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**MPS**

**MAPLIN PROFESSIONAL**



# THE COMPLETE CATALOGUE FOR ELECTRONICS

1997/8

September '97 – February '98

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Send written orders to:  
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**STORES INFORMATION**  
**See Pages 8-16**

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Maplin MPS has always offered excellent value for money - and now there are volume price breaks on the page, and even more at back of catalogue.

**Business Credit Account**

Maplin MPS offer credit account facilities to Businesses, Educational and Government Establishments. Simply fill in the credit application form at the back of the catalogue.

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We are also pleased to accept American Express, Visa, Access, Mastercard, and Connect, Switch, or you can pay by cheque made payable to Maplin MPS.



All products are selected, tested and despatched under Maplin's fully BSI accredited warehouse systems even though not all of the items are manufactured by a quality assured source. Sales by mail and over the Wombwell trade counter are fully covered by our BS EN ISO 9002 process. The sales process at the regional stores is not audited by BSI however fully compliant supplies can be made by arrangement with the shop manager.

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**Telephone:** 01702 **554000**  
Over 30 lines

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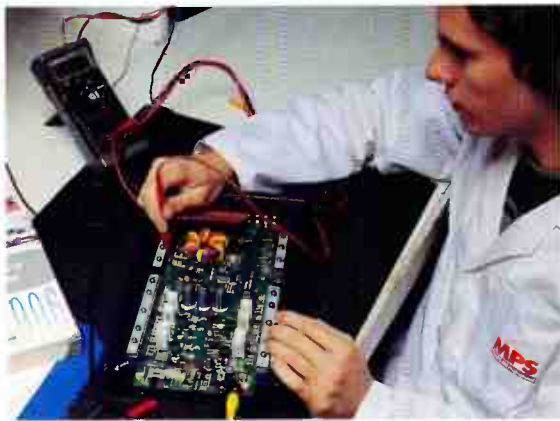
**e-mail:** [Sales@maplin.co.uk](mailto:Sales@maplin.co.uk)

**Write:** Maplin MPS,  
FREEPOST SMU 94  
PO Box 777 Rayleigh,  
Essex SS6 8LU

**Keycall:** 01702 **556751**  
24 hour telephone  
computer service  
(See back of catalogue for details)

**CashTel:** 01702 **552941**  
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**Don't forget!**  
Order before 5.00pm  
for same day despatch!



It's easy to place your order 24 hours a day, 365 days a year. It's easier still if you use the order form at the back of this catalogue!

If you don't have a business account, avoid delivery charges by making sure your order is over £30.00 inc. VAT!

Our helpful trained staff are always happy to answer any technical question during normal working hours!



## Easy ways to pay

### INSTANT BUSINESS CREDIT ACCOUNT

All orders from Maplin MPS Business Credit Account customers are DELIVERED FREE and, in most cases – subject to status, of course – an account can be set up and used instantly.

Just send a completed credit application form (at the back of this catalogue) and we'll do the rest.

### COMPANY PURCHASING CARDS

Use your company purchasing card over the phone or at any Maplin store and all orders are DELIVERED FREE.

### CASH, CHEQUE OR CREDIT/DEBIT CARD

All orders over £30.00 inc. VAT are DELIVERED FREE. Smaller orders attract a small order charge of only £2.95 inc. VAT.

### PERSONAL CREDIT FACILITIES

Credit facilities are available for non-account customers on major products priced over £75 (subject to status). Please enquire when ordering.

## Same Day Despatch

All stock items ordered before 5:00pm are despatched the same day. A back ordering system is available should any items be temporarily out of stock.

### FIRST CLASS POST

All despatches under 1kg (apart from datasheets and publications) are sent by first class post so you can enjoy your purchases without delay. Larger parcels are sent by fast courier, with 24-hour service.

## Guaranteed Next Day Delivery

### WEEKDAY DELIVERIES

While our normal service means your goods will usually arrive the following working day, we do offer a guaranteed delivery service for vital consignments. All orders for guaranteed deliveries must be received by 4:00pm (excluding Sundays and public holidays) and attract the following charges in addition to any other charges normally due:

UK Mainland before 12:30pm	£8.30
UK Mainland before 10:30am	£13.00
Northern Ireland before 12:30pm	£15.00
Northern Ireland before 10:30am	£20.00
Channel Islands	£20.00
Scottish Highlands, Offshore Islands, Isle of Man and the Scilly Isles in the following postcode areas: IM1-9, IV40-49, IV51, IV55, IV56, KA27, KA28, KW15-17, PA41-49, PA60-78, PA80-88, PH42-44, TR21-25, ZE1-3	£20.00





## **SATURDAY DELIVERIES**

If we receive your order before 2:00pm Friday we can guarantee that you will receive all items despatched by the next day, normally before noon (except public holidays). Saturday deliveries attract the following charge in addition to any other charge normally due:

UK Mainland	£15.00
Northern Ireland	£22.00
Scottish Highlands, Offshore Islands, Isle of Man and the Scilly Isles	£28.00

*We are sorry, but Saturday deliveries to the Channel Islands are not available.*

## **International Orders**

We are able to despatch Maplin products to most places on Earth. See the back of the catalogue for details.

## **If in Doubt... Call our Technical Helpline**

If you have any query, big or small, just call our Helpline on 01702 556001 – Monday to Friday, 9:00am to 5:00pm – or fax the relevant details to 01702 554001, marking it for the attention of the Technical Services Manager. Don't forget to include your name and address and any contact references.

## **Maplin Nationwide**

With more stores open than ever before and more opening all the time, it's never been easier to visit a Maplin Store or Mondo Superstore to see our superb product range for yourself and talk to our highly trained staff. Or, if you prefer, choose your purchases from our catalogue, telephone your nearest store and call in personally to collect them – even on Saturday (and Sunday too in certain stores). To find your nearest store call 0800 136156 or see pages 8 to 16 of this catalogue.

## **Buy with Confidence**

### **PRODUCT WARRANTY**

Every Maplin MPS product is subjected to rigorous quality control. If, in proper use, any product fails to perform to its specifications owing to faulty materials or workmanship within a year of purchase, we will be glad to replace it, repair it, or provide a refund.

### **EXTENDED WARRANTIES**

Extended warranties are available on an increasing number of products. Please ask for details when ordering.

## HOME/BUSINESS INSTALLATION SERVICE

An installation service for certain products is now available in several regions. Please contact your nearest Maplin Store for details.

## FULL AFTER SALES REPAIR SERVICE

Our highly qualified technicians are available to repair any items outside their guarantee period. Please phone 01702 554000 for details of our competitive prices.

# Business Services

## INSTRUMENT CALIBRATION

Maplin MPS offers a comprehensive range of calibration instruments with two choices of certification – 'Standard Certificate' guarantees full traceability to NPL (National Physical Laboratory) while a NAMAS Certificate offers worldwide recognition and is Crown copyright. Please see Section 38, Test and Measurement Equipment, for full details.

## QUOTATIONS/PRO-FORMA INVOICES

Maplin MPS are always ready to offer business customers quotations for special requirements (such as non-catalogue products and larger volumes) and these are guaranteed for a fixed period. We can also provide pro-forma invoices on request. Please see our full Terms and Conditions, inside the back cover.

## SCHEDULED ORDERS

Tell us when and how many and we'll deliver, subject to a minimum shipment value of £25.00, written confirmation and a maximum contract period of one year.

Scheduling your orders will save you money and storage space.

## CERTIFICATES OF CONFORMITY

Commercial Certificates of Conformity are available on request. Please quote Order Code XL19V when placing your order.

# Maplin Magazine

Why not subscribe to the UK's most widely read specialist electronics magazine, published monthly. Features, news, projects to make and details of our latest products are all here. Simply phone and enquire. It makes a great present!



# How to get the most from your catalogue

## Product Description

The Maplin MPS catalogue is widely regarded as the electronics product bible. Examine the detail in our product descriptions and it's easy to see why.

## Product Photograph

There's a full colour photograph for nearly every product in the catalogue. The original What You See Is What You Get!

## Pack Quantity

Small, commonly used products are supplied in multi-packs to minimise damage and keep prices low. Simply choose the Order Code for the quantity you require.

## Prices

The price for every product is quoted exc. and inc. VAT.

## Volume Discounts

Most products have several columns of prices, showing price breaks (exc. VAT) for volume discounts. Greater discounts for even larger volumes are shown in the Order Code Index at the back of this catalogue.

## NEW PRODUCTS

## New Product Pages

Want to see what's new at a glance? These pages will show you and tell you where you can find them in the catalogue.



## Contact Numbers

Want to speak to us? Every page has a reminder of the contact numbers for Sales, Customer Services and Technical Support.



## Switches

### Snap-in Miniature Rocker Switches

A range of miniature round faced rocker switches which snap-in a 20mm diameter hole. Body has a 2mm wide locating lug for which a slot must be provided in the edge of the board to prevent rotation. Available in SPST, DPST and DPDT configurations with red or black contacts. Connections are 4.8mm push-in terminals. Current rating 20mA max. as measured with insulation resistance 100MΩ strength is > 1,500V AC.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
J001A	Round Rocker SPST On-Off	£0.75	£0.90
J001B	Round Rocker SPST On-Off	£0.75	£0.90
J001C	Round Rocker SPST On-Off	£0.75	£0.90
J001D	Round Rocker SPST On-Off	£0.75	£0.90
J001E	Round Rocker SPST On-Off	£0.75	£0.90
J001F	Round Rocker SPST On-Off	£0.75	£0.90
J001G	Round Rocker SPST On-Off	£0.75	£0.90
J001H	Round Rocker SPST On-Off	£0.75	£0.90
J001I	Round Rocker SPST On-Off	£0.75	£0.90
J001J	Round Rocker SPST On-Off	£0.75	£0.90
J001K	Round Rocker SPST On-Off	£0.75	£0.90
J001L	Round Rocker SPST On-Off	£0.75	£0.90
J001M	Round Rocker SPST On-Off	£0.75	£0.90
J001N	Round Rocker SPST On-Off	£0.75	£0.90
J001O	Round Rocker SPST On-Off	£0.75	£0.90
J001P	Round Rocker SPST On-Off	£0.75	£0.90
J001Q	Round Rocker SPST On-Off	£0.75	£0.90
J001R	Round Rocker SPST On-Off	£0.75	£0.90
J001S	Round Rocker SPST On-Off	£0.75	£0.90
J001T	Round Rocker SPST On-Off	£0.75	£0.90
J001U	Round Rocker SPST On-Off	£0.75	£0.90
J001V	Round Rocker SPST On-Off	£0.75	£0.90
J001W	Round Rocker SPST On-Off	£0.75	£0.90
J001X	Round Rocker SPST On-Off	£0.75	£0.90
J001Y	Round Rocker SPST On-Off	£0.75	£0.90
J001Z	Round Rocker SPST On-Off	£0.75	£0.90

### 10A Toggle Switches

A range of heavy duty toggle switches with chrome-plated terminals. Connections are 6.35mm (1/4in) blade terminals with note for soldering if desired as an alternative. Rated 10A 250V AC. Contact resistance < 50mΩ. Insulation resistance > 50,000 MΩ. Available in single pole and double pole.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
J002A	10A Toggle Switch	£1.00	£1.20
J002B	10A Toggle Switch	£1.00	£1.20
J002C	10A Toggle Switch	£1.00	£1.20
J002D	10A Toggle Switch	£1.00	£1.20
J002E	10A Toggle Switch	£1.00	£1.20
J002F	10A Toggle Switch	£1.00	£1.20
J002G	10A Toggle Switch	£1.00	£1.20
J002H	10A Toggle Switch	£1.00	£1.20
J002I	10A Toggle Switch	£1.00	£1.20
J002J	10A Toggle Switch	£1.00	£1.20
J002K	10A Toggle Switch	£1.00	£1.20
J002L	10A Toggle Switch	£1.00	£1.20
J002M	10A Toggle Switch	£1.00	£1.20
J002N	10A Toggle Switch	£1.00	£1.20
J002O	10A Toggle Switch	£1.00	£1.20
J002P	10A Toggle Switch	£1.00	£1.20
J002Q	10A Toggle Switch	£1.00	£1.20
J002R	10A Toggle Switch	£1.00	£1.20
J002S	10A Toggle Switch	£1.00	£1.20
J002T	10A Toggle Switch	£1.00	£1.20
J002U	10A Toggle Switch	£1.00	£1.20
J002V	10A Toggle Switch	£1.00	£1.20
J002W	10A Toggle Switch	£1.00	£1.20
J002X	10A Toggle Switch	£1.00	£1.20
J002Y	10A Toggle Switch	£1.00	£1.20
J002Z	10A Toggle Switch	£1.00	£1.20

Dimensions of body Type	Height mm	Width mm	Depth mm
Vertical SPDT	13.6	11	7.5
Horizontal SPDT	8	11	14.4
Vertical DPDT	13.6	11	11.7
Horizontal DPDT	12.2	11	14.4

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
J003A	10A Toggle Switch	£1.00	£1.20
J003B	10A Toggle Switch	£1.00	£1.20
J003C	10A Toggle Switch	£1.00	£1.20
J003D	10A Toggle Switch	£1.00	£1.20
J003E	10A Toggle Switch	£1.00	£1.20
J003F	10A Toggle Switch	£1.00	£1.20
J003G	10A Toggle Switch	£1.00	£1.20
J003H	10A Toggle Switch	£1.00	£1.20
J003I	10A Toggle Switch	£1.00	£1.20
J003J	10A Toggle Switch	£1.00	£1.20
J003K	10A Toggle Switch	£1.00	£1.20
J003L	10A Toggle Switch	£1.00	£1.20
J003M	10A Toggle Switch	£1.00	£1.20
J003N	10A Toggle Switch	£1.00	£1.20
J003O	10A Toggle Switch	£1.00	£1.20
J003P	10A Toggle Switch	£1.00	£1.20
J003Q	10A Toggle Switch	£1.00	£1.20
J003R	10A Toggle Switch	£1.00	£1.20
J003S	10A Toggle Switch	£1.00	£1.20
J003T	10A Toggle Switch	£1.00	£1.20
J003U	10A Toggle Switch	£1.00	£1.20
J003V	10A Toggle Switch	£1.00	£1.20
J003W	10A Toggle Switch	£1.00	£1.20
J003X	10A Toggle Switch	£1.00	£1.20
J003Y	10A Toggle Switch	£1.00	£1.20
J003Z	10A Toggle Switch	£1.00	£1.20

### Toggle Covers

Moulded plastic covers that fit over the dolly of the miniature toggle switches. Available in the colours red, white or black.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
J004A	Toggle Cover Red	£0.15	£0.18
J004B	Toggle Cover White	£0.15	£0.18
J004C	Toggle Cover Black	£0.15	£0.18

### DPDT Toggle

Standard DPDT toggle switch rated 2A 250V AC. 250,000 make/break cycles. Supplied on PCB. Mounting plate.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
J005A	DPDT Toggle	£1.50	£1.80
J005B	DPDT Toggle	£1.50	£1.80
J005C	DPDT Toggle	£1.50	£1.80
J005D	DPDT Toggle	£1.50	£1.80
J005E	DPDT Toggle	£1.50	£1.80
J005F	DPDT Toggle	£1.50	£1.80
J005G	DPDT Toggle	£1.50	£1.80
J005H	DPDT Toggle	£1.50	£1.80
J005I	DPDT Toggle	£1.50	£1.80
J005J	DPDT Toggle	£1.50	£1.80
J005K	DPDT Toggle	£1.50	£1.80
J005L	DPDT Toggle	£1.50	£1.80
J005M	DPDT Toggle	£1.50	£1.80
J005N	DPDT Toggle	£1.50	£1.80
J005O	DPDT Toggle	£1.50	£1.80
J005P	DPDT Toggle	£1.50	£1.80
J005Q	DPDT Toggle	£1.50	£1.80
J005R	DPDT Toggle	£1.50	£1.80
J005S	DPDT Toggle	£1.50	£1.80
J005T	DPDT Toggle	£1.50	£1.80
J005U	DPDT Toggle	£1.50	£1.80
J005V	DPDT Toggle	£1.50	£1.80
J005W	DPDT Toggle	£1.50	£1.80
J005X	DPDT Toggle	£1.50	£1.80
J005Y	DPDT Toggle	£1.50	£1.80
J005Z	DPDT Toggle	£1.50	£1.80

### Single pole types

Body size: 29.2 x 15.8 x 17.5mm high. Tag length: 11mm. Bush: M12 x 11.5mm long x 6mm dia. Dolly: 16.5mm long x 6mm dia. Panel cut-out: 12.7mm dia.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
J006A	Single Pole Toggle	£0.75	£0.90
J006B	Single Pole Toggle	£0.75	£0.90
J006C	Single Pole Toggle	£0.75	£0.90
J006D	Single Pole Toggle	£0.75	£0.90
J006E	Single Pole Toggle	£0.75	£0.90
J006F	Single Pole Toggle	£0.75	£0.90
J006G	Single Pole Toggle	£0.75	£0.90
J006H	Single Pole Toggle	£0.75	£0.90
J006I	Single Pole Toggle	£0.75	£0.90
J006J	Single Pole Toggle	£0.75	£0.90
J006K	Single Pole Toggle	£0.75	£0.90
J006L	Single Pole Toggle	£0.75	£0.90
J006M	Single Pole Toggle	£0.75	£0.90
J006N	Single Pole Toggle	£0.75	£0.90
J006O	Single Pole Toggle	£0.75	£0.90
J006P	Single Pole Toggle	£0.75	£0.90
J006Q	Single Pole Toggle	£0.75	£0.90
J006R	Single Pole Toggle	£0.75	£0.90
J006S	Single Pole Toggle	£0.75	£0.90
J006T	Single Pole Toggle	£0.75	£0.90
J006U	Single Pole Toggle	£0.75	£0.90
J006V	Single Pole Toggle	£0.75	£0.90
J006W	Single Pole Toggle	£0.75	£0.90
J006X	Single Pole Toggle	£0.75	£0.90
J006Y	Single Pole Toggle	£0.75	£0.90
J006Z	Single Pole Toggle	£0.75	£0.90

### Double pole types

Body size: 32.5 x 19.5 x 20mm high. Tag length: 11mm. Bush: M12 x 11.5mm long x 6mm dia. Dolly: 16.5mm long x 6mm dia. Panel cut-out: 12.7mm dia.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
J007A	Double Pole Toggle	£1.50	£1.80
J007B	Double Pole Toggle	£1.50	£1.80
J007C	Double Pole Toggle	£1.50	£1.80
J007D	Double Pole Toggle	£1.50	£1.80
J007E	Double Pole Toggle	£1.50	£1.80
J007F	Double Pole Toggle	£1.50	£1.80
J007G	Double Pole Toggle	£1.50	£1.80
J007H	Double Pole Toggle	£1.50	£1.80
J007I	Double Pole Toggle	£1.50	£1.80
J007J	Double Pole Toggle	£1.50	£1.80
J007K	Double Pole Toggle	£1.50	£1.80
J007L	Double Pole Toggle	£1.50	£1.80
J007M	Double Pole Toggle	£1.50	£1.80
J007N	Double Pole Toggle	£1.50	£1.80
J007O	Double Pole Toggle	£1.50	£1.80
J007P	Double Pole Toggle	£1.50	£1.80
J007Q	Double Pole Toggle	£1.50	£1.80
J007R	Double Pole Toggle	£1.50	£1.80
J007S	Double Pole Toggle	£1.50	£1.80
J007T	Double Pole Toggle	£1.50	£1.80
J007U	Double Pole Toggle	£1.50	£1.80
J007V	Double Pole Toggle	£1.50	£1.80
J007W	Double Pole Toggle	£1.50	£1.80
J007X	Double Pole Toggle	£1.50	£1.80
J007Y	Double Pole Toggle	£1.50	£1.80
J007Z	Double Pole Toggle	£1.50	£1.80

### ROCKER Round-Faced Miniature Rocker Switches

A range of three miniature round faced rocker switches with single round hole. Mounting hole 11mm. Current rating 1A and SPDT 240V AC. DPDT 240V AC 1.5A.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
J008A	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008B	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008C	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008D	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008E	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008F	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008G	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008H	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008I	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008J	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008K	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008L	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008M	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008N	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008O	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008P	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008Q	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008R	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008S	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008T	Round-Faced Miniature Rocker Switch	£0.75	£0.90
J008U	Round-Faced Miniature Rocker Switch	£0	



## Section Introductions

Every section has an introduction page with its own alphabetical index – making our products even easier to find.



Maplin Electronics is now a full member of A.F.D.E.C. (Association of Franchised Distributors of Electronic Components).

## Section Header

Every page carries a Section Header. A full Section Index appears on both page 1 and the back cover.

## Section Identifier tabs

There's a numbered tag on the side of every page to correspond with the tabs shown in the Section Index.

## See it...live!

Remember, you can see the vast majority of the products in this catalogue in any Maplin or Maplin Mondo Store. Call 0800 136156 or see the next few pages for details of your nearest store.

## Order Code Index

If you know the Order Code, this index will tell you where you'll find the product and give details of additional volume discounts.

## MPS Business Credit Account

All orders for business account customers are delivered free. To open your account send your completed application form (at the back of this catalogue). You may be asked for additional information if you are not a registered company.

## Order Form

To make ordering even easier, an order form is included at the back of this catalogue. Use either the quoted VAT inclusive or exclusive and look out for non-VAT products (indicated as 'N' in the price panel).



## Now even more **MAPLIN** Stores and **MONDO** Superstores – Nationwide



### **MAPLIN** – First for products, first for service

Never forget that this catalogue, packed with products as it is, is only half the story. Visit any Maplin or Maplin Mondo store and you'll discover that the most exciting product range in the world of electronics and beyond is backed by the highest standards of professional service and advice in the business. It's no wonder that Maplin has been the number one choice for millions of customers over the last 25 years.

Every store carries as many of the products shown in this catalogue as possible but some items may need to be specially ordered for you. If you have made a specific choice from our catalogue it's advisable to ring your nearest store (quoting the product's Order Code) to make sure it's available before calling in to collect it.

### Easy Payment



All stores accept Access, Mastercard, Visa, Barclaycard, Switch, Connect, American Express and crossed cheques up to a value of £5,000 (cheque guarantee card are needed for personal cheques). Business customers can use their Maplin MPS account, although prior arrangements should be made if using them at weekends.

Cheques should not be pre-signed unless by prior arrangement and a contact name and address should be printed on the reverse. Your personal details are guaranteed confidential and will not be used for any other purpose.

### Why not visit your local Maplin Catalogue Store, or Mondo Superstore

#### AREA 1. SCOTLAND AND NORTHERN IRELAND

	Telephone	Fax
Edinburgh	0131 313 5551	0131 313 1811
Glasgow	0141 353 3323	0141 353 1838
Belfast	01232 683 929	01232 683 867

#### AREA 2. NORTH WEST

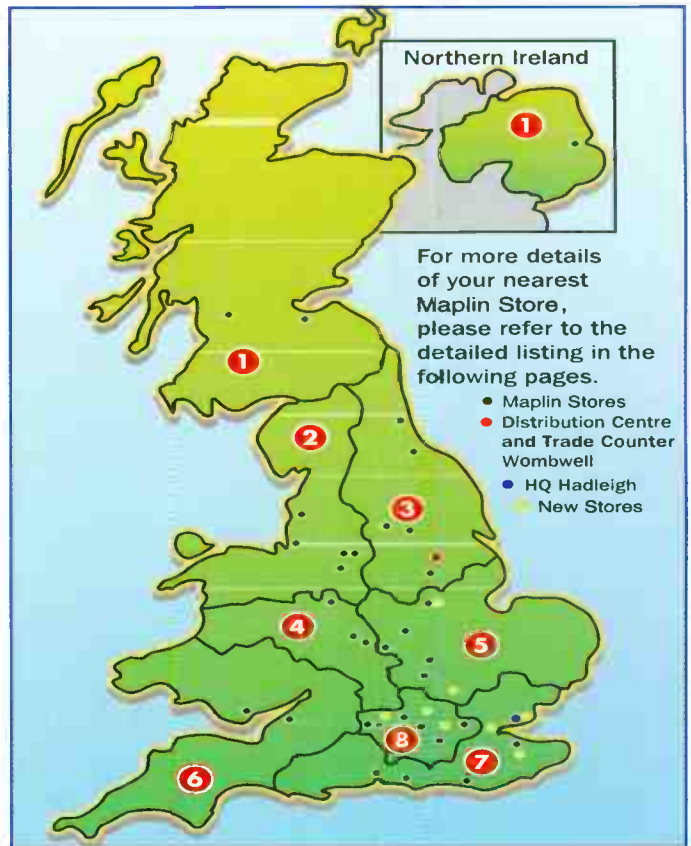
	Telephone	Fax
Liverpool	0151 230 0366	0151 230 0365
Manchester (Cheetham Hill)	0161 832 2550	0161 832 2380
(Oxford Road)	0161 236 0281	0161 237 1977
Preston	01772 258 484	01772 258 686
Stockport	0161 480 4900	0161 474 0400

#### AREA 3. NORTH EAST

	Telephone	Fax
Barnsley	01226 340 108	01226 340 167
Bradford	01274 728 808	01274 738 841
Leeds Mondo	0113 244 9200	0113 243 0210
Middlesbrough	01642 242 900	01642 242 909
Newcastle-upon-Tyne	0191 488 9555	0191 488 2830
Sheffield	0114 285 5492	0114 285 4389

#### AREA 4. WEST MIDLANDS

	Telephone	Fax
Birmingham	0121 384 8411	0121 384 8423
Dudley (Nr. Merryhill)	01384 485 051	01384 485 185
Stoke-on-Trent	01782 749 947	01782 749 997



AREA 5. EAST MIDLANDS & EAST ANGLIA		
	Telephone	Fax
Coventry	01203 550 504	01203 550 484
Leicester	0116 262 3288	0116 262 3289
Luton	01582 414 155	01582 486 333
Milton Keynes	01908 692 720	01908 692 725
Northampton	01604 756 726	01604 752 437
Nottingham	0115 941 0242	0115 941 0247
Nottingham Mondo	0115 979 1028	0115 924 9578
AREA 6. SOUTH WEST		
	Telephone	Fax
Bristol	0117 923 2014	0117 923 2019
Cardiff	01222 464 554	01222 464 335
AREA 7. SOUTH EAST		
	Telephone	Fax
Brighton	01273 620 930	01273 620 928
Chatham	01634 818 588	01634 818 589
Maidstone	01622 690 761	01622 690 791
Portsmouth	01705 654 411	01705 654 334
Southampton	01703 225 831	01703 339 150
Thurrock Mondo	01708 867 976	01708 865 517
Westcliff-on-Sea	01702 392 000	01702 341 013
AREA 8. LONDON		
	Telephone	Fax
Edgware	0181 951 0969	0181 951 0967
Forest Hill	0181 291 9192	0181 291 9107
Hammersmith	0181 748 0926	0181 741 5362
Ilford	0181 599 0100	0181 599 5169
Reading	01734 566 638	01734 592 115
Slough	01753 551 419	01753 694 393
Stratford	0181 555 6254	0181 534 9359
Watford	01923 246 848	01923 246 854
Wood Green	0181 881 3288	0181 881 2165

**Opening Times**

All Maplin Stores are open from 9:00am to 5:30pm, Monday to Saturday  
The next time you want something fast, just call in!  
(Check with stores for Sunday opening).

**Sunday Opening**

Many Maplin Stores are open on Sunday but if your local store doesn't yet, keep in touch – they could be opening on Sunday soon! You'll find it makes parking easier and our staff have even more time to give you all the technical advice you need.

**Call 0800 136156**  
**for details of your nearest store**

**Mail Order Services:**  
**Maplin MPS,**  
**FREEPOST SMU 94, P.O. Box 777,**  
**Rayleigh, Essex, SS6 8LU**  
**Tel 01702 554000 Fax 01702 554001**  
**E-mail <recipient>@maplin.co.uk**

## BARNESLEY (WOMBWELL)

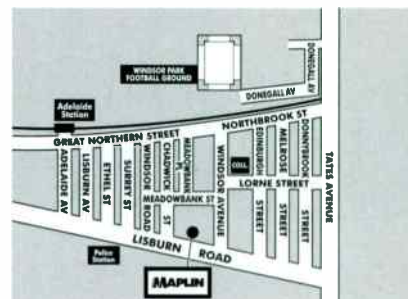
National Distribution Centre  
Valley Road, (off Station Road),  
Wombwell, Barnsley,  
South Yorkshire S73 OBS  
Tel: (+44) 01226 340108  
Fax: (+44) 01226 340167  
Trade and Retail Counter  
Opening hours:  
Monday to Friday : 9am to 5.15pm



## BELFAST

357- 359 Lisburn Road, Belfast, BT9 7EP.  
Tel: 01232 683929  
Fax: 01232 683867  
Opening hours: 9am to 5.30pm\*  
Monday to Wednesday 8.30am to 6.00pm.  
Thursday 8.30am to 8.00pm.  
Friday 8.30am to 6.00pm.  
Saturday 9am to 5.30pm.  
Check with store for Public Holiday Opening.

Situated on the busy Lisburn Road, there is plenty of on-street parking at our Belfast Maplin Store.



\*Check with store for Sunday opening.

## BIRMINGHAM

Junction of Sutton New Road and  
Summer Road, Erdington,  
Birmingham, B23 6TH.  
Tel: 0121 384 8411  
Fax: 0121 384 8423  
Opening hours: 9am to 6.00pm.  
Monday to Saturday.  
Check with store for Public Holiday Opening.

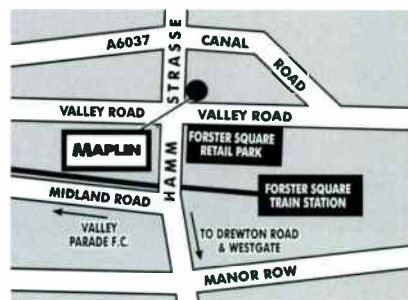
Situated in Erdington on the main roundabout at the junction of Sutton New Road and Summer Road, our Maplin Store has plenty of free private parking.



## BRADFORD

28 Valley Road, Hamm Strasse,  
Bradford, BD1 4RH.  
Tel: 01274 728808  
Fax: 01274 738841  
Opening hours: 9am to 6.00 p.m.  
Monday to Saturday.  
Open till 8am on Thursday.  
Sunday 10am to 4.00pm.  
Check with store for Public Holiday Opening.

Situated beside Carpet World and Appleyard the Jaguar dealers, we are conveniently located opposite the new Forster Square station accessible by car along Canal Road and Westgate. Free on-site parking is provided for our customers. Since the store has been re-launched at the end of April, we have had 1000's of new and exciting products.



## BRIGHTON

65 London Road, Brighton, BN1 4JE.  
Tel: 01273 620930  
Fax: 01273 620928  
Opening hours:  
9am to 6.00pm.  
Monday to Saturday.

There is plenty of parking either in the street (voucher available from the Maplin Store) or in the London Road multi-storey.



Check with store for Public Holiday Opening.

## BRISTOL

302 Gloucester Road, Horfield, Bristol,  
BS7 8PD.  
Tel: 0117 923 2014  
Fax: 0117 923 2019  
Opening hours:  
Monday to Friday: 9am to 6.00pm.  
Saturday: 9am. to 5.30pm.  
\*Sunday: 10am to 4pm.  
Check with store for Public Holiday Opening.

Situated on the main A38 Gloucester Road, about halfway between the city centre and Filton Airfield, opposite the Esso Premier Service Station.



\*Check with store for Sunday opening.

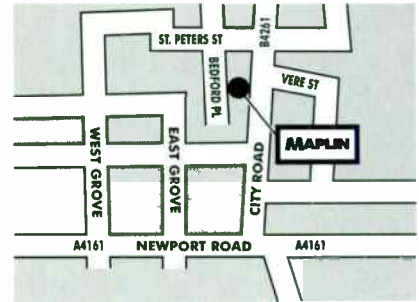
## CARDIFF

29 - 31 City Road, Cardiff, CF2 3BJ.  
 Tel: 01222 464554  
 Fax: 01222 464335

Monday, Wednesday & Friday: 9am to 5.30pm  
 Tuesday, Thursday & Saturday: 9am to 6.00pm

Check with store for Public Holiday Opening.

Conveniently located on City Road about 200m from the junction with Newport Road, the Maplin Store is easily accessible from the M4 (J29 East, J32 West). There is plenty of parking in the streets or in our private car park at the rear of the Store.



## CHATHAM

2 Luton Road, Chatham, Kent, ME4 5AA.  
 Tel: 01634 818588  
 Fax: 01634 818589

Opening hours: 9am to 5.30pm  
 Monday to Saturday.

Check with store for Public Holiday Opening.

Ideally located alongside the Luton Arches, at the junction with the High Street and Chatham Hill, the Maplin Store is a short drive from the M2. There is plenty of local free parking.



## COVENTRY

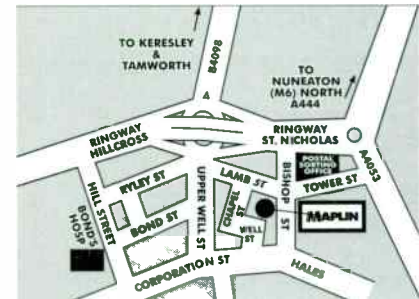
12 Bishop Street, Coventry, CV1 1HU.  
 Tel: 01203 550504  
 Fax: 01203 550484

Opening hours: 9am to 5.30pm  
 Monday to Saturday.

Closed till 9.30am on Friday for staff training.

Check with store for Public Holiday Opening.

Situated within the ring road, just to the north of the West Orchard shopping centre, there is plenty of car parking either on-street (one hour) or in the nearby pay-and-display car park.



## DUDLEY (Near Merryhill)

Unit 7, Sterling Park, Pedmore Road, Brierley Hill, West Midlands, DY5 1TB.  
 Tel: 01384 485051  
 Fax: 01384 485185

Opening hours: 9am to 6.00pm  
 Monday to Saturday.

Check with store for Public Holiday Opening.

Situated on the Sterling Business Park, a prominent location on the Pedmore Road (A4036) in the Brierley Hill District, the Maplin Store has plenty of on-site free parking.



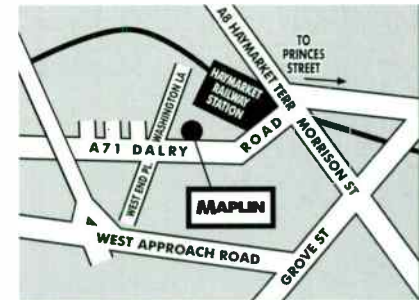
## EDINBURGH

126 Dalry Road, Edinburgh, EH11 2EZ.  
 Tel: 0131 313 5551  
 Fax: 0131 313 1811

Opening hours:  
 Monday to Saturday: 9am to 6.00pm  
 Thursday: 9am to 7.00pm  
 Sunday: 10am to 4.30pm

Check with store for Public Holiday Opening.

Conveniently located on the main A71 road, our Edinburgh Maplin Store is just a short distance from Haymarket Station and about 15 minutes walk from Princess Street. The location is well served by bus routes and benefits from a large free car park situated behind the store. Being located on the A71 and close to A8 gives good access from A1, M8, M9, M90 and A720 (city bypass).



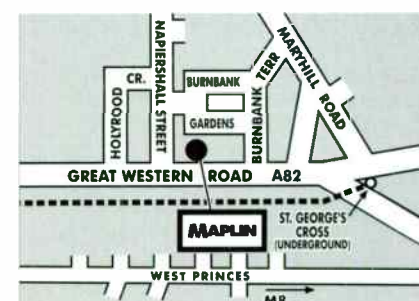
## GLASGOW

264 - 266 Great Western Road, Glasgow, G4 9EJ.  
 Tel: 0141 353 3323  
 Fax: 0141 353 1838

Opening hours:  
 Monday - Saturday 9am to 6.00pm  
 Sunday: 9am to 5.30pm.

Late Night: Thu till 8.30pm  
 Closed till 9.30am on Friday for staff training.

Check with store for Public Holiday Opening. Situated only a short distance from the M8, the Maplin Store has a small amount of parking to the rear with a reasonable amount of on-street parking.



## LEEDS

**3 Regent Street, Leeds, LS2 7QN.**  
**Tel: 0113 244 9200**  
**Fax: 0113 243 0210**  
 Opening hours: 9am to 6pm  
 Monday to Wednesday.  
 Thursday & Friday 9am to 8pm  
 Saturday: 9am to 6pm  
 Sunday: 11am to 5pm



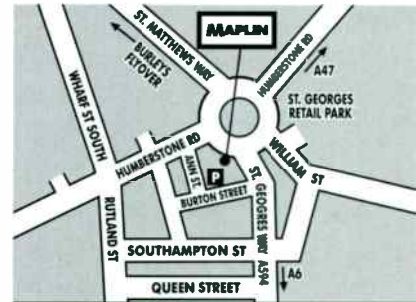
The Mondo Maplin Superstore is situated a few minutes walk from the city centre in Regent Street 1 1/2 miles from the end of the M1 and M621 to the south. There is a large car park behind the Superstore.



## LEICESTER

**Office World Building, Burton Street, Leicester, LE1 1TE.**  
**Tel: 0116 262 3288**  
**Fax: 0116 262 3289**  
 Opening hours: 9am to 6pm  
 Monday to Friday.  
 Saturday: 9am to 5.30pm  
 Sunday: 10am to 4pm  
 Check with store for Public Holiday Opening.

Easily reached from M1, follow signs to City Centre and then A47 towards Peterborough. Conveniently located by the roundabout at the junction of Humberstone Road (A47), St. George's Way (A594) and St. Matthew's Way (A47) opposite St. George's Retail Park. Ample on-site parking.



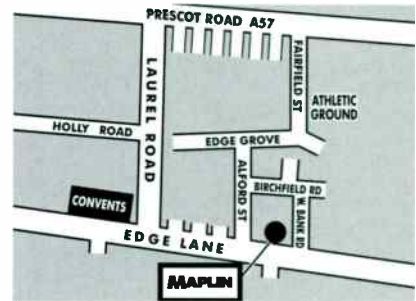
## LIVERPOOL

**355 Edge Lane, Fairfield, Liverpool, L7 9LG.**  
**Tel: 0151 230 0366**  
**Fax: 0151 230 0365**

Monday to Friday: 9am to 6pm  
 Saturday: 9am to 5.30pm

Check with store for Public Holiday Opening.

Situated on the A5047 an extension of the M62 motorway, the north side of Edge Lane opposite the GPT site (formerly Plessey) about 100 yards west of the Retail Park. Ample car parking available.



## LONDON (EDGWARE)

**146-148 Burnt Oak, Broadway, Edgware, HA8 0AX.**  
**Tel: 0181 951 0969**  
**Fax: 0181 951 0967**  
 Opening hours: 9am to 6.00pm  
 Monday to Saturday.  
 Sunday: 10am to 4.00pm

Check with store for Public Holiday Opening.

Located on the A5, Edgware Road at Burnt Oak, on the corner of Barnfield Road with the M1 J4, and the A1 close by. Parking is in the many side roads.



## LONDON (FOREST HILL)

**107-113 Stanstead Road, Forest Hill, London, SE23 1HH.**  
**Tel: 0181 291 9192**  
**Fax: 0181 291 9107**  
 Opening hours: 9am to 6.00pm  
 Monday to Saturday.

Check with store for Public Holiday Opening.

This south London Maplin Store is centrally located with easy access by road. Situated just off the South Circular ring road in Stanstead Road with ample on-site free car parking.



## LONDON (HAMMERSMITH)

**120-122 King Street, Hammersmith, London, W6 0QU.**  
**Tel: 0181 748 0926**  
**Fax: 0181 741 5362**  
 Opening Hours: 9am to 6.00pm  
 Monday to Saturday.  
 Check with store for Public Holiday Opening.  
 Situated west of the pedestrian shopping centre in Hammersmith. Just 2 miles by car

from the end of the M4, along the Great West Road turning left before the Hammersmith flyover. Metered parking close by.



## LONDON (ILFORD)

302-304 Green Lane, Ilford, IG1 1XT.  
Tel: 0181 599 0100  
Fax: 0181 599 5169  
Opening hours: 9am to 6.00pm  
Monday to Saturday.  
Check with store for Public Holiday Opening.

This Maplin Store is located on the busy Green Lane, about half a mile from the Ilford shopping centre. Easily accessed from all round the east side of Greater London by road.  
Seven Kings Railway Station (British Rail) Ampie free parking outside the Store, or in adjoining side streets.  
Car Park behind shop.



## LONDON (STRATFORD)

104-106 The Broadway, Stratford, London E15 1NG.  
Tel: 0181 555 6254  
Fax: 0181 534 9359  
Opening Hours: 9am to 6.00pm  
Monday to Saturday.  
Sunday: 10am to 4.00pm

Situated next to Co-op Living on Stratford Broadway. Ample parking is available in the Stratford Centre Car Park. The Store is a short walk from Stratford Station and Buses stop outside the Store.



Check with store for Public Holiday Opening.

## LONDON (WOOD GREEN)

21-23 High Road, Wood Green, London N22 6BH.  
Tel: 0181 881 3288  
Fax: 0181 881 2165  
Opening hours: 9am to 6.00pm  
Monday to Saturday.  
Sunday: 11am to 5.00pm  
Check with store for Public Holiday Opening.

The store is situated just 200 yards from the Shopping City Complex where ample parking space is available. The store is located between Wood Green and Tumpike Lane tube stations on the main Piccadilly line from central London. All main bus routes pass the store.



## LUTON

50-52 The Arndale Shopping Centre, Luton, Bedfordshire LU1 2TE.  
Tel: 01582 414155  
Fax: 01582 486333  
Opening hours: 9am to 5.30pm  
Monday to Saturday.  
Thursday open till 7pm

Located adjacent to the Park Street entrance to the Arndale Shopping Centre this store is conveniently positioned for both the pedestrian and car boume shopper. Retailers close by include Debenhams, Woolworths and The Post Office. Customers should follow all directions for the Town Centre. Ample car parking is available to the rear of the Arndale Centre



Check with store for Public Holiday Opening.

## MAIDSTONE

79-85 Week Street, Maidstone, Kent ME14 1QX  
Tel: 01622 690761  
Fax: 01622 690791  
Opening hours: 9am to 5.30pm  
Monday to Saturday.

Situated on Week Street (opposite Army & Navy and McDonalds). as shown in map. From M20 J6, follow A229 west bound to Town Centre/Railway Station.

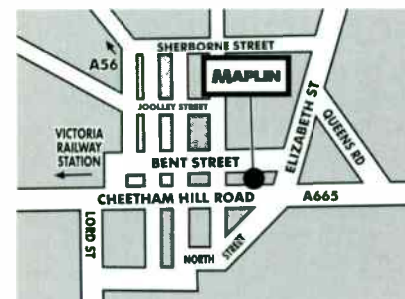


Check with store for Public Holiday Opening.

## MANCHESTER (CHEETHAM HILL)

169 Cheetham Hill Road, Cheetham Hill, Manchester, M8 8LG.  
Tel: 0161 832 2550  
Fax: 0161 832 2380  
Opening hours: 9am to 6pm  
Monday to Friday  
Saturday: 9am to 5.30pm  
Sunday: 10am to 4pm  
Check with store for Public Holiday Opening.

Located close to the popular retail park on Cheetham Hill Road, this Maplin Store is easily reached from all parts of north Manchester and surrounding districts. Ample parking either in the street or Maplin Store forecourt.



## MANCHESTER (OXFORD ROAD)

**8 Oxford Road, Manchester, M1 5QA.**  
**Tel: 0161 236 0281**  
**Fax: 0161 237 1977**  
 Opening hours:  
 Monday to Friday 9am to 6pm  
 Saturday: 9am to 5.30pm  
 Sunday: 10am to 4pm  
 Check with store for Public Holiday Opening.  
 Situated directly opposite the BBC, just off the

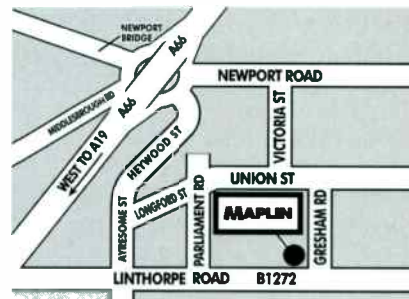
Mancunian Way between Piccadilly and the University complex. About 5 minutes by car from the end of the M602 or junction 10 on the M63. Metered parking in side roads or large NCP car park behind the Maplin Store.  
 (with cost of Parking redeemable via a voucher available in store).



## MIDDLESBROUGH

**Unit 1, The Forbes Building, 309-321 Linthorpe Road, Middlesbrough, TS1 4AW.**  
**Tel: 01642 242900**  
**Fax: 01642 242909**  
 Opening hours: 9am to 5.30pm  
 Monday to Saturday.  
 Closed till 9am on Friday for staff training.  
 Check with store for Public Holiday Opening.

Centrally located, on the corner of Linthorpe Road and Gresham Road a short distance from the A66 at its junction with the A1032.  
 A short walk from the shopping centre with on-street parking and car park directly behind the Maplin Store.



## MILTON KEYNES

**Unit 2, Office World Building, Snowdon Drive, Winterhill, Milton Keynes, MK6 1BH.**  
**Tel: 01908 692720**  
**Fax: 01908 692725**  
 Opening hours: 9am to 5.30pm  
 Monday to Saturday.  
 Sunday: 10am to 4pm  
 Check with store for Public Holiday Opening.

Our Maplin Store is situated alongside Office World on the V6 at Grampian Gate, located between the H6 & H7 roundabouts approx. 1/2 mile from the railway station & a few hundred metres from Winterhill Retail Park. There is a large free car park surrounding the Store.



## NEWCASTLE-UPON-TYNE (GATESHEAD)

**Unit 4, Allison Court (beside The Metro Centre), Gateshead, NE11 9YS.**  
**Tel: 0191 488 9555**  
**Fax: 0191 488 2830**  
 Opening hours: 9 to 6pm  
 Monday to Friday. Saturday: 9 to 5.30pm  
 Sunday: 11am to 5pm  
 Check with store for Public Holiday Opening.

Situated within sight of the A1 alongside the A1 exit which leads to the Metro Centre. Car parking available adjoining the Maplin Store.



## NORTHAMPTON

**139 St. James Road, Northampton, NN5 5LE.**  
**Tel: 01604 756726**  
**Fax: 01604 752437**  
 Opening hours: 9am to 6pm  
 Monday to Saturday.  
 Check with store for Public Holiday Opening.

Situated on the A428 about 800m west of the city centre. This Maplin Store is easily reached, being about five miles from junction 16 three miles from junction 15A on the M1 and Ample parking space in a large car park which also provides access to the adjoining Co-op superstore.



## NOTTINGHAM

**86-88 Lower Parliament Street, Nottingham, NG1 1EH.**  
**Tel: 0115 941 0242**  
**Fax: 0115 941 0247**  
 Opening hours: 9am to 5pm  
 Monday to Saturday.  
 Closed till 9am Friday for staff training.

Check with store for Public Holiday Opening. Situated on the north-east corner of the city's ring-road a few minutes walk from the city centre. About 15 minutes drive from the M1, south take J25, north J26. There is good parking outside the Maplin Store or in adjoining streets, alternatively there is a car park nearby in Brook Street alongside Lower Parliament Street.





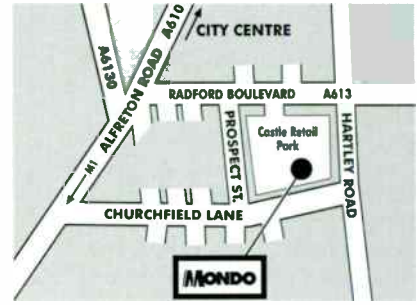
**NOTTINGHAM**

Unit 3 Castle Retail Park, Radford  
Boulevard, Nottingham NG7 5QT.  
Tel: 0115 979 1028  
Fax: 0115 924 9578

Opening hours: 9am to 8pm  
Monday to Friday.  
9am to 6pm Saturday.  
11am to 5pm Sunday.  
Closed Christmas Day and Easter Sunday.



Located to the North West of the city centre the Mondo Maplin Superstore is well situated for easy access from the city centre or the M1 motorway. Ample free car parking in front of the store.



**PRESTON**

Unit 1, Corporation Street, Preston,  
PR1 2UQ.

Tel: 01772 258484  
Fax: 01772 258686

Opening hours:  
Monday to Friday: 9am to 6pm  
Saturday 9am to 5.30pm, Sunday 10am to 4.00pm  
Check with store for Public Holiday Opening.

Situated immediately beside Office World sited at the Penwortham Bypass/Ring Way junction close to the Com Exchange. Ample free parking.



**PORTSMOUTH**

98-100 Kingston Road, Portsmouth,  
PO2 7PA.

Tel: 01705 654411  
Fax: 01705 654334

Opening hours: 9am to 5.30pm  
Monday to Saturday.

Located within Kingston Road on the corner of Binsteed Road and about 3/4 mile from the M275 with on-street parking both outside the Maplin Store and in adjoining side streets.



Check with store for Public Holiday Opening.

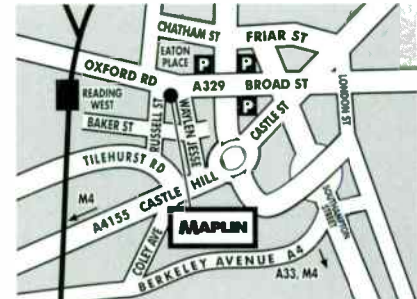
**READING**

129-131 Oxford Road, Reading,  
RG1 7UU.

Tel: 01734 566638  
Fax: 01734 592115

Opening hours: 9am to 5.30pm  
Monday to Saturday.

Located on the Oxford Road a few minutes walk from the centre of town with limited on-street parking but there is a multi-story car park in Eaton Place or at Broad Street shopping mall. Situated west of the town centre, the Maplin Store is within easy reach of the M4.



Check with store for Public Holiday Opening.

**SHEFFIELD**

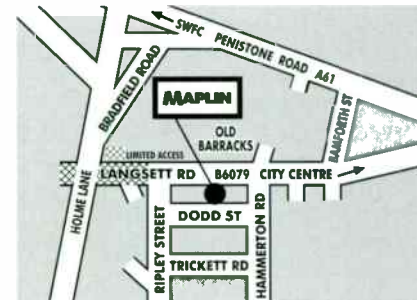
413 Langsett Road, Hillsborough,  
Sheffield, S6 2LL.

Tel: 0114 285 5492  
Fax: 0114 285 4389

Opening hours: 9am to 5.30pm  
Monday to Saturday.

Closed till 9.30am Friday for staff training.  
Check with store for Public Holiday Opening.

Situated on the busy Langsett Road (B6079) opposite the Hillsborough Barracks shopping centre, the Maplin Store can be reached by leaving the M1 at J34, and travelling along the A6102 towards Hillsborough. Parking is excellent, with forecourt parking in front of the Store.



**SLOUGH**

216-218 Farnham Road, Slough,  
SL1 4XE.

Tel: 01753 551419  
Fax: 01753 694393

Opening hours: 9am to 5.30pm Monday to Saturday.

Closed till 9.30am Friday for staff training.  
Check with store for Public Holiday Opening.

Situated on the busy A355, the Maplin Store can easily be found on the Farnham Road at the junction with Edinburgh Avenue and Sheffield Road, with plenty of parking in front or at the side of the Store.



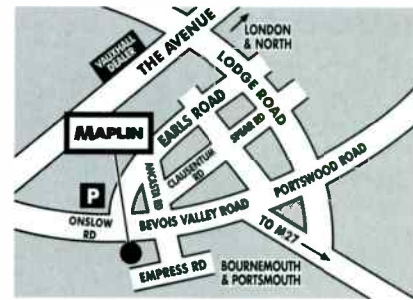
## SOUTHAMPTON

46 - 48 Bevois Valley Road,  
Southampton, SO14 0JR.  
Tel: 01703 225831  
Fax: 01703 339150

Opening hours: 9am to 5.30pm  
Monday to Saturday.  
Closed till 9.30am Friday for  
staff training.

Check with store for Public Holiday Opening.

Situated in the Bevois Valley area our Maplin Store is conveniently placed for easy access from all parts of Hampshire and surrounding areas. From the direction of London follow the A33, and from east or west leave the M27 at J5. There is a small car park in Earls Road opposite the Store.



## SOUTHEND (WESTCLIFF)

233-237 London Road,  
Westcliff-on-Sea, Essex, SS0 7BP.  
Tel: 01702 392000  
Fax: 01702 341013

Opening hours:  
9am to 5.30pm Monday to Saturday.  
9am to 7pm Friday.  
Closed all Public Holidays.

Our Southend Maplin Store is situated on the A13, London Road. We are just 30 minutes by car from J29 on the M25. There is plenty of free parking at the rear of the Store with access from Summercourt Road. There is also a purpose-built wheelchair ramp at the rear entrance to give access to the disabled from the car park.



## STOCKPORT

259-261 Wellington Road South,  
Stockport, SK2 6NG.  
Tel: 0161 480 4900  
Fax: 0161 474 0400

Opening hours: 9am to 6pm Monday to Friday.  
Saturday 9am to 5.30pm. \*Sunday 10am to 4pm  
(\*Check with Store for Sunday opening).  
Closed till 9.30am Friday for staff training.  
Check with store for Public Holiday Opening.

Conveniently located on the busy A6, Wellington Road South, our Stockport Maplin Store is 100m north of the junction with Buxton Road and Bramhall Lane, and a little over 1 1/2 miles from the centre of Stockport. J13 on the M63 is a little more than 1 mile away and there is plenty of parking in the layby in front of the Maplin Store or in our own car park which is accessed from Higher Hillgate at the rear of the Store.



## STOKE-ON-TRENT

39-45 London Road, Stoke-on-Trent,  
ST4 1NB.  
Tel: 01782 749947  
Fax: 01782 749997

Opening hours:  
Monday to Friday 9am to 6pm  
Late night Thursday to 7pm  
Saturday 9am to 5.30pm  
Check with store for Public Holiday Opening.

Located just off the A52, in Stoke Town Center, this Maplin Store is situated opposite the Royal Doulton factory on the London Road at its junction with Fleming Road. There is an adjoining private car park which is accessed via Spark Street.



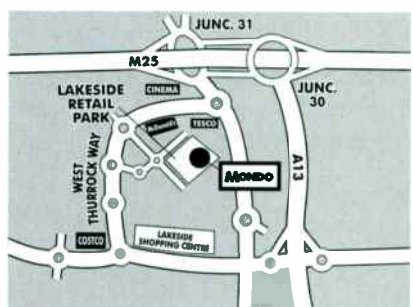
## THURROCK

Unit B3B, Lakeside Retail Park,  
West Thurrock, Grays, Essex RM20 1WN  
Tel: 01708 867976  
Fax: 01708 865517

Opening hours: 9am to 8pm Monday to Friday  
9am to 6pm Saturday.  
11am to 5pm Sunday.  
Opens 8.00am for trade customers.  
Closed Christmas Day and Easter Sunday.



Located on one of the country's premier retail parks, with easy access off the M25. Ample free car parking in front of the store.

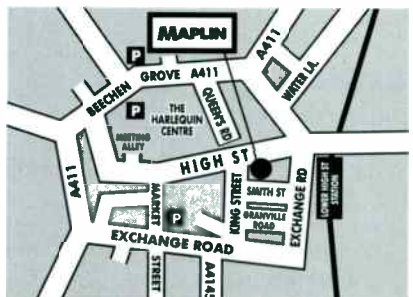


## WATFORD

138 High Street, Watford,  
Herts WD1 2EN  
Tel: 01923 246848  
Fax: 01923 246854

Opening hours: 9am to 5.30pm  
Monday to Saturday.  
11am to 5pm Sunday.  
Closed Christmas Day and Easter Sunday.

The store is located on the main High Street. This is accessible from the A411 Ring Road via Water Lane which is just before the Pyramid Building.



More new Maplin Stores opening soon – call 0800 136156 for the latest details.

Sales: 01702 554000 • Fax: 01702 554001 • Customer Services: 01702 554002 • Technical Helpline: 01702 556001

See end of catalogue for postage details  
World Radio History

# NEW PRODUCTS



**MB03D,  
MB04E  
Supply  
Master**  
See  
Industrial  
Control  
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**MB01B,  
MB02C  
Supply  
Master**  
See Industrial  
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**MB71N  
Radio  
Controlled  
Clock**  
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**MB05F  
Electronic  
Immersion  
Heater  
Timeswitch**  
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**MB06G  
Segment  
Immersion  
Heater  
Timeswitch**  
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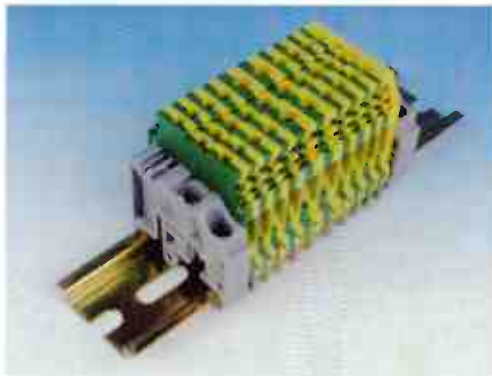
**Comprehensive Range  
of 'CK' Screwdrivers**  
See Tools Section



# NEW PRODUCTS

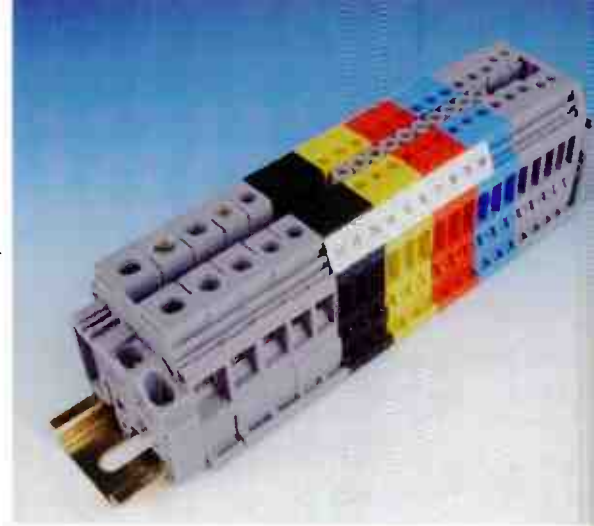
## MB43N DIN Rail Terminals

See Industrial  
Control  
Section,  
Page 528.



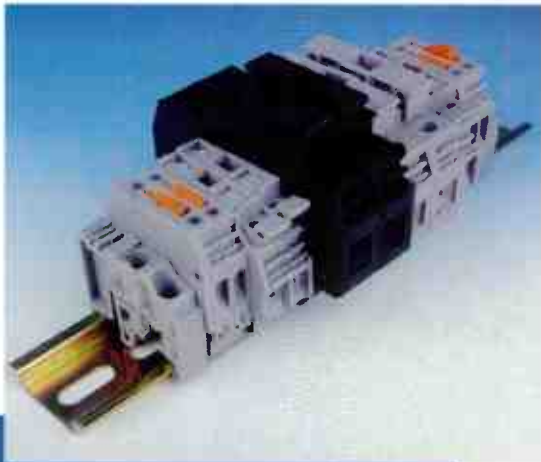
## MB24B DIN Rail Terminals

See  
Industrial  
Control  
Section,  
Page 528



## MB48C DIN Rail Terminals

See Industrial  
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Page 528



## MG23A, MG25G DIN Rail Timers

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## MG33L Mechanical Run Back Timers

See Industrial Control  
Section,  
Page 520



## MB13P 17.5mm Wide Timeswitch

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## MG30H 4 Pole Timers

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## MB16S Segment DIN Rail Time Switch

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**MB14Q,  
 MB15R  
 35mm Wide  
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**MB07H  
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**MG17T, MG19V  
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**MG08J  
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**MG36P  
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**MC21X  
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**MC18U,  
 MC19V  
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▲  
**MB09K  
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# NEW PRODUCTS



▲ **MB10L, MB11M Panel Mount Timeswitch**  
See Time & Temperature Section, Page 1242



▲ **MB19V Dusk to Dawn Timeswitch**  
See Time & Temperature Section, Page 1243



▶ **MB12N Staircase Timeswitch**  
See Time & Temperature Section, Page 1242



◀ **MB17T DIN Rail Timeswitch**  
See Industrial Control Section, Page 521



▶ **MC83C Vero Plastic Enclosures**  
See Enclosures & Accessories Section, Page 459



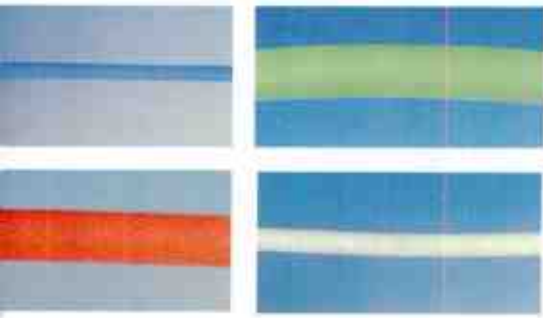
▶ **MC93B Vero Plastic Enclosures**  
See Enclosures & Accessories Section Page 464



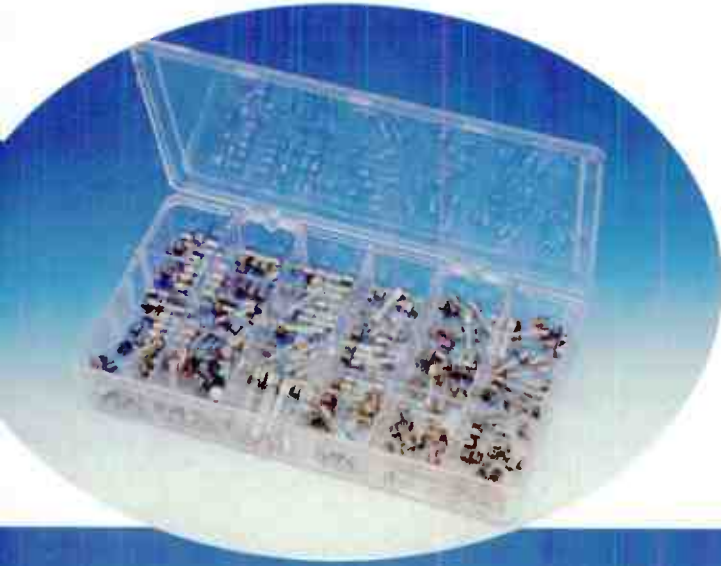
▲ **MC20W Hours Counter**  
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▶ **MF39N Vero 19" Rack Cases**  
See Enclosures & Accessories Section, Page 471





◀ **GD50E Coloured Heatshrink**  
See Cables Section, Page 233



▶ **MG10L Peli Watertight Cases**  
See Storage Systems Section, Page 1142



◀ **MS00A Fuse Kit**  
See Fuse Section, Page 514



▶ **MU32K/33L Artikula Desk Lamps**  
See Mains Electrical Section, Page 578



▲ **MS31J, MS78K RCD Protected Stockets** See Mains Electrical Section Page 563



▶ **GG55K Tripod Halogen Floodlight**  
See Mains Electrical Section, Page 580



▼ **GC53H Plug-in Nightlight**  
See Mains Electrical Section, Page 580



▶ **MS15R Home Automation Kit**  
See Mains Electrical Section, Page 588



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**MS87U  
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Buggy  
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**MS91Y  
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**MT44X  
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Helicopter**  
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**MT42V  
Ready  
Trainer**  
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**MS11M  
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**GG61R  
Security  
Marker Set**  
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**GG70M  
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**MT34M Telecam**  
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▲ **MU12X  
Paging Alarm**  
See Security Section,  
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▶ **GG74R  
Infra Red  
Illuminator**  
See Security  
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▲ **MU46A Security Event Capture Video Recorder**  
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▶ **MU26D Covert  
'Smoke Alarm'  
Camera**  
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◀ **MS12N  
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▶ **MU63T DECT Digital  
Cordless Telephone**  
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▼ **MS13P  
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◀ **MT27E  
Alpha Express  
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# NEW PRODUCTS

**KV69A**  
Tektronics  
**Vector Scope**  
See Test & Measurement Section, Page 1225



**KV66W**  
Tektronics  
**Portable Oscilloscope**  
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**KV56L** Tektronics  
**Digital Real Time Oscilloscope**  
See Test & Measurement Section, Page 1223



**MG05F & MG06G**  
**2mm Minigrip Probes**  
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**KV65V** Digital Real Time Oscilloscope  
See Test & Measurement Section, Page 1223

**MF81C & MG02C**  
**Miniature Test Clips**  
See Connectors Section, Page 450



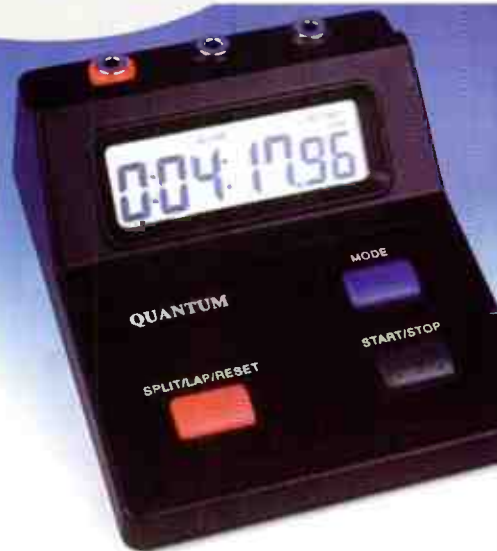
**NP14Q**  
Tektronics 900  
**Series Multimeter**  
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**MG03D & MG04E**  
**2mm Crocodile Clips**  
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**MG09K**  
**LCD Stopclock**  
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**NP41U EZLITE Development System**  
See Semiconductors Section, Page 934



**NP42V DSP Development Kit**  
See Semiconductors Section, Page 934



▲ **NR20W AVR Starter Kit** See Semiconductors Section, Page 931



▲ **NR19V EEPROM Kit** See Semiconductors Section, Page 948



▲ **NR24B PIC Explorer Training System** See Semiconductors Section, Page 931



▲ **NQ11M** See Books Section, Page 153

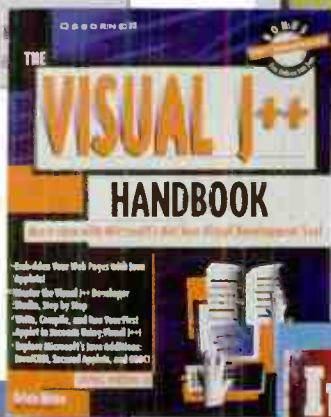


▲ **NQ16S** See Books Section, Page 144



▲ **NQ34M** See Books Section, Page 158

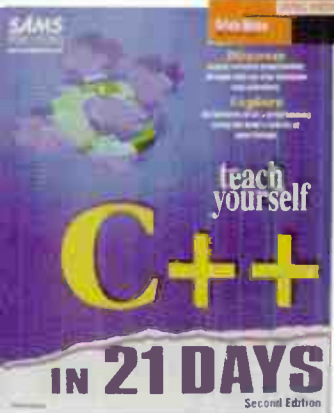
▼ **NR11M** See Books Section, Page 155



▼ **NQ17T** See Books Section, Page 145



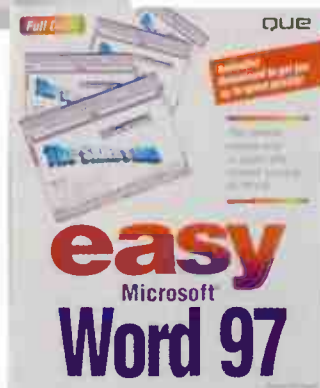
▼ **NQ35Q** See Books Section, Page 159



▲ **NR16S** See Books Section, Page 145



▲ **NQ28F** See Books Section, Page 153



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**MY15R  
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▲ **MX86T 25 Disc CD Player** See Audio Video Section, Page 60  
▼ **GT65A Mercury 2 Speakers** See Audio Video Section, Page 65

**KS52G Dual  
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**KM65S  
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◀ **KM21X Lazer  
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**KM70M  
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▶ **MX44X  
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◀ **MX99H Micro Flat  
Speaker Cable**  
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▲ **KS29G CD Car Kit**  
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▲ **KS69A Casio Keyboard**  
See Sound Production and Lighting Section, Page 1125



◀ **KS23A Pro Logic Midi System**  
See Audio Video Section, Page 59



▲ **KS91Y Car Audio Cable**  
See Car Products Section Page 277



◀ **KS42U Multi CD Player**  
See Car Products Section, Page 265

▼ **VR92A Wharfedale Valdus Speakers**  
See Audio Video Section, Page 66

▶ **KM74R Jenson Car Amplifier**  
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▶ **BT81C Twin Bass Box**  
See Car Products Section, Page 274



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**KS59P Valdus Car Speakers**  
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**MY11M Universa Twin LNB**  
See Audio Video Section, Page 78



**GT82D Handy Mains Inverter**  
See Car Products Section, Page 280

**MY12N Flat Cable F Plug to F Plug**  
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**MX40T One Farad Capacitor**  
See Car Products Section, Page 276



**MY03D Satellite A/B Switch**  
See Audio Video Section, Page 79



**KS25C Micro CD**  
See Audio Video Section, Page 59

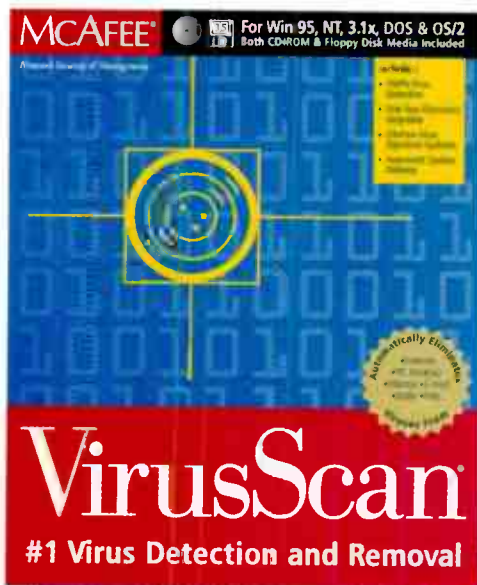


**MX74R 19in Rack Equipment Holder**  
See Sound Production & Lighting Section, Page 1120



◀ **KM80B PIC Pocket 1040**  
See Computer Section, Page 338

**KM81C Virus Scan V3 Electronic**  
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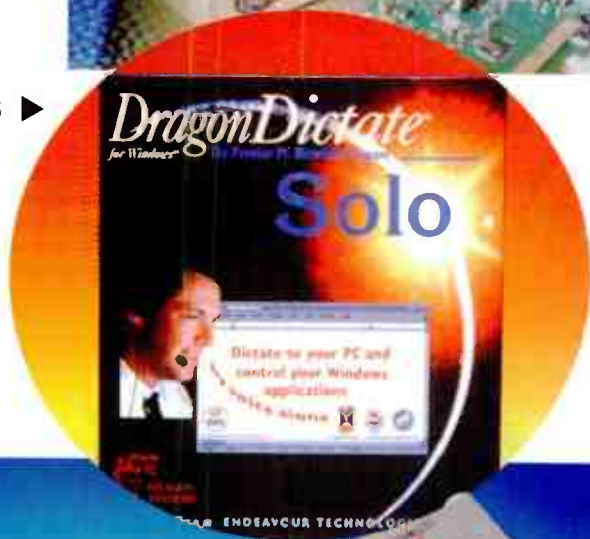
◀ **KM93B Sub Woofer 200W**  
See Computer Section, Page 309

▶ **KQ17T Motorola 56K Internal Modem**  
See Computer Section, Page 348



◀ **KV47B Mustek VDC100 Camera**  
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**KV42W Dragon Dictate Solo**  
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◀ **KT71N Velocity RS232**  
See Computer Section, Page 339

▶ **KV46A Midi Keyboard**  
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▼ **KX34M 3D Pro Turbo PCTV**  
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**KX37S PCI Network Card**  
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**LQ98G 16 Port Hub** ▶  
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▲ **LQ97F 8 Port Hub**  
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**LR81C Fujitsu Scanner**  
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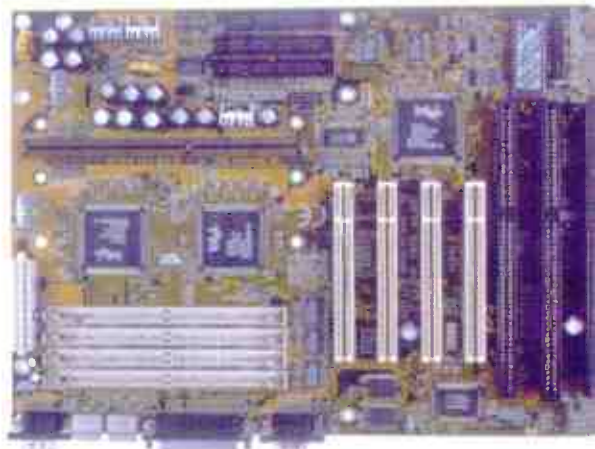


▲ **LR82D 600P ScanExpress**  
See Computer Section, Page 337

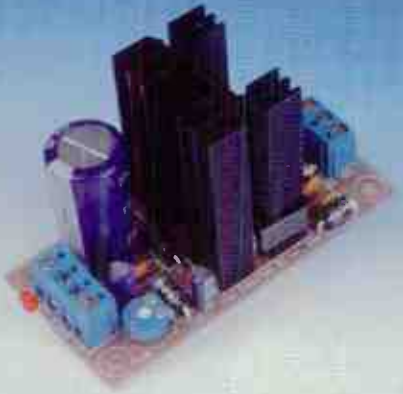


**LR86T Pentium II Motherboard** ▶  
See Computer Section,  
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◀ **KX04E Waverider Pro 32**  
See Computer Section,  
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◀ **LU86T/LU87U Variable PSU Kit**  
See Projects & Modules Section, Page 762

**LU21X Active SCART Splitter Kit** ▶  
See Projects & Modules Section, Page 792

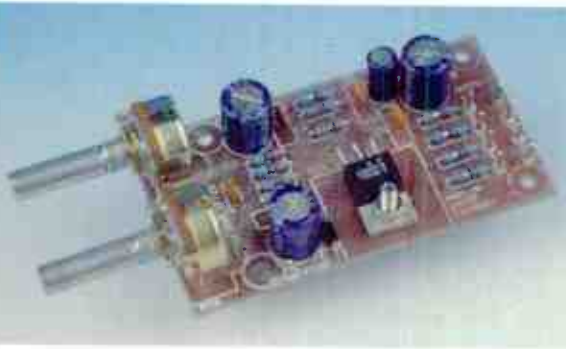


▲ **LU35Q Audio Video Modulator**  
See Projects & Modules Section, Page 792



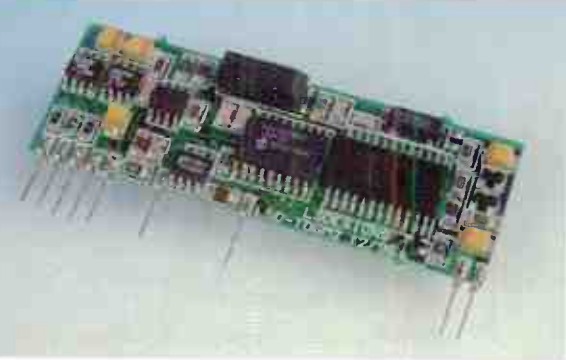
◀ **LU26D Audio Lead Checker Kit**  
See Projects & Modules Section, Page 787

**LU32K Active Transformer DI Box**  
See Projects & Modules Section, Page 742



◀ **LU79L Video Distribution Amplifier**  
See Projects & Modules Section, Page 792

**NV11M Touch Key Receptacle** ▶  
See Projects & Modules Section, Page 781

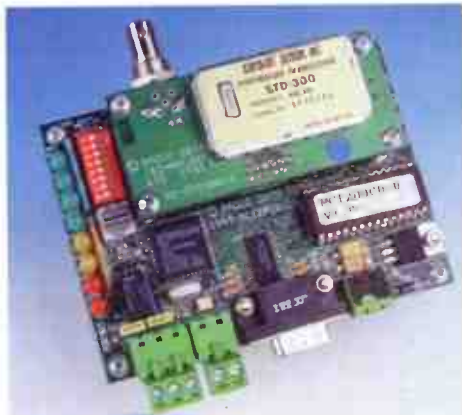


▲ **NV10L Time & Date Video Graphics Module**  
See Projects & Modules Section, Page 790

**VF85G PCS32 Mk II 2-Channel Digital Storage PC Scope** ▶  
See Projects & Modules Section, Page 784



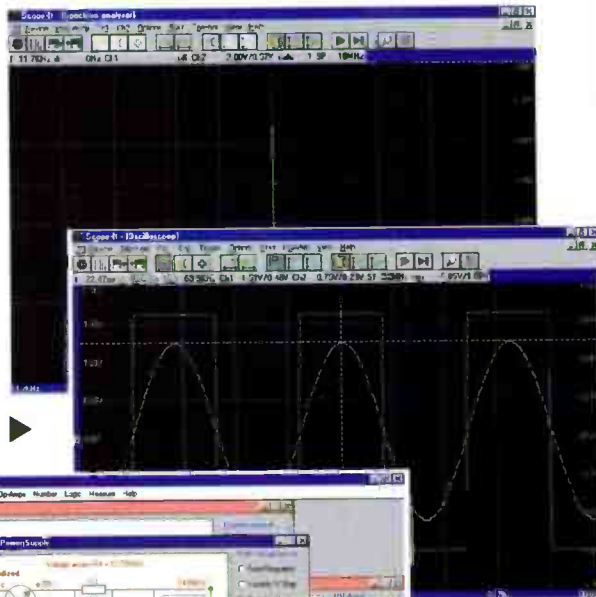
# NEW PRODUCTS



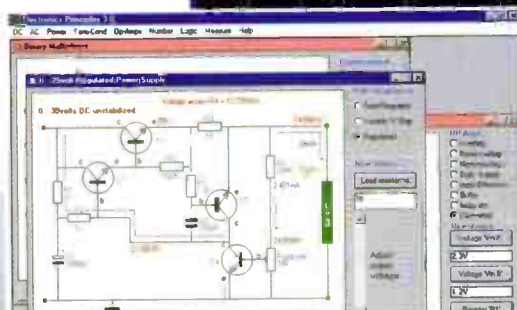
**NV07H  
458MHz  
Radio  
Modem**  
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**VF87-1  
Scope-it**  
See Projects &  
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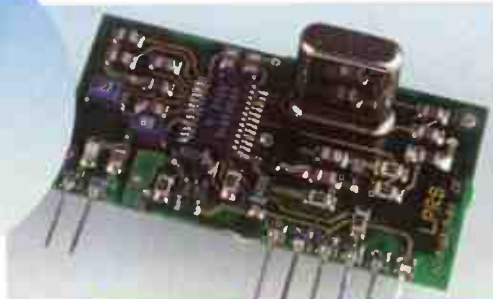
**VF87-2  
Scope-it**  
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**NV13P-3  
Electronic  
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**NV14P-1  
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**NV08J  
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**NV09K  
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**VF88V  
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**NV35Q Scanner**  
See Radio  
Communications  
Section, Page 803



**NV62S Walkie-Talkie** See Radio  
Communications Section Page 812



**NV55K C.B.** See Radio  
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**NV36P Communications Receiver**  
See Radio Communications Section, Page 803





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## AERIALS & AMPLIFIERS SELECTION GUIDE



Put simply, if you want to get the best from your TV or FM radio, invest in a suitable outdoor aerial and install it properly.

Poor results tend to be associated with indoor aerials, the performance of which will vary with passing traffic and even the movement of people in the room. Note that Channel 5 reception requires a high-quality aerial in most cases. This is because it transmits at a fraction of the power levels available to the more established broadcasters. Special 'temporary' caravan aerials, which mount on a window with 'suckers', are available for travellers. These will provide much better performance than an indoor aerial, or the loop built into portable TVs.

With respect to VHF/FM radio reception, many of us rely on the simple wire aerial supplied with the tuner or stereo system. The results speak for themselves - hissy stereo reception, even from the powerful BBC transmitters, and a lack of choice simply because other stations are simply too weak for the tuner to resolve.

This catalogue lists a wide variety of TV and radio aerials for home installation, and the choice is bewildering. However, armed with some basic information, selecting one appropriate to your individual needs is relatively straightforward. So too is installation, which is within the capabilities of any competent DIY enthusiast equipped with the required tools. For best results, the aerial needs to be installed in the highest possible position - which inevitably means the roof of a building. Indeed, raising the height of an aerial by as little as a metre can double the available signal strength.

Although Maplin does sell chimney mounting kits, we would only recommend that roof installation is undertaken by those with the correct roof ladders and experience. However, Maplin also sells brackets for mounting on the side of the house, and with an aluminium pole of the appropriate size, aerials can be elevated to an adequate height. Outdoor installations should be carried out with safety in mind, and all mounting components and surfaces should be up to the job. As an alternative, an aerial could be fitted inside the roof, but the best performance will not be obtained. Reflections from water tanks could cause ghosting, and the roof structure will attenuate the signal. In strong signal areas, however, acceptable results can be achieved.

TV aerials are 'directional', meaning that the greatest signal pick-up is from one direction. As a general rule, the greater the number of elements, the greater the directionality and the greater the signal pick-up. Ten-element aerials are designed for areas of high signal strength - in other words, those relatively close to the transmitter.

Fourteen-element aerials are intended for medium-signal areas, while eighteen-element aerials are designed for 'fringe' locations where the wanted signal is quite weak. Weak reception is characterised by grainy pictures.

There are also specialised types designed to squeeze every last microvolt out of the air - such models are ideal for 'extreme fringe' locations that

are a long distance away from the transmitter. A look at neighbours' TV aerials will provide some indication as to the type that will be required - note, however, that another more suitable transmitter may since have been commissioned. Before purchasing and installing a TV aerial, it may be worth contacting the BBC's engineering department to find out details of the transmitter that serves your region.

Regardless of the aerial you choose, it should be aimed directly at the transmitter, following the 'line of sight'. Professional installers use a signal strength meter, aligning the aerial for maximum signal. DIY installers could use the positioning of neighbours TV aerials as a rough guide, and monitor the picture on a TV set across all five channels for final adjustment. Look to minimise ghosting, which is caused by 'multipath distortion' - the aerial picking up delayed (reflected) versions of the wanted signal - as well as patterning and grain. In some instances, notably installations in built-up areas, a compromise may have to be reached.

Although it is possible to purchase directional VHF aerials for radio reception, the most popular models tend to be omnidirectional models that will pick up radio stations equally from all directions. VHF radio aerials are designed to receive the entire band, although best results tend to occur in the middle of the band (i.e. around 98MHz). Polarisation is also used in VHF/FM radio broadcasting - but the only practical way of installing a large VHF beam aerial is to install it horizontally. These days, however, radio transmitters employ mixed (both vertical and horizontal) polarisation to ensure good results with both horizontally-polarised aerials (homes) and vertically-polarised aerials (cars and portable sets). If a directional (beam) FM aerial is chosen, correct alignment is necessary to prevent distortion caused by multipath reception.

Aerial amplifiers, which 'boost' the signal, are also available. These should only be considered if a picture is poor due to weak signal strength, and not interference. They will not eliminate ghosting either - only correct aerial alignment can help here. If interference is the cause of poor TV reception, an aerial amplifier can sometimes make matters worse.

### Contacts:

BBC Engineering Information  
Villiers House,  
The Broadway,  
Ealing,  
London W5 2PA

Tel: (0345) 010313  
Web: <http://www.bbc.co.uk/enginef>

BBC engineering information is also available on page 698 of the BBC Teletext service. Channel 5's transmitter details can be found on page 597 of its teletext service.

## AERIALS

### OUTDOOR TV AERIALS

#### DIY TV Aerial

Maxview



A low-cost but high-quality 10-element wideband TV aerial for installation in the loft or outdoors. Includes complete fitting kit comprising universal bracket with adjustable support, and a generous 10 metres (33 feet) of coaxial cable terminated with a UHF plug. Suitable for all TV channels, and equally suitable for main or additional secondary TV sets. Supplied with easy to fit assembly instructions. Fixing kit included.

Gain:	6-0dB
Channel No	21-68
No of elements	10
Forward gain	6dB
Front/back ratio:	20dB
Acceptance angle:	29°

Retail Unit Price each (inc. VAT).

Order Code	Type 830	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZA55K 2	DIY TV Aerial	£13.600	£11.900	£11.250	£15.990

#### 10-Element TV Aerials

Maxview



A range of high quality 10element UHF TV aerials are available in group A(channels 21-34), Group B (Channels 39-53) and Group C/D (Channels 48-68) and are suitable for strong UHF TV signal areas. They are manufactured from high quality corrosion resistant aluminium and come complete with a good quality folded tubular dipole, aerial clamp and reflector.

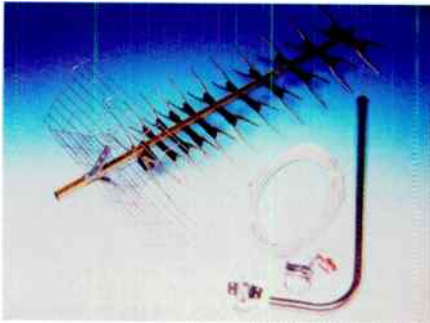
	GK16S	GK17T	GK18U
Group	A	B	C/D
Channel No	21-34	39-53	48-68
No of elements	10	10	10
Forward gain:	8-75dB	9-1dB	8-75dB
Front/back ratio:	18dB	20dB	22dB
Acceptance angle:	20°	24°	25°

Retail Unit Price each (inc. VAT).

Order Code	Type 832	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GK16S 1	10 Element TV A	£7.650	£5.700	£5.100	£8.990
GK17T 1	10 Element TV B	£7.650	£5.700	£5.100	£8.990
GK18U 1	10 Element TV CD	£7.650	£5.700	£5.100	£8.990

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**12-Element TV Aerial Kit**



A complete kit of all parts necessary to install a high quality TV aerial ready for immediate use. The design is of the Quad-X type, having 10 director bays - offering signal gain equivalent to that from at least twice the number of 'standard' dipole directors - preceding a 40cm wide Quad-X dipole antenna backed by a grid plane reflector. All hardware is supplied in a flat pack and requires assembly.

The kit comprises:

1. Antenna parts: 2 section extruded aluminium main spar and jointing hardware; 2 halves of reflector grid plane; integral main antenna dipole with cable connection box; and 10 director bay elements. The elements are elegantly formed from pressed aluminium, and come ready mounted in insulating plastic supports, which require attaching to the main spar with the novel self-locking plastic press-studs provided. The complete assembly is 1.15 metres long but very lightweight, and fetchingly finished in gold with contrasting black plastic components.

2. Mounting hardware, comprising one 25mm dia. right-angled aluminium mounting mast 780mm high with a 200mm long, lower stand-off section; mast fixing bracket including screws and wall plugs for mounting to a vertical wall, loft joist or similar surface; and a universal fitting antenna fixing clamp.

3. Cabling, including 10 metres of white coax cable; one white coax UHF plug; and cable fixing clips. The cable has an air filled insulator and solid centre conductor, and is easily connected into the dipole connector box. To ensure a reliable connection, strip 20mm of outer sleeve and 10mm of inner insulator. Release brass clamp and remove centre screw. Wrap braid screen around remaining insulator and insert under clamp. Wrap centre conductor around screw and replace, tighten clamp (see diagram). At the plug end, it is suggested that the tip of the solid core be soldered at the end of the plug pin after assembly to ensure a good connection. Fixing kit included.

Pictorial assembly instructions are provided on underside of packaging.

**Specification**

Forward gain: 10 to 15dB  
Front/back ratio: 25 to 30dB  
Acceptance angle: 16°

Retail Unit Price each (inc. VAT).

Order Code	Type 5022	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GK27E 5	TV Aerial Kit	£34.030	£28.950	£26.250	£39.990

**14-Element TV Aerials**

Maxview



These high quality 14 element aerials are available in Group A, Group B and Group C/D and are suitable for normal UHF TV signal areas. They are manufactured from high quality corrosion resistant aluminium and come complete with a good quality folded tubular dipole, aerial clamp and reflector.

	GK19V	GK20W	GK21
Group	A	B	C/D
Channel No	21-34	39-53	48-68
No of elements	14	14	14
Forward gain:	9.7dB	10.2dB	9.75dB
Front/back ratio:	21dB	22dB	23dB
Acceptance angle:	19°	21°	20°

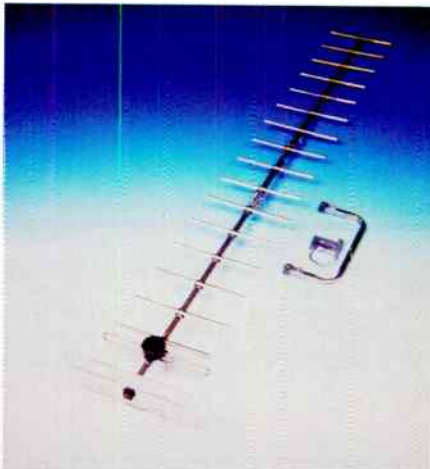
Retail Unit Price each (inc. VAT).

Order Code	Type 893	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GK19V 1	14 Element TV A	£8.500	£7.100	£6.450	£9.990
GK20W 1	14 Element TV B	£8.500	£7.100	£6.450	£9.990
GK21X 1	14 Element TV CD	£8.500	£7.100	£6.450	£9.990

See Section 10, Connectors for our full range of UHF connectors

**18-Element TV Aerials**

Maxview



These high quality 18 element UHF TV Aerials are suitable for weak UHF TV signal areas. They are manufactured from high quality corrosion resistant aluminium and come complete with a good quality folded tubular dipole, aerial clamp, reflector and centre mount for extra support.

**Technical Specification**

	GK22Y	GK23A	GK24B	GK25C
Group	A	B	C/D	Wideband
Channel No	21-34	39-53	48-68	21-68
Number of elements	18	18	18	18

Forward gain:	10.5dB	10.6dB	10.5dB	8.6dB
Front/back ratio:	23dB	23dB	24dB	18dB
Acceptance angle:	16°	15°	16.5°	21°

Retail Unit Price each (inc. VAT).

Order Code	Type 895	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GK22Y 2	18 Element TV A	£12.750	£9.750	£8.650	£14.990
GK23A 1	18 Element TV B	£12.750	£9.750	£8.650	£14.990
GK24B 2	18 Element TV CD	£12.750	£9.750	£8.650	£14.990
GK25C 2	18 Element TV W	£12.750	£9.750	£8.650	£14.990

**18 Element Aerials**

Maxview



These aerials are manufactured from high quality corrosion resistant aluminium and come complete with good quality folded tubular dipole, aerial clamp, reflector and centre mount for extra support.

**Technical Specification**

Code	GT92A	GT93B	GT94C
Group	A/37	B/37	C/D
Channel No	21-37	37-53	48-68
No of elements	18	18	18
Forward Gain(db)	10.5	10.6	10.5
Front/back ratio	23	23	24
Acceptance angle(°)	16	25	16.5

Retail Unit Price each (inc. VAT).

Order Code	Type 17581	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GT92A	18 Element Grp A/37	£12.750	£11.450	£10.250	£14.990
GT93B	18 Element Grp B/37	£12.750	£11.450	£10.250	£14.990
GT94C	18 Element Grp CD	£12.750	£11.450	£10.250	£14.990

**5-Bay Director Aerial**

Antiference

Suitable for local areas, this aerial has five powerful Quad-X director bays giving equivalent gain to that provided by a standard 10-element aerial. Available only as a wideband (W) giving coverage of all UHF channels. A very compact and economical aerial, supplied complete with clamp.



Forward Gain 6.5dB  
Front/Back Ratio 26-27dB  
Acceptance Angle ±17-28°  
Overall Size 0.76m long approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 904	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XQ38R 3	Extrajoin XG5	£34.030	£23.750	£21.950	£39.990

Account Enquiries: 01702 554187

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## 18 & 10 ELEMENT TRUECOLOUR AERIALS

**Antiference**

The truecolour dipole combines two techniques which give a more even response across the frequency range whilst matching impedance to ensure the maximum signal transfer from aerial to cable. The aerial has high signal rejection from side and back reducing ghosting, a sturdy construction and is supplied assembled and ready to go. Group A,B and E aerials are enhanced to cover Channel 5.

Supplied with a Universal Clamp Type 1 and U support arm.



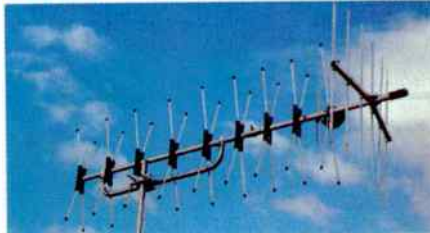
Technical Specification and Performance Data									
18 ELEMENT			10 ELEMENT						
TC18A	TC18B	TC18C/D	TC18E	TC10A	TC10B	TC10C/D	TC10E	TC10W	
Forward Gain dBd	12.3	12.8	12.8	12.3	10.3	10.5	10.7	10.5	9.8
Forward Gain dBi	14.5	15.0	15.0	14.5	12.5	12.7	12.9	12.7	12.0
Front/Back Ratio dB	22	22	22	22	18	19	18	18	18
Acceptance Angle deg. +/-	18	17	18	19	23	21	23	23	23
Length mm	1809	1523	1394	1394	1089	914	834	834	1034
Width mm	343	265	235	265	343	265	235	265	343
Windage N (at 130 km/h)	91	73	65	68	63	51	45	48	57

Retail Unit Price each (inc. VAT).

Order Code	Type 100	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XQ29G 2	Truecolour TC10 Grp A	£17.010	£12.350	£11.200	£19.990
XQ30H 2	Truecolour TC10 Grp B	£17.010	£12.350	£11.200	£19.990
XQ31J 2	Truecolour TC10 Grp C/D	£17.010	£12.350	£11.200	£19.990
JAA2V 1	True Colour TC10E	£17.010	£12.350	£11.200	£19.990
MJD4E 1	Truecolour TC10 GrpWB	£17.010	£12.350	£11.200	£19.990
XQ35Q 3	Truecolour TC18 Grp A	£24.670	£18.000	£16.000	£28.990
XQ36P 3	Truecolour TC18 Grp B	£24.670	£18.000	£16.000	£28.990
XQ37S 3	Truecolour TC18 Grp C/D	£24.670	£18.000	£16.000	£28.990
XG24B 3	Truecolour TC18 Grp E	£24.670	£18.000	£16.000	£28.990

## Aerial for Difficult Reception Areas

**Antiference**



Suitable for fringe areas, this aerial has eight, nine or ten powerful Quad-X director bays giving near equivalent gain to that provided by 2 standard 18-element aerials of the same group. The aerial has been developed and tuned to give maximum forward gain. It has high signal rejection from side and back to eliminate ghosting. The aerial is available in three channel groups and a wideband version is also available. Groups A,B and E aerials are enhanced to cover channel 37.

Supplied with a three-way clamp for tall mounting, assembled and ready to go.

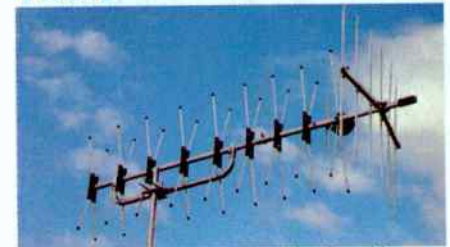
Group	A	B	C/D	E	W/B
Forward Gain (dBd)	12.3	12.8	14.2	12.8	12.0
Forward Gain (dBi)	14.5	15.0	16.4	15.0	14.2
Front/Back Ratio (dB)	27	27	25	26	25
Acceptance Angle (°)	15	13	14	14	20
Windage N (130km/h)	93	91	78	83	77
Number of director bays	8	9	10	10	8

Retail Unit Price each (inc. VAT).

Order Code	Type 100	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XQ39N 5	Extragain XG8 GroupA	£42.540	£29.250	£26.800	£49.990
XQ40T 5	Extragain XG9 GroupB	£42.540	£29.250	£26.800	£49.990
XQ41U 5	Extragain XG10GrpC/D	£42.540	£29.250	£26.800	£49.990
XQ42V 5	Extragain XG8 Wbnd	£42.540	£29.250	£26.800	£49.990
FN94C 1	High Gain XG10E	£42.540	£34.900	£31.500	£49.990

## 14 Element Xtra gain Aerials

**Antiference**



This 14 element aerial has been developed to deliver the maximum signal whilst ensuring high signal rejection from the back and side to eliminate ghosting, and giving the maximum forward gain. Supplied assembled and ready to go with a U support arm and three-way clamp.

Group A,B and C/D aerials are enhanced to cover channel 37

Group	A	B	C/D	Wbnd
Forward gain (dB)	13.3	14.3	14.8	13.6
Forward Gain dBi	15.5	16.5	17.0	15.8
Front/Back Ratio (dB)	28	28	27	27
Acceptance angle	13	11	13	13
Windage N (130km/h)	150	137	113	127

Retail Unit Price each (inc. VAT).

Order Code	Type 12215	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XQ46A 5	Extragain XG14 Wbnd	£59.560	£45.100	£41.200	£69.990
FN95D 1	High Gain XG14A	£59.560	£48.000	£42.650	£69.990
FN96E 1	High Gain XG14B	£59.560	£48.000	£42.650	£69.990
FN97F 1	HIGH GAIN XG14CD	£59.560	£48.000	£42.650	£69.990

## Touring Aerial

**Maxview**



A low-cost, high quality 9-element TV aerial for touring. This kit comprises an easily assembled multi-element aerial, an easily assembled mounting pole, two quick-release clamps and 5m of coaxial down lead. The clamps are provided with mounting plates that are designed to be secured to a surface, allowing the clamps and mounting pole to be assembled and removed as and when required. Aerial and mounting pole are 600mm long.

Group	Wideband
Channel No.	21-68
No of Elements	9
Forward Gain (dB)	6
Front/Back Ratio (dB)	20
Acceptance Angle (deg)	20

Retail Unit Price each (inc. VAT).

Order Code	Type 5138	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
FT71N 2	Touring Aerial	£18.710	£16.250	£14.900	£21.990

## See Section 6 for our full range of Cable

## 18 Element Xtra gain Aerials

**Antiference**



Suitable for outer fringe areas, this aerial has eighteen powerful Quad-X director bays giving near equivalent gain to that provided by four standard 18-element aerials. This aerial has been developed to deliver the maximum signal whilst ensuring high signal rejection from the back and side to eliminate ghosting, and giving the maximum forward gain. Supplied assembled and ready to go with a U support arm and three-way clamp.

Group A,B and C/D aerials are enhanced to cover channel 37

	Group A	Group B	Group C/D
Forward Gain (dBd)	14.0	15.3	15.8
Forward Gain (dBi)	16.2	17.5	18.0
Front/Back Ratio (dB)	29	28	27
Acceptance Angle (°)	11	10	12
Windage N (130km/h)	150	137	113

Retail Unit Price each (inc. VAT).

Order Code	Type 100	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XQ43W 7	Extragain XG18 GroupA	£68.070	£45.100	£41.200	£79.990
XQ44X 6	Extragain XG18 GroupB	£68.070	£45.100	£41.200	£79.990
XQ45Y 6	Extragain XG18 GrpC/D	£68.070	£45.100	£41.200	£79.990

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**INDOOR TV AERIALS**

**High Performance Indoor Set-Top Aerials**

Antiference



Two set top aerials, styled to match modern TV sets. The "Toptenna" (XY30H) is a precisely tuned Yagi wideband antenna which outperforms all the competition at this price. Assembly instructions on box.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XY30H	Toptenna	£8.800	£5.200	£4.600	£7.990

**Multi-Element Hi-Tech TV Aerial**

Antiference



A smart, lightweight UHF TV aerial for indoor use. The aerial features two parallel, staggered 7-element arrays of matt finished aluminium, connected to either side of a 75Ω coaxial feeder and mounted on a square section plastic support. The unusual 'log periodic' design offers up to 6dB of gain at 770MHz, and a minimum 4.5dB at 500MHz. Covers all UHF broadcast TV channels from 21 to 68. The aerial comes in three parts, a triangular base for a plug-in support, and the aerial itself which is normally mounted horizontally but can be inserted vertically for vertically polarised transmitters. Safety isolated to BS5373. Fitted with 1 metre of coaxial cable terminated with a UHF plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YM56L	Hi-Tech TV Aerial	£15.310	£10.750	£9.850	£17.990

**TV Top Aerial**

Teleste



A compact TV top aerial with internal amplifier for clearer reception. Battery operation for use anywhere including caravans etc. Internal battery management ensures that the amplifier is only ever on when the TV is in operation, automatically switching on when it senses the TV has been activated. After the TV has been switched off the unit will return to its normal standby state. A manual override facility allows operation when used with VCRs etc. LED indicators show the mode of operation and battery state through an opaque window. Operates from 2 x LR6 (AA) type batteries.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AS29G	Indoor TV Aerial	£17.010	£15.750	£14.950	£19.990

**T-Vision Indoor TV Antenna with Signal Booster**

Maxview



The T-Vision directional antenna with plug-in signal booster represents a breakthrough in aerial technology. The antenna is wideband and suitable for all available UHF TV channels including Channel 5 in predicted coverage areas. The aerial body is 300mm diameter with a 180mm base which hides 5 metres of cable wound inside. The antenna is directional and with the 5 metres of cable, this allows it to be positioned for the optimum reception anywhere in the room. The aerial is then connected to a plug-in signal booster that provides 12.5dB gain.

Group: Wideband  
Channel No.: 21-68  
Amplifier Gain (dB): 12.5  
Power Requirement: 230V AC (<5W)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BV67X	T-Vision Aerial	£29.770	£27.200	£25.230	£34.990

**Contour Indoor TV Aerial**

Maxview



A unique innovative design of indoor aerial that would pass any critical eye test for modern styling. This bi-directional aerial is suitable for all UHF TV signals including Channel 5 in predicted coverage areas. This aerial comes in two forms - the basic Contour aerial for strong signal areas, and an alternative version, the Contour Plus, which includes an integral low noise signal amplifier/booster, for weak signal areas. Both versions are coloured mid-grey and supplied with a flylead 2m long. They are designed for fixing permanently with wall plugs and screws, attaching to a window with two small suction pads or to leave free standing in any convenient position.

**Specification**

	RT64	RT65
Group	Wideband	Wideband
Channel No.	21-68	21-68
Amp. Gain (dB)	N/A	10
Power Req'd.	N/A	2 AA Batteries (not supplied)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RT64U	Contour Aerial	£10.200	£8.950	£8.300	£11.990
RT65V	Contour Plus Aerial	£18.710	£16.400	£15.250	£21.990

**Profile Plus Indoor FM Aerial**

Maxview



A unique innovative design of indoor aerial that would pass any critical eye test for modern styling. This bi-directional aerial is suitable for all FM applications. It includes an integral low noise signal amplifier/booster, for weak signal areas. The aerial is coloured slate grey and is supplied with a flylead 2m long.

Frequency range: 88 to 108MHz  
Dimensions: 320mm x 220mm x 50mm  
Power supply: 2 x 'AA' batteries (JY48C, not supplied)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RT66W	Profile Plus Aerial	£18.710	£16.950	£15.500	£21.990

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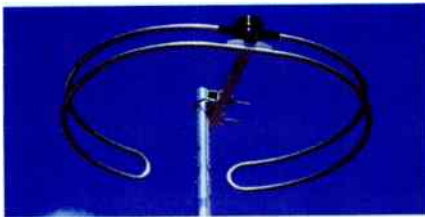
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See Section 3,  
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## RADIO/FM AERIALS

### VHF FM Omnidirectional Aerial

Maxview



An ingenious solution to the problem of receiving VHF FM broadcasts from a number of different transmitters. The omnidirectional aerial, by virtue of its design, offers the listener the choice to tune to radio stations broadcasting in the VHF FM band from nearby transmitters located in the surrounding area. Omnidirectional aerials are intended for use in good reception areas. This depends upon distance from the transmitter and the power of the transmission. In practice this generally means its performance makes it better suited for use in urban areas where radio stations are more plentiful as opposed to more remote rural areas. Supplied with mast mounting clamp.

Overall Size: 95mm x 515mm (dia.)  
Bandwidth (MHz) 88-108  
Forward Gain (dB) 3  
Front Back Ratio(dB) 0  
Accept. Angle (deg) 360

Retail Unit Price each (inc. VAT).

Order Code	Type #74	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XM64U 1	CFM Circular Aerial	£12.750	£9.450	£8.360	£14.990

### Stereo FM Aerial Type FM3

Maxview



A low-cost but high quality 3-element, stereo FM aerial, directional for long-distance reception. Can be installed either in a loft or mounted externally. Supplied with a generous 10m of coaxial cable and VHF plug and complete fitting kit. Comes with easy to fit assembly instructions.

**Specification**  
Bandwidth 9MHz) 88-108  
No. of Elements 3  
Forward Gain (dB) 4  
Front/Back Ratio (dB) 16  
Acceptance Angle (deg) 36

Retail Unit Price each (inc. VAT).

Order Code	Type #593	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GK26D 3	FM Aerial FM3	£19.560	£18.500	£16.250	£22.990



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### Mushkillers

Antiference

New type of 108 Mushkillers, a range of high quality VHF/FM aerials introduced to cover the enlarged Band II frequency range of 88 to 108MHz. The aerials offer VSWRs as low as 1.50:1, have an even response to within 1dB over the band, display high directivity for stereo reception free from multipath distortion, and give up to 1½dB extra gain with patented 'Trumatch' dipole.



### 3-Element

Suitable for good reception areas. It features the 'Trumatch' dipole, one director and one reflector. Supplied complete with Universal Clamp Type 1.

Forward Gain 4-5dB  
Front/Back Ratio 15dB  
Acceptance Angle ±32°  
Overall Size 864mm long x 1.73m wide

Retail Unit Price each (inc. VAT).

Order Code	Type #76	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XQ23A 3	Mushkiller FM1083	£22.110	£16.800	£15.550	£25.990

### 5-Element



Suitable for outer reception areas. Supplied with Universal Clamp Type 1.

Forward Gain 6-5dB  
Front/Back Ratio 16dB  
Acceptance Angle ±28°  
Overall Size 2.05m long x 1.73m wide

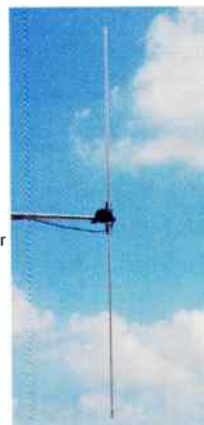
Retail Unit Price each (inc. VAT).

Order Code	Type #77	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XQ25C 5	Mushkiller FM1085	£34.030	£26.000	£23.750	£39.990

### Radio Rod

Antiference

'Radio Rod' is designed to be omnidirectional and receive national and local transmissions from any direction in the range 88 - 108MHz. Ideal for use with midi systems, it is light and easy to install on the outside of the house or in the loft. Comes complete with 10m of coaxial cable fittings and instructions. A coax plug or coupler will be needed to terminate this lead to the receiver or an extension lead (see connectors section also)

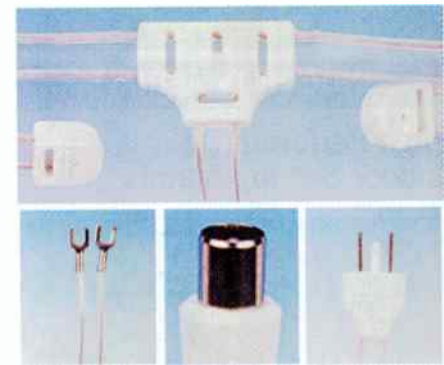


Retail Unit Price each (inc. VAT).

Order Code	Type #73	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XPO9K 1	Radio Rod	£15.310	£10.950	£9.850	£17.990

### FM Aerials

Two types are available, one has spade terminals, one is terminated in a coax plug. Impedance 300Ω balanced.



Retail Unit Price each (inc. VAT).

Order Code	Type #999	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
LB11M	FM Tape Aerial Spade	£1.430	£1.050	£0.850	£1.690
FS24B	FM Tape Aerial Coax	£1.350	£1.050	£0.850	£1.590
YT15R †	FM Tape Aerial Plug	£1.090			£1.290

### VHF/FM Aerial

This free standing indoor aerial has a built-in amplifier and fully adjustable telescopic rods to allow you to seek the best signal. Ideal for VHF and FM reception, it comes complete with a 75Ω coax lead and the black weighted base includes an on/off switch, LED display and DC input socket.



**Specification**  
Gain: 20dB VHF  
Power: 9V DC (PP3 battery or external mains adaptor)  
Dimensions: 99 x 99 x 32mm

Retail Unit Price each (inc. VAT).

Order Code	Type #967	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BV36P	VHF/FM Aerial	£8.500	£7.550	£6.950	£9.990

## TELESCOPIC AERIALS

### Low Cost

Union Brothers

Two low-cost telescopic aerials, one six-section and one seven-section. The six-section type is 482mm (19in.) long (105mm retracted), 6mm in diameter at the base and has a threaded hole tapped to M2.5 in the bottom. The seven-section type is 670mm (26.25in.) long (123mm retracted), 7mm in diameter at the base and has a threaded hole tapped to M3 up the centre.



Retail Unit Price each (inc. VAT).

Order Code	Type #62	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JM10L	6-Section Aerial	£1.350	£0.720	£0.580	£1.590
RK49D	7-Section Antenna	£1.350	£0.720	£0.580	£1.590



## High Quality 10-Section

**Union Brothers**

A high quality, heavily chromed, 10-section telescopic aerial (retracted length 166mm) extending to 1.31m (51.5in.). Base section is 9.5mm diameter and a threaded hole is tapped to M4 up the centre.



Retail Unit Price each (inc. VAT).

Order Code	Type 812	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
LB10L	HQ 10-Section Aerial	£3.390	£1.990	£1.500	£3.990

## Fully Retractable Swivel Base

**Union Brothers**

A low-cost eight-section telescopic aerial with a base that swivels and rotates. This aerial has the advantage that the mast-sections may be pushed down through the swivel base into the equipment in which the aerial is housed. Thus the aerial is fully retractable, leaving only 11mm of aerial tip exposed. The aerial is 1.016m long from the base and 1.04m long including the base. The base requires an 11.35mm diameter cut-out for mounting and 210mm of clearance inside the enclosure for when the aerial is fully retracted.



Retail Unit Price each (inc. VAT).

Order Code	Type 814	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JM11M	Rotable Swivel Aerial	£2.800	£1.750	£1.480	£3.290

## Swivel Base

**Union Brothers**

Low-cost 6-section telescopic aerial with base which swivels and rotates. The aerial extends from 275mm to 980mm. Requires a 9.53mm dia. cut-out for mounting. Base section is 6mm dia.



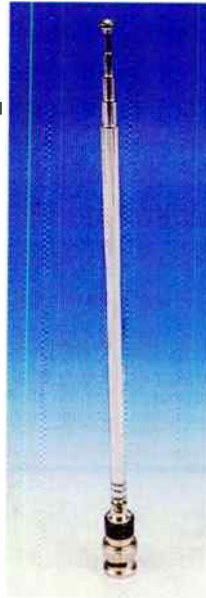
Retail Unit Price each (inc. VAT).

Order Code	Type 868	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YT20W	6 Sed Swivel Aerial	£2.540	£1.700	£1.500	£2.990

## 144/430MHz Telescopic Aerial & BNC Plug

**Union Brothers**

A good quality, reasonably priced telescopic aerial, designed especially for use with hand-held transceivers operating at 144/430MHz. This 5-section aerial is 535mm long when extended and 187mm long when retracted. The aerial represents 1/4 wavelength at 144MHz when extended and 1/4 wavelength at 430MHz when retracted. The aerial has a pivoted base and is terminated in a BNC connector suitable for direct connection to most hand-held transceivers.



Retail Unit Price each (inc. VAT).

Order Code	Type 870	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JM12N	144/430 BNC Aerial	£5.090	£1.590	£2.990	£5.990

## MOUNTING BRACKETS AND MASTS

### BRACKETS

## Bracket No. 1



A universal clamp for masts up to 51mm (2in.) diameter. Kit includes: 1 bracket assembly, 2 nuts and 2 shakeproof washers.

Retail Unit Price each (inc. VAT).

Order Code	Type 911	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BW42V	Univ. Clamp Type 1	£2.540	£2.250	£1.950	£2.990

## Loft Bracket

A stand-off arm with bracket for mounting aerials in lofts. Size 500 x 25mm diameter.



Retail Unit Price each (inc. VAT).

Order Code	Type 919	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BW45Y	Loft Bracket	£3.390	£2.450	£2.100	£3.990

## Bracket No. 3

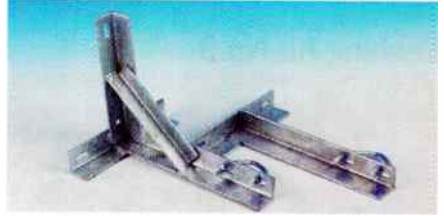
A wall-mounting bracket for 25.4 to 32mm diameter mast (1 to 1 1/4 in.) and providing a 102mm (4in.) stand-off. Kit includes: 1 bracket, 2 U bolts and 4 nuts.



Retail Unit Price each (inc. VAT).

Order Code	Type 912	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XQ53H 2	Mast Bracket Type 3	£4.240	£2.550	£2.150	£4.990

## Bracket No. 8



A heavy duty double wall-mounting bracket for masts from 38mm (1 1/2 in.) to 51mm (2 in.) diameter and providing a 304mm (12 in.) stand-off. Kit includes: 2 brackets, 2 U bolts and 4 nuts.

Retail Unit Price each (inc. VAT).

Order Code	Type 914	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XQ54J 6	Mast Bracket Type 8	£10.200	£7.050	£6.350	£11.990

## 45cm (18in.) Mast Bracket



Larger version of XQ54J above. Used where there is a large overhang on the eaves of a house. Accepts masts of 38 to 51mm (1 1/2 to 2 in.) diameter. Manufactured from galvanised steel, and supplied complete with 'v' bolts.

Retail Unit Price each (inc. VAT).

Order Code	Type 9140	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
ZF17T 7	18 Inch Mast Bracket	£11.900	£9.400	£8.300	£13.990

## Lashing Kit No.4



A single lashing with bracket to give 152mm (6in.) stand-off for masts up to 25.4mm (1in.) diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type 9890	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XQ55K 3	Lashing Kit Type 4	£6.800	£5.800	£4.900	£7.990

## Lashing Kit No. 7



A heavy duty double lashing with brackets to give 140mm (5.5in.) stand-off for masts up to 51mm (2in.) dia. Kit includes: 2 brackets, 2 U bolts, 4 U bolt nuts, 4 J bolts, 4 J bolt nuts, 2 eyelets, 2 lengths of lashing cable and cable support guides.

Retail Unit Price each (inc. VAT).

Order Code	Type 915	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XQ57M6	Lashing Kit Type 7	£12.750	£9.650	£8.600	£14.990

## Lashing Kit No.9



A single lashing with bracket to give 102mm (4in.) stand-off for 25.4 to 32mm diameter masts (1 to 1.25in.). Kit includes: 1 bracket, 2 U bolts, 4 U bolt nuts, 2 J bolts, 4 J bolt nuts, 1 eyelet, 1 length of lashing cable and 3 cable support guides.

Retail Unit Price each (inc. VAT).

Order Code	Type 919A	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XQ58N5	Lashing Kit Type 9	£9.500	£7.450	£6.500	£9.990

## MASTS

### Mast Type D



A 915 x 25.4mm (3ft. x 1in.) cranked mast giving a 229mm (9in.) stand-off. Manufactured in tubular aluminium, wall thickness 1.2mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5004	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XQ60Q	Mast D	£3.390	£2.450	£2.100	£3.990

### Mast Type E



A 1829 x 25.4mm (6ft. x 1in.) straight mast. Manufactured in tubular aluminium, wall thickness 1.2mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5006	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XQ61R	Mast E	£5.940	£4.950	£4.500	£6.990

## Mast Type G



A 3048 x 38mm (10ft. x 1.5in.) straight mast. Manufactured in tubular aluminium, wall thickness 1.6mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 915	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XQ62S3	Mast G	£18.710	£15.200	£12.750	£21.990

## Mast Type M



A 1524 x 25.4mm (5ft. x 1in.) cranked mast giving a 229mm (9in.) stand-off. Manufactured in tubular aluminium, wall thickness 1.2mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 917	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XQ63T	Mast M	£5.090	£3.400	£2.850	£5.990

## AERIAL AMPLIFIERS

### INDOOR AERIAL AMPLIFIERS

#### Plug-In Aerial Booster

Teleste



A smart and easy to install aerial booster for TV and FM signals, that features a 'piggy back' mains socket for TV, VCR or Hi-Fi. The side entry connections allow for greater stability and a neater installation. Available in two versions - for one (BV39N) or two (BV40T) aerial outputs.

Retail Unit Price each (inc. VAT).

Order Code	Type 9315	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BV39N	Plug-In Booster 1 OP.	£14.450	£13.300	£12.800	£16.990
BV40T	Plug-In Booster 2 OP.	£17.010	£15.350	£14.650	£19.990

#### Plug-in Signal Boosters

Maxview



A range of fixed gain, plug-in, signal amplifiers for use with TV and FM radios, when fed from a suitable aerial. The amplifiers can also be used to

link a satellite decoder to a TV and/or a video recorder. These units are housed in an attractively styled box fitted with square pins at the rear for plugging directly into a 13A socket. The unit is supplied with one input socket and between one and four output sockets, depending on the model. If the amplifiers are to feed TVs and FM radios simultaneously, then the downloads from the two aerials will have to be connected to the input socket via a diplexer (e.g., FE27E). The outputs can then be fed directly to the equipment or, if in strong signal areas, split again using diplexers. In fact, by using suitable diplexers various combinations are possible, to suit individual requirements.

#### Specification (all units)

Maximum output: 30mV  
 Noise: 3.5dB (typical)  
 Bandwidth: 40MHz to 860MHz,  
 Channels E2 to 69  
 Power requirements: 230V AC < 5W

#### Specification (each unit)

Order Code	Model	No. of Gain to	each outlet
RT67W	PSB1C 1		12.5dB
RT68X	PSB2C 2		9.5 9.5dB
RT69Y	PSB3C 3		9.5,6,6dB
RT70A	PSB4C 4		All 6dB



Retail Unit Price each (inc. VAT).

Order Code	Type 943	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RT67X	Sig Amp 1 OP	£15.310	£11.850	£11.050	£17.990
RT68Y	Sig Amp 2 OP	£17.010	£13.150	£12.250	£19.990
RT69A	Sig Amp 3 OP	£19.560	£14.650	£13.750	£22.990
RT70M	Sig Amp 4 OP	£22.110	£16.800	£15.750	£25.990

## Indoor Amplifier

Antiference



A selection of indoor amplifiers suitable for UHF TV (colour or black and white) and FM. These amplifiers will improve weak signals, but if the poor signal quality is due to interference the unit may amplify the problem. The choice available includes a power amplifier and 4 ordinary indoor amplifiers with either 1, 2, 3 or 4 outputs so that you can run a number of televisions from one unit. Fitted with approximately 1 metre of cable these units are very simple to install to the mains, and they come complete with instructions. The amplifiers have a very low power consumption, so are safe to leave on indefinitely.

<b>YX73Q - 1 Output</b>	
Freq Range (MHz)	45 - 860MHz
Gain	16dB
Input/Output impedance	75Ω
Noise	3dB
Maximum Output	98dBμV
<b>YQ22Y - 2 Outputs</b>	

**Freq Range (MHz)** 45 to 860MHz  
**Gain:** 13dB  
**Channel Isolation:** 20dB  
**Input/output impedance:** 75Ω  
**Noise:** 3.5dB  
**Maximum Output** 94dBμV

**BK75S - 3 Outputs**  
**Freq Range (MHz)** 45-860MHz  
**Gain** 13dB  
**Channel isolation** 23dB  
**Input/output impedance:** 75Ω  
**Noise:** 3.5dB  
**Maximum Output** 96dBμV

**YN42V - 4 Outputs**  
**VHF**  
**Freq Range (MHz)** 45 to 860MHz  
**Gain** 9dB  
**Noise figure** 3.5dB  
**Channel isolation** 23dB  
**Input/Output impedance** 75Ω  
**Maximum Output** 92dBμV

**VA44X - Power amplifier**  
**Inputs** 1  
**Outputs** 1  
**Freq Range (MHz)** 470-1GHz  
**Gain** 26dB  
**Input/output impedance:** 75Ω  
**Noise:** 4dB  
**Maximum Output** 104dBμV

Retail Unit Price each (inc. VAT).

Order Code	Type 938	Price each exc. VAT	inc. VAT each
VA44X	Power Amplifier	£39.140	£45.990

Retail Unit Price each (inc. VAT).

Order Code	Type 938	Price each exc. VAT	inc. VAT each
VX73Q	A110 Indoor Amp	£21.260	£24.990
VQ22Y	Xtra Set Amp	£23.620	£27.990
BK75S	Xtra Set 3 Amp	£25.520	£29.990
YN42V	Xtra Set 4 Amp	£30.620	£36.990

## TV/FM Signal Boosters



Aerial preamplifiers that can be used to boost TV or FM aerial signals. 'MultiSet 2' has inputs and outputs for connecting a single UHF or FM aerial to two TVs or FM stereo tuners. 'MultiSet 4' accepts separate UHF and FM signals and combines and redistributes them on four coax outlets. Both types are designed to be mounted directly onto a wall or similar vertical surface. Fitted with a 0.8m long lead with moulded 3-pin mains plug. Designed for continuous use from a conventional mains outlet socket. Supplied with fitting hardware and instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type 9314	Price each exc. VAT	inc. VAT each
BV41U	MultiSet 2	£17.010	£19.990
BV42V	MultiSet 4	£21.260	£24.990

## TV/FM Variable Signal Amplifiers

**Maxview**

A range of variable gain signal amplifiers for use with TV or FM radio sets fed from a suitable aerial. The amplifiers can also be used to link a satellite receiver to a TV and/or video recorder. These mains powered units are designed for continuous use and

a red LED illuminates when the unit is switched on. The amplifiers can be wall mounted or free standing, a 1m flying lead is included to connect to an FM radio, TV or video recorder. Housed in a very attractive white plastic box, the gain is easily adjusted by a flush mounted control. The amplifiers have one input socket and either 1, 2, 3 or 4 output sockets. All the sockets are flush mounted in the box. If the amplifiers are to feed a TV and an FM radio simultaneously, then the two downloads will have to be connected to the input via a combiner (e.g. FE27E). Alternatively, a masthead combiner (e.g. BW51F) can be used to feed one download. By using a combiner on the input, then a TV aerial can be used with a satellite receiver or computer and the outputs can then feed a video recorder and TVs. In fact, by using a combiner and/or splitters various combinations are possible, to suit individual requirements.

### Specifications

**KC09K**



**Bandwidth (MHz)** 40-860  
**No. of Outputs** 1  
**Gain To each output (dB)** 21  
**Gain Control Range (dB)** 0-20  
**Noise Figure (dB)** 4.5  
**Maximum output (mV)** 30  
**Power Requirements** 230V AC (<5W)

**KC10L**



**Bandwidth (MHz)** 40-860  
**No. of Outputs** 2  
**Gain To each output (dB)** 17.5, 17.5  
**Gain Control Range (dB)** 0-20  
**Noise Figure (dB)** 5.0  
**Maximum output (mV)** 30  
**Power Requirements** 230V AC (<5W)

**KC11M**



**Bandwidth (MHz)** 40-860  
**No. of Outputs** 3  
**Gain To each output (dB)** 17.5, 13, 13  
**Gain Control Range (dB)** 0-20  
**Noise Figure (dB)** 5.0  
**Maximum output (mV)** 30  
**Power Requirements** 230V AC (<5W)

**KC12N**



**Bandwidth (MHz)** 40-860  
**No. of Outputs** 4  
**Gain To each output (dB)** 13, 13, 13, 13  
**Gain Control Range (dB)** 0-20  
**Noise Figure (dB)** 4.5  
**Maximum output (mV)** 30  
**Power Requirements** 230V AC (<5W)

Supplied with 1.25m of mains cable, 3A fuse, 1m flying lead with coaxial plugs and full instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type 9111	Price each exc. VAT	inc. VAT each
KC09K	Var Sig Amp 1 O/P	£22.970	£26.990
KC10L	Var Sig Amp 2 O/P	£25.520	£29.990
KC11M	Var Sig Amp 3 O/P	£28.920	£33.990
KC12N	Var Sig Amp 4 O/P	£31.480	£36.990

## Six- and Eight-Way Signal Boosters



Signal boosters for TV and FM radios, as RT67W to RT70A above but designed to be mounted directly to a wall or similar vertical surface. Fitted with a 0.8m long lead with moulded 3-pin mains plug. Designed for continuous use from a conventional mains outlet socket. Supplied with fitting hardware and instructions. Type PSB6C has six coax outlets, while type PSB8C has eight outlets.

### Specification

	BV43	BV44
Bandwidth (MHz)	40-860	40-860
No. of Outputs	6	8
Gain to each output (dB)	7.5	6
Noise Figure (dB)	4.5	4.5
Maximum output (mV)	30	30
Power Requirements	230V AC (<5W)	230V AC (<5W)

Retail Unit Price each (inc. VAT).

Order Code	Type 9013	Price each exc. VAT	inc. VAT each
BV43W	6W Signal Booster	£30.620	£35.990
BV44X	8W Signal Booster	£35.730	£41.990

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1

## Battery Powered TV/FM Variable Signal Amplifier

Maxview



A 12/24V DC powered version of the single output amplifier described above (KC09K). Ideal for use in caravans, caravannettes, boats or long distance lorries, the amplifier has only one output, but a splitter (e.g. FE27E) can be used if necessary. The amplifier has an on/off switch, and is supplied with approx. 1.5m of twin power lead, and a 1m flying lead fitted with coaxial plugs. Dimensions 92 x 85 x 63mm.

Specification	
Bandwidth (MHz)	40-860
No. of Outputs	1
Gain (dB)	21
Gain Control Range (dB)	0-20
Noise Figure (dB)	4.5
Maximum Output (mV)	30
Power Requirements	12/24V d.c at 12mA

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KC13P	12/24V DC Signal Amp	£23.820 1+ £18.900 5+ £17.650 10+	£27.990 1+

## TV/FM Signal Booster Kit

Maxview



The SSB4/DIY kit is based on a 4 output amplifier. Easy to follow detailed instructions are included showing how to install a system for feeding up to four TVs.

Contents of kit	
13amp plug	1
White TV/FM Coaxial cable	25m
TV/FM Flylead	5 at 2m
White TV/Fm splitter/combiner	3
White TV/FM coaxial connector	3
White TV/Fm coaxial plug	10
White single surface outlet box	4
Fixing screws for outlet box	8
Coaxial cable clips	50 x 6mm
Instructions	1

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FT72P 5	TV/FM Booster Kit	£38.280 1+ £34.000 5+ £31.050 10+	£44.990 1+

See Stock Code Index For More Price Breaks

## Pace Channel Shifter

Pace



In areas where Channel 5 is transmitted on channel number 37 some people are still suffering from interference on their VCR's. This device may be the solution.

The pace signal shifter and booster takes the incoming signal which is on channel number 37 and shifts it up the scale to avoid interference. This allows VCR's to play back normal.

But this is not all. It also boosts the signal of the terrestrial channels - BBC, ITV, Channel 4 and Channel 5 - to help improve their picture quality. Channels 1 to 4 are boosted to 5 dB and channel 5 to 7dB.

It is simple to fit. Just attach the VCR cable, plug into the mains you are returned. No technical knowledge is required - anyone can fit it.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
G177J	Pace Channel Shifter	£29.770 1+	£34.990 1+

## DISTRIBUTION AMPLIFIERS

### UHF/VHF Distribution Amplifiers

Antiference

These multiple output amplifiers are designed to provide simply engineered, reliable UHF and VHF distribution systems from a range of plug-in units. Now you can operate more than one receiver from a single antenna using a multi-way splitter with no losses - in fact, these 'splitters' also amplify! The amplifiers will accept two aerial feeds and combine the signals for distribution, and provision is made for powering a masthead amplifier via the UHF aerial download.

All coaxial sockets meet BS3041, IEC 169-2 and DIN 45325 standards. The A260 is an ultra-wide band FM/UHF distribution amplifier for small domestic systems. It features high gain, exceptional output capability, separate FM/UHF aerial input sockets and six 'split' outputs. Provision is included for powering a mast-head amplifier via the UHF download. The A261 is an ultra-wide band VHF/UHF version for larger scale domestic systems, flats, hotels, shops, showrooms and service departments. It is provided with separate UHF and VHF aerial inlets, and these two signals are combined within to share any one of the common outputs. In addition to the features of the A260, the A261 also has a high level output socket as well as the six 'split' outlets. This can be connected to an extra distribution panel, the XP6, providing a further six outlets. In this way a number of XP6 units can be cascaded in series providing a total of 32 outlets, or up to 63 outlets using two A261 amplifiers - full details are provided with each XP6 unit.



The A281 is a wideband FM/UHF distribution amplifier as A260, but with eight 'split' outlets and an additional high level output - and by using two A281 amplifiers up to 67 outlets are possible. An

LED indicates when line power is present on the UHF input.

The distribution amplifiers are enclosed in attractive metal cases providing effective screening, minimising RF radiation and protecting the system from interference, and there is also no need to terminate unused outputs.

The XP6 is a passive, ultra-wide band plug-in 'tee' unit with six padded outputs and a low-loss through line. It has excellent performance characteristics at VHF and UHF, with a high level of isolation between its outputs so that there is no need to terminate unused ones.

A260	FM	UHF
No of Inputs	2	
No of Outputs	6	
Freq. Range (MHz)	45-230	470-860
Gain splits(dB)	10.0	10.0
Noise (dB)	4.0	4.0
Isolation split-split(dB)	32	30
Max. output (dBµV)	88	86
impedance (Ω)	75	75
Connections	75Ω coax sockets	
Power supply reqd	230V AC ± 10% 50Hz	
Power output for aerial pre-amps available	+12V DC @ 6mA max. via centre conductor of UHF aerial input socket, screen is earth	

Connections:  
Power supply reqd: 200-250V AC mains  
Power output for aerial pre-amps available: +12V DC @ 40mA max. centre conductor of aerial input socket, screen is earth

A281	VHF	UHF
No of Inputs	2	
No of Outputs	8+1 high	
Freq. Range (MHz)	45-230	470-860
Gain - high O/P dB	22	25
Gain splits dB	5.0	6.0
Noise (dB)	4.0	4.0
Isolation split-split(dB)	32	31
Max. output (dBµV)	84	84
Impedance (Ω)	75	75
Connections:	75Ω coax sockets	
Power supply reqd:	200-250V AC mains	
Power output for aerial pre-amps:	+12V DC @ 40mA max. via centre conductor of aerial input socket, screen is earth	

XP6  
Circuit type: Resistive  
Bandwidth MHz: 40-860  
Tap loss dB: 20  
Through loss: VHF 4.5dB  
UHF 5.5dB

Isolation between outputs dB: >33  
Nominal impedance: 75Ω  
Connections: 75Ω coax sockets

\*NOTE: because of the distribution losses indicated above, the XP6 should not be used as an aerial splitter without the recommended distribution amplifier.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YZ86T 2	Amp A260	£54.450 1+ £43.500 5+ £40.400 10+	£63.990 1+
YZ87U 2	Amp A261	£82.110 1+ £48.500 5+ £44.000 10+	£72.990 1+
KR20W 1	Amp 281	£65.520 1+ £51.500 5+ £46.200 10+	£76.990 1+
JU85G	Tee XP6	£15.310 1+ £11.170 5+ £10.850 10+	£17.990 1+



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**MASTHEAD AMPLIFIERS**

**Masthead Amplifier**



A masthead amplifier for UHF in a fully weatherproof housing complete with brackets for either mast or surface mounting. The power to drive the amplifier is 12V DC and is fed to the amplifier from the special power unit BW50E, which must be bought separately, shown below.

Bandwidth: 470 to 860MHz  
Typical Gain: 15dB  
Noise: 3dB

Retail Unit Price each (inc. VAT).

Order Code	Type 0100	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BW46A	Masthead UP1501	£12.750	£9.750	£8.950	£14.990

**Low Noise Masthead Amplifiers**

Antiference



The UP2301 is a two stage, wideband UHF masthead amplifier, proven to be one of the most successful high gain UHF preamplifiers for fringe area reception.

It covers all channels from 21 through to 68. It has a single input and output.

The UP2501 is similar to the UP2301 but having a lower noise figure and a bandwidth limited to channels 21 to 34, useful where strong adjacent transmitters operating on other channels are a problem. It has a single input and output.

The UP3501 is a three stage, ultra-wideband amplifier for both VHF and UHF antennas, and sets a new standard for FM/TV preamplifiers. It features both high gain and output, an even response, excellent matching and very low noise characteristics. It has separate VHF and UHF aerial inputs and one common output.

All these units are housed in a tough, weatherproof plastic moulding featuring a reversible mounting bracket, which can be either surface mounted using a single screw, or tied to a mast using a black nylon tie-wrap (supplied). Cables are very easily connected to internal screw terminals and screen clamps. Each amplifier requires a 12V DC supply provided via the output downlead centre conductor.

**Specifications**

UP2301	UHF
Freq. range (MHz)	470-860
Gain (dB)	25
Noise (dB)	3.5
Maximum output (dBµV)	102
Power requirement (mA)	55

UP2501	UHF
Freq. range (MHz)	470-585
Gain (dB)	24
Noise (dB)	3.5
Maximum output (dBµV)	102

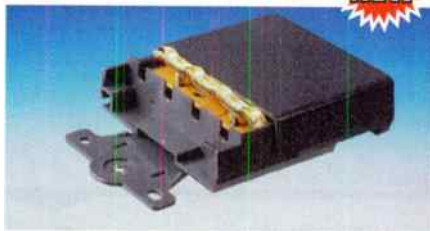
Power requirement (mA)	55
<b>UP3501</b>	<b>VHF UHF</b>
Bandwidth MHz	88-108 470-860
Gain: (dB)	18 18
Noise (dB)	3 3.5
Maximum output (dBµV)	102 102
Power Requirement (mA)	12

Retail Unit Price each (inc. VAT).

Order Code	Type 021	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YZ89W	Low N Amp UP2301	£17.010	£15.600	£14.450	£19.990
MJ03D	Low N Amp UP2501	£19.560	£17.450	£16.800	£22.990
YZ90X 1	Low N Amp UP3501	£30.620	£25.600	£23.300	£35.990

**Masthead Amplifier**

Maxview



The Maxview 13db gain UHF Masthead Amplifier features a very low noise figure and is designed to boost UHF TV signals in weak signal areas for improved signal performance. It is designed for either indoor or outdoor use and for mounting close to the aerial, requiring +12V d.c. line powering from either a single output (BV71) or twin output (GT89) Masthead power supply unit. The medium gain amplifier provides excellent performance in smaller systems using relatively short cable runs (<15m).

The MHA13U is unscreened and recommended for domestic use only. It is easy to install and comes complete with cable tie for mast fixing or bracket for fixing to the wall.

**Technical specification**

Bandwidth	470-860MHz
Noise Figure	2dB
Gain	13dB
Max O/P Crossmod	
2 channels	107dBµV
5 Channels	101dBµV
Input RLR (75ohm)	12dB
Output RLR (75ohm)	8dB
Power requirements at 12 V d.c.	15mA
Through line powering	No
R.F. Connector type	Saddle and Clamp

Retail Unit Price each (inc. VAT).

Order Code	Type 17501	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GT89H	1in,1out 13dB Amp	£14.450	£12.250	£11.250	£16.990

**12dB Gain Masthead Amplified Splitter**

Maxview



The Maxview multi-output UHF Masthead Amplifier is designed to boost UHF TV signals in weak signal areas for improved signal performance to 3 outlets. It is designed for indoor or outdoor use and for mounting close to the aerial, requiring +12V d.c line powering from either a single (BV71) or twin (GT89) Masthead power unit.

The amplifier has built in signal splitting and when used with a single output Masthead power unit can provide UHF signal feeds for up to 3 UHF TV outlets, 4 with a twin.

**Technical Specification**

Bandwidth (MHz)	470-860
Noise figure	2.5dB
Gain per outlet	12dB
Max O/P Crossmod	
2 Channels	95dBµV
5 Channels	90dBµV
Input RLR (75ohm)	12dB
Output RLR (75 ohm)	18dB
No of outputs	3

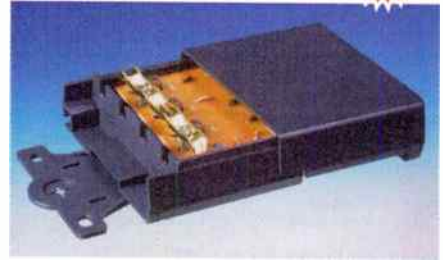
Isolation between outputs	25dB
Power Requirements at 12V d.c	30mA
Through Line Powering	No
R.F. Connector Type	Saddle and Clamp

Retail Unit Price each (inc. VAT).

Order Code	Type 17600	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GT90X	UHF/FM In, 1 Out Amp	£25.520	£22.850	£21.500	£29.990

**UHF & FM Masthead Amplified Diplexer**

Maxview



The Maxview UHF and FM masthead Amplified Diplexer provides separate band-limited UHF and FM inputs. Both inputs have very low noise figure amplifiers designed to provide excellent signal performance in weak UHF TV and FM radio signal areas. The combination of separate amplifiers and high performance output diplexer filtering ensures optimum signal handling characteristics. It is designed for indoor and outdoor use and for mounting close to aerials, requiring 12V d.c. line powering from either a single output (BV71) or twin output (GT89) Masthead power supply unit.

**Technical Specification**

	UHF	FM
Bandwidth (MHz)	470-860	88-108
Noise figure	2dB	3.5dB
Gain	12dB	14dB
Rejection	30dB	30dB
Max O/P Crossmod		
2 Channels	110dBµV	107dBµV
5 Channels	104dBµV	101dBµV
Input RLR(75ohm)	10dB	
Output RLR(75ohm)	10dB	
Power requirements at 12V d.c	30mA total	
Through line powering	Available UHF only	
R.F Connector type	Saddle and Clamp	

Retail Unit Price each (inc. VAT).

Order Code	Type 17501	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GT91Y	1in,3out 12dB Amp	£22.970	£19.950	£18.500	£26.990



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## POWER UNITS

### Masthead Amp Power Unit

Antiference



A power unit for use with our masthead amps UP1501. Supplied with instructions and screws for fixing. It has co-ax sockets for both sides of the aerial head for easy connection, and includes approximately 1 metre of mains cable.

**Specification**

Mains input: 200-250V AC 50Hz  
 Line-power output: +12V DC ±10%  
 @ 60mA max  
 Insertion loss: <1dB (40-1000MHz)  
 Cable connections: Co-ax sockets

Retail Unit Price each (inc. VAT).

Order Code	Type ref	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BW50E	Power Unit PUP1	£14.450	£12.250	£11.150	£16.990

### Single and Twin Power Supply Unit

Maxview



Both Masthead Power Supply units are designed to power any masthead amplifier. They are recommended for indoor domestic use only with a line power voltage of +12 V DC, at 50mA. Due to its design it neatly plugs directly into a socket.

The twin plug-in unit incorporates signal spitting to provide additional wideband (44-860MHz) TV output without the need for either a multi-output masthead amplifier or 2 way splitter.

**Technical Specification**

Code	BV71N	GT89W
Mains Voltage	230V +/-10%	
Loss per TV outlet	0.5dB	4dB
D.C output Voltage	12V@50mA max	
Input RLR (75 ohm)	12dB	10dB
Output RLR (75 ohm)	10dB	12dB
R.F. Connector Type	Type F	Type F
Mains Connector	Plug in	Plug in

Retail Unit Price each (inc. VAT).

Order Code	Type ref	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BV71N	1 Way Power Supply	£11.050	£9.440	£8.920	£12.990
GT89W	Masthead Twin Power Unit	£12.750	£11.450	£10.250	£14.990

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## COMBINER/SPLITTERS

### FM/UHF Diplexer

Antiference



A masthead or surface mounting diplexer for combining or separating FM and UHF signals from antenna downloads. To separate at receiver, use BW57M, YN54J or FE27E.

	FM	UHF
Bandwidth:	87-108MHz	470-860MHz
Insertion loss:	0.5dB	0.5dB
Channel Isolation:	22dB	38dB

Retail Unit Price each (inc. VAT).

Order Code	Type ref	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BW51F	Diplexer UF22	£11.050	£8.500	£7.990	£12.990

### Masthead Diplexer

Maxview



A range of three units that are capable of combining 2 grouped UHF TV inputs. These passive diplexers are intended for indoor or outdoor domestic use. Through-line powering from the output to either or both channels is available as an opt on thus allowing low noise amplification to be added for weak UHF TV signal reception areas for installations with longer cable runs. It is easy to install and comes complete with cable tie for mast fixing or bracket for fixing to the wall with two screws diplexers for the following channel groups are available:

	Low Channel	High Channel
BV68Y	21-34	39-68
BV69A	21-46	53-68
BV70M	21-52	59-68
GT95D	21-33	37-68
GT96E	21-37	41-68
GT97F	21-49	55-68
GT87U	21-49	49-53
GT98G	UHF	VHF
R.F Connector	Saddle and	Clamp

Retail Unit Price each (inc. VAT).

Order Code	Type ref	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BV68Y	Diplexer 21-34,39-68	£10.200	£7.740	£7.250	£11.990
BV69A	Diplexer 21-46,59-68	£10.200	£7.740	£7.250	£11.990
BV70M	Diplexer 21-52,59-68	£10.200	£7.740	£7.250	£11.990
GT95D	Diplexer 21-33,37-68	£10.200	£8.950	£7.450	£11.990
GT96E	Diplexer 21-37,41-68	£10.200	£8.950	£7.450	£11.990
GT97F	Diplexer 21-49,55-68	£10.200	£8.950	£7.450	£11.990
GT98G	VHF/UHF Diplexer	£10.200	£8.950	£7.450	£11.990
GT87U	Diplexer 21-49,49-53	£10.200			£11.990

## Combiner/Splitter



A 'professional' non-resistive, low-loss unit for combining antenna downloads or dividing equally the signals on one download. Supplied in a weatherproof housing, a masthead amplifier can be powered through this unit. Suitable for mast or surface mounting.

Retail Unit Price each (inc. VAT).

Order Code	Type ref	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BW52G	Splitter CS1000	£11.050	£8.500	£7.900	£12.990

## UHF Aerial Combiners

Antiference



Ideal for use in areas where ITV stations overlap, the combiners allow two aerials in different groups to share one download. Two types are available and should be selected as below.

Aerial receiving stations in group	Aerial receiving stations in group	Use combiner
A	B	A/E
A	C/D	A/E
A	E	A/E
B	C/D	AB/CD

The unit is very easy to install on the aerial mast or a vertical surface and masthead amplifiers can be powered through the unit on either or both inputs. Supplied with full instructions.

Products available

Code		Low	High
		Channel	Channel
YP57M	Aerial Combiner A/E	21-34	37-68
YP58N	Aerial Combiner AB/CC	21-53	55-68
VA33L	Combiner 21-31,34-68	21-31	34-68
VA34M	Combiner 21-37,39-68	21-37	39-68
VA35Q	Combiner 21-46,49-68	21-46	48-68
VA36P	Combiner 21-48,53-68	21-48	50-68
VA37S	Combiner 21-50,52-68	21-50	52-68
VA38R	Combiner 21-65,67-68	21-65	67-68

Retail Unit Price each (inc. VAT).

Order Code	Type ref	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YP57M	Aerial Combiner A/E	£14.450	£11.000	£9.900	£16.990
YP58N	Aerial Combiner AB/CC	£14.450	£11.000	£9.900	£16.990
VA33L	Combiner 21-31,34-68	£14.450	£11.000	£9.900	£16.990
VA34M	Combiner 21-37,39-68	£14.450	£11.000	£9.900	£16.990
VA35Q	Combiner 21-46,49-68	£14.450	£11.000	£9.900	£16.990
VA36P	Combiner 21-48,53-68	£14.450	£11.000	£9.900	£16.990
VA37S	Combiner 21-50,52-68	£14.450	£11.000	£9.900	£16.990
VA38R	Combiner 21-65,67-68	£14.450	£11.000	£9.900	£16.990

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**SPLITTERS AND FITTINGS**

**2-Way UHF TV Splitter**

Two good quality, metal shrouded screened UHF TV signal splitters. The splitters are electrically identical but offer different arrangements of plugs/sockets. Type 1 has one input plug and two output sockets. Type 2 has one input socket and two output plugs. Both types have an insertion loss of 4.5dB and are suitable for use with frequencies up to 1GHz. Isolation between the outputs is 22dB.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JM13P	Type 1 TV Splitter	£2.540	£1.500	£1.000	£2.990
JM14Q	Type 2 TV Splitter	£2.540	£1.500	£1.000	£2.990

**TV/FM Diplexer Plug-in**

A plug-in diplexer which may be used to combine or separate UHF TV and FM radio signals. Unit has at one end two co-ax sockets, one marked TV and the other FM and a co-ax plug at the other end which connects to the combined signal. Insertion loss <1dB. Overall size of plastic body: 37 x 40 x 16mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FE27E	Plug-in TV/FM Diplex	£4.240	£2.160	£2.700	£4.990

**Two Into One Y Adaptor**

A low-cost Y-shaped 2 into 1 adaptor for splitting or combining co-axial feeders



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS23A	2/1 Coax Adptr Typ Y	£1.520	£0.600	£0.450	£1.790

**Two Into One Adaptor**



A simple plug-in 2 into 1 adaptor for splitting or combining coaxial feeders.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FT65G	2 Into 1 Coax Adptr	£1.430	£0.500	£0.700	£1.690

**Single Coaxial Outlet**

*Union Brothers*

A surface mounted coax outlet in a moulded white housing. Coax cable enters from rear and is screw terminated. For use with FM or UHF signals. Overall size: 50 x 32 x 24mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HX87U	Surface Co-ax Outlet	£2.030	£1.000	£0.750	£2.390

**TV/FM Diplexer Surface**

A surface mounting integral diplexer which separates the UHF TV radio signals from the FM radio signals which have been combined on one download. Screw fixing for co-ax cable at rear, two co-ax sockets at the front, one marked TV and one marked FM. In a white moulded housing with fixing screws supplied. Overall size: 63 x 44 x 29mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BW57M	Surface TV/FM Outlet	£7.650	£5.400	£4.950	£8.990

**Surface Mounting Inductive Splitter Unit**



A non-resistive splitter that offers less loss than other models. It may also be used in reverse to combine two signals via the co-ax sockets onto one lead. White moulded housing and fixing screws supplied. No soldering required. Overall size: 59 x 51 x 27mm high.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YQ23A	Inductive Splitter	£3.390	£2.250	£1.900	£3.990

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**Single Flush Mounting Co-axial Outlet**



A flush mounting co-ax outlet with a white thermoset front plate. Fits standard conduit and surface boxes (see electrical accessories) to BS1363. Screws supplied. No soldering required. For use with FM or UHF signals. Front 85mm square. Depth (from rear of plastic moulding) 15mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW55K	Flush Co-ax Outlet	£2.540	£1.500	£1.000	£2.990

**Double Co-axial Outlet Flush**



As BW55K, but with two completely separate co-ax sockets and screw terminals at rear for two separate cables. Overall size 86mm square. Depth from rear of plastic face 15mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW56L	Flush Dbl Co-ax Outfit	£2.880	£2.000	£1.600	£3.390

**Flush Mounting TV/FM Diplexer**

*Antiference*



A flush mounting diplexer to separate UHF TV signals from FM radio signals which have been combined on one download. Screw fixing for co-ax cable at rear, two co-ax sockets on the front, one marked TV and one marked FM. Fits standard conduit and surface boxes (see Electrical Accessories) to BS1363. Screws supplied. Front 85mm square. Depth (from rear of plastic moulding): 10mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YN54J	Flush TV/FM Outlet	£7.650	£5.400	£4.950	£8.990

## TV/Satellite Outlet Socket



A flush-mounting dual outlet socket containing one conventional VHF coaxial socket, and one threaded F connector socket for a satellite feeder to connect to a receiver. Screw fixings for both coax cables are provided at the rear. Fits standard conduit and surface boxes (see Electrical Accessories) to BS1363. Screws supplied. Front panel is 85mm square. Depth (from rear of front panel) 15mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 0146	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
LN64U	TV/Sat Outlet	£4.240	£3.850	£3.250	£4.990

## Balun 300/75Ω

A receiver transformer to enable 300Ω balanced feeder (XR31J) to be used when TV or FM receiver has 75Ω unbalanced aerial input. The balanced feeder terminates on screw terminals on the balun which may then be plugged into a standard co-ax socket. By using an in-line co-ax socket and a short piece of 300Ω feeder it is possible to use the balun in reverse. Size of body 38 x 22 x 20mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 0145	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FD78K	300/75 Balun	£1.940	£1.450	£1.250	£2.290

## Attenuators



For in-line connection. Standard coax socket at one end, standard coax plug at other end in bright aluminium alloy bodies and suitable for VHF and UHF. They have low VSWR and are clearly marked. Two types available: 6dB or 12dB. Length 45mm (approx).

Retail Unit Price each (inc. VAT).

Order Code	Type 065	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BW59P	Attenuator 6dB	£2.970	£2.300	£2.150	£3.490
BW60Q	Attenuator 12dB	£3.020	£2.600	£2.300	£3.550

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## TVI Filter

### Antiference

A high quality filter designed to be inserted in the aerial leads of TV sets suffering from interference from CB transmissions. The filter is peaked to reject signals from transmitters operating on 27 to 28MHz while giving a very low insertion loss to UHF TV signals. The unit plugs directly onto the end of the existing TV aerial lead.



Retail Unit Price each (inc. VAT).

Order Code	Type 066	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YL43W	TVI Filter	£5.090	£3.900	£3.650	£5.990

## EXTENSION LEADS

### TV Aerial Flylead



Co-axial cable with co-ax plugs connected at both ends. Available in 2m, 5m and 10m lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 068	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW36P	Flylead 2m	£1.690	£1.000	£0.750	£1.990
JW39N	Flylead 5m	£2.450	£1.500	£1.250	£2.890
JW40T	Flylead 10m	£3.310	£1.750	£1.500	£3.890

### Aerial Extension Cable



Co-axial extension lead manufactured from 75Ω co-axial cable. Terminated at one end in a co-axial plug and at the other end in a co-axial socket. The terminations are protected with a plastic strain relieving sheath. Length 2m.

Retail Unit Price each (inc. VAT).

Order Code	Type 070	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
GW61R	Aerial Extn Cable	£1.690	£1.000	£0.750	£1.990

## FLAT CABLE

### Flexible link Connector



The Flexible link connector is ideal where it is not possible or convenient to drill a hole through a window frame. The flat flexilink can be moulded to fit the contours of most windows. Available with a coax plug (MY13P) or an F plug (MY12N) on each end.

Retail Unit Price each (inc. VAT).

Order Code	Type 17006	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MY12N	20mm Flat F-F plug	£2.110			£2.490
MY13P	20mm Flat coax-coax	£2.110			£2.490

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## Wrist-Strap / Cord



For use when handling CMOS and other devices that are prone to electrostatic damage. This fabric wrist-strap is comfortable to wear and prevents electrostatic charge building up. The strap is pulled tightly around the wrist and locked in place with a Velcro fastener. Three conductive threads woven into the fabric press against the skin and allow any electrostatic charge to leak away to earth.

### Specification

Material: Acetate fibre  
 Size: 230 x 20mm  
 Fits wrists from: 160 to 200mm circumference  
 Cable length retracted: 430mm (extended: 2m)  
 Current limiting resistor: 1M $\Omega$  moulded into fastener  
 Net weight: 22g

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
FE25G	ESD Wrist Strap	£8.920	£7.450	£5.49G	£10.490

## High Comfort Wrist Strap



A wrist strap specially woven to give maximum comfort. The conductive woven fibres are made from silver for maximum conductivity and minimum skin irritation. The strap is fully adjustable and has a 10mm fixing stud.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
LE82D	Adjustable Strap	£3.820	£3.430	£3.210	£4.490

## Adjustable Wrist Strap



A low-cost, conductive, adjustable wrist strap with 10mm press stud.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AS38D	Wristband	£2.540	£1.820	£1.660	£2.990

## 'Clean Room' Stainless Steel Wriststrap



This expandable hypoallergenic wriststrap is made from jewellery grade stainless steel and is intended for clean room environments. This fully adjustable strap is fitted with a 10mm stud.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JA63T	S-Steel Wrist Strap	£7.890	£7.740	£7.220	£9.260

## Disposable Wriststraps



A pack of ten disposable wriststraps each complete with fitted lead (with in-built 1M $\Omega$  resistor) and clip. Colour supplied may vary. This item is especially useful for the field service engineer where antistatic protection may not be available.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JA64U	Disposable W. Strap	£1.520	£1.390	£1.290	£1.790

## Straight Earth Cords



Straight earth connectors for use with antistatic protection equipment. Cord AS37S is terminated at one end with a 10mm female press-stud and a 4mm banana plug at the other and includes a fitting crocodile clip. Overall cord resistance is 4.4M $\Omega$ . The cord measures 1.2m in length and is 2.5mm thick. AS49D is similar in construction, but is terminated in 10mm and 4mm press-studs and does not include the crocodile clip. AS07H is 1m long and is terminated at both ends with 10mm studs.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AS37S	Antistatic Cord 1.2m	£5.090	£4.100	£4.000	£5.990
AS49D	Antistatic Cord 10-4	£5.090	£4.450	£4.200	£5.990
AS07H	Antistatic Earth Cord	£5.940	£3.990	£3.700	£6.990

Account Enquiries: 01702 554187

## Coiled Earth Cords



Extremely flexible coiled ground cords for earthing an operator to an antistatic mat or earth plate. AS04E has 10mm female press-studs at each end which incorporate a 2.2M $\Omega$  resistor and strain relief. The cord measures approximately 560mm relaxed and stretches up to 3m. AS05F is of a similar construction but has a 10mm female press-stud at one end and a 4mm press-stud at the other. AS06G is again similar but has a 10mm press-stud incorporating a 4.4M $\Omega$  resistor at one end and a banana plug at the other, fitted with a removable crocodile clip.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AS04E	Antistatic Cord	£5.940	£4.700	£4.310	£6.990
AS05F	Antistatic Cord 10-4	£5.940	£4.670	£4.310	£6.990
AS06G	Antistatic Cord 4-4-4	£5.940	£4.670	£4.310	£6.990

## Antistatic Bonding Plug

An antistatic bonding plug with plastic live/neutral pins and brass earth pin. The earth pin is connected to a 10mm press stud via a 1M $\Omega$  resistor.



### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AS38R	Antistatic Earth Plug	£5.090	£3.940	£3.480	£5.990

## Heel Strap



A non-marking heel earthing strap, made from a heavy duty, two-layer material, and designed for earthing operators to conductive floor matting. The heel strap has a built-in 1M $\Omega$  resistor for complete operator safety and is designed not to mark shoe or floor surfaces.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CH44X	Heel Strap	£4.240	£3.600	£3.500	£4.990

See Stock Code Index For More Price Breaks

**Earthing Plates**



Earth reference plates for use with antistatic products. Available with either 3 x 10mm stud array and a threaded earth connector (AS08J), or with 4 x 10mm stud array (AS09K). The threaded earth connector extends 25mm and is countersunk from below the plate. The plates measure approximately 125 x 75 x 6.5mm (AS09K is 3mm thick).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AS08J	Threaded GND Plate	£5.090	£4.990	£4.790	£5.990
AS09K	Sludged GND Plate	£5.090	£4.990	£4.790	£5.990

**Work Mat**

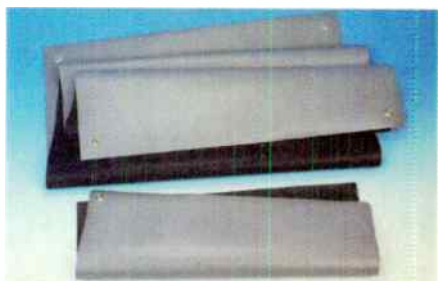


A tough conductive flexible plastic mat which can be used to prevent the build-up of static charges on devices or equipment likely to be at risk. The mat has an earthing strap which may be clamped to a suitable earth by a jubilee clip. The static charge on any item placed on the mat will leak away to earth. Computers placed on the mat will not generate spurious data when touched by someone holding a static charge for example. The mat is also useful for safe handling of CMOS devices etc. Size 500 x 350 x 1mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YJ30X	Antistatic Workmat	£21.260	£16.440	£11.770	£24.990

**Antistatic Bench Mats**



- ★ In-built resistance
- ★ Hard-wearing
- ★ Molten solder resistant
- ★ Resistant to most solvents
- ★ Safe non-conductive surface

These worktop antistatic mats are constructed in a two-layer material: a static dissipative surface layer and a conductive backing. Meets European specification (EN100 015). Two sizes are available in grey.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CH48C 1	Lge Dissipative Mat	£40.840	£33.430	£29.650	£47.990
CH47B	Sml Dissipative Mat	£16.160	£11.750	£10.500	£18.990

**Conductive Nitrile Bench Matting**

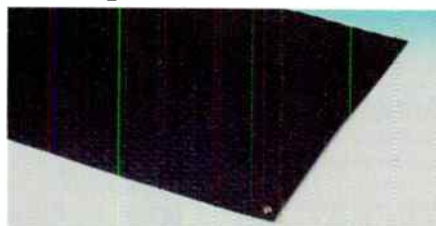


A durable and hardwearing, conductive nitrile bench matting that offers excellent heat and chemical resistance with good 'lay-flat' properties. The mat is easy to clean, non-reflective and comes with two 10mm press studs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AS01B 4	Antistatic Bench Mat	£39.280	£34.990	£32.990	£44.990

**Conductive Nitrile Floor Matting**



A durable and hardwearing, conductive nitrile floor matting that offers excellent heat and chemical resistance with good 'lay-flat' properties. The mat is easy to clean, non-reflective and comes with two 10mm press studs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AS02C 5	Antistatic Floor Mat	£42.540	£41.990	£39.990	£49.990

**Field Service Engineer's Kit**



A portable static dissipative work station primarily intended for field service engineers - such as computer hardware and telecom engineers, who require a compact, lightweight work surface. The kit is ideal for servicing equipment and/or PCBs which incorporate static-sensitive devices and components.

The mat has three 'Velcro' strips, and when folded forms two large pockets which can hold small tools, components, boards, and the items in the kit. The mat with its contents are then housed in a convenient pouch for storage/travel.

The mat and pouch are constructed from a lightweight hardwearing material finished in dark blue, with a stitched edge. The kit comprise the following:

- 1 x mat and carry pouch
- 1 x adjustable wrist strap

- 1 x coily ground cord AS04E
- 1 x straight earth connector AS07H
- 1 x straight earth connector AS37S
- 1 x ESP bonding plug AS38R
- 1 x conductive tweezers CH43W

**Specification (mat and pouch)**

Surface resistivity: <math><10^9</math>/sq. m.  
 Charge decay: <math><2s</math> (5kV to 37V)  
 Tensile strength: 1.4KN  
 Elongation at break: 20%  
 tear strength: 38N  
 Dimensions  
 mat open: 595 x 595mm  
 mat pocket: 200 x 285mm  
 pouch: 350 x 180mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JA62S	Field Service Kit	£48.500	£40.950	£31.000	£56.990

**Triple-Ply Static Dissipative Workstation Kit**



A static dissipative workstation kit containing all the necessary items required for the setting up of a static-free environment, for the protection of static sensitive devices. This kit is supplied with heavy duty triple-ply bench matting, suitable for extensive use. The kit comprises the following:

- 1 x Triple Ply Antistatic Bench Mat – dimensions 1200 x 600 x 1.5mm (AS36P)
  - 1 x Conductive Nitrile Floor Matting – dimensions 1200 x 600 x 3mm (AS02C)
  - 1 x Adjustable Wrist Band (AS03D)
  - 1 x Ground Cord – length 1m (AS04E)
  - 3 x Straight Earth Connectors – length 1m (AS07H)
  - 1 x Earth Reference Plate – dimensions 125 x 75 x 3mm (AS09K)
  - 1 x Executive Bonding Plug – 1MΩ (AS38R)
  - 1 x Conductive Plastic Tweezers (CH43W)
- Certain parts can be ordered separately or order AS35Q for the complete kit.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AS35Q 10	Dissipative A/S Kit	£97.870	£82.000	£78.000	£115.000
AS36P 3	Antistatic Bench Mat	£50.210	£44.000	£42.000	£58.000
AS02C 5	Antistatic Floor Mat	£42.540	£41.990	£39.990	£49.990
AS03D	Wristband	£2.540	£1.820	£1.660	£2.990
AS04E	Antistatic Cord	£5.940	£4.700	£4.310	£6.990
AS07H	Antistatic Earth Crd	£5.940	£3.990	£3.700	£5.990
AS09K	Sludged GND Plate	£5.090	£4.990	£4.790	£5.990
CH43W	Antistatic Tweezers	£2.110	£1.690	£1.380	£2.490
AS38R	Antistatic Earth Plg	£5.090	£3.940	£3.490	£5.990



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## Conductive Workstation Kit



This kit contains all the necessary items required for the setting up of a conductive static-free environment, for the protection of static sensitive devices. The kit comprises the following:

- 1 x Conductive Nitrile Bench Matting – dimensions 1200 x 600 x 1.5mm (AS01B)
- 1 x Conductive Nitrile Floor Matting – dimensions 1200 x 600 x 3mm (AS02C)
- 1 x Adjustable Wrist Strap (AS03D)
- 1 x Ground Cord – length 1m (AS04E)
- 3 x Straight Earth Connectors – length 1m (AS07H)
- 1 x Earth Reference Plate – dimensions 125 x 75 x 3mm (AS09K)
- 1 x Executive Bonding Plug – 1MΩ (AS38T)
- 1 x Conductive Plastic Tweezers (CH43W)

Also includes a full guide and instructions on how to use the kit and avoiding static related problems. For full kit order AS00A, or alternatively order items separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AS00A	11 Conductive A/S Kit	£97.090	£98.000	£92.740	£114.090
AS01B	4 Antistatic Bench Mat	£38.280	£34.990	£32.990	£44.990
AS02C	5 Antistatic Floor Mat	£42.540	£41.990	£39.990	£49.990
AS03D	Wristband	£2.540	£1.820	£1.660	£2.990
AS04E	Antistatic Cord	£5.940	£4.700	£4.310	£5.990
AS07H	Antistatic Earth Cord	£5.940	£3.990	£3.700	£5.990
AS09K	Studded GND Plate	£5.090	£4.990	£4.790	£5.990

## Electrically Conductive Tweezers



Plastic electrically conductive tweezers designed specifically for the placement of static sensitive devices. The tips are small enough to manoeuvre the smallest of components while the handles fit comfortably into the hand. Serrations on the tips help to securely hold components during placement.

NB. AS THESE TWEEZERS ARE CONDUCTIVE THEY MUST NOT BE USED ON LIVE CIRCUITRY!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CH43W	Antistatic Tweezers	£2.110	£1.690	£1.380	£2.490

## Conductive Desoldering Pump

Antex



A conductive desoldering pump consisting of a nickel-plated aluminium body with a black conductive Teflon tip. This results in a low 'top-to-tip' resistance. Replacement tip is available.

- Overall length: 195mm
- External diameter: 20mm
- Suction volume: 7-7cc
- 'Top-to-tip' resistance: 10Ω
- Spare tip: BA20W

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
BA19V	Conductive Pump	£8.500	£7.990	£7.590	£9.990
BA20W	Conductive Tip	£1.690	£1.330	£1.260	£1.990

## Antistatic Spray

Electrolube

A water based antistatic spray in a pump action container, used for nullifying static charge problems.

Supplied in a 250ml bottle.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
YB79L	Antistatic Spray	£3.390	£2.950	£2.700	£3.990

## Triple-Ply & Conductive Matting Systems Checker



This system checker has been designed to meet BT's stringent specifications for both the instrument performance and for the limits imposed within a safe handling area. These specifications exceed those demanded by BS EN 100015.

The unit will test three features of a work station:

- Test 1. Wrist band test - This measures the conducting path of the user, the user's wristband, the cord and the connection between these components.
- Test 2. Cord test - monitors the integrity of the cord in isolation
- Test 3. The unit also has the facility to test the

integrity of the cords, bench and floor covering together, including the connections between.

### Specification

Test	Min Resistance Limit Ω	Max Resistance Limit Ω
Test 1	3.7MΩ ±5%	50MΩ ±10%
Test 2	4MΩ ±2%	4.8MΩ ±2%
Test 3	7.4MΩ ±5%	11.4MΩ ±5%

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	+	+	1+
JAB1R	A/S System Checker	£84.250			£99.000

## Surface Resistance Meter



A simple yet effective meter for checking that antistatic bench and floor matting is working correctly and of the correct quality. Simply place the meter on the surface to test and hold in the button. The electrical conductivity will be indicated by the array of LEDs, which signify resistances in the range 103 to 1012Ω/SQ. This device can also be used to measure the resistance to earth by connecting a lead to the 3-5mm jack socket at the side of the unit. Operation is from a PP3 9V battery (JY49D), not included. Overall dimensions are 145 x 80 x 34mm (L x W x H).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ASS1F	1 Resistance Meter	£67.230	£64.000	£63.000	£79.000

## Wrist Strap and Heel/Toe Strap Tester



A simple handheld meter for checking the resistance of wrist straps etc. Two manually switched ranges are available for measurements between 0-5MΩ and 10MΩ or 0-9MΩ and 35MΩ. To test a wrist strap or similar, ensure you are wearing the strap correctly then press the silver disc with a finger. If the strap passes then a green LED will illuminate. If the strap is worn incorrectly or does not pass the test a buzzer will sound and a red LED will illuminate. A battery warning circuit constantly monitors the battery condition and lights a yellow LED if the battery is becoming low. Operation from PP3 9V (JY49D) not included, or an optional battery eliminator via a 3-5mm jack socket. Dimensions are 134 x 72 x 28mm (L x W x H).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
ASS2G	1 Heel Strap Tester	£68.070	£63.000	£58.950	£79.990



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**Warning Sign**



A large, very visible warning sign to draw attention to an ESD protected area.  
Dimensions 150 x 300mm.  
Illustration also shows warning labels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JA69A	A/S Warning 150x300	£8.930	£8.050	£0.100	£10.500

**Antistatic Warning Labels**

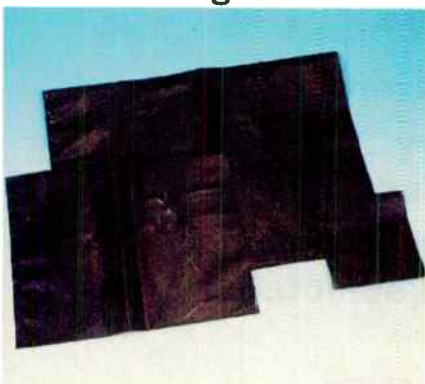


Self adhesive warning labels for bags, boxes, bins etc. to give easy identification of static sensitive devices. Available in two sizes - 12 x 22mm and 25 x 51mm, and in strips of 25, or rolls of 1000 labels. Illustration also shows rigid warning sign JA69A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JA65V	25 A/S Lbl 12X22	£0.740	£0.660	£0.480	£0.870
JA66W	1000 A/S Lbl 12X22	£13.300			£15.630
JA67X	25 A/S Lbl 25X51	£0.817	£0.740	£0.580	£0.960
JA68Y	1000 A/S Lbl 25X51	£16.050			£18.360

**Conductive Bags**



A range of conductive low-density polyethylene bags for antistatic devices. Each bag is impregnated with carbon and is unaffected by age, humidity and is resistant to most chemicals. Sold in packs of 10.

**Dimensions (W x L) (mm)**

- 100 x 100
- 100 x 150
- 120 x 200
- 150 x 250
- 220 x 250
- 250 x 350

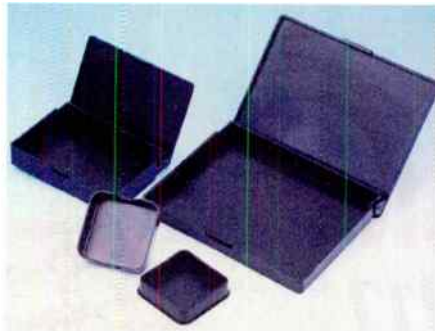
**Order Code**

- AS18U
- AS19V
- AS20W
- AS21X
- AS22Y
- AS23A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AS18U	Antistatic Bag A1	£0.553	£0.490	£0.450	£0.650
AS19V	Antistatic Bag B1	£0.672	£0.590	£0.550	£0.790
AS20W	Antistatic Bag C1	£0.757	£0.640	£0.590	£0.890
AS21X	Antistatic Bag D1	£1.090	£0.980	£0.900	£1.290
AS22Y	Antistatic Bag E1	£1.260	£1.080	£1.020	£1.490
AS23A	Antistatic Bag F1	£1.690	£1.400	£1.350	£1.990

**Conductive Boxes**



A range of electrically conductive carbon loaded boxes for the storage and transport of static sensitive devices. All boxes are designed for use with conductive foam as packing. AS12N has a removable lid, while AS13P and AS14Q have flip-up hinged lids.

**Dimensions (L x W x H) (mm)**

- 40 x 40 x 13.5
- 77 x 54 x 19
- 111.5 x 86 x 16.5

**Order Code**

- AS12N
- AS13P
- AS14Q

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AS12N	Antistatic Box A1	£0.587	£0.560	£0.470	£0.690
AS13P	Antistatic Box B1	£0.842	£0.690	£0.610	£0.990
AS14Q	Antistatic Box D1	£1.600	£1.350	£1.100	£1.880

**Foam**



Conductive foam sheet 6mm thick in two densities. High density type is suitable for retaining ICs which may be simply pushed into the material and are held tightly in place. Low density type is very flexible for use as a packing material where static sensitive devices are being stored or packaged. Sheets are 305 x 305mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FA82D	Highdensity A/Stat Foam	£3.900	£3.410	£3.140	£4.590
FA83E	Lowdensity A/Stat Foam	£2.540	£2.050	£1.850	£2.990

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**Conductive Plastic Trays**



Conductive plastic tray constructed from carbon black filled low-density polyethylene which is resistant to most chemicals. The effectiveness of these trays is unchanged with age or humidity. AS15R is a conductive component tray with a 10mm press stud connector for earth grounding purposes. AS16S is a stackable conductive tray. DT85G is primarily intended for use as a chemical tray for PCB development, having a specially shaped corner to aid the pouring of liquids from the tray.



**Dimensions (L x W x H) (mm)**

- 325 x 175 x 25
- 355 x 243 x 63
- 330 x 255 x 50

**Order Code**

- AS15R
- AS16S
- DT85G

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AS15R	Antistatic Tray A1	£4.500	£3.950	£3.700	£5.290
AS16S	Antistatic Tray B1	£7.220	£6.100	£5.750	£8.490
DT85G	Large Anti-Stat Tray	£5.860	£4.930	£4.490	£6.890

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## AUDIO

### PERSONAL CASSETTES

#### Stereo Cassette Player

Casio



A lightweight value for money personal stereo. This stereo cassette player has simple controls and a bass boost system.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD82D	13342 Persnl Cass Plyr AS31	1+ £6.800	1+ £7.990

#### Personal Stereo with AM/FM Radio

Casio



- ★ New design.
- ★ Bass Boost System.
- ★ AM/FM radio.
- ★ LED FM stereo indicator.
- ★ Auto stop.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD85G	13343 Persnl Cas Plyr As210R	1+ £13.600	1+ £15.990

#### Auto-Reverse Radio/Cassette Player - AS-310R

Casio



- ★ AM/FM stereo radio
- ★ Auto reverse
- ★ Belt clip
- ★ Bass boost system
- ★ Stereo headphones

A stylish auto-reverse radio/cassette player with Bass Boost System. Auto-reverse means that you never have to remove a tape and turn it over to listen to the other side, just press the direction button and the tape direction will reverse. In addition to auto-reverse this unit can be instructed to reverse the tape after side one has finished and play side two, or play continuously, reversing the

tape direction when required. The main controls include Play, Stop, Fast Forward, Rewind, Direction, Reverse Mode Selector, Volume, Tape/Radio Selector, FM Stereo Selector and Tuning. Operates from 2 x 'AA' type cells (not supplied, order 2 x JY48C). Supplied with full operating instructions and in-ear headphones.

#### Specification

Frequency range	FM 88 - 108MHz AM 530 - 1600kHz
Power consumption cells,	3V DC (2 x 1.5V 'AA' not supplied)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM47B	8849 AS-310R Pers Stereo	1+ £21.260	1+ £24.990

#### Walkman with Retractable Headphones

Sony



- ★ Auto-winding headphone system.
- ★ Up to 18 hours battery life.
- ★ Auto reverse.
- ★ Mega Bass.
- ★ Dolby B NR
- ★ Anti rolling mechanism.
- ★ AVLS(Automatic Volume Limiter System)
- ★ Tape selector.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD55K	13252 Sony Walkmn WmEX3848	1+ £42.540	1+ £49.990

#### Walkman - WMFX453

Sony



- ★ Super long battery life with up to 18 hours playing time when used with alkaline batteries.
- ★ PLL digital MW/FM stereo radio
- ★ 20 Presets (15FM/5MW)
- ★ Mega Bass
- ★ Auto Reverse
- ★ Anit-Rolling mechanism
- ★ AVLS (Automatic Volume Limiter System)
- ★ Tape Selector
- ★ Belt clip supplied
- ★ Fontopia headphones supplied

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX89W1	17816 Sony WMFX453 Walkman	1+ £42.540	1+ £49.990

## PERSONAL CD PLAYERS

### Portable CD player

Goodmans



NEW

- ★ 1 bit DAC
- ★ 2 digit LCD display
- ★ Battery recharge facility for standard Nicad batteries
- ★ Bass boost
- ★ Intro scan, random play
- ★ AC adaptor
- ★ Super slim design
- ★ Repeat one/all
- ★ Audio patch lead and neodinium inner earphones
- ★ Line output
- ★ 16 track programmable

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS28F 1	17428 Basic CD player blk	1+ £42.540	1+ £49.990

### Portable CD player plus Remote control

Goodmans



NEW

- ★ 10 Second anti shock
- ★ 3 way repeat one/all/programme
- ★ Bass boost
- ★ Battery recharge facility with SPC for standard Nicad batteries
- ★ AC adaptor
- ★ Intro scan
- ★ Random play
- ★ 1 bit D/A converter
- ★ 8 x oversampling
- ★ 15 track programmable
- ★ Inner ear neodinium earphones
- ★ Line out
- ★ Audio leads
- ★ LCD display with elapsed time and data silo
- ★ Auto power off
- ★ Remote control

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS30H 1	17332 CD player + remote	1+ £59.560	1+ £69.990

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**Discman - D171**

Sony



**NEW**

- \* Digital Compact Discman
- \* Upto 12 Hours playback when used with 2 alkaline batteries.
- \* Digital megabass
- \* 1 bit D/A converter
- \* Programmable function (1/All/Shuffle/Intro/scan/programme)
- \* LCD display
- \* Hold switch to override function
- \* Charging circuit for optional rechargeable battery.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX90X 1	Sony D171 discman	£68.070	£79.990

**CD Car Conversion Kit**

Goodmans



This kit will convert your existing personal CD player for use in the car. Included in the kit is an anti vibration platform on a flexible mounting arm. An audio converter cassette is used to 'connect' the output from the CD to your in-car radio cassette player. A power supply is provided to connect to your CD player which plugs into the car cigar lighter, and can be set to the required voltage. Supplied with six sizes of connecting plugs to accommodate almost all popular models.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AY13P 2	CD Travel Kit	£29.770	£34.990

**Auto Tuning FM Radio with Belt Clip**



A miniature FM radio with auto tuning and compact inner ear headphones, offering excellent sound quality. To change stations simply press the button on the front - a simple slider switch turns the radio on/off. A built-in spring loaded clip makes it easy to attach the radio to a belt loop, etc.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GV31J	FM Radio & Earphone	£5.940	£6.990
BS75S 1	FM Radio + Vol	£5.940	£6.990

**Personal CD/Car Kit**

Goodmans



**NEW**

- \* 3 second anti shock
- \* 3 way repeat one /all/programme
- \* Bass boost
- \* Battery recharge facility for standard Nicad batteries.
- \* AC adaptor
- \* Intro scan
- \* Random play
- \* Complete with car conversion kit
- \* 1 bit D/A converter
- \* 8 x oversampling
- \* 20 track programmable
- \* Inner ear neodymium earphones
- \* Line out
- \* Audio leads
- \* LCD display with elapsed time and data silo
- \* Auto power off

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS29G 1	CD + car kit	£69.070	£79.990

**Auto-Tuning Miniature Radio Receiver**



A compact and highly portable radio receiver for reception of FM broadcasts. Designed to fit easily into a top pocket, this unit provides high quality mono reception with simple to operate controls. A two level volume control also acts as an on/off control, while tuning is achieved with a single press button. Successive presses of the tuning button steps through the available channels, until the top of the receiver band is reached. A single press of the reset button sets the tuning back to the beginning of the band. Supplied with full operating instructions. Available in transparent blue (BS57M) and transparent red (BS56L).



**Specification**  
 Frequency range 88 - 108MHz  
 Power source 2 x 1.5V 'LR44' button cell  
 Antenna Earphone cable antenna

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS56L	Mini FM Radio Red	£5.940	£6.990
BS57M 1	Mini FM Radio Blue	£5.940	£6.990

**Miniature FM Radio**



This miniature, auto-tuning, FM radio receiver is a product of state of the art miniaturisation and produces a quality of reception that is normally only expected from radios many times its size. This little radio is provided with an 'on/off' switch, a 'seek' button and a 'reset' button and a pair of earphones, attached to 800mm of cord, that also doubles as the aerial. The 'seek' and 'reset' buttons are used for tuning. To operate, the 'reset' button is pressed once. This sets the frequency at the low-end of the tuning range (i.e. 88MHz). Then the 'seek' button is pressed once for each station that is automatically tuned in to, until the desired station is found. If you have a favourite station, then tuning in is not required every time the radio is switched on, as the last station selected is always remembered when the power is switched off.

Frequency range: 88MHz to 108MHz (FM)  
 Power source: 1 x 3V lithium button cell  
 Type CR2032 or equivalent (supplied)

Dimensions: 36 x 26 x 10mm  
 Weight: 23g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CJ05F	Mini FM Radio	£8.500	£9.990

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## WORLD RECEIVERS

### Air/PB/WB/TV1/FM/CB Radio Receiver

3



A compact radio capable of receiving air, private, water, TV, FM and citizen band transmissions. A squelch control helps to eliminate background hiss when stations stop transmitting, and external jack sockets are provided for an earphone and external power supply. The unit is supplied with a fully retractable aerial that also tilts to allow optimum signal reception regardless of the surroundings. Operates from four 'AA' type cells (not supplied, order JY48C). Supplied with full operating instructions.

**Specifications**  
 Frequency range: Airband 108 - 145MHz  
 Private Band 145 - 176MHz  
 Weather Band 162.5MHz  
 TV1 Band 54 - 87MHz  
 FM Band 88 - 108MHz  
 CB Band Ch1 - Ch80  
 Output power: 280mW undistorted  
 Speaker: 7.5cm  
 Power source: 6V DC (4 x 'AA' type cells), external 6V adapter

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU13P	Radio	1+ 5+ 10+ 1+	£17.010 £16.250 £14.900 £19.990

### Air/PB/WB/TV1/FM/CB Band Radio Receiver

A multiband radio receiver ideal for reception of airband, private, water, TV1, FM and CB band radio transmissions. Features include a squelch, volume, 3-position waveband selector, retractable aerial, a large clear display and an LED power indicator. Ideal for use at airshows or for the enthusiast who wants to tune around the dial and due to its portable design means you can take it anywhere. Also features jack sockets for an earphone and an external 6V power supply. Operates from 6V DC (4 x 'AA' type cells not supplied, order JY48C). Supplied with full operating instructions.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU12N	Multiband Radio	1+ 10+ 25+ 1+	£18.710 £16.650 £14.750 £21.990

### Digital World Receiver

Philips



If you want a compact world receivers with digital technology and built-in clock/alarm functions, this World Receiver is the ideal choice.

- ★ PLL quartz digital tuning.
- ★ Reception on FM stereo, MW and 13 SW bands.
- ★ Digital tuning system with 20 presets.
- ★ Built-in loudspeaker.
- ★ Headphone socket for personal listening including FM stereo.
- ★ Clock with LCD display plus alarm and sleep functions.
- ★ DC socket for mains adaptor.
- ★ Stereo reproduction only via headphone socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA27E	Digital World Recvr	1+ 1+	£59.560 £69.990

## VOICE RECORDERS

### Cassette Recorder D6280

Philips



A portable cassette recorder with automatic recording level control, pause button, electronic tape speed control, and a sensitive built-in condenser type microphone. It also has a 3-digit tape position counter with zero reset.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS26D	Cassette Recorder	1+ 1+	£25.520 £29.990



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### Desktop Cassette Recorder TCM939

Sony



A desktop cassette recorder with one-key control for recording, integral microphone and socket for external microphone, cue/review functions, tape counter, and powered by batteries or external mains adaptor, supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS28F	Recorder TCM939	1+ 1+	£25.520 £29.990

### Microcassette Recorder with Voice Activation

A slimline dual speed microcassette recorder featuring a counter battery condition LED, voice activation system, tape speed indicator, microphone and earphone sockets. Operations include STOP, EJECT, PLAY, REWIND, FAST-FORWARD and PAUSE. It is also possible to CUE and REWIND while in PLAY mode - ideal for locating dialogue on the tape! Dual speed operation allows a balance between audio quality and maximum recording time. Operates from a 3V DC power source (2 x 'AA' cells, not supplied - order JY48C), with the ability to accept an external power supply. Supplied with full operating instructions.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU18U 1	Micro Cass Recorder	1+ 5+ 10+ 1+	£21.260 £20.000 £19.500 £24.990

### Micro Cassette Recorder - TP-35

Casio



- ★ Two speed recording
- ★ Digital tape counter
- ★ Voice activation control
- ★ One-touch recording
- ★ Automatic shut-off
- ★ Built-in speaker

Compact and simple to operate, this stylish micro-recorder is ideal for the office, home and personal use. Main controls include Play, Stop, Record, Fast Forward/Cue, Rewind/Review, Pause, a thumb wheel control for volume, slide switches for Tape

Speed, Voice Activated Recording and a press button for Counter Reset. Records meetings and notes, etc., onto micro-cassettes, which are easy to store, be it in a pocket, briefcase or desk, and are rugged enough to withstand normal office wear and tear. Features Voice Activated Recording whereby the unit will pause when silence is heard for between 2 and 6 seconds, reducing the unnecessary use of valuable recording time. External jack sockets are provided for a microphone and earphone. A built-in speaker allows fast and simple playback without the need for headphones or an earpiece. The tape counter enables the location of sections of speech, etc., giving faster access to information and the ability to create a catalogue of each tape's contents. Operates from two 'AA' type batteries (not supplied, JY48C) and is supplied with full operating instructions.

**Specification**  
Frequency response 300-4000Hz  
Tape speed 2.4/1.2cm/s (switchable)  
Speaker 30mm diameter 4Ω impedance

Maximum power 150mW  
MIC jack signal 0.3mV (600Ω)  
Earphone jack 8Ω  
Power 3V ('AA' x 2)  
Dimensions 129 x 26 x 66mm  
Weight (without batteries) 148g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BMS6L	TP-35 Micro Tape Rec	£29.770	£34.990

## Voice Activated Personal Memo

Sanyo  
KS71N - TRC520 LA19V - TRC570



Attractive and easy to use, both models are perfect for dictating letters and taking notes anywhere, anytime.

- Both models boast the following features:
- ★ 2 speed recording/playback system
  - ★ One-touch record and review
  - ★ Sockets for earphone (not supplied)
  - ★ Twin speed control to double tape recording time
  - ★ DC socket for direct use from mains and recharge capability.

- In addition the LA19V (TRC570) features:
- ★ Voice activated recording V.A.S
  - ★ Three digit tape counter
  - ★ Telephone recording capability
  - ★ external mic socket

The KS71P (TRC520) comes complete with carry case.

Both units come complete with a blank micro cassette and are powered by 2 x 'AA' batteries (not supplied) or from the mains with a suitable 3V DC adaptor (not supplied), a 500mA regulated power supply unit is recommended.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LA19V	1 Sanyo Micro Recorder	£29.770	£34.990
KS71N	1 dict Mach+cass+ case	£21.260	£24.990

## TRC520 Dictation Machine Cassette and Case

Sanyo  
Attractive and easy to use, the TRC520 model is perfect for dictating letters and taking notes anywhere, anytime.



**Specifications:**

- ★ 2-speed recording/playback system
- ★ One-touch record and review
- ★ Earphone socket
- ★ Twin speed control
- ★ DC socket recharge capability

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS71N	dict Mach+cass+ case	£21.260	£24.990



## Voice Memo




A handy and novel electronic memo pad that can easily slip in a pocket and be used to store telephone numbers, addresses or any short messages. Easy to use, the device can store upto 20 secs (DR68Y) or 10 secs (CB42V, CB43W) message. A simple three position switch selects the recorded message, or the one to be over-recorded. A red button is held down while the message is being recorded, and a black button is used to playback. Supplied with keyring.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DR68Y	Voice Memo 20 Sec	£13.600	£15.990
CB42V	Voice Memo 10 Sec	£9.500	£9.990
CB43W	Voice Memo	£12.750	£14.990

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## PORTABLE CASSETTES

### Mono Radio Cassette

Ross



This mono radio cassette player which can be mains of battery operated with 4x"D" size batteries boasts the following features.

- ★ MW/LW/FM radio
- ★ 6 key auto stop cassette deck
- ★ Headphone socket

Available in white (MX92) and metallic blue (FN53)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FN53H	Mono Radio Cassette	£17.010	£19.990
MX92A	Wht mono radio: cass	£0.000	£0.000

### Stereo Radio Cassette

Ross



- ★ MW/LW/FM stereo radio
- ★ FM stereo indicator
- ★ 6 key auto stop cassette
- ★ telescopic aerial
- ★ carrying handle
- ★ Headphone socket

Mains or battery operated (requires 4 x "D" size batteries) Batteries not supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX93B	Grn ste radio: cass	£0.000	£0.000

## Double Stereo Radio Cassette Recorder.

Philips



Stylish radio cassette recorder with a twin cassette deck and FM stereo/MW radio reception.

- ★ FM stereo/MW wavebands.
- ★ Large, clear front tuning scale.
- ★ FM stereo LED indicator.
- ★ Automatic frequency control on FM.
- ★ Dynamic Bass Boost.
- ★ One-touch recording for simple operation.
- ★ Continuous play and high speed dubbing.
- ★ Stereo headphone connection.
- ★ Built in microphone.
- ★ Mains and battery operated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD59P	13240 Twin Cass Plyr	£38.280	£44.990

### CD/RADIO CASSETTES

## Portable CD player

Goodmans



- ★ 3 beam laser
- ★ 20 track programmable CD
- ★ Repeat, random play
- ★ Full auto stop cassette
- ★ Auto level control (ALC)
- ★ Auto frequency control
- ★ One touch record
- ★ Tone control
- ★ AC or battery powered
- ★ 16 bit DAC
- ★ Headphone socket
- ★ LW/MW/FM stereo radio
- ★ FM indicator
- ★ Stereo/mono switch
- ★ Power LED indicator
- ★ Soft eject door
- ★ skip and search function

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS33L 1	17411 CD Radio Cass-bl	£55.310	£64.990

## CD Radio Cassette - QUADRA

Goodmans



- ★ 3 band PLL tuner
- ★ 25 station memory
- ★ Toploading CD player
- ★ 20 track programmable
- ★ Clock function and CD time remaining
- ★ Headphone socket
- ★ Single full auto stop cassette deck
- ★ 2 x 1.5 WRMS output
- ★ Bass boost
- ★ Mains/battery operation
- ★ 4 speaker Quadra sound system.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS99H	17330 Quadra CD /rad /cas	£85.090	£99.990

## Bambino CD radio cassette recorder

Philips



Compact unit with cute styling and a top-loading programmable Cd player, cassette deck and FM stereo/MW/LW tuner. Attractive silver finish.

- ★ Programmable CD player.
- ★ Next/Previous, Repeat and shuffle functions.
- ★ LCD display.
- ★ Stereo cassette deck with automatic recording level control.
- ★ Syncro-start for recording from CD.
- ★ FM stereo/MW/LW radio with automatic FM stereo switching.
- ★ Dynamic Bass Boost.
- ★ Headphone socket
- ★ Mains and battery operation.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD87U	13225 CD,radi,cas Az1101	£85.090	£99.990

## CD Radio Cassette recorder

Philips



Compact, easy-to-carry radio cassette recorder with remote control and smooth action motorised tray CD loading. Digital radio tuner with 29 stations presets and bass reflex speaker system for a powerful sound.

- ★ 7-key remote control.
- ★ Programmable CD player.
- ★ Digital sound controls.
- ★ Stereo cassette deck with automatic recording level control.
- ★ Digital FM stereo/MW/LW tuner with 29 station presets.
- ★ 4 inch bass reflex speakers.
- ★ Mains and battery operated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD86T	13237 CD,Rad,Cas AZ1407	£127.650	£149.990

## Portable CD player with twin cassette.

Sony



- ★ PLL synthesizer tuner with FM/MW/LW.
- ★ 12 x 3 station preset memories.
- ★ High-power output.5W+5W RMS (EIAL)
- ★ Twin cassette decks.
- ★ High-speed tape dubbing.
- ★ Front loading CD tray.
- ★ 10-key direct access CD play (remote use)
- ★ music Calandar (12).
- ★ AMS / search / 20 Random Music sensor / repeat / shuffle / intro scan multi function CD player.
- ★ Electronic sound equalizer (4 pattern preset)
- ★ Mega Bass.
- ★ Remote control.
- ★ Mix microphone.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD56L	13259 Portil Cd CFD-380	£161.690	£189.990

See Stock Code Index For More Price Breaks

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**MICRO SYSTEMS**

**CD Micro System**

Goodmans



- ★ FM Stereo/MW PLL tuner (20 station memory 10 FM, 10 MW)
- ★ CD-skip/search functions
- ★ Full logic auto reverse cassette deck with continuous play
- ★ Clock
- ★ Bass boost
- ★ Aux input
- ★ Full range ported speakers with detachable grille
- ★ 2 x 12.5 watts RMS 10% THD (100W PMPO) output
- ★ 20 track programmable CD player repeat one/all tracks, introscan, random play
- ★ High speed syncro dub (CD to tape)
- ★ Auto record level
- ★ Large multifunction display with spectrum analyser
- ★ 4 preset EQ effects - Live, Theatre, Hall, Normal
- ★ 3.5mm headphone jack
- ★ 31 key remote control

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS27E 1	CD micro system	£127.650	£149.590

**CD Micro with TV**

Goodmans



Specification:

- ★ CD player with skip and repeat functions
- ★ Auto stop tape deck with one touch record
- ★ Clock with wake to radio or buzzer facility, sleep/snooze functions
- ★ Bass boost
- ★ Condenser mic
- ★ MW/FM analogue tuner with digital display
- ★ 2 x 5 watts RMS (20W PMPO)
- ★ 5 1/2" black and white TV
- ★ Built in aerial amplifier
- ★ Electronic volume control
- ★ Message centre - facility to leave up to 30 second message
- ★ 9 key remote control

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS25C 1	Micro CD+B+WTV	£127.650	£149.990

**MINI SYSTEMS**

**3 Disc CD Mini**

Goodmans



- ★ 2 x 50 W RMS output
- ★ FM/MW PLL tuner with 40 station presets
- ★ Large multifunction LCD display
- ★ 3 disc CD changer with intro, random and repeat functions
- ★ 1 bit DAC 4 x oversampling
- ★ 30 key remote control
- ★ Headphone socket
- ★ 20 track programmable
- ★ Twin cassette with sequential play, full auto stop and high speed dubbing.
- ★ 4 pre set EQ, rock, classic, pop, flat
- ★ Bass boost
- ★ Electronic volume control
- ★ Two way ported speaker system
- ★ Aux input.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS22Y 1	CD Mini 2 x 50 Watt	£170.200	£199.990

**Dolby Pro Logic Mini System**

Goodmans



- ★ 4 x 15 Watts output
- ★ FM/MW PLL tuner
- ★ 30 pre-set station memories
- ★ Auto station store
- ★ Unified LCD display
- ★ 3 disc CD with 32 track programmable memory
- ★ Bass Boost
- ★ Sleep timer
- ★ Headphone socket
- ★ Twin auto stop cassette deck with high speed dubbing and sequential play.
- ★ 36 key remote control with function switching on remote
- ★ Full function Dolby Pro Logic
- ★ 4 pre-set EQ flat/rock/pop/jazz
- ★ 5 speakers included
- ★ Motorised volume
- ★ Clock timer
- ★ CD syncro dubbing
- ★ Aux input

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS23A 1	CD mini 4 x 15W	£212.750	£249.990

**CD Micro System**

Goodmans



- ★ 2 x 50 watts RMS
- ★ 7 disc CD player
- ★ Introscan, random play, repeat one or all
- ★ MW/LW/FM Stereo PLL tuner
- ★ Bass Boost
- ★ 3 pre set equalisation
- ★ CD syncro record with tape edit function
- ★ Continuous play
- ★ Surround sound option
- ★ Voice fader
- ★ Mute function
- ★ 49 key red remote control
- ★ 200 watts music
- ★ 24 track programmable
- ★ Direct disc and track access via remote
- ★ 40 pre set memories
- ★ Motorised volume
- ★ Twin cassette with high speed dubbing
- ★ Auto reverse play on deck B
- ★ Microphone socket with mixing and echo control
- ★ Aux input
- ★ Clock timer
- ★ Two way bass reflex speakers
- ★ Headphone socket

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS24B 1	CD Mini 2 x 50 W	£229.770	£269.990

**Mini Turntable**

Goodmans



- ★ Semi automatic
- ★ Mini width 280mm
- ★ Magnetic cartridge fitted
- ★ Tone arm lock
- ★ Switchable output for phono or auxiliary connection
- ★ Clear perspex lid
- ★ Cueing device

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS26D 1	Mini Turntable	£42.540	£49.990

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## Pioneer NS-1 Mini System



- ★ 'One Touch' Play for easy operation
- ★ Chrono Multi Display
- ★ 35W RMS power with 55W RMS for the subwoofer
- ★ Subwoofer level control
- ★ Bass/Treble control (2-step)
- ★ Stereo wide control
- ★ FM/AM tuner with 36 presets and RDS functions including Radio Text, Program Service and Program Type
- ★ Slot-In CD player
- ★ Horizontal loading single cassette deck with auto direct play
- ★ Dolby B noise reduction

★ **Automatic synchronous recording from CD**  
A stylish and compact system combining the highest in quality components and construction techniques. Slot-In CD loading, a user-friendly remote control, RDS tuner and front-loading cassette deck give easy operation. Space-saving satellite speakers present clear mid and treble ranges, while a powerful subwoofer reaches down to the lowest bass frequencies. Unique horizontal cassette loading with autoplay function and Slot-In CD provides a sleek, stylish feel to the front panel controls with the most complicated dubbing tasks reduced to a single key press. The radio section features the latest in RDS technology with auto-tuning to the strongest frequency when there is a choice of two or more transmission sites. The station name, radio text and programme type are all indicated on the multi-function front panel which also has an in-built clock function. A multi-function VU meter array also gives information about the current setting including balance, volume and tone controls, etc. Supplied with full operating and setting up instructions, and a full remote control to allow 'armchair' control.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FJ49D 1	NS1 Super Mini	£493.600	£579.99C

See Section 5, Books for our full range of Audio Books

## CD PLAYERS

### Compact Disc Player

Teac'



- ★ 1-bit D/A converter.
- ★ 8-times oversampling digital filter.
- ★ TOS-Link Optical digital output.
- ★ Multi function 8-digit fluorescent display.
- ★ Center-mounted mechanism.
- ★ Music calendar.
- ★ Full-function remote controller.

- ★ Shuffle play.
- ★ Random memory programming.
- ★ 2-way (one/All) repeat function.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VD98G	CD Player CDP1800	£110.620	£129.990

### Compact Disc Player

Pioneer



- ★ 1-bit DLC D/A Converter suppresses noise and minimises jitter for clearer, better sound all around.
- ★ "Talk-back" input: The display shows situation-sensitive prompts asking you to supply necessary "data"
- ★ Hi-Lite Scan
- ★ Memory hold function
- ★ Compu-PGM Edit and auto programme editing: Automatically chooses tape length.
- ★ Anti-resonance and anti-vibration design: Honeycomb chassis and large insulators

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX85G 1	CD player PD206	£127.650	£149.990

### Compact Disc Player

Pioneer



- ★ Hi-bit Legato Link Conversion
- ★ Clean DAC-Drive System: It reduces noise of the power supply to D/A converter to a minimum for pure and clean sound.
- ★ Stable Platter Mechanism.
- ★ Hi-Lite Scan

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VD93B	CD PLAYER PDS805	£170.200	£199.990

### CD Player - CD-57

Marantz



- ★ Coaxial digital outputs.
- ★ CD and tape (side A/B) syncro-start in all Marantz systems.
- ★ Peak search for best adjustment of recording level.
- ★ Automatic music scan (AMS).
- ★ Four step display dimmer.
- ★ 1-bit converter minimises noise.

- ★ Variable output permits remote control of CD signal level even if amplifier is not remote controlled.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD96E	CD Player CD57	£195.730	£229.990

## MULTI DISC PLAYERS

### 25-disc file Type Compact Disc Player

Pioneer



- ★ 25-disc storage capacity with Rolling Rack System
- ★ 1-Bit DLC with pulseflow D/A Converter suppresses noise and minimises jitter for clearer, better sound all around
- ★ Best selection memory
- ★ Previous Disc Scan
- ★ "Custom Filling" lets you create 3 sets of your favourite CD's
- ★ Optical digital output.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX86T 1	25-disc play PDF606	£170.200	£199.990

### Pioneer PD-F905 101-Disc CD Jukebox



- ★ 101-disc library - like having your own high-tech jukebox
- ★ 1-bit DLC (Digital Linear Conversion) for clearer, better sound
- ★ BEST memory (20 tracks)
- ★ 'Roulette rack' system
- ★ ADLC (Auto Digital Level Controller) for listening comfort
- ★ I/O interface terminals
- ★ Last-disc memory - replay starts with last disc heard before powering down last time
- ★ 32 Track programming
- ★ Remote control

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FM49D 1	CD Multi Play	£340.410	£399.990

Use Your Account  
- by Phone  
- by Fax  
- at Maplin and Maplin Mondo Stores

**AMPLIFIERS**

**Integrated Stereo Amplifier**

Teac



- ★ UR System with remote controller.
- ★ 6 Inputs (CD, AUX, Tape, VCR, Tuner, Phono).
- ★ Microphones jack with level control.
- ★ 45 watts RMS output power per channel; DIN 50 watts per channel (A-R300)
- ★ Bass and treble controls.
- ★ Balance control
- ★ Dual speaker terminals and independent A/B speaker switching.
- ★ Headphone jack.
- ★ Binding Post speaker terminals.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC61R	Amplifier AR-300	£170.200	£199.990

**Pioneer A-300R**



- ★ Power output (DIN continuous, into 4Ω): 55W per channel
- ★ Total harmonic distortion (-3dB, 8Ω load, full bandwidth): 0.05%
- ★ No tone controls for better sound potential
- ★ Wide-range linear circuit delivers clear, clean hi-fi sound
- ★ Superb low-impedance driving capability
- ★ Remote control of motorised volume knob
- ★ Resonance-free and efficient 'Aero Wing' heatsink design
- ★ Solid aluminium front panel and knobs
- ★ 2 x 10,000µF reservoir capacitors in power supply circuit
- ★ 2 x tape, tuner, phono, CD and aux inputs
- ★ Headphone socket

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FU16S 1	Amplifier A-300R	£170.240	£199.990

**Integrated Amplifier - PM47**

Marantz



- ★ Efficient power output 40W RMS into 8ohms, rising to 60W into 4ohm speakers.
- ★ Superior engineering responsive power supply (LDPS) and short symmetrical signal path ensure dynamic performance and precise stereo imagery.
- ★ Tape monitor function used with three head cassette deck, it allows real-time monitoring to recording quality.
- ★ Cleaner treble CCNE eliminates noise of rectifying circuits, minimising high

frequency distortion and ensuring high frequency accuracy.

Key Features:

- Off/full record selector (listening to one source while recording another).
- Bass and treble tone controls or tone defeat option for greater purity.
- Moving magnet phono stage.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD93B	Integrated Amp PM47	£127.650	£149.990

**Harman/Kardon HK610**



- ★ Power output: 30w per channel (rms, into 8Ω)
- ★ Total harmonic distortion (under above conditions): 0.09%
- ★ High current design with triple-Darlington output stage
- ★ All discrete components in the signal path
- ★ Tone controls
- ★ Headphone socket
- ★ 2 x tape, tuner, phono, CD and aux inputs
- ★ Switching and terminals for two pairs of speakers
- ★ Requires additional PCB for phono input to be used.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FU29W 1	Amplifier HK 610	£153.180	£179.990

**TUNERS**

**Stereo Tuner**

Teac



- ★ Precision quartz PLL tuning system.
- ★ Random-access 20-FM/20-Am station memory.
- ★ Station Name filing function
- ★ FM stereo/mono mode selector
- ★ Timer operation for A-R300
- ★ UR control by the A-300 with cable connection.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC62S	Tuner TR400	£102.110	£119.990

**Tuner - ST-57**

Marantz



- ★ Wide choice of listening clean, low noise reception of FM stereo, Medium Wave and Long Wave bands.

★ High quality design quartz-locked digital tuning for drift free reception, plus low noise signal processing.

★ Advanced RDS displays station name and programme type and radio text; plus tuning by frequency, station name and programme name.

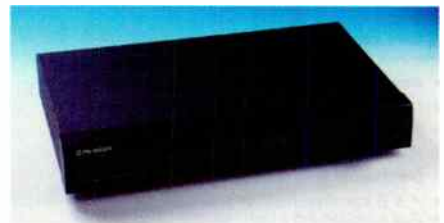
Key Features.

- Metal front panel.
- 59 Station presets.
- Adjustable scan sensitivity.
- Broadcast frequency key-in.
- 'narrow' IF setting for best reception of weaker broadcast among stronger signals.
- dedicated circuit removes birdy whistle (pilot tone) from FM stereo broadcasts.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD94C	Tuner ST57	£127.650	£149.990

**Pioneer F-204RDS**



- ★ FM and MW bands
- ★ Quartz-synthesiser tuning for accuracy and freedom from drift
- ★ 30 groupable presets
- ★ RDS ready - features include RT (Radio Text), PS (Programme Service name) and PTY (Programme Type) displays
- ★ PTY Search
- ★ 4-letter station name memory
- ★ Direct access tuning - just type in station's frequency
- ★ FM sensitivity: 1.2µV
- ★ Channel separation (FM stereo): 40dB

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FU24B 1	Tuner F204 RDS	£119.140	£139.990



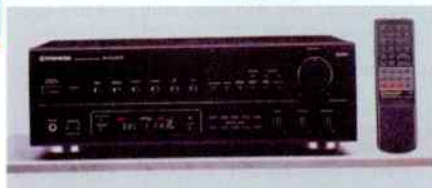
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Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System



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## RECEIVERS

### Pioneer SX-205RDS



- ★ Powerful 50 watts x 2(DIN) power output
- ★ RDS (Radio Data Service) tuner with Program search, program type and radio text facility
- ★ EON (Enhanced Other Networks) - will automatically tune to available traffic reports
- ★ Wide range linear circuit - delivering clear, clean hi-fi sound
- ★ 30 station memory
- ★ 4 Letter station name memory
- ★ Direct Access tuning - allows you to tune into a station by entering the frequency on the numeric keypad
- ★ Bass/Treble/Balance control
- ★ Loudness switch
- ★ Six audio inputs
- ★ Program type search
- ★ Switchable MPX filter
- ★ A & B speaker switching
- ★ Full function infra red remote control unit

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FN89H 1	SX 250 Receiver	£170.200	£199.990

## SINGLE CASSETTE DECKS

### Single Mechanical Stereo Cassette Deck

TEAC



- ★ Center-mounted tape transport.
- ★ Dolby B Noise Reduction system.
- ★ One-touch recording.
- ★ 3-position tape selector
- ★ Direct function mechanism.
- ★ Full auto-stop

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC60Q	Mech Sing Tape V377	£72.330	£84.990

### Single Stereo Cassette deck

Teac



- ★ IC Logic control mechanism
- ★ Dolby HX Pro & B/C NR.
- ★ 2-colour FL multi-function display.

- ★ Tape running status character display.
- ★ Rec Mute and auto spacer.
- ★ Automatic tape type selector.
- ★ CD Sync dubbing
- ★ TEAC UR system compatible.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VD99H	Single Tape V610	£85.090	£99.990

### Cassette Deck

Pioneer



- ★ FLEX(Frequency Level Expander)
- ★ Dolby B/C NR for noise-free recording and playback.
- ★ Anti-resonance and anti-vibration design: Honeycomb chassis and large insulators.
- ★ Centre mount design: Ensures better dynamic balance.
- ★ Music skip/search.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VD94C	Cassette Deck CTS250	£127.650	£149.990

### Marantz SD-53



- ★ Audiophile cassette deck
- ★ Dolby B/C/HX-Pro
- ★ Bias fine control
- ★ Recording mute
- ★ Headphone socket
- ★ Wow and flutter: 0-06% WRMS
- ★ Frequency response: 25Hz to 20kHz
- ★ Signal-to-noise ratio: 74dB (Dolby C on)
- ★ Dimensions: 426 x 132 x 300mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FU34M 1	Cass Deck SD-53	£170.200	£199.990

## DOUBLE CASSETTE DECKS

### Double Auto-Reverse Cassette Deck

Pioneer



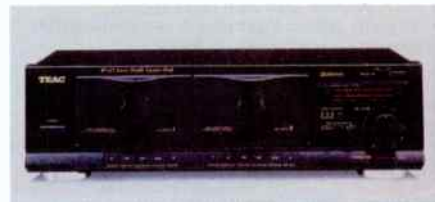
- ★ Digital Processing System: Achieves up to 90dB S/N ratio (with Digital NR and Dolby NR on)
- ★ Digital NR (Noise reduction)
- ★ Digital FLEX (Frequency Level Expander)

- ★ Digital TDNS (Tape Duplication Noise Suppressor)
- ★ Digital super Auto BLE XD
- ★ 20-bit A/D-D/A Converter
- ★ Dolby HX pro and dolby B/C NR with MPX filter
- ★ Two auto-reverse cassette transports: Auto reverse record/play (Deck II) and auto reverse play (deck I)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX87U 1	Double cass deck	£170.200	£199.990

### Teac W-416



- ★ Excellent value for money
- ★ Twin transport for copying recordings
- ★ Deck 1 play, deck 2 record/play
- ★ Manual tape selection
- ★ High-speed dubbing
- ★ Dolby B
- ★ Wow and flutter: 0-09% WRMS
- ★ Frequency response (-20dB, metal tape): 25Hz to 16kHz
- ★ Signal-to-noise ratio: 65dB (Dolby B on, overall)
- ★ Dimensions: 435 x 130 x 215mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FU37S 1	Cass Deck W-416	£65.090	£99.990

### Double auto reverse Cassette Deck

Pioneer



- ★ Digital Processing System: Achieves up to 90dB S/N ratio (with digital NR and Dolby NR on)
- ★ Digital NR (Noise Reduction)
- ★ Digital FLEX (Frequency Level expander)
- ★ Digital ALCA (auto level control with tape analyser)
- ★ Digital TDNS (tape duplication Noise suppressor)
- ★ Digital Super auto BLE XD
- ★ Digital syncro recording
- ★ 20-bit A/D-D/A Converter
- ★ Legarto Link conversion
- ★ Digital Input (optical)
- ★ Dolby HX Pro and Dolby B/C NR with MPX filter
- ★ Two auto reverse cassette transports: Both record and play in both direction (DeckI/II)
- ★ Parallel recording
- ★ Power eject
- ★ Microphone Input

Retail Unit Price each (inc. VAT).

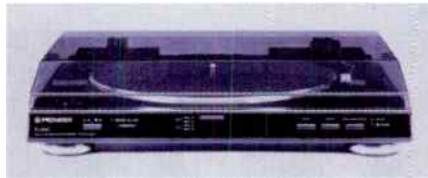
Order Code	Type	Price each exc. VAT	inc. VAT each
MX88V 1	Cass deck CTW806DR	£255.310	£299.990



**TURNTABLE**

**Pioneer PL - 990 Turntable**

Pioneer



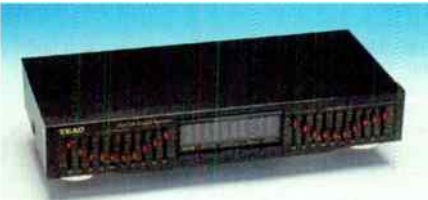
Full automatic operation. Low mass straight tone arm; Precision DC servo motor. Universal-type cartridge connector. Phono equaliser included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FN83E 1	PL990 Turntable	£110.620	£129.990

**GRAPHIC EQUALIZERS**

**Teac EQA-220**



- ★ Slider control
- ★ 10 bands per channel – 30/60/125/250/500/1k/2k/4k/8k/16kHz
- ★ ±12dB boost/cut range
- ★ 10-band spectrum analyser display
- ★ Line level input 47k Ohms @ 0.3v nominal
- ★ Tape monitor and bypass switches
- ★ Record equalisation in/out switch
- ★ Dimensions: 435 x 83 x 213mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FJ46A 1	Graphic Eq EQA-220	£102.110	£119.990

**Pioneer GR-777**



- ★ Top-end equaliser
- ★ Push-button control
- ★ 10 bands per channel – 32/63/125/250/500/1000/2k/4k/8k/16kHz
- ★ ±10dB boost/cut range
- ★ 10-band spectrum analyser display
- ★ 5 programmable equalisation patterns
- ★ 5 pre-programmed response curves – Heavy, Clear, Soft, Visual and Vocal
- ★ Tape monitor and bypass switches
- ★ Remote control supplied
- ★ Dimensions: 420 x 85.5 x 311.5mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FJ43W 1	Graphic Equal GR-777	£238.280	£279.990

**LASER DISC**

**Pioneer CLD-515**



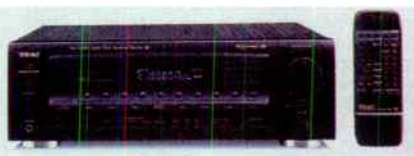
- ★ PAL/NTSC compatibility for greater variety
- ★ Auto-reverse mechanism for hassle-free playback of both disc sides
- ★ Digital Video Processing for noise-free, sharp and clear pictures
- ★ Sharpness control
- ★ User friendly – logically designed key layout
- ★ On-screen graphics
- ★ Independent CD tray for quick loading of audio CDs
- ★ 1-bit DLC (Direct Linear Conversion) for superb audio reproduction
- ★ Last memory review allows you to start viewing a disc from where you left off last time
- ★ SCART, phono audio and phono video outputs

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FU48C 1	Laser Disc CLD-D515	£468.070	£549.990

**A/V RECEIVERS**

**Teac AG-V6200 AV Receiver with Dolby Pro Logic**



- ★ Designed to replace your existing stereo amplifier or receiver
- ★ Dolby Pro Logic
- ★ Power Output 90W RMS. Surround = 70W x 3 (Front, Centre), 18W x 2 (Rear)
- ★ Stadium, Theatre and Dolby 3-channel Logic DSP Modes
- ★ S.A.V.E. feature allows replacement of VCR sound with sound from an AUDIO source (eg CD)
- ★ Wide (large speaker), normal and phantom (centre-less) modes
- ★ Discrete Output Circuit Control to ensure highest possible audio quality
- ★ Digital delay time control
- ★ Built-in test generator
- ★ 2 AV inputs plus AV output to monitor
- ★ Audio inputs for two tape decks, CD and phono
- ★ Tone and loudness controls with bypass facility
- ★ Motor driven volume control
- ★ Master mute button
- ★ Switching and terminals for two pairs of speakers
- ★ Stereo headphone socket
- ★ FM and MW band tuner
- ★ Quartz PLL synthesis tuning system for accuracy
- ★ 30 station presets
- ★ Manual or auto-peek tuning
- ★ Sleep mode
- ★ Supplied with remote control

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FU56L 1	AV Rx AG-V6200	£340.410	£399.990

**A/V AMPLIFIERS**

**Audio/Video Amplifier'**

Harman/Kardon'



- ★ 5 Channel audio/video amplifier with Dolby Pro Logic and 3 channel mode.
- ★ Ultrawide bandwidth and low negative feedback.
- ★ inputs: 3 line level, 1 tape with monitor function, 1VCR, 1 A/V on front. Separate Pre Out/Main in (front channels). Subwoofer outputs. 1 switched AC output.
- ★ Adjustable 4 step rear delay.
- ★ Copy between VCR's and from VCR to tape (audio) possible.
- ★ Audio and video mixable.
- ★ Bypass switch off surround modes.
- ★ Display dimmer and 5 step sleep timer.
- ★ System remote control with 10 direct access keys.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VD97F	AV100 Amplifier	£212.750	£249.990

**A/V Surround Sound Processing Amplifier with ISC (Intelligent System Control)**

Pioneer'



- ★ ISC (Intelligent System Control)
- ★ Heads-up remote controller
- ★ One-touch Operation
- ★ Full Function Control
- ★ Dolby Pro Logic Surround with Time-Link digital delay.
- ★ Accurate imaging System (4-channel Equal Power)
- ★ DIN continuous power output(1kHz).
- ★ Stereo: 120W + 120W (4Ω)
- ★ Surround: 80W + 80W (front) (4Ω), 80W (centre) (4Ω), 80W (rear) (4Ω).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC91Y	AV Amp VSA-805S	£382.970	£449.990

**All Orders Account or Not –**

PHONE BEFORE 5PM FOR SAME DAY DESPATCH

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## SURROUND SOUND

### Goodmans GHC40 Pro-Logic System

NEW LOW PRICE



This superb Dolby Pro-Logic Surround Sound system brings all the features of this sound entertainment system plus the added convenience of being able to accommodate your television and video recorder in one beautiful finished piece of furniture. This six speaker system incorporates a Dolby Pro-Logic decoder plus a 40W rms active subwoofer for improved bass performance and power to deliver the low frequency sounds. The two built-in swivelling front speakers give enhanced stereo imaging, while the two rear satellite speakers, which operate via the Dolby Adaptive Matrix, give the surround effect of the cinema. A centre channel speaker is used to give enhanced definition to dialogue. A complete home cinema system which has been designed for both video and satellite storage and up to a 84cm (33in.) TV set.

#### Specification

Total power: 300W PMPO  
Speakers: 4 x 100mm full range surround  
1 x 125 x 75mm elliptical centre  
1 x 200mm subwoofer with 40W rms amplifier

S/N ratio  
surround: 66dB  
subwoofer: 68dB  
Sensitivity: 300mV

Supplied with all necessary connecting leads (SCART and phono), and remote control.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GV28F 1	Surr Sound System	£255.310	£299.990

### Dolby Pro Logic Home Cinema

Goodmans



Create cinema sound in your own living room with these stylish twin towers. Complete package includes twin towers, 2 small satellite speakers, remote control and connecting leads.

- ★ Dolby Pro Logic speaker system
- ★ 2 x 20 watt front channel
- ★ 2 x 6.5 watt centre channel
- ★ Inputs for TV, video, satellite and aux with LED Indicators
- ★ Easy connection to TV or VCR
- ★ 200 watts PMPO
- ★ Centre channel output for connecting a separate centre speaker
- ★ 2 x 6.5 watt rear surround
- ★ Full 10 key remote control including Input selection
- ★ Scart to phono and phono to phono leads supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FN76H 1	Prologic Twin Towers	£212.750	£249.990

### Dolby Pro-Logic Surround Sound Processor



Now you can bring the excitement and enjoyment of 'big film sound' to your home with this superb Dolby Pro-Logic Surround sound processor. Not only will the unit decode the Dolby surround sound information encoded on suitable video tapes and television programmes, but two other synthesis effects can also be selected. 'Hall' will create the 'spaciousness' or reverberation experienced in a concert hall by using digital delay techniques. Matrix will synthesise stereo from a mono source such as old movies, mono TV programmes or VCR tapes. The processor has a 30W stereo amplifier that can be used to power centre front and rear speakers or stereo rear speakers. Line level outputs are provided for various combination including a subwoofer with a crossover frequency of 100Hz. This processor is supplied with remote control, full operating instructions and suggested connecting diagrams.

#### Specification

Power output: 2 x 30W peak either for centre front and rear or left and right rear.

Frequency response matrix:  
hall: 100Hz to 7kHz  
Dolby surround: 100Hz to 7kHz  
S/N ratio: 90dB (surround decoder)  
Delay time: 30ms or 50ms - digital  
Line input: 150mΩ  
Input impedance: 47kΩ  
Max. input voltage: 5V  
Output level: 1.2V (Dolby mode)  
Subwoofer output: 2V  
crossover: 100Hz  
Functions: Dolby Pro-Logic Surround Sound, Hall, Matrix and monitor  
Inputs: line and tape  
Outputs: line out (unprocessed), centre, subwoofer, surround out (processed), tape record  
Display: 5 level LED for surround, left, centre, and right  
Remote control: infra-red using 2 x 'AA' batteries  
Power requirements: 230V AC 50Hz  
Dimensions: 420 x 52 x 232mm  
Weight: 4kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CN81C 1†	Surround Sound 15W/C	£136.160 3+ £130.000 5+ £125.000	£159.990 1+

### Complete 7 Piece Home Cinema solution - SIMPLY CINEMA

JBL



This award winning Home cinema solution combines six amplifiers, one for each, video shielded, front, centre, and surround satellite and a dedicated amplifier for the subwoofer, with an advanced Dolby-Pro logic decoder as well as onboard digital surround effects for music or enhanced broadcast or movie sound. JBL's complete seven piece home cinema solution is the easiest way to turn your room into a great sounding Cinema.

Everything you need comes in one box. Just add your TV, a Hi-Fi, VCR or Laser disc and you can experience famous JBL cinema sound in minutes!

Remember the chances are you favourite cinema is equipped with a JBL sound system. Why not enjoy the great sound at home?.

#### Surround Speaker System

	Satellite Speakers	Subwoofer
Power Handling (RMS)	20 Watts	60 Watts
Frequency response	120-20Hz	35-200Hz
Sensitivity (1 w/m)	87db	90db
Nominal Impedance	8 ohms	6ohms
Woofer Size	3"	6 1/2"
Tweeter Size	1"	
Dimensions (HxWxD)	103x190x187mm	198x354x451mm

#### Processor Amplifier

Total Max Amp Output	100Watts
Dimensions (HxWxD)	69x343x230mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS4X	7 pce Home cin sol	£255.310	£299.990

See Section 17. Loudspeakers Sounders & Accessories for our full range of Loudspeakers

## MINI SPEAKERS

### Portable Active Speakers



A compact pair of 7W extension speakers, designed for use with personal stereos, portable CD players and multimedia PC systems. Each speaker has a separate volume control and power switch, to allow each speaker to be controlled totally independently. Power can be supplied from a 6V DC mains adaptor (not supplied), or from four AA batteries (JY48C), two in each speaker. A dynamic bass boost system automatically boosts low-frequency audio, giving a

spacious, full sound.  
The speaker dimensions are:  
125 x 85 x 70mm (H x W x D)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ94C 1	Portable Amp Spkrs	1+ £12.750 5+ £10.600 10+ £9.500	1+ £14.990

## Active Micro Speakers

Ross



A compact high-quality, active speaker system with a 7W music power capacity that is ideally suited for use with portable stereo radios, cassette players and CD players. In the active mode each speaker has its own amplifier operated by the insertion of the connecting lead. Output level is set by the 'volume min-max' control and tone can be modified with the 'treble boost on/off' switch located at the rear. Bass boost circuitry is also provided, controlled by an 'on/off' switch. The speaker system is powered by four size 'AA' batteries (JY48C), not supplied. A 6V DC 2.1mm power socket is provided for external supplies. Supplied with instruction leaflet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MKS1F 2	Active Micro-Speakers	1+ £14.450	1+ £16.990

## Active Mini Speakers

Goodmans



- ★ 25 watts
- ★ Single 3" full range loudspeaker
- ★ Power on/off button
- ★ Input source via 3.5mm stereo jack plug
- ★ Volume control
- ★ Ported enclosure
- ★ Tone control
- ★ Frequency response 100Hz-20Hz

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS31J	Active 65	1+ £21.250	1+ £24.990

## Active Speakers

Goodmans



This 3 piece speaker system is ideal for use with either your walkman, your portable CD player, or your computer.

- ★ 100 watt
- ★ Subwoofer & 2 satellite speakers
- ★ Frequency response 20Hz - 20,000Hz
- ★ 3D Active system
- ★ Volume & bass control.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS32K 1	mini spkr+subwfr	1+ £59.500	1+ £69.990

## LOUDSPEAKERS

### Mercury M2

Marantz



Exceptional dynamics with tremendous midrange performance make the M2 the perfect partner for a wide range of Hi-Fi systems.

Recommended amplifier: 10 to 80 watts per channel  
Sensitivity: 88db  
Nominal impedance: 8 ohms  
Frequency response: 48Hz to 20kHz  
LF driver: 160mm  
HF driver: 25mm soft dome.  
Enclosure type: Rear ported reflex  
Dimensions: 380x203x270(HxWxD)  
Weight: 6.2kg  
Finish: Black with cherry.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GT69A	Mercury 2 Speaker	1+ £119.140	1+ £139.990

## Control Speakers

JBL

The JBL Control Series compact monitors take flexibility to new extremes, putting you in full control. The modest size and rugged, industrial high tech design of the JBL control series make these compact monitors suitable for almost any application. The JBL badge can be rotated to match the orientation of the speaker, standing upright or lying on its side.

The JBL Control Series compact monitors employ large screw terminals for tight, reliable cable connections.

The superior performance, compact dimensions and comprehensive video shielding of the JBL Control series compact monitors also make them suitable for use near TV or computer screens.

KS81 - CM40 Compact monitor



- ★ Full range 4" Poly-Laminate driver
- ★ Suitable as rear channel surround speaker

KS82 - CM42 Compact Monitor

- ★ 4" Poly-laminated bass/midrange driver
- ★ 1/2" Titanium dome tweeter

KS83 - CM52 Compact Monitor



- ★ 6 1/2" poly-laminate bass/midrange driver
- ★ 1/2" Titanium dome tweeter

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS81C	4in centrl spkr	1+ £76.580	1+ £89.990
KS82D	4in 2 way centrl spkr	1+ £110.620	1+ £129.990
KS83E	5in 2 way centrl spkr	1+ £153.160	1+ £179.990

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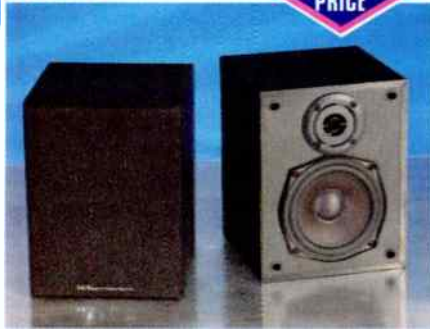
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## Wharfedale Programme 30D Loudspeakers.

Wharfedale

NEW LOW PRICE



British Loudspeakers are renowned throughout the world for their quality of sound and for their craftsmanship.

The programme 30D has been based on this successful design and stands just 9" high, 7" wide and 8" deep, using new Wharfedale-design drive units for extended and smooth high frequency response. Tight dynamic bass is guaranteed by the use of Wharfedales technology and a large magnet bass/midrange unit. A new crossover features TOP (Tweeter Overload Protection) to prevent accidental damage while allowing a full 75 watts of power handling.

### Specifications

Optimum Power/cab	30 watts
Power handling	75 watts
Efficiency 1w/meter	86dB
Impedance	8 Ω
Useable freq. response	50Hz-20Hz
Bass driver	1 x 4.5"
HF driver	25mm dome
Dispersion characteristics	wide
Dimensions (H x W x Dmm)	240x186x204

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD77J	FP30D Speaker	£89.350	£104.990

## Valdus Speakers

WHARFEDALE



Building upon 63 years experience in the design and manufacture of loudspeaker drive units Wharfedale have produced a new family of advanced drive units for the valdus range. Built to be tough and to deliver the goods they all have high temperature voice coils and oversize magnets assemblies so that they punch out the levels of bass you need each and every day. Wharfedale have also developed a completely new tweeter for the VALDUS speakers. Designed to push out the highs cleanly and at real levels the Q316T has a super large 28mm plastic dome coupled to a coil kept cool by a special ferrofluid magnetic oil.

The moulded horn shape boosts the sensitivity and directs the sound to where it is needed - at the listener. Choose from the complete range of 5 speakers - see below

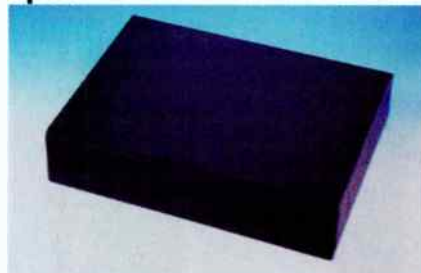
### SPECIFICATIONS

	100	200	300	400	500
System	2-way Rear	2-way Front	2-way Rear	3-way Front	3-way dual Chamber; front and rear ported floor standing
Ported for	bookshelf stand or mounting	bookshelf stand or mounting	bookshelf stand or mounting	bookshelf standing mounting	floor standing
Power Handling.	100Watts	100Watts	100Watts	150Watts	200Watts.
Sensitivity (for 2.83v at 1 m)	88dB	89dB	90dB	91dB	91dB
Nominal Impedance	8 ohms	6 ohms	8 ohms	6 ohms	4 ohms
Drive Units	120mm Bass/mid	170mm Bass/mid	200mm Bass/mid	200mm Bass	2 x 200mm Mid 60 x 130mm dome tweeter.
Dimension (HxWxD)mm	170x186x170	380x210x200	470x250x200	800x250x265	1080x250x265
Code	VR92A	VR98G	VR95D	KM58N	KR59P

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VR92A	Valdus 100	£68.070	£79.990
VR98G	Valdus 200 Speaker	£93.600	£109.990
VR95D	Valdus 300 Speaker	£127.650	£149.990
KM58N	Valdus 400 Loudspeaker	£170.200	£199.990
KM59P	Valdus500 Loudspeaker	£255.310	£299.990

## Home Cinema Centre Speaker



A home cinema speaker for use with surround sound systems. The speaker features a paper cone with foam surround for high quality sound reproduction. The magnets are shielded to prevent picture discoloration and distortion when used in close proximity to a TV set.

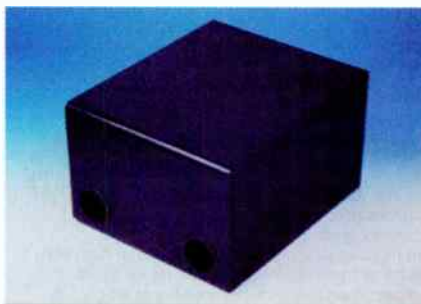
### Specifications:

Nominal Impedance:	8Ω
Resonant Frequency:	170Hz
Frequency Range:	170Hz to 10,000Hz
Efficiency:	87dB
Power Handling:	40W RMS

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM53H	Centre Speaker	£38.280	£44.990

## Home Cinema Subwoofer



A subwoofer for use in surround sound systems to complete the cinema effect. This unit features a

165mm drive unit with paper cone and foam surround.

### Specifications:

Impedance:	8Ω
Resonant Frequency:	55Hz
Frequency Range:	55Hz to 140Hz
Efficiency:	90dB
Power Handling:	60W RMS

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM54J	Subwoofer+band Pass	£42.540	£49.990

## Home Cinema Satellite Speakers



Satellite speakers with a power rating of 25W RMS for use in home cinema surround sound systems as either front or rear satellite speakers. The speakers feature paper cones with foam surrounds for high quality reproduction.

### Specifications:

Impedance:	8Ω
Resonant Frequency:	190Hz
Frequency Range:	190Hz to 15,000Hz
Efficiency:	88dB
Power Handling:	25W RMS08

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM55K	Main Front Speakers	£15.310	£17.990

## Wharfedale Modulus Vivendi Movies 5 Cinema Sound System



This collection of speakers from one of the most famous and highly regarded British loudspeaker manufacturer offers a well balanced, clean and polished sound performance. Comprising of cuboid satellite and rear speakers, a centre speaker plus a subwoofer, this package sounds big - just as the film dictates. Action packed films are handled with dynamic conviction, which makes this system one of the best at the price. Bass is well balanced and powerful, and the centre speaker is magnetically shielded and can sit close to the television. There is weight and clarity to the centre channel which is kept precisely located to the television screen. This Wharfedale system brings a whole new meaning to Home Cinema Sound.

- \* Satellites 1 x 100mm Fullrange unit
- \* Centre 1 x 100mm Fullrange unit
- \* Subwoofer 2 x 170mm Bass units
- \* Frequency response: 25Hz to 20.5kHz

★ **Impedance:** 8Ω  
 ★ **Sensitivity:** All modules 88dB (2.83V/1m)  
 ★ **Dimensions:** satellite: 160 x 142 x 122mm  
 centre: 142 x 462 x 122mm  
 subwoofer: 493 x 220 x 350mm

The system also includes 30m of cable, modus wall brackets and a home theatre book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FUR3E 1	Music 5	£297.860	£349.990

coiled lead is terminated with a 3.5mm. stereo jack plug. An adaptor to connect to a 6.35mm (1/4in.) socket is included. These low cost headphones are very sensitive and have a wide frequency response.

**Specification**  
 Sensitivity: 105dB S.P.L. @ 1kHz  
 Frequency response: 20Hz to 18kHz  
 Impedance: 32Ω ±5%

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BZ58N	Low Cost Headphones	£6.800 £4.490 £3.600	£7.990

**Specification**  
 Impedance: 22Ω to 32Ω  
 Frequency range: 20Hz to 18kHz  
 Maximum input power: 100mW  
 Sensitivity: 101dB spl at 1kHz

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ96E	L/Weight Headphones	£4.240 £3.400 £3.000	£4.990

See Section 6. Cables and Accessories for our full range of Audio and Speaker Cables

**HEADPHONES**

**Educational Headphones**



A low cost durable mono headphone suitable for general purpose use, especially suited to an educational environment. The padded ear pieces are adjustable and the headband is in black plastic. Supplied with 1m approx. of coiled cable terminated in a 6.35mm (1/4in.) mono jack plug.

Impedance: 600Ω  
 Frequency range: 30Hz to 18kHz  
 Sensitivity: 105dB/mW

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CP51F	Educate Phones	£5.091 £3.300 £2.950	£5.390

**Stereo/Mono Closed Back Headphones.**

Ross



High velocity Mylar dome drive units. Independent Volume controls and Stereo/Mono switch. Coiled lead with 6.4mm gold plated stereo plug. Padded adjustable headband and earpads.

Appropriate to use as a sturdy low cost educational headphone in schools.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM00A	Mono/Stereo Hdphons	£8.500 £8.000 £7.500	£9.990

**CD Compatible Headphones**



A pair of high quality headphones intended for listening to compact disc and digital music material. The drivers feature high energy magnets and diaphragms designed to bring out the best in the dynamic range and superior signal to noise ratio of compact disc. Maintains sensitivity and stability at low volume levels. It has adjustable padded steel headband and leather earpads, and a 2.7m long extra flexible lead terminated in a 3.5mm stereo jack plug. 6.35mm (1/4in.) jack adaptor included. Colour black.

**Specification**  
 Driver type: Dynamic  
 Impedance: 32Ω ±1.6Ω  
 Max. input power: 200mW  
 Frequency response: 16Hz to 22kHz  
 Weight: 190g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZB92A	CD Phones	£11.050 £8.750 £6.990	£12.990

**Low Cost Stereo Headphones**



A stereo dynamic headphone with adjustable headband suitable for general purpose use. The headphones can be switched to mono, and the long

**Lightweight Stereo Headphones**



A lightweight stereo headphone with adjustable headband and suitable for use with digital audio sources. The headphones are very comfortable and offer good quality at a reasonable price. The 1.2m lead is terminated in a 3.5mm jack plug and a converter plug is included for 1/4 in jack sockets.

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## Digital Headphones



Designed for listening to digital source material, these quality stereo headphones feature super thin diaphragm drive units for the very best in sound quality. Lightweight and comfortable to wear, the gimbal mounted earpads fit snugly against the ear and provide excellent external sound isolation. The adjustable black padded headband ensures that the headphones are still comfortable after long continuous use. The 3m lead is terminated in a 3.5mm gold-plated plug and a 6.35mm (1/4in.) to 3.5mm adaptor is included.

### Specification

Sensitivity: 102dB/mW @ 1kHz  
 Frequency response: 20Hz to 20kHz  
 Impedance: 32Ω  
 Cord length: 3m approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
B225C	Digital Headphones	£14.450	£11.000	£8.500	£16.990

## Foldable Headphones MDR-A009

Sony

A pair of high quality headphones that fold neatly in half, facilitating storage and travel. The open design features full stereo operation through 23mm diameter transducers with a wide frequency response, while remaining light and comfortable. The headphone cord length is approximately 2m and is terminated in a 3.5mm jack plug with a 6.35mm (0.25in.) socket adaptor. Supplied with full operating instructions.



### Specification

Frequency response: 18Hz - 20kHz  
 Weight: 43g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DW39N	Headphones MDR-A009	£12.750	£9.900	£9.100	£14.990

## Stereo Closed Back Headphones

Wharfedale



A pair of very high quality stereo closed-back headphones with multiple applications. These headphones boast high quality padded earshell, thick padded headband with click-stop adjustment, in line volume control and mono/stereo switch. The OFC single entry cable is approximately 5 meters long and has the option of a 3.5mm or 6.3mm gold plated plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BV74R	Wharfedale Headphones	£25.520	£23.110	£21.900	£29.990

## HD435 Stereo Headphones

Sennheiser



Ideal for rock and pop music these headphones produce a sound as good as the visual impression - vivacious and fresh with rich bass tones. Whether on a mini disc portable or CD player, plug in, turn up the volume and get started.

Frequency Response(Hz) 22-22,000  
 Impedance(Ω) 32  
 Total harmonic distortion <1  
 Weight (g) 118  
 Cable 3.0m, OFC copper

Supplied with 3.5/6.3 mm jack plug

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VC71N	HD435 32ohm Headphone	£25.520			£29.990

## HD445 Stereo Headphone

Sennheiser



The top headphone in its class. Quality at an affordable price, this headphone will not disappoint with its transparent sound, clear treble and rich, powerful bass. This headphone is equally at home with a hi-fi system or on the move with a portable CD, MiniDisc, DCC or cassette player.

Frequency response (Hz) 20-20,000  
 Impedance (Ω) 52  
 Total harmonic distortion ≤0.9  
 Weight (g) 125  
 Cable 3.0m, OFC copper

Supplied with 3.5/6.3 mm jack plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VC72P	HD445 52ohm Headphone	£38.280			£44.990

## HD455 Stereo Headphones

Sennheiser



At Sennheiser, low price doesn't mean low quality. This baby of the Expression series is no weakling, and for lovers of modern music, has the muscle to deliver. Like all the Expression series this headphone has a fully adjustable headband and comes complete with detachable single OFC cable that enters the left side of the headphones and a 2-year guarantee.

Frequency Response (Hz) 18-21,000  
 Impedance (Ω) 52  
 Total harmonic distortion (%) ≤0.9  
 Weight (g) 120  
 Cable 3.0m OFC copper.

Supplied with 3.5/6.3mm jack plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VC73Q	HD455 52ohm Headpho	£46.800			£54.990

## HD475 Stereo Headphones

Sennheiser



Equally at home with rock music and the classics, this is the headphone for concert lovers with a wide taste in music. Expressive in sound and design, this ergonomically designed headphone will cope



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with it all. Supplied with a detachable single OFC cable that enters the left side of the headphones.  
 Frequency Response (Hz) 16-23,000  
 Impedance ( $\Omega$ ) 60  
 Total Harmonic distortion (%)  $\leq 0.7\%$   
 Weight (g) 120  
 Cable 3.0m, OFC Copper

Supplied with a 3.5/6.3 mm jack plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC74R	HD475 60ohm Headphon	£68.070	£79.990

## Professional Stereo Headphones

Sennheiser



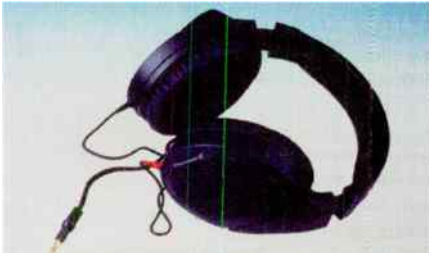
A firm favourite in professional sound studios. Originally designed for ENG use, the HD 25 can also be recommended for any hi-fi system, home studio or disco when it is important to reproduce exceptionally high sound pressure levels across the frequency range, or where critical listening is required in noisy environments. Extremely rugged construction to cope with life on the road, this headphone has a cable made from steel for optimum tensile strength.  
 Frequency response (Hz) 30-16,000  
 Impedance ( $\Omega$ ) 85  
 Total harmonic distortion(%)  $\leq 0.4$   
 Weight (g) 115  
 Cable 3.0m, steel  
 Supplied with 6.3 mm jack plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC75S	HD25SP Closed Headph	£76.580	£89.990

## HD535 Classic Headphones

Sennheiser



An ideal combination of price and sound quality, the HD 535 opens the door to high end quality sound. Because of its balance and powerful bass response it is equally good coping with the demands of rock and pop music as well as the subtleties of classical recordings. The HD535 carries the ears with comfort-soft circumaural earpads and connects to the hi-fi system via a gold-plated jack plug/adaptor.  
 Frequency Response (Hz) 20-25,000  
 Impedance ( $\Omega$ ) 150  
 Total harmonic distortion (%)  $\leq 0.25$   
 Weight (g) 225  
 Supplied with 6.3mm jack plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC76H	HD535 150ohm Headphon	£89.350	£104.990

## Infra-Red Stereo Headphone System - A085D



A stereo headphone system for use with any AV stereo source. The headphones offer high quality sound, ratchet adjustable headband, soft padded earpieces, individual volume controls and a green LED on indicator. The transmitter is a compact unit that can be free-standing or wall mounted with an integral 1.75m lead terminated in a 3.5mm stereo plug, on/off switch and is powered by a power adapter, supplied.

### Specifications

Wavelength: 940nm  
 Carrier frequency: Left 210kHz, Right 355kHz  
 Frequency response: 30Hz-18kHz  
 Channel separation: >40dB  
 Impedance: 32 $\Omega$   
 Power supply (transmitter): 12V DC (adapter supplied)  
 (headphones): 2 x 1.5V 'AA' type cells (not supplied, order 2 x JY48C)  
 Dimensions: 160 x 105 x 190mm  
 Weight (transmitter): 0.205kg  
 (headphone): 0.195kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU24B 1	IR System	£28.920	£33.990

## Mono Infra-Red Headphones - A085E



A mono headphone system that is compatible with TV, VCR and any other audio source. Good sound quality and supplied with a microphone adapter for attachment, by adhesive pad, to sound sources without a line output socket.

### Specification

Carrier frequency: 940nm infra-red at 250kHz  
 Frequency response: 60Hz-18kHz  
 Signal/Noise Ratio: >50dB  
 Power supply (transmitter): 12V DC 200mA (adapter supplied)

(headphone): 2 x 1.5V 'AA' type cells (not supplied, order JY48C)  
 Weight: 0.15kg  
 Dimensions: 120 x 90 x 50mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU23A	IR Mono Phone	£22.110	£25.990

## Wireless Headphones



These VHF wireless headphones offer a number of features that make them far out perform the traditional Infra-red headphones.

- ★ The VHF signal passes through walls and ceilings thus giving unlimited freedom of movement.
- ★ Range: 30M
- ★ The latest RF technology gives a crystal clear detailed stereo signal without leads or cable
- ★ Individual Right and Left volume control
- ★ Fine tuning for best reception
- ★ Suitable for private Hi-Fi, TV & video listening
- ★ Built in battery charger
- ★ Rechargeable batteries included
- ★ Frequency response: 30-18,000Hz



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MY15R 1	Stereo RF headphone	£59.560	£69.990

## Stereo Headphones with Boom Microphone



These lightweight stereo headphones feature an adjustable boom microphone, and a tough plastic headband with stainless-steel adjusters. The foam-padded earpieces each contain high-quality rare-earth samarium cobalt transducers for a high standard of sound reproduction. A foam windshield covers the sensitive microphone capsule, which is an omnidirectional dynamic type. The straight screen lead terminates in a 6.3mm stereo plug for the headphones, and a 3.5mm mono plug for the microphone.

### Specifications:

Headphone impedance: 32 ohms  
 Headphone frequency response: 100Hz to 20kHz  
 Headphone power handling: 150mW  
 Microphone impedance: 250 ohms  
 Microphone sensitivity: -78dB @ 1kHz  
 Lead: 2.5m long, straight  
 Microphone plug: 3.5mm mono  
 Headphone plug: 6.3mm stereo  
 Weight: 80g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU21X	Video/Disco Phones	£11.050	£12.990

## Fully-Enclosed Mono Headphones with Boom Microphone

3



Ideal for use by DJs, these mono headphones incorporate a uni-directional dynamic microphone mounted on an adjustable sprung-steel boom. The earpieces are fully enclosed to cut down ambient sound, and are mounted on an adjustable headband with chrome wire adjusters. For clarity of sound, high-quality mylar transducers are fitted to each earpiece. The straight screen lead is terminated in colour-coded plugs.

### Specification:

Headphone impedance:	600 ohms
Headphone frequency response:	100Hz to 20kHz
Headphone power handling:	200mW
Microphone impedance:	200 ohms
Microphone sensitivity:	-80dB @ 1kHz
Lead:	1.75m long, straight
Microphone plug:	6.3mm mono
Headphone plug:	6.3mm mono
Weight:	320g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DU22Y	Video/Disco Phones	£10.200	£8.990	£7.500	£11.990

Microphone plug:	3.5mm mono
Headphone plug:	3.5mm mono
Weight:	75g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DU22Y	Video/Disco Phones	£10.200	£8.990	£7.500	£11.990

## Stereo Headphone with Microphone



A stereo headphone with an adjustable leather effect headband, and a 19mm diameter dynamic microphone on a bendable PVC sleeved boom. The boom is mounted on a swivel base on the left-hand ear pad shell. The 40mm diameter mylar speakers are mounted in black plastic shells with leather effect foam filled ear pads. The phones have 2.2m of flat cable terminated in a 3.5mm stereo jack plug for the ear phones, and a 3.5mm mono plug for the microphone. The microphone is a low impedance dynamic type as opposed to an electret type, so no energising battery is required. However, a suitable low impedance microphone preamplifier will be required.

### Headphones

Impedance:	32Ω ±15%
Rated power input:	30mW
Maximum power input:	100mW
Frequency response:	40Hz to 12kHz
Right/left balance:	<3dB
Total harmonic distortion:	<3%
Sound pressure level:	92dB ±4dB (@ 1mW CNS)

### Microphone

Impedance:	200Ω
General Weight:	100g (without cable)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CJ10L	Stereo Headset + Mic	£17.010	£13.950	£11.450	£19.990

## Stereo Headphone with Boom Microphone



A stereo dynamic headphone with adjustable headband and a dynamic microphone on an adjustable boom. The membrane type driver diaphragms are mounted in back vented plastic shells with foam padded ear pieces. The phones have 2.5m of cable terminated in a standard 6.35mm (1/4in.) stereo jack plug with strain relief sleeve. The microphone can be detached if required, and is fitted with 2.5m of cable terminated in a mono 6.35mm (1/4in.) jack plug with strain relief.

### Headphones

Impedance:	32Ω
Sensitivity:	97dB/mW
Frequency response:	50Hz to 15kHz
Nominal input:	1mW
Max input:	100mW

### Microphone

Impedance:	500Ω
Sensitivity:	-82dB (56mV)
Frequency response:	200Hz to 5kHz

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YJ85G	Stereo Mic Hdpnone	£28.920	£24.250	£22.650	£33.990

## EARPHONES

### Universal Mini Headphones

A light-weight pair of personal stereo type miniature headphones with washable round orange foam earpieces and adjustable headband.

The 1 metre long lead is terminated in a 3.5mm stereo jack plug. Suitable for use with all types of personal cassette players and radios etc.



Impedance:	32Ω ±15%
Drive units:	27mm mylar diaphragm
Input power:	50mW max

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
ZB91Y	Mini Phones	£4.240	£2.750	£1.950	£4.990

## Headset and Boom Microphone



With this headset, you can add narration whilst making or dubbing a movie. The lightweight mono headphone is mounted on a tough plastic headband with stainless steel adjusters and a rest for the other ear. For comfort, the dynamic earpiece is covered by a foam pad. The microphone, mounted on an adjustable boom, is a high-sensitivity dynamic type with a foam windshield. 1.5m of lead are provided, terminating in two 3.5mm mono jack plugs.

### Specification

Headphone impedance:	32 ohms
Headphone frequency response:	20Hz to 20kHz
Sensitivity:	100dB @ 1mW
Microphone impedance:	250 ohms
Microphone sensitivity:	-78dB (1kHz/1mW)
Microphone frequency response:	200Hz to 4kHz
Lead:	1.5m long, straight



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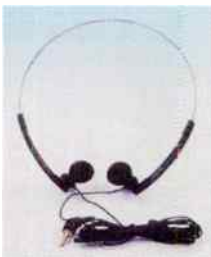
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## Lightweight Stereo Earphones

An extremely lightweight stereo dynamic earphones with adjustable headband and suitable for use with digital audio sources. The earphones are very comfortable and offer good quality at a reasonable price. The 1.2m lead is terminated in a 3.5mm jack plug. Supplied with black earpads.



### Specification

Impedance: 32Ω  
Frequency range: 20Hz to 20kHz  
Sensitivity: 96dB spl at 1kHz

Retail Unit Price each (inc. VAT).

Order Code	Type #148	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RJ97F	L/Weight Earphones	£5.090	£3.950	£3.500	£5.950

## Stereo Earphones



A low cost stereo earphone that is suitable for all portable personal stereos, and attractively finished in black. There is no headband and the small transducers sit comfortably in the ear. The compact design offers very good sound quality, particularly in the bass region, and the earphone is supplied in a tough plastic case, making them ideal for travelling. The 1.1m lead is terminated in a gold-plated 3.5mm jack plug.

### Specification

Impedance: 22Ω to 32Ω  
Frequency range: 20Hz to 20kHz  
Maximum power input: 60mW  
Sensitivity: 96dB spl at 1kHz

Retail Unit Price each (inc. VAT).

Order Code	Type #154	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DK95D	Stereo Headphones	£4.240	£3.950	£3.500	£4.990

## Earphones with Cobalt Speakers



A high quality stereo earphone with samarium cobalt speakers for superb sound quality and suitable for all portable personal stereos, CD players and digital sound. The compact design offers a wide frequency response and high sensitivity. Finished in black and supplied in a tough

plastic case for protection when not in use. The 1.3m lead is terminated in a gold-plated 3.5mm jack plug.

### Specification

Impedance: 22Ω to 32Ω  
Frequency range: 15Hz to 20kHz  
Maximum power input: 60mW  
Sensitivity: 103dB spl at 1kHz

Retail Unit Price each (inc. VAT).

Order Code	Type #149	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RZ93B	Cobalt Earphones	£5.940	£5.090	£4.500	£6.990

## CD Compatible Bass Earphones



A set of high-quality stereo inner earphones with bass emphasis ideally suited for listening to CD players. These lightweight sensitive units come with 1m of lead terminated in a right-angle 3.5mm jack plug.

### Specification

Type: Dynamic  
Driver units: 15mm dia. dome  
Impedance: 32Ω  
Sensitivity: 100dB at 1kHz  
Power handling capacity: 10mW  
Maximum input power: 40mW  
Frequency response: 20Hz to 20kHz

Retail Unit Price each (inc. VAT).

Order Code	Type #148	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CJ12N	Bass Earphones	£5.090	£3.950	£3.500	£5.990

## Inner Ear Phones with Volume Control

### Ross

Unobtrusive, direct into the ear fitting. Complete absence of inward ear pressure ensures lasting comfort. Ultra-slim In-line Volume control. 1.2 meter (approx) superflexible cable with 3.5mm gold plated plug. Ideal for use with personal stereos, compact Disc players, Hi-Fi at home or on the move.



Retail Unit Price each (inc. VAT).

Order Code	Type #1812	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MX84F	Inner ear + volume	£6.800			£7.990

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## In-Ear Type Headphones

### Sony

- ★ Rotary slide-type micro volume control for easy volume level adjustment.
- ★ Compact case.
- ★ Neodim magnet for powerful and high quality bass sound.
- ★ 13.5mm Driver unit.
- ★ Sony acoustics twin turbo circuit.
- ★ Thin housing for extra comfort.



Retail Unit Price each (inc. VAT).

Order Code	Type #1367	Price each exc. VAT		inc. VAT each
		1+	10+	1+
PD60Q	Earphones + Volume	£10.200		£11.990

## Quality In-ear headphone

### Sony

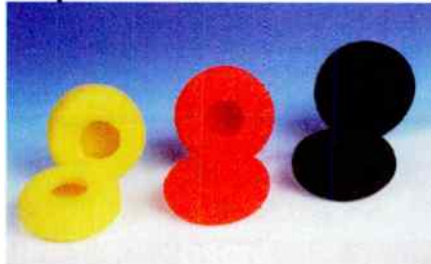


- ★ Neck chain style cord for extra convenience.
- ★ Metallic trim on earpiece.
- ★ Neodim magnet for powerful and high quality bass sound.
- ★ 13.5mm Drive unit.
- ★ Sony acoustic twin turbo circuit.
- ★ Gold plated stereo mini plug

Retail Unit Price each (inc. VAT).

Order Code	Type #1370	Price each exc. VAT		inc. VAT each
		1+	10+	1+
GV47B	High Quality Headph	£12.750		£14.990

## Earphone Pads



Three pairs of replacement foam pads, suitable for any make of ultra light earphones. Packed on a blister card with one pair of each colour - red, black and yellow.

Retail Unit Price each (inc. VAT).

Order Code	Type #1034	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CB48C	Earphone Pads	£1.260	£0.860	£0.680	£1.490

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ON ALL PRODUCTS

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## Headphone Pads



Three pairs of replacement foam pads, suitable for super lightweight headphones. Packed on a blister card with one pair of each colour - red, black and yellow.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB490	Headphone Pads	£1.430	£1.690

## Replacement Foam Pad



A black replacement foam earpad for lightweight personal stereo headphones, with dimensions of 50mm diameter, 5mm internal depth and overlapping edge width of 7mm. Sold in pairs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JZ34M	Lrg R Earpad	£0.842	£0.990

## Replacement Foam Earpads

Can be used as replacements for the original pads on lightweight personal stereo headphones, which invariably perish with old age. Sold in pairs. Size 15 x 4mm (internal) with 5mm wide rear overlap. Black only.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JZ30H	Earpad Black	£0.638	£0.750

## VIDEO

## TELEVISIONS

### Televisions

NEI  
14" Portable Television  
Order code - GV88V

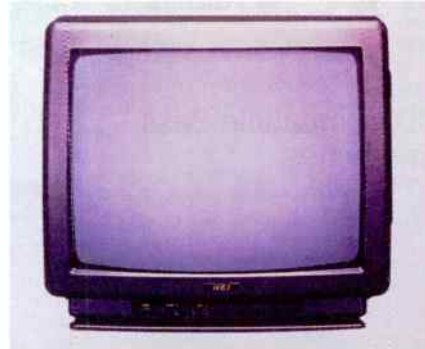


Standard Features  
★ 90 programme memories  
★ Full infra red remote control

- ★ On Screen display
- ★ Full functions in two menus
- ★ Sleep timer / Auto standby
- ★ Auto Search
- ★ Auto sound mute control
- ★ Scart Socket
- ★ Rod Antenna

Specifications  
Gross weight (approx) 11Kg  
Power Output 1.5W RMS

### 20" Televisions



Three 20" televisions are available all of which have the following features.

- ★ 20 Inch/51 cm Screen
- ★ Voltage Synthesis tuning system
- ★ 90 programme channels
- ★ UHF/VHF/Hyperband tuner
- ★ On screen display
- ★ Full function infra red remote control
- ★ Auto search
- ★ Auto sound mute control
- ★ Sleep Timer/auto standby
- ★ Scart socket
- ★ External Speaker output

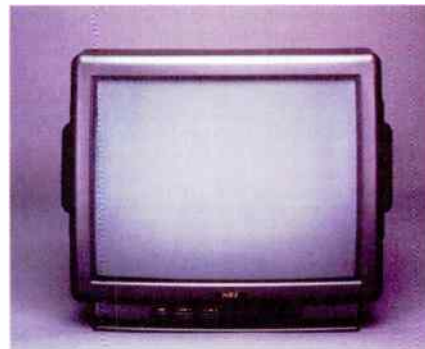
Specification  
Audio power output 2.5W RMS Mono, 3.5 W RMS Stereo  
Receiving systems PAL 1  
Weight(approx) 21.5kg

Order code - MX43W  
As above

Order code - FN42V  
Additional Features  
★ Teletext

Order code - FN43W  
Additional Features  
★ Teletext  
★ Nicam Stereo

21" Television  
Order Code - MX16S



Features  
★ Nicam Stereo (2x5W RMS, 10% THD)  
★ Voltage synthesised tuning  
★ 90 Programme memory  
★ UHF/VHF/Hyperband Tuner  
★ On screen display  
★ Full infra red remote control  
★ Auto search  
★ Auto sound mute control  
★ Sleep Timer/Auto standby  
★ Euro AV (full Scart)  
★ Simple text  
Specifications  
Power Output 5 W RMS (10% THD)  
Receiving System PAL 1  
Weight (approx) 24Kg

28" FST Nicam Television  
Order Code - FN46A



### Features

- ★ 28 inch/72cm FST CTV
- ★ 70 Programme Channels
- ★ PSEUDO effect stereo
- ★ Digital Nicam
- ★ Stereo sound 2x5 Watts
- ★ Stereo wide feature from Stereo signal
- ★ Voltage synthesis tuning
- ★ Automatic search tuning
- ★ Full on screen display
- ★ Automatic programme search
- ★ Programmable 'off' time function
- ★ 'Slumber' function for switching off automatically after broadcast close down
- ★ Full infra red remote control
- ★ Optional teletext
  - 1 page
  - 4 page
  - 4 page fastext
- ★ Silent tuning
- ★ Scart socket
- ★ 2x2 PIN DIN socket (external audio connection)
- ★ Headphone Socket

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GV88V	14" in colour TV	£127.650	£149.990
MX43W	20" Remote CTV	£170.200	£199.990
MX16S	21" FST Nicam TXT	£255.310	£299.990
FN42V	20" Text	£187.220	£219.990
FN43W	20" Nicam Text	£238.280	£279.990
FN46A	28" FST Nicam Text	£382.970	£449.990

## PERSONAL TELEVISIONS

### Pocket Television - TV770

Casio

NEW LOW PRICE

- ★ STN Screen.
- ★ 39,600 Pixels.
- ★ Earphone Jack.
- ★ Screen size: 2,3Inch(5.9cm)
- ★ Telescopic Aerial.
- ★ Power Supply. AA x4
- ★ Dimensions (HxWxDmm), 127x81x35
- ★ Weight. 200g
- ★ Battery Life. 4.0 hours.
- ★ Adaptor. Y778K.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD79L	Portable TV 770	£68.070	£79.950

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**Portable Television TV-1800**

Casio



Screen size 2.5 inch (6.5cm)  
 Number of pixels 118,800  
 Power supply AAx4  
 Battery life 2.5 hours  
 Dimensions 125mm(h)x91mm(w)x38mm(d)  
 Weight 240g  
 Adaptor YT78K  
 Other information Earphone jack, telescopic aerial

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
K577J	Casio portab TV	£93.600	£109.990

**Portable TV - EV-510**

Casio



Screen size 2.5 inch (6.5cm) Active Matrix - super TFT  
 Number of pixels 61,380  
 Power Supply AA x 3  
 Battery Life 2.0 hours  
 Dimensions 1221mm(h) x 75mm(w) x 27mm(d)  
 Weight 195g  
 Adaptor YT78K  
 Other information earphone jack, Telescopic aerial, AV jack (suitable for camcorders)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
K578K	Casio portab TV	£110.622	£129.990

**Personal Television**

Casio



A portable, personal television ideal for taking anywhere on your travels, 7 system includes PAL(B/G,H), SECAM (B/G,H), PAL (I/I), PAL (D/D), PAL (D/K), SECAM (D/K), SECAM (K/-). It has a colour monitor (AV Jack) with a 4 inch (10cm) STN screen (158 400 pixels). It can be powered by using 4 x D cell batteries or by an optional power adaptor (PD81C). The battery life will give you 7 hours of viewing (approx). It comes with a telescopic aerial and a separate earphone jack. All this in a TV that weighs just 354 grams.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD80B	Portable TV 6700	£255.310	£299.990
PD81C	Power Adptr for PD80	£12.750	£14.990

**LCD Colour TV Mains Adaptors**



This AC mains adaptor allows Casio LCD Colour TVs and digital camaras to be operated off 240V AC mains, thus conserving internal battery life. Input: 240V AC Output: 6V DC

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YT78K	Casio ADK65 Mains	£13.600	£15.990

**LCD Colour TV 12V Car Adaptors**



This 12V car adaptors allows Casio LCD Colour TVs and digital camaras to be operated off 12V DC from a car cigarette lighter/accessory socket, thus conserving internal battery life. Input: 12V DC Output: 6V DC

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YT79L	Casio CAK65 Car	£17.010	£19.990

**VIDEO RECORDERS**

**2 Head VCR with Videoplus programming**

Philips



This ergonomic remote-controlled video recorder has easy Videoplus programming with remote control and Philips laser cut video heads for maximum picture quality.

- ★ Auto install with date and time download.
- ★ Quick start deck for fast control response.
- ★ Turbo View.
- ★ HQ Recording with Edge Noise Canceller and Digital autotracking.
- ★ PDC Programme Delivery Control for automatically timed recordings.
- ★ Single line on screen display.
- ★ 99 Preset Stations.
- ★ Up to 6 programmed recordings.
- ★ Still and reverse play.
- ★ Forward and reverse scan.
- ★ Automatic head cleaner.
- ★ Scart connector.
- ★ Infra-red remote control.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD88W	2HD LP Vcd	£170.200	£199.990

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## 4 + 2 head Nicam Long Play Video Recorder

Philips



The VR 668 gives you easy Videoplus programming together with synchro edit, audio dubbing, front AVS and a shuttle on the set.

- ★ Teletext/colour subtitle recording.
- ★ Auto Install with date and time download.
- ★ NTSC playback.
- ★ PDC Programme Delivery Control for automatically timed recording.
- ★ Full-screen On screen Display with user preference control.
- ★ SQPB for superb picture quality.
- ★ VISS Video Index Search System.
- ★ Next/previous -Introscan.
- ★ Turbo Drive for ultra-fast response.
- ★ Turbo view and scan modes.
- ★ Jog shuttle remote control.
- ★ Perfect still and slow motion pictures.
- ★ Studio Picture control and tracking system for constantly optimum picture sharpness.
- ★ Direct record.
- ★ 2-Scart connectors.
- ★ Extra slow motion 1/24 normal speed.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD88V	4HD Nic Turbo Dv Vid	£340.410	£399.990

## VIDEO EDITING EQUIPMENT

### 'Mix As You Shoot' Camcorder Audio Mixer



If you're fairly new to the wonderful world of the camcorder, you will probably recognise the need for an audio mixer during the editing stage. With one of these, you can mix in commentary and background music with the camcorder's audio channel, and lend a much more professional feel to your production. This mono 3-input device is different in that you can mix sounds while you shoot, and so is useful for recordings where no editing is required, such as videotaped transcripts of meetings. There are inputs for a pair of microphones (handy for interviews) and a line-level source, such as a CD player. Each input has its own slider level control, and the mixed output is fed into the camcorder via its external mike jack. An advantage is that it is a passive device - in other words, no batteries are required. The compact mixer (85 x 53 x 18mm) attaches to the camcorder, handstrap or belt. Supplied with two stereo leads with 3.5mm jacks and one stereo to mono lead with 3.5mm jacks.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB78K	Camcorder Mixer	£34.030	£39.990

## Camcorder Audio Mixer



A 4 channel stereo mixer intended for editing and dubbing audio soundtracks on video recordings, i.e. at the camcorder to domestic VCR transcription stage. Inputs are provided for L/R microphones, tape/tuner/CD, turntable and camcorder audio soundtrack. Each channel can be faded in and out using the slide fader level controls. The turntable input is switchable between magnetic and ceramic pick-ups. A master fader controls the output level. With the exception of the 6.35mm (1/4 in.) jack socket microphone inputs, all signal inputs and outputs are via phono connectors. Requires a 9V PP3 battery to operate, alternatively an external 9V DC supply may be used.

### Specification

Power requirements: 9V PP3 battery or 9V DC supply  
 Mic input: 1mV/600Ω  
 Phono (mag): 3mV/50kΩ (RIAA equalised)  
 Tape/CD/tuner input: 150mV/50kΩ  
 Camcorder input: 150mV/50kΩ  
 Output level: 500mV  
 Distortion: <0.5%  
 S/N ratio: >55dB  
 Frequency response: 20Hz to 20kHz ±2dB  
 Dimensions: 267 x 68 x 192mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU71N	Camcorder Mixer	£34.030	£39.990

## Automatic Video Editor



Take all of the frustration and guesswork out of your video editing with this high quality automatic video editor. The VP-274 allows you to manually or automatically cut and splice scenes on the run, make simple cuts and fades and use sophisticated sound mixing from multiple audio sources to create a richer and more involving soundtrack.

The editor has basic image enhancement capabilities to help sharpen and clean up your copies and features a choice of fades (to colour or black and white) and wipes, a 192 scene memory and the ability to 'learn' your current system's infra-red codes so that you can control the action from your video's remote control. The VP-274 video editor is compatible with VHS, S-VHS, S-VHS-C, Hi8, VHS-C and Video 8 and is supplied with a mains adaptor, infra-red remote control and full instructions.

### Specification

Video:  
 Input impedance: 75Ω  
 Input level: 1V pk-pk nominal  
 Output gain: Unity ±1dB (into 75Ω)  
 Frequency response: 5MHz approx (composite video signal)  
 5.5MHz approx (S-Video)  
 Audio:  
 Input impedance: 47kΩ min  
 Output impedance: 1kΩ min  
 Frequency response: 20Hz to 20kHz ±3dB  
 S/N ratio: 70dB typical  
 DNR noise reduction: 9dB approx  
 THD: <0.1%  
 Output gain: 14dB approx  
 Power supply: DC 12V 500mA mains adaptor (not supplied), appropriate adaptors are (CC10L) and (ZF51F)

Input impedance: 47kΩ min  
 Output impedance: 1kΩ min  
 Frequency response: 20Hz to 20kHz ±3dB  
 S/N ratio: 60dB typical  
 THD: <0.1%  
 Microphone sensitivity: -73dB  
 Output gain: 14dB approx  
 Power supply: DC 9V 500mA mains adaptor  
 Dimensions: 270 x 170 x 50mm  
 Weight: 1kg approx

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BJ93B	Video Auto Editor	£153.180	£179.990

## Video Special Effects Processor



Make your videos more watchable and involving by adding special effects from the choice offered by this sophisticated special effects processor. The VP-275 gives you automatic or manual access to more than 50 different wipe patterns, eight background colours for fade and wipe effects and a range of halo effects and borders. Controlled by a digital computer, it also features eight pages of memory for custom wipe effects, all available at the touch of a button.

The VP-275 special effects console is compatible with VHS, S-VHS, S-VHS-C, Hi8, VHS-C and Video 8. Supplied with full instructions.

### Specification

Video:  
 Input impedance: 75Ω  
 Input & output level: 1V pk-pk nominal  
 Frequency response: 5MHz approx (composite video signal)  
 5.5MHz approx (S-Video)  
 Gain control range: 0dB to +4dB approx  
 Colour control range: 30dB to +6dB

Audio:  
 Input impedance: 47kΩ min  
 Output impedance: 1kΩ min  
 Frequency response: 20Hz to 20kHz ±3dB  
 S/N ratio: 70dB typical  
 DNR noise reduction: 9dB approx  
 THD: <0.1%  
 Output gain: 14dB approx  
 Power supply: DC 12V 500mA mains adaptor (not supplied), appropriate adaptors are (CC10L) and (ZF51F)  
 Dimensions: 270 x 170 x 50mm  
 Weight: 1kg approx

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BJ94C	Vid Editor & Aud Mix	£127.650	£149.990

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**Video Processor**



Add professional editing effects and stereo sound (with DNRTM noise reduction) to your videos with this easy to use and flexible video processing console. It's easy to use and provides access to a wide range of fades and image enhancements, including colour gain correction, detail enhancement and colour correction. The VP-265 even has a very handy split screen feature to enable you to make instant 'before and after' comparisons of the image as you make your changes. The VP-265 video processing console is compatible with VHS, S-VHS, S-VHS-C, Hi8, VHS-C and Video 8 and is supplied with a mains adaptor, headphones with integral microphone and full instructions.

**Specification**

Video:  
Input impedance: 75Ω  
Input & output level: 1V pk-pk nominal  
Frequency response: 5MHz approx (composite video signal).

Gain control range: 0dB to +4dB approx  
Colour control range: -30dB to +6dB

Audio:  
Input impedance: 47kΩ min  
Output impedance: 1kΩ min  
Frequency response: 20Hz to 20kHz ±3dB  
S/N ratio: 70dB typical  
DNR noise reduction: -9dB approx  
THD: <1%  
Microphone sensitivity: -73dB  
Output gain: 14dB approx  
Power supply: DC 9V 500mA mains adaptor  
Dimensions: 270 x 170 x 50mm  
Weight: 1kg approx

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
BJ95D 1	Video Processor	£102.110	£119.990

**Video Editor**



The VP-272 is a manually controlled video editing console that will make editing your camcorder footage much more straightforward and rewarding. It allows you to cut and splice scenes on the run, make simple cuts and fades to make your 'story-line' flow more freely and help you to sharpen and clean up the image on your copies. The console also offers basic audio mixing capabilities to allow the addition of narration/voiceover and music to replace or supplement your existing soundtrack. The video editor features the ability to 'learn' your

current system's infra-red codes so that you can control the action from your video's remote control. The VP-272 video editor is compatible with VHS, S-VHS, S-VHS-C, Hi8, VHS-C and Video 8 and is supplied with a microphone and full instructions. Suitable mains adaptor is BZ83E.

**Specification**

Video:  
Input impedance: 75Ω  
Input level: 1V pk-pk nominal  
Output gain: Unity ±1dB (into 75Ω)  
Frequency response: 5MHz approx (composite video signal)  
5.5MHz approx (S-Video)

Audio:  
Input impedance: 47kΩ min  
Output impedance: 1kΩ min  
Frequency response: 20Hz to 20kHz ±3dB  
S/N ratio: 60dB typical  
THD: <0.1%  
Microphone sensitivity: -73dB  
Output gain: 14dB approx  
Power supply: DC 12V @ 500mA PSU (see JC92) or 2x1.5V AA Batteries  
Dimensions: 270 x 170 x 50mm  
Weight: 1kg approx

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
BJ95G 1	Video Editor	£93.600	£109.990

**Video Processor with Special Effects**



Now you can create exciting home videos with this superb video editing processor. The processor has a wide range of diverse video effects including fade in/out and over 30 wipe patterns which allow you to cut and mix images from two different sources (i.e. a video recorder and camcorder) to enhance your videos. The fade in/out can be from a black and white or colour background. The borders of the wipe pattern can have a 'halo' effect which can be varied from sharp to a very soft focus. Similarly, the pattern angle can be varied from horizontal to vertical. In addition, there is a built-in stereo audio mixer which features three stereo inputs. This allows the audio output from the camcorder to be mixed with background music and a voice over. The audio master volume adjusts the volume of the overall mix - an LED stereo bargraph is provided to assist in setting the master volume control. The video master control adjusts the fade under 'fade' mode, or the wipe pattern position on screen under 'wipe' mode. A microphone jack socket is provided for an external microphone for commentaries and voice overs. A headphone output allows the audio mix to be monitored via headphones. A black and burst output provides synchronising pulses to cameras, VCRs and time base correctors (TBC) that can accept such information. A 'genlock' switch is provided to select operation with a genlock source. For normal use this will be operated in the normal position. Dimensions 380 x 250 x 65mm. Requires an external 12V DC supply.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ90X 5	Video Proc With S/Ef	£170.200	£199.990

**Video Processor/Audio Mixer VEC 1030**

Videotech Design



The VEC1030 offers a number of easy to use features to improve video productions and help with video editing/copying. The quality of recordings can be improved with picture detail, brightness and colour saturation controls. The VEC1030 has a variable split-screen control so that the original picture can be compared to the correct picture. It also offers picture fades and wipes and curtain wipe effects, plus a 3 channel audio mixer. Supplied complete with mains adaptor and starter pack of leads. Guaranteed for 2 years.

**VIDEO**

In & Out: Comp Vid 1 V p-p. Term 75Ω. Phono skts.  
System: CCIR. 625 lines 50Hz, negative syncs. PAL colour.  
Resolution: 500 lines with processing off.

**AUDIO**

Channels 1&2: 2 phono sockets each  
Channel 3: 2 phono sockets  
Mic socket: 0.25" mono jack  
Outputs: 3 phono skts. 2 stereo, 1 mono.  
Impedance: >1KΩ. Channel separation >45dB.  
Power supply: 9V to 15V DC.  
Size: 230mm x 145mm x 55mm

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
VM30H	Video Proc/Aud Mix	£85.090	£99.990



RS12750  
BS EN ISO 9002

Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System



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## High Resolution Video Processor

Videotech Design



This processor is fully compatible with all formats, including SVHS and Hi8. It will also convert 'S' video to composite video and vice versa. Designed to enhance original footage this unit offers push button selection of picture processing providing adjustment of detail enhancement, brightness, contrast and colour. The VEC1070 features split screen processing and a versatile 3 channel mono/stereo audio mixer with master fader, microphone and headphone socket. Supplied complete with mains adaptor and starter pack of leads. Guaranteed for two years.

### VIDEO

In & Out

s Video Y=1V p-p, C=30V p-p. Term 75Ω. 4pin S skts. Comp video 1V p-p. Term 75Ω. Phono sockets.

System syncs.

CCIR, 625 lines 50 Hz, negative PAL colour coded.

Resolution

S-S=-6dB 6.4MHz=500 lines  
S-Cmp=-6dB 6.4MHz=500 lines  
Cmp-Cmp=-6dB 3.2MHz=250 lines

### AUDIO

Channel 1&2

Each has 2 phono skts

Impedance

10KΩ

Max gain

14dB

Freq resp

=10Hz-20

Channel 3

2 phono skts for stereo L&R signals

Impedance

10KΩ

Max gain

20dB

Freq resp

10Hz-18KHz±3dB

Mic skt

0.25" mono jack.  
Suitable for any low impedance, 200Ω-1KΩ microphone.

Outputs

4 phono skts. 2 for stereo (L&R); 1 for mono and 1 for attenuated.

Headphone

0.25" mono jack socket.

Power supply

9V to 15V DC. Max ripple 1V p-p

Overall size

355mm x 177mm x 62mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM31J	High Res Vid Process	£149.770	£175.990

## VCC3010 High Resolution Video Corrector



This high specification video processor, designed and manufactured in the UK, is compatible with all types of UK standard PAL video equipment – including ALL formats of camcorders and video recorders (S-VHS, VHS, Hi8, 8mm etc), photo-CD players, computers with genlock, photo-slide copiers and TV tuners (terrestrial or satellite). It is equally at home as the front end to a home entertainment system or in a studio correcting and balancing multiple video sources into a vision mixer. Although specifically designed for tape to tape copying, the VCC3010 is ideal for any situation where a/v switching or picture correction is needed and offers a degree of fine control and enhancement that's hard to match on other processors. It even includes a split screen option for the comparison of images before and after corrections.

In addition to colour correction and picture processing (detail, brightness, contrast, colour separation) it's capable of a range of special effects including positive/negative switching and picture tinting (including a sepia effect). Colour correction makes use of a specially developed 'synchronised

colour mixing' system that adjusts the individual RGB signals – eliminating filter and delay lines and giving fine control over the colours themselves as brightness and contrast are unaffected by the adjustment. Each of the 4 video and 4 audio inputs can be individually selected and the unit will automatically switch the video input between 'S' and composite according to the connections. The 2 x 's' and 2 x composite video outputs are fully buffered. Connections include an XCON external control socket, phono sockets for composite video and audio and standard 4 pin 'S' sockets for SVHS and Hi8. The VCC3010's slimline shape make it ideal for rack/shelf mounting.

The VCC3010 is supplied complete with mains adaptor, starter pack of leads and comprehensive user guide. Guaranteed for two years.

### Specification

Bandwidth/resolution: S/S 6db @ 8.5MHz=700 lines  
S/comp 6db @ 8.5MHz=700 lines  
Comp/comp 6db @ 3.6MHz=300 lines

Detail enhancement: Approx ±6db @ 2MHz  
Brightness control: DC Black Level ±15%  
Contrast control: > -34db to +6db (2% to 200%)

Colour saturation: > -34db to +6db (2% to 200%)

RGB control: Adds between 0 and 50% of max RGB subcarrier

Technology: Mixed Bipolar and HCMOS (incorporates 18 ICs and 35 semiconductors)

Power supply: 240mA @ 15V dc  
Dimensions: 385 x 165 x 60mm  
Weight: 1.6kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB44X	Video Corrector	£212.750	£249.990

## Colour Video Title Generator-VTG288Plus

Videotech Design



The VTG288Plus superimposes titles and sub-titles over live pictures. Titles are created either by using a simple on-screen cursor/grid system or by modifying the built in demonstration pages. The unit has 4 superb high resolution fonts with 126 characters including upper and lower case letters, numbers, punctuation and many useful symbols and graphics. Each line of text can be of a different font, height or colour and the width of the characters is variable. Titles can be dissolved in and out of the picture and displayed professionally using the ultra-smooth 2-speed vertical scrolling facility. Short animated sequences can also be created. Supplied with mains adaptor, starter pack of leads and comprehensive user guide. Guaranteed for two years.

### Specification

Video inputs 4 pin S skt. Y=1V p-p. C=3.0V p-p. Term 75Ω.

Vid outputs Phono socket for COMP Vid 1Vp-p 4pin S socket. Y=1V p-p. C=3.0V p-p. Term 75Ω. Phono socket for comp Video 1V p-p. Term 75Ω

Resolution S-S>6.5MHz/500 lines  
S-COMP>6.5 MHz/500 lines  
COMP-COMP>3.2 MHz/250 lines

Colours 16 colours  
Pages 16 pages non-volatile.  
Power supply 10V DC. Max ripple 1V p-p

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM33L	Colour Vid Title	£297.860	£349.990

## Video Editing & Effects Controller

Videotech Design



The VEC2070 combines five essential post-production units in one. A built-in processor/enhancer which provides adjustment of the picture brightness, contrast and colour saturation. A superb range of special effect, including 60 wipe and masking patterns with hard or variable soft edges, in 32 different colours which can all be perfectly synchronised with the edit transitions. A high quality 4 channel stereo mixer with a manual master fader. Supplied with mains adaptor, starter pack of leads and comprehensive user guide. Guaranteed for 2 years.

### Specification

Video inputs 2 x 4pin skts (Y=1V p-p, C=0.3Vp-p. Term 75Ω)  
2 x Composite Phono skts (Video =1Vp-p. Term 75Ω)  
Video outputs 1 x 4pin S skt (Y=1V p-p, C=3.0V p-p. Term 75Ω)  
2 x composite phono skts. (1xnormal output and 1x preview output. video=1Vp-p. Term

75Ω)  
Resolution S-S>7.7MHz/600 lines  
S-comp>7.7MHz/600 lines  
Comp-comp>3.2/250 lines

Special Effects Automatic and manual audio and video fades.

VTR Control Both master and copy VTRs can be controlled by infra-red remote pause.

Audio Channels Each channel has 2 phono sockets for stereo L&R signals. Impedance=10KΩ. Max Gain=14dB. Freq resp 10Hz-20KHz±3dB.

Microphone Input 0.25" mono jack.

Audio Output 2 Phono sockets for stereo L&R.

Impedance<1KΩ.

Headphones 0.25" stereo jack socket

Power Supply 16V DC. Max ripple 1Vp-p

Overall size 415mm x 270mm x 75mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM32K	Vid Ed and Effects	£340.410	£399.990

## Vision Mixer / Digital Timebase Corrector-VMX400

Videotech Design



The VMX400 has digital frame store which enables a number of digital effects to be performed on the picture, such as picture in picture effects, chroma key and perfect still frames. The unit offers an amazing range of 60 automatically or manually controlled wipe masking patterns with hard and soft edges. A special digital picture processing facility provides adjustments of positive/negative, detail,

brightness, contrast and colour saturation. the VMX400 can also re-register the colour horizontally and vertically to minimise colour smearing. The unit also has the chroma key facility that enables and selected colour in one picture to be replaced by another picture. Any one of 5 sizes of picture in picture (PIP) can be selected and moved to anywhere on the screen. The digital store also enables the capture of perfect and recordable still frames. Supplied complete with mains adaptor and starter pack of leads. Guaranteed for 2 years.

**Specification**

**Vid In** 2 x S Video. Y=1 V p-p, C=0.3V p-p. Term 75Ω. 4 pin S skts. 2 x COMP Vid. 1 V p-p. Term 75Ω. phono skts. S Vid. Y=1V p-p, C=0.3Vp-p. Term 75Ω. 4 pin S skt. COMP Vid. 1 Vp-p. Term 75Ω. Phono skt. Preview Out-2 x Composite Vid phono sockets.

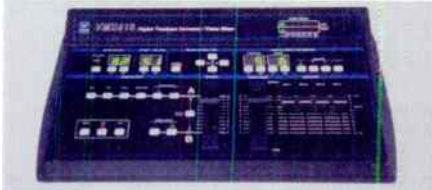
**Resolution:**  
**Channel A** S-S>5.5MHz/500lines  
S-COMP>5.5MHz/500lines  
COMP-COMP>3.2MHz/250lines  
**Channel B** S-S>7.0MHz/550lines.  
S-COMP>7.0MHz/550lines  
COMP-COMP>3.2MHz/250lines  
**P Supply** 9V DC  
**Size** 322mm x 270mm x 75mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PDR3E	Vision Mixer	£468.070	£549.990

**Vision Mixer/Timebase Corrector - VMX410**

Videotech Design



The VMX410 uses the very latest digital techniques to stabilise and synchronise video signals so they can be timebase corrected or mixed together. A special digital picture processing memory provides adjustment like positive/negative, detail, brightness, contrast and colour saturation. The unit can also re-register the colour horizontally and vertically to minimise colour smearing.

Chroma key is one of the most common special effects seen on TV and the VMX410 put this facility at your fingertips with its simple cursor system to select the key colour. 5 sizes of picture-in-picture (PIP) are available and can be positioned anywhere on the screen. The unit has a full 4-channel stereo sound mixer together with audio fader, microphone and headphone socket, and VU meter. Supplied complete with mains adaptor, starter pack of leads. Guaranteed for two years.

**Specification**

**Vid Inputs** 2 x S Video. Y=1V p-p, C=0.3V p-p Term 75Ω. 4 pin S skts. 2 x COMP Vid. 1V p-p. Term 75Ω. Phono skts.  
**Vid Outputs** S Video . Y=1V p-p, C=0.3V p-p. Term 75Ω. 4 pin S skts. COMP Vid. 1 V p-p. Term75Ω. Phono skt. Preview Outputs: 2 x Comp Video phono skts for channels A & B.

**Resolution**  
**Channel A** S-S>5.5MHz/500lines  
S-COMP>5.5MHz/500lines  
COMP-COMP>3.2MHz/250lines  
**Channel B** S-S>7.0MHz/550lines  
S-COMP>7.0MHz/550lines  
COMP-COMP>3.2MHz/250lines  
**Power supply** 9V DC.  
**Size** 415mm x 270mm x 75mm

Retail Unit Price each (inc. VAT).

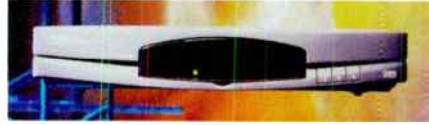
Order Code	Type	Price each exc. VAT	inc. VAT each
VM35Q	Timebase Corrector	£595.730	£699.990

**SATELLITE EQUIPMENT**

**SYSTEMS**

**Prima - Integrated Receiver, Decoder with Dish**

Pace



- ★ 125 TV & Radio channel capacity with selected pre-programming and easy on-screen identification.
- ★ Full infra-red remote control including favourite channel facility giving fast access to preferred programmes.
- ★ Scart socket for connection to TV or VCR.
- ★ Wegener Panda 1 stereo for crystal clear sound quality reproduction.
- ★ Integrated VideoCrypt decoder for a viewing card.
- ★ 4 event, 28 day timer for use in conjunction with a VCR to record satellite programmes.
- ★ On-screen menus for easy initial set-up with parental lock for total control over channel access.
- ★ Standard 60cm dish, 80 cm dish £17.02 (£20.00 inc VAT) extra in areas where required.

PRICE BASED ON 12 MONTH SUBSCRIPTION TO SKY PROGRAMMING AT PREVAILING RATES PLUS INSTALLATION. CALL OR CHECK IN-STORE FOR DETAILS ON ANY SPECIAL SKY PROMOTIONS

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FN84F 1	Pace Prima 60cm	£127.650	£149.990

**RECEIVER/DECODERS**

**SR-90 VC-1 Satellite Receiver**

Echostar



- ★ Astra 1D Compatible
- ★ 22KHz high/low Band Selection
- ★ Built-in VideoCrypt 1 Decoder
- ★ Remote Control
- ★ OSG in English

A high quality satellite receiver equip with a range of user friendly features at an attractive price. The SR-90 is fully compatible with Astra 1D and offers OSG in a number of languages including English. 22 KHz high/low band selection is available for future programmes. The unit is supplied with a built-in VideoCrypt 1 decoder.

INSTALLATION AND SKY SUBSCRIPTION NOT INCLUDED

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV77J 1	Echostar SR-90/VC1	£161.690	£189.990

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**LT-8700 Satellite Receiver**

Echostar



- ★ Multi-satellite Receiver
- ★ Motorised
- ★ Full UHF Remote Control
- ★ Choice of Decoders
- ★ Parental Lock

The LT-8700 is a top line motorised multi-satellite receiver designed with the highest quality in mind. The full function UHF remote control allows you to change television or radio channel on any television set in your house from any room. The unit offers D/D2Mac, VideoCrypt

INSTALLATION AND SKY SUBSCRIPTION NOT INCLUDED.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV73Q 1	Echostar LT-8700	£96.160	£1,099.990

**REPLACEMENT DISHES**

**Upgrade Satellite Dish**

Channel Master



Both 60cm and 80 cm dishes are available. The 60cm dish is an off set satellite dish and comes complete with LNB, ORDER CODE - FN89W

The 80cm dish, DOES NOT come with an LNB and is specified below:

Frequency range 10.95 - 12.5 GHz  
Gain @ 12.75 GHz 80cm 39.00dB  
Offset angle 22°  
Azimuth Range 180°  
Elevation angle 5-50°  
ORDER CODE - KST0M

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FN89W	60cm Dish + LNB	£42.540	£49.990
KST0M	80 cm dish	£42.540	£49.990

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## Channel master 90cm Motorised Pack



Pack contains:- Motor arm.  
90cm dish.  
Polar Mount.  
Polar Rota  
Feed horn

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FN70M	90cm Motorised Pack	£195.730	£229.990

## LNB'S

### Low-Noise Enhanced LNB



A high-quality Astra 1D-ready LNB with an ultra-low noise figure of 0.8dB. A feed and voltage-operated polarity selector is incorporated for compatibility with the majority of Astra receivers. The standard 40mm throat can be accommodated by most dishes, making this LNB a superior replacement for those normally supplied. A quieter LNB should lead to improved performance where marginal conditions – e.g., a heavy downpour on the edge of the satellite footprint – are experienced. This LNB converts the 10.7GHz to 11.7GHz band to an IF range of 950MHz to 1950MHz. If used with an modern extended-IF receiver (one with a tuning range of between 950MHz and 2050MHz), coverage of all Astra services is possible. It is important to seal the cable connection from the outside world using self-amalgamating tape. The output connector is a standard 'F' socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS85G 1	Enhanced LNB	£25.520	£29.990

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## Cambridge Universal LNB



There are many channels outside the 10.7GHz to 11.7GHz band (known as FSS) occupied by Astra. The satellites that use these higher frequencies are within the scope of a motorised dish (or fixed dish with Satwalker). 11.7GHz to 12.5GHz, a band known as DBS, is popular among Scandinavian and French satellite broadcasters. The area between 12.5GHz and 12.75GHz, meanwhile, is called the Telecom band. French channels on the Telecom satellites use these frequencies. Collectively, the FSS, DBS and Telecom frequency ranges are known as the Ku band. With a universal LNB, all channels on Ku-band satellites – from Astra 1D to Telecom – are within your grasp. To maintain compatibility with the tuning range of satellite receivers, the Cambridge Universal LNB splits the Ku band into two sections. The first corresponds to the FSS band (10.7GHz to 11.7GHz), the second the DBS and Telecom bands (11.7GHz to 12.75GHz). The upper frequency section is selected by a 22kHz tone, which is supplied by the receiver via the coaxial cable (together with supply voltage). Any receiver with 22kHz tone switching is compatible. Channel polarity is selected by the LNB supply voltage (13V/18V), as per standard Astra LNBs. Noise figure: 1-5dB (max, lower section), 1-3dB (max, upper section). Standard 40mm throat for ease of fixing to standard dishes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS88V	Universal LNB	£36.580	£42.990

## Twin LNB



This twin enhanced LNB is just that – two independent LNBs in the same package. Each high-quality LNB has its own output 'F' socket for feeding a receiver. Now, both receivers can select channels of either polarity regardless of what the other is watching. It is worth purchasing one of these LNBs at the outset if two-receiver operation is likely – simply seal off the unused output terminal with self-amalgamating tape. Please note that each connected receiver will need a frequency extender to view channels below 10.95GHz (Astra 1D, etc.). Designed to fit standard dish, with 40mm throat. Frequency coverage: 10.95GHz to 11.7GHz. Noise figure: 1dB. Please note this LNB is not suitable for old type receivers with restricted tuning range.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS86T 1	Twin LNB	£34.030	£39.990



## Universal twin LNB



The universal twin LNB offers a polariser and low noise converter in a single assembly. The channels that output from either of the connectors will be determined by the control voltage applied to the output and whether a 22kHz tone is present. The signals from each output are independent of the signals selected on the other output. This universal LNB will cover from 10.7ghz to 12.75ghz.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MY11M 1	Universal twin LNB	£76.580	£89.990

## Multi LNB Holder



Lenson heath multi LNB holder (40mm), designed to hold 4 LNB's.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FR72P	Multi LNB Holder	£17.010	£19.990

## ACCESSORIES

### 10dB In-Line Amplifier for Satellite TV



If coax cable runs of 40 to 50m are required between dish/LNB and receiver, it is likely that the signal will be attenuated enough to impair performance. By installing this in-line amplifier at the receiver end, the cable losses are compensated for. It must be stressed that an in-line amplifier will not reduce sparklies if the dish is too small for the required channel, or the LNB is too noisy! Indeed, in-line amplifiers (which are powered by the LNB supply voltage sent up the coax) introduce noise themselves, and could make matters even worse under such circumstances! Power consumption is a minimal 50mA, and the amplifier works over the full 950MHz to 2050MHz IF range. Input and output connections are made via F connectors (not included). All connections should be sealed with self-amalgamating tape (not included) to keep out moisture.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM94C	Sat TV Amp 10dB	£12.750	£14.990



## 20dB In-Line Amplifier for Satellite TV



A higher-gain version of the above. Designed to compensate for cable losses in runs that exceed 80m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BM95D	Sat TV Amp 20dB	£15.310	£12.450	£10.550	£17.990

## SCART Satellite to Two Decoders Switch Unit



A changeover switch unit enabling two satellite decoders to share one satellite receiver. This will allow two differently encrypted satellite formats to be quickly and easily switched from one to the other. Switching is by a simple push button. Size: 123 x 82 x 34mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BM96E	Sat Decoder Selector	£8.500			£9.990

## Satellite Finder Kit



A compact, battery powered meter to help align your satellite dish for best reception. The output from the satellite LNB is fed directly into the unit, via 1.8m (6ft.) of RF cable provided, and by adjusting the gain and sensitivity of the unit, the best position for the dish can be found. The kit includes a compass to help in the initial positioning of the dish. The PVC case has a covered compartment for the battery holder, which takes 10 x 'AA' type batteries (not included).

### Specification

Frequency range:	950 to 1550MHz
Gain:	10dB + 4dB
Sensitivity control:	12dB + 4dB (LNB gain = 55dB, C/N = 15dB) +12V to +18V
Power supply:	+12V to +18V
DC Supply current:	60mA
Operating range (input):	62 to 80dB (LNB gain = 55 to 60dB)
Impedance:	75Ω

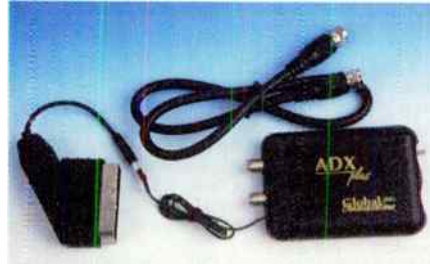
Connections: 'F' type female (input/output)  
Case size: 245 x 125 x 55mm

**NOT COVERED BY 7 DAY REFUND POLICY UNLESS FAULTY.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BZ68Y	Sat Finder Kit	£34.030	£26.000	£23.250	£39.990

## Frequency Extender



This device, which sits between the LNB and the receiver, enables the new Astra 1D satellite to be received by systems currently unable to. Older receivers and LNBs will only allow tuning between 10.95GHz and 11.7GHz. Astra 1D and the lower Astra 1C channels, however, range between 10.7GHz and 10.95GHz, which lies just beneath. Most LNBs do in fact cover the Astra 1D band, but the 700MHz to 950MHz range to which it is converted is not within the scope of the tuners used in most satellite receivers. This frequency extender, however, gets round the problem by shifting the entire band upwards by 250MHz, so that the Astra 1D channels appear at the bottom of the receiver's tuning range. For example, RTL is replaced by NBC Super Channel. So that the Astra 1B channels at the top of the band can still be received, a bypass facility is included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BV76H	Frequency Extender	£19.560			£22.990

## A.B Switch



Sat/Antenna/Cable switch, can simply be installed to switch one piece of equipment between two signal sources (i.e. Satellite dish, TV aerial or FM antenna).

### Specification

- ★ For SAT/CATV ues.
- ★ Bandwidth DC-2050MHz
- ★ High Isolation, low loss

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MY03D	A/B switch	£5.940			£6.990

See Stock Code Index For More Price Breaks

## Satellite installation Kit



This satellite DIY installation kit is ideal for the enthusiast that wants to install their own satellite system. The kit contains 20m of black satellite coaxial cable, fixing bolts, cable clips and 2F connectors.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MY04E	Sat installation kit	£9.350			£10.990

## Screw-On F Connectors

A selection of screw-on F connectors for a variety of different cables including RG58, RG59 and CT100, etc.



Cable Type	Part Number	Order Code
RG6, CT100, 3/X/289	TOF 56	FU04E
RG58, 309 EP	TOF 58	FU05F
RG59, H109F	TOF 59	FU06G
H47, RA521, CT125	TOF 5C2V	GV17T

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FU04E	RG6 F Plug	£0.842	£0.680	£0.520	£0.990
FU05F	RG58 F Plug	£0.842	£0.680	£0.520	£0.990
FU06G	RG59 F Plug	£0.842	£0.680	£0.520	£0.990
GV17T	CT125 F Plug	£0.842	£0.680	£0.520	£0.990

## AUDIO VIDEO ACCESSORIES

### SPEAKER FLOOR STANDS

## Speaker Floor Supports



A pair of stylish, rigid, fixed tilt speaker supports that will complement and support most popular loudspeakers. Designed to enhance both performance and style of your speakers on solid floors or carpets, the supports will take speakers weighing up to 25kg (55lb.). Overall dimensions: 305 x 245 x 70mm. Finished in black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BV92A	Speaker Floor Support	£17.010	£15.650	£14.600	£19.990

## Speaker Stands



An inexpensive versatile stand the Z.L.S is of all welded construction with a sloping rectangular centre pillar that is easily sand filled through the port in the top plate. The base plate is pre drilled the threaded to accept 6mm floor spikes as an optional extra. Finished in Partington black wrinkle finish polyester.

Dimensions

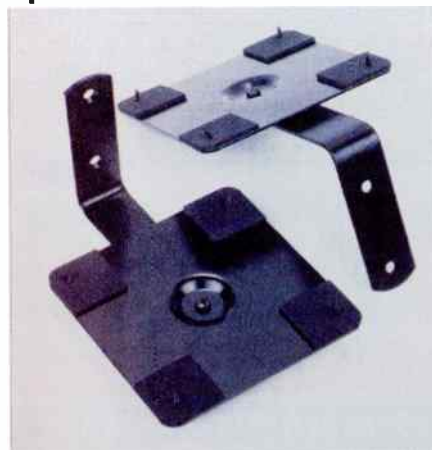
MY05F	Height 300mm
	Top plate 165mm x 165mm.
MY06G	Height 450mm
	Top plate 165mm x 165mm.
MY07H	Height 600mm
	Top plate 165mm x 165mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 17572	Price each exc. VAT	inc. VAT each
MY05F 1	Speaker stand	£29.770	£34.990
MY06G 1	Speaker stand	£34.030	£39.990
MY07H 1	Speaker stand	£36.580	£42.990

## SPEAKER WALL BRACKETS

### Speaker Wall Brackets



This is a simple but effective pair of speaker wall brackets that take virtually no time to install. Simply screw a speaker to each base with the four short screws provided and fix the assembled units to the wall. Once fitted, your speakers can be turned through 360° allowing you to set them up in the optimum position.

Solidly constructed in black painted metal, the pair of brackets feature foam pads to help dampen unwanted vibration and are supplied with all necessary fixing screws.

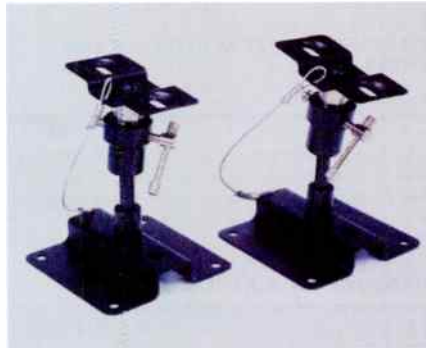
Retail Unit Price each (inc. VAT).

Order Code	Type 9834	Price each exc. VAT	inc. VAT each
CN37S	Speak Wall Bracks A	£9.350	£10.990

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## Speaker Wall Bracket



This pair of heavy duty Speaker Wall Brackets is robust, solidly constructed and very adjustable. Once your speaker is fitted to the bracket, you can use the bracket's ball and socket joint to rotate it through 360° in the vertical plane and up to 90° in the horizontal. When your speaker is set up at the exact angle that you want for it, simply tighten the allen key to safely lock it into place. Supplied with screws and washers suitable for fixing a pair of speakers to the brackets. Maximum depth from wall: 130mm. Wall fitting 100 x 100mm. Maximum load 5kg / bracket.

Retail Unit Price each (inc. VAT).

Order Code	Type 9834	Price each exc. VAT	inc. VAT each
CN38R	Speak Wall Bracks B	£12.750	£14.990

## Battery Operated Stereo Mixer



A high quality low-cost battery powered stereo mixer incorporating sophisticated solid-state circuitry to ensure low-noise performance. The unit is enclosed in an attractive black case designed to eliminate hum while allowing the switch-control panel to be operated with ease. This mixer's range of facilities includes an input for a microphone (600Ω), a headphone socket, two phono inputs (RIAA compensated for magnetic pick-ups), and one auxiliary input for tuner/tape etc. Slide type gain controls on the front panel enable fingertip control for complete mixing and fading. All the input/output phono sockets are at the rear of the unit with the exception of the 6.35mm (1/4in.) mono jack socket for the microphone and the 6.35mm (1/4in.) jack socket for the headphones, which are positioned on the front panel. A PP3 9V battery (JY49D) provides the power to run this unit or alternatively a 9V DC battery eliminator, such as our XX09K may be used. The battery is fitted inside the mixer case and access is via a removable cover in the base. The battery eliminator connection is a 2.1mm power socket on the rear panel.

### Specification:

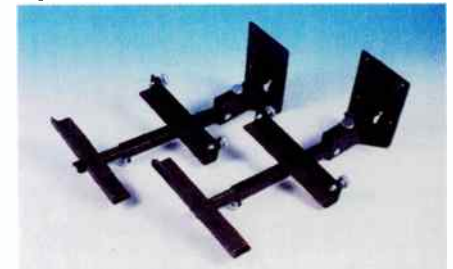
Frequency response:	20Hz to 20kHz ±1dB
Distortion:	<0.5%
Signal to noise ratio:	>55dB
Output:	220mV (max 2V) at 50kΩ
Mic input:	0.3mV at 600Ω
Phono inputs:	3mV at 50kΩ
Aux input:	120mV at 50kΩ

Current consumption: 12mA  
Overall dimensions: 228 x 178 x 80mm  
Weight: 1176g

Retail Unit Price each (inc. VAT).

Order Code	Type 4567	Price each exc. VAT	inc. VAT each
XJ14Q 3	Sound Mixer	£25.520	£29.990

## Speaker Wall Brackets



A pair of high quality, adjustable loudspeaker wall brackets that are quick and easy to assemble and will support speakers weighing up to 16kg (35lb.). The brackets feature a swivel facility with variable tilt (±15°) and security pins to clamp the speakers (no screws into enclosures) and adjust to accept speakers from 114 to 229mm. Functionally styled to suit all domestic and commercial environments and finished in black. Fixing screws supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type 9018	Price each exc. VAT	inc. VAT each
BV91Y	Speaker Wall Bracket	£17.010	£19.990

## Corner Speaker Bracket



This speaker bracket offers the upmost flexibility in the choice of mounting positions. The two way swivel plate at the wall end of the bracket allows it to be mounted not only on a flat surface, but also into the corner of the room or on an outside corner. The wall mounting plate adjusts to any angle between 90° and 270°.

The arm which extends from 16-23 cm, swivels horizontally and can be locked into any position.

The speaker mounting plate swivels vertically, allowing the speaker to be attached from the top, the bottom of the back and to be adjusted to any angle.

The bracket will support speakers up to 15kg in weight. It is available in black (KM64) and white (KM63) and is packed in pairs.

Fixing holes: 0.7 mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17561	Price each exc. VAT	inc. VAT each
KM63T	Corner Spkr Bract Wt	£19.560	£22.990
KM64U	Corner Spkr Brct Blk	£21.260	£24.990

**SPEAKER CABLE**

**Micro Flat Speaker Cable**



This high performance micro flat speaker cable is perfect for connecting your speakers invisibly.

At only 0.5mm thick this oxygen free speaker cable has a high strength adhesive back that will stick to most surfaces and, a paintable jacket, meaning that it can be painted or wallpapered over or run under carpet for invisible installation. Or, the off white colour of the jacket blends quite easily with most decors. Hookup is simple - all you need are scissors and a small screwdriver.

This brilliant cable has 18 AWG oxygen free copper conductors and comes complete with 8 corrosion resistant gold plated pins maximising signal transfer and minimising signal loss.

Available in two lengths 30ft (Order code - MX99H) and 50ft (Order code - MX83E)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX99H	flat spkr cab 30ft	£34.030	£39.990
MX83E	flat spkr cab 50ft	£51.050	£59.990

**TV AND VIDEO BRACKETS**

**Monitor/TV Wall Mount**



Allows you to mount your TV or monitor on a wall anywhere in the home or office. The platform will take a set of up to 49cm screen size and weight up to 12kg in complete safety. The platform can be tilted using a knurled adjuster screw, and swivelled horizontally in any direction. The support comprises a double jointed extension arm for total versatility; can be turned round completely and even around corners. Ideal for alcoves and through rooms, etc. Also ideal for computer monitors. Quickly and easily installed using the full instructions provided. Six 50mm screws, a spanner and wall plugs may be required for wall fixing.

**Warning:** This installation depends on a strong and sturdy attachment to a solid brick or block wall.

Attaching to board partitioning is not recommended, unless fixing directly to an underlying, vertical timber support. In any event, if in doubt, consult an experienced person.

Made in high grade steel, painted white. Dimensions of platform, 305mm wide x 280mm deep. 20mm raised lip at front. Distance from wall: fully retracted, 305mm; fully extended, 580mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GK28F	TV Wall Bracket	£21.260 £19.650 £17.800	£24.990

**TV Wall Bracket**

A quick and easy to assemble TV wall bracket for total viewing convenience, featuring a locking swivel and tilt shelf. The bracket will accept up to a 36cm TV or monitor (FST/FSQ) weighing up to 27kg and comes with a six-fixing wall plate providing added safety. Dimension of shelf: 355 x 254mm. Front of shelf to bracket: 330mm. Finished in black.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV31J	TV Wall Bracket	£15.310	£17.990

**Multiview TV Wall Bracket**

A multifunction TV bracket with articulated arm and adjustable tilt that allows exact positioning of TV for perfect viewing.



The large shelf, 335 x 305mm, enables most TVs up to 27kg to be wall mounted, and comes with a six-fixing wall plate providing added safety. The quick and easy to assemble shelf is ideal for kitchens and bedrooms. Front of shelf to bracket: 597mm. Finished in black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV32K	Multiview Bracket	£21.260	£24.990

**TV and Video Wall Bracket.**

AVF



- ★ Supports most TVs up to 20"(50cm) in screen size.
- ★ Wall mount supports TV and VCR with a combined weight up to 80lbs(36kg)
- ★ Adjustable width VCR bracket holds most front loading VCRs 13-19" (333 - 483mm) wide and 4"(102mm) in height.
- ★ Vertical clamping adjusters secure VCR firmly in place.
- ★ TV and VCR rotate independently of each other up to 270° for perfect screen viewing.
- ★ Attractively finished in satin black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FN91Y	Tv/Vid Wall Bracket	£28.070 £26.850 £26.350	£32.990

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**AUDIO SWITCHING**

**Combined Stereo Input and Speaker Output Switch Control Box**



A combination switch control box comprising stereo phono inputs for CD and Tuner, which can be sent to a common stereo output for an amplifier not possessing enough line level inputs to include a CD player. In addition, up to two pairs of speakers can be connected to the amplifier's output either separately or simultaneously (provided the amplifier is able to drive two loads at once, e.g., down to 4Ω so that 8Ω/2 is acceptable). Switching is by rocker switches on a sloping front panel. Speaker connections are via spring-loaded terminals.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CN42V	Combo Audi Switch Box	£10.200 £9.000 £8.670	£11.990

**Audio Switch Box**



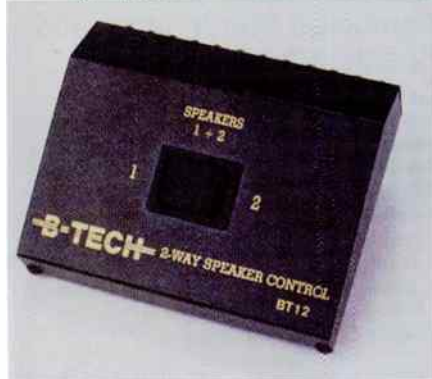
An extremely compact audio selector unit that allows switching between one of four stereo audio inputs. All connections to inputs and outputs are via standard phono sockets mounted on the rear of the unit, except input 1 where connection is via a front-mounted 3.5mm stereo jack socket, thus allowing 'personal stereo' type units to be connected to normal Hi-Fi equipment. Selection is by means of four top-mounted switches. Recesses above the switches allow identification labels to be neatly positioned. The unit is supplied with one stereo phono to phono cable, one stereo 3.5mm to 3.5mm jack cable, a self-adhesive double-sided fixing pad and five identification labels. Dimensions: 138 x 28 x 37mm. Colour: Silver.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YZ24B	Audio Switch Box	£16.160 £13.060 £11.580	£18.990

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## 2-Way Speaker Control



A neat, black metal, loudspeaker switch box that allows two pairs of loudspeakers to be used with one pair of amplifier loudspeaker terminals. The switch can select either pair of loudspeakers, or all four together. The internal wiring of this unit is such that the load presented to the amplifier will not fall below that of the lowest impedance speakers. Thus if 4Ω speakers are used, the minimum load will be 4Ω. The unit is for four speakers maximum and is NOT recommended for valve amplifiers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KP94C	2W Speaker Switch	£10.200	£7.650	£7.640	£11.990

## Four-Way Stereo Audio Switch Box



A 4-way switch box connecting three stereo pairs of input phono sockets to one stereo output pair for connection to a stereo amplifier. The three phono inputs are labeled 1: 'CD/MD'; 2: 'TAPE/DAT/DCC'; 3: 'VIDEO SOUND'. In addition an 'AUX' input (number 4) is provided as a stereo 3.5mm jack socket. The selector switch is in the form of a 4-way rotary knob labelled 1 to 4, on a sloping front panel.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CN47B	4Way Audi Input Ctrl	£8.530	£7.290	£6.430	£9.990

## Five-Way Stereo Speaker Switch Box



A 5-way switch box connecting left- and right-channel amplifier outputs to up to 5 pairs of speakers, either individually or simultaneously. Switching is by a bank of five push on, push off buttons. A stereo headphone socket is included. Speaker connections are via spring-loaded

terminals. Unit includes protection for the amplifier against open and short circuit, overload or erroneous connection.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CN46A	5 Way Speaker Switch	£17.010	£16.500	£15.560	£19.990

## Two-Way and Four-Way Stereo Speaker Switch Boxes



Two and four-way switch boxes connecting a stereo power amplifier to up to four pairs of speakers as required. In the 2-way version, up to two pairs of speakers can be connected to the amplifier's output either separately or simultaneously (provided the amplifier is able to drive two loads at once, e.g., down to 4Ω so that 8Ω/2 is acceptable). In the 4-way version, up to four pairs of speakers can be connected. Switching is by rocker switches on a sloping front panel. Speaker connections are via spring-loaded terminals.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CN43W	2 Way Speaker Switch	£9.350	£8.500	£7.700	£10.990
CN45Y	4 Way Speaker Switch	£16.160	£13.520	£11.480	£18.990

## AUDIO CASSETTES

### TDK Ferric



Using a high grade ferric-oxide coating, these cassettes promise high quality and sensitive recording with minimum tape noise. The D type is a great value for



money choice – they'll thrive on repeated recording and playback and are suitable for all types of cassette deck. AR type is TDK's premium super ferric grade and are ideal for digital sources. They record at higher levels without distortion and play your recordings back with powerful bass and low tape hiss. Available in D90 5 pack (BV04E) and AR90 3 pack (BV05F).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	10+	1+
BV04E	D90x5 Audio Tapes	£4.240		£4.990
BV05F	AR90x3 Audio Tapes	£4.240		£4.990

### CrO<sub>2</sub>



Chrome dioxide tapes provide a higher frequency response, dynamic range and signal-to-noise ratio than normal ferric-oxide tapes and they're ideal for all CD, digital and analogue sources. The CrDing type promises amazingly realistic sound that's full of power. The tape has a wide dynamic range with extremely low tape noise. The award winning SA type has high output characteristics that have set a new benchmark for CrO<sub>2</sub> tape. Available in CrDing – I190 3 pack (BV06G) and SA90 3 pack (BV07H).



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	10+	1+
BV06G	3-Pack Audio Tapes	£3.390		£3.990
BV07H	SA90x3 Audio Tapes	£5.090		£5.990

### Maxell Audio Cassettes



A good all purpose tape for general use including all types of music, speech, dictation and interviews. Ideal for personal and portable cassette players. Single cassettes available in 60 and 90 minute lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	10+	1+
FN82A	UR60 Single Tape	£0.757		£0.890
FN83B	UR90 Single Tape	£0.842		£0.990



**Packs of Audio Tapes.**



A good all purpose tape for general use including all types of music, speech, dictation and interviews. Ideal for personal and portable cassette players. Packs of 3 and 5 are available, with each tape either 60 or 90 minutes long.

CODE	Tape Length	Pack Size
PD67X -	90 mins	3
PD68Y	90 mins	5
MY08J	60 mins	3
MY09K	60 mins	5

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD67X	UR90 3 Pack Tapes	£2.540	£2.967
PD68Y	UR90 5 Pack Tapes	£4.240	£4.980
MY08J	JR60 five pack	£4.040	£4.750
MY09K	JR60 three pack	£2.280	£2.690

**Maxell CrO<sub>2</sub>**



The UDII-CD type is the ideal cassette for mini and midi stereo systems and quality portable cassette recorders and the cassette even includes a non-abrasive head cleaning leader tape. Use when recording from high quality stereo records, AM and FM stereo and other hi-fi sources. Available as UDII CD90 in a pack of 5.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV11M	UDII CD90 X5 Pack	£5.090	£5.990

**Maxell Open Reel Tapes**



Maxell open reel tapes are professional quality tapes offering outstanding performance for the professional recordist. The UD type (BV19V) offers high quality performance over a wide spectrum from the low to the superhigh frequency range. The XLI grade (BV20W) provides an extra edge and outstanding performance. 1800ft reels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV19V	UD Open Reel Tape	£8.500	£9.990
BV20W	XLI Open Reel Tape	£10.200	£11.990

**MICRO CASSETTES**

**Micro-Cassette C60**



A C60 micro-cassettes for use with dictation machines and answering machines, etc. Each pack contains two micro-cassettes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BD66W	Micro Cassette C60	£5.090	£5.990

**Micro Cassettes**

A micro cassette for dictation machines and compact Micro Cassette players. The D-MC60 is a TDK ferric-oxide tape ideal for speech and general purpose use including music, total playing time 60 minutes.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CT49T	D Micro MC-60	£5.090	£5.990

**Micro Cassette and Headcleaner**

The telpack features a MC60 cassette and Headcleaner and is compatible with other micro cassettes as well as telephone answering machines.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS73Q	micro cass-hd ctnr	£4.240	£4.990

**Cassette Fast Winder**



The cassette tape winder enables you to wind tape quickly by hand whilst listening to another tape. Suitable for a battery player/recorder, because

battery consumption is high when rewinding. The rewind time for a C90 tape is 60 seconds – faster than most recorders! The winder comprises a stowable handle attached to a large gear wheel that drives a hexagonal shaft through a pinion. The gears are housed in a tough plastic housing.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RT57M	Fast Tape Winder	£3.390	£3.990

**VIDEO TAPES**

**Single Video Tapes**



Super High Quality Grade Video Cassette best suited for long play recording. Available in 180 and 240 minute lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD69A	E-180 Single Tape	£2.110	£2.490
PD70M	E-240 Sngl Vid Tape	£2.540	£2.990

**Maxell VHS Cassettes**



These VX high quality grade video cassettes are produced by Maxell, one of the leading names in high performance magnetic tape. They promise exceptional durability and consistent quality and are ideal for general recording purposes. E180 packed in three's, E240 packed in two's.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS98G	Maxell E180 X3 Pack	£5.090	£5.990
BS99H	Maxell E240 X2 Pack	£4.670	£5.490

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## Video Tapes

TDK



Tough and reliable for everyday recordings and time-shift viewing. Available in packs of three. Length 3 hours.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD74R	HS-180 Vias 3 Pack	£5.940	£6.980

## Quality Video Tapes

TDK

Ideal for library-building, particularly suited to recording NICAM digital stereo broadcasts and for use with Home Cinema systems. Available in packs of two. Length 3 hours.



## VHS-C45 Camcorder Cassette

Maxell

Super high Quality Grade Video Cassette for everyday camcorder use. Length 40 mins.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD71N	VHS-C45 Sng Cam Cass	£4.240	£4.990

## Hi 8 Camcorder Cassette

TDK



A metal particle tape for sharply defined images from Hi8 camcorders. Available as singles. Length 90 minutes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD72P	Hi8 Camcorder Cass	£5.940	£6.990

## 8mm Camcorder Cassette

TDK



Natural colour and dynamic sound reproduction - ideal for outdoor sound recordings. Available in packs of 2. Length 90 mins.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD73Q	8mm Cam Cassette	£5.940	£6.990

## CAMCORDER TAPES

### Maxell Camcorder Cassettes

A range of professional quality video cassettes suitable for all video cameras and VHS video recorders (a VHS cassette adaptor is needed for use in full size VCRs). Featuring hi-output Maxell's own 'Black Magnetite' technology, these high quality cassettes deliver a sharp picture with excellent colour and superior sound.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV18U	VHS-C Two Pack	£7.650	£8.990

**Business Account Holders**  
No Delivery Charges for any order

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## ADAPTOR

### Motorised VHS-C Cassette Adaptor.



A motorised, battery operated cassette adaptor that enables you to view direct from a camcorder cassette. This adaptor will accept any VHS-C format compact video cassette tapes for recording or playback and fits into a standard VCR.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA28F	Motorised VHS-C Adap	£17.090	£19.990

## CD STORAGE

### Compact Disc Boxes



Empty boxes for digital audio Compact Disc. Keep some spare ones in case a box should be broken and your treasured CDs will always be protected. Available for single or double albums

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV62S	CD Double Case	1+ £1.430 25+ £0.850 100+ £0.720	1+ £1.690
BV61R	CD Library Case	£0.842 £0.550 £0.500	£0.990

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Electronics Magazine

**CD Jewel Boxes**

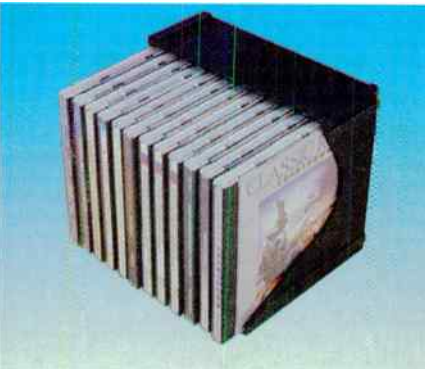


A pack of five CD boxes with the outer casing made from a transparent plastic, whilst the CD holder inside the box is made from a grey matt plastic. The boxes are intended as replacements for broken CD boxes etc. Dimensions: 142 x 125 x 10mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV65V	CD Jewel Boxes 5	1+ £3.390 10+ £2.550 25+ £2.250	1+ £3.950

**12 Compact Disc Storage Box**



CD's not included

A storage system which will hold up to 12 digital audio Compact Discs, allowing for easy access. It can be wall or shelf-mounted and is stackable. Dimensions H135 x W160 x D126mm overall. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YT18U	Compact Discbox 12	1+ £2.110 25+ £1.500 100+ £1.250	£2.490

**20 Compact Disc Storage Box**



CD's not included

A storage rack which will hold up to 20 digital audio Compact Discs, allowing for easy access. It can be wall or shelf-mounted. Dimensions H261 x W131 x D264mm. Colour black. Supplied flat packed ready for assembly.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YT19V 1	Compact Discbox 20	1+ £2.540 25+ £2.250 100+ £2.000	£2.990

**Audio/Video Storage System**



A durable, two-shelf storage rack for CDs, computer games cartridges, video cassettes and audio cassettes. Holds up to 56 CDs, or 34 audio cassettes, or 11 video cassettes, or various combinations of each. Easy to retrieve and store. Supplied as a self-assembly pack with shelf supports in various positions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BH87U 1	CD Rack For 56 CDs	1+ £2.540	£2.990

**Trio Cd Rack**



- ★ Stores up to 14 CDs.
  - ★ Space for two double CDs.
  - ★ Stackable (up to 3 units)
  - ★ Available in Black only.
- CDs not included

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA43W	Trio CD Rack	1+ £3.390	£3.990

**CD Storage Rack Triangle**



A unique and innovative way to store your CDs. This easy to assemble stackable CD storage system will add style to your CD storage. Each rack will hold up to 20 CDs. CD's not included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV58N	CD Rack Triangle	1+ £3.820	£4.490

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## Wave CD Rack



- ★ Stores up to 20 CDs.
- ★ Stacks with other Wave units.
- ★ Angled slots for easy CD extraction.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA41U	Wave CD Rack	£5.080	£5.990

## Duet CD Rack



- ★ Stores up to 24 CDs
- ★ Wall mountable.
- ★ Can be linked with other duets in a number of ways to create vertical and circular formations.
- ★ HT: 12.5cm WD: 35cm DP: 12.5cm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD46A	Duet Cd Rack	£7.650	£8.990

## Stacking CD Rack



- ★ Stores up to 40 CDs, 50 Cassettes, 13 Videos, or any combination of these.
- ★ Stacks with other Rackit units to grow with your collection.
- ★ Available in Black only.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD49D	Rackit(black) 3	£7.650	£8.990

## Monza CD Rack

This attractive steel CD Rack stores up to 30 CDs. Available in black only.

HT: 87cm  
WD: 12cm  
DP: 15cm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD47B	Monza CD 30	£8.500	£9.990

## Stylish CD racks



A stylish Cd rack which holds a maximum of 22 CDs. More than one rack may be stacked together to increase the capacity CDs not included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FN86T	Wooden CD Rack	1+ 5+ 10+ 1+ £12.750 £11.880 £11.060 £14.990	1+ £8.990

## Audio Bank



A unique audio storage system that provides dust free protection for all your single, double CDs and audio cassettes. The unit will hold either 24 single CDs, 12 double CDs, 18 audio cassettes or a mixture of the three. There are three compartments with individual covers, and when opened the storage compartment slips out, automatically, for easy access to the CDs or cassettes. Each compartment can hold cassettes or a combination of CDs. The units are made of durable, impact-resistant plastic with rubber feet to protect your furniture. Designed to stack together, to give unlimited storage and protection of all your audio cassettes and CDs. Dimensions: 390 x 165 x 162mm approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BZ07H 2	Audio Bank	1+ 10+ 25+ 1+ £10.200 £8.350 £7.650 £11.990	1+ £11.990

## CD Carrier



A bag designed to carry a portable CD player, several CDs and headphones, made from hard wearing black vinyl. Two internal zipped pockets are provided along with belt loops and a shoulder strap.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV97F	CD Carrier	1+ £5.940	1+ £6.990

## CD Carry Bag



A black hard wearing nylon bag with a zipped padded section for a portable CD player and a padded pouch for headphones and CDs.



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A protective flap is held in place by Velcro. Complete with adjustable shoulder strap.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BH83W	Bag For Discman/CDs	£5.940	£6.990

### CD Carrier with Wallet



A handy CD carrier made from black vinyl with zippered compartment for a portable CD and headphones, plus a convenient wallet for up to 10 CDs. Supplied with an adjustable shoulder strap.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV96E	CD Carry Wallet	£7.650	£8.190

### AUDIO STORAGE

#### Library Cases



Empty plastic library cases for single cassettes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RB03D	Cassette Case Single	1+ 25+ 100+ 1+	£0.417 £0.290 £0.210 £0.490

### Cassette Rota-Rack Double



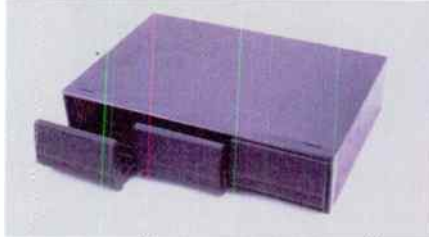
An attractive transparent smoke grey plastic cassette rack that revolves on a circular base. Has two tiers holding a total of 40 cassettes or 64 cassettes without their library boxes. When fully

loaded, the rack requires a space of 250mm diameter to revolve in and the height is 265mm. Supplied in a neat flatpack and easily assembled.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YT17T 1	Rota-Rack Double	£4.240	£4.990

### Audio Cassette Cabinet



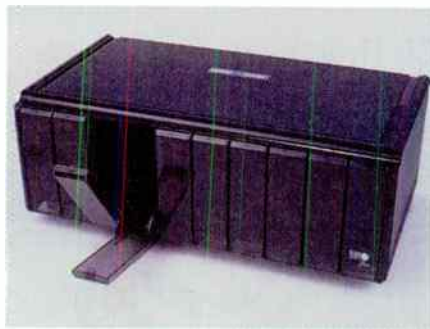
An attractive audio cassette cabinet that holds up to 36 cassettes arranged in three pull-out draws. Finished in a black ash woodgrain effect, the cabinets can easily be stacked to increase storage capacity. Dimensions: 360 x 260 x 83mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV95D	Audio Cass Cabinet	£5.940	£6.990

### VIDEO STORAGE

#### Video Bank

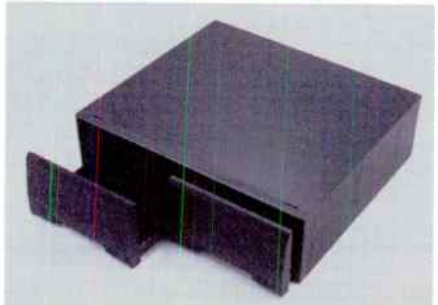


Designed to complement the 'Audio Bank', the 'Video Bank' is made to the same high quality, and includes the same automatic compartment slip out when the unit is opened. The 'Video Bank' vertically holds 10 VHS cassettes for optimum use of storage space and media protection. Complementary side labels are included for easy identification of the video cassettes. Dimensions: 390 x 209 x 141mm approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BZ08J 2	Video Bank	£11.060	£12.990

### Video Cassette Cabinet



A smart video cabinet for up to 24 cassettes that is finished in a black ash woodgrain effect. The cassettes are stored in two pull-out draws, and the

cabinets can be stacked to increase storage capacity. Dimensions: 428 x 400 x 130mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV94C	Video Cass Cabinet	£10.200	£11.990

### Multi Rack 3



- ★ 3 tier free standing storage rack.
- ★ Stores up to 153 CDs, 90 cassette, 54 Videos, or any combination of these.
- ★ Sliding dividers ensure CDs/Tapes/Videos stay in place.
- ★ Solid hardwood construction with black finish.
- ★ HT: 70cm WD: 59.5cm DP: 23cm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD48C	Multi Rack 3	£19.560	£22.990

### CD PLAYER CLEANING

#### CD Cleaner Pad and Spray Kit

A circular cleaning pad and base for cleaning the working surface of compact discs. The CD is placed face down onto the no-slip base (supplied), then treated with the spray-on cleaning fluid prior to a gentle rotary action with the pad.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CN41N	CD Cleaner W/Spray	1+ 10+ 25+ 1+	£4.240 £3.540 £3.080 £4.990



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## Compact Disc Laser Lens Cleaner



This laser lens cleaner is a special encoded cleaning disc provided with a cleverly designed unique brush system that ensures thorough and reliable cleaning without causing any harm to the sensitive, coated lens - it even plays music while it is cleaning. This disc is easy to use and has been designed to be played like a standard CD and work effectively with all CD players. Regular use will prevent the mistracking and distortion which would otherwise be caused by a dirty laser lens. Supplied in a storage case.

Retail Unit Price each (inc. VAT).

Order Code	Type 3123	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CN40T	CD Laser Lens Cleaner	£8.500	£7.950	£7.090	£9.990

## Combined Cassette, CD and CD Player Laser Lens Cleaner



A 'wet' type cleaning kit for both cassette players and recorders, compact discs and CD players. Supplied with bottle of cleaning solution which can be used with the cassette cleaner tape and with the special cloth provided for removing sticky fingerprints and other marks from the surfaces of CDs. In addition a laser lens cleaner CD is provided in the kit which includes a small cleaning brush on its playing surface. The CD is played in the normal way and the audio instructions on the disc outline the procedure.

Retail Unit Price each (inc. VAT).

Order Code	Type 3125	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BN174R	Cleaning Kit	£10.200	£8.310	£7.080	£11.990

## Compact Disc Cleaner Kit

Comprising a bottle of cleaning solution to be used with the special cloth provided for removing sticky fingerprints and other marks from the surfaces of Compact Discs.



Retail Unit Price each (inc. VAT).

Order Code	Type 3021	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CN39N	CD Cleaning Kit	£2.540	£2.400	£2.300	£2.990

## Automatic Compact Disc Cleaner



Simply insert a compact disk into this automatic cleaner, press the start button and the twin cleaning pads will rotate within their own axis giving an efficient and thorough cleaning action. Supplied with four cleaning pads and CD cleaning fluid. Powered by 2 'C' batteries (JY47B, not supplied) or an external 3V DC supply. Pack of 4 replacement cleaning pads available BV66W. Also extra cleaning fluid GT54J.

Retail Unit Price each (inc. VAT).

Order Code	Type 3025	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BV90X	Auto CD Cleaner	£12.750	£11.370	£10.350	£14.990
BV66W	Spare Pads For BV90	£1.260	£1.200	£1.150	£1.490
GT54J	Cleaning Fluid	£1.090			£1.290

## CD Hydrobath



The Cd Hydrobath is a unique NON CONTACT cleaning system developed to clean all types of compact discs. It combines the scientific principles of hydrodynamic technologies and the newly developed CD6+ surfactant cleaning solution, that is both a wetting agent, emulsifier and dryer, with a unique specially developed high speed rotation platform.

The CD6+ solution is pressure directed into the playing surface as the disc spins at a high rate of speed. After the cleaning cycle the disc spins in the other direction, completely drying the disc for use.

The CD Hydrobath is the ultimate cleaning system for all types of compact discs.

Replacement CD6+ cleaning solution is available. Order code MY01



Retail Unit Price each (inc. VAT).

Order Code	Type 17033	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MY00A	CD Hydrobath	£17.010			£19.990
MY01B	Fluid Hydrobath	£2.540			£2.990

## AF Spray

**Electrolube**

A fast evaporating solvent for tape drive maintenance, removal of contamination on the heads of floppy disc drives and removal of oil, grease and dirt from electromechanical equipment. Apply with Safewipes or Safebuds for cleaning magnetic read/write heads. For other applications spray directly onto parts to be cleaned. Supplied in 300ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type 11099	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FB88V	AF Spray	£7.400	£7.030	£6.660	£8.700

## Safeclene 2000

**Electrolube**

A fast evaporating non-flammable solvent for tape drive maintenance, removal of contamination on the heads of floppy disc drives and removal of oil, grease and dirt from electromechanical equipment. Supplied in a 200ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type 12007	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FC23A	Safeclene 2000	£15.200	£14.430	£12.530	£17.860

## Sound Check Audio Reference standard alignment CD

Sound Check 2



Sound Check 2 plus spectrum analyser



Sound check has become the international reference standard for sound designers, musicians and producers.

Sound Check 2 contains all the original Sound Check tracks for audio assessment, with the

addition of some new tracks, which really make sound check 2 the most valuable tool for anyone involved in the audio and music industry. These new tracks include extra dry vocal recordings from the spoken word, rock vocal, soprano and a unique live recording of Luciano Pavarotti. As well as extra tones, sound check 2 contains additional music tracks both classical and rock including "Luv 4 Luv" the ultimate test for bass loudspeaker and their amplifiers. Also incorporated in the sound check 2 analyser are complete instructions for instant frequency response measurement and graph paper for permanent records. The double CD case has a built-in microphone and sound level meter calibrated from -15dB to +12dB to form an instant system response analysis.

Sound check 2 - Similar to Sound Check 1 but with 99 tracks instead of the original 92.

Sound Check 2 plus spectrum analyser - This double CD case includes the sound check 2 Audio test CD and has a built in spectrum analyser with calibrated meter to measure the third octave frequency.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS80B	Sound check 2	£25.520	£29.490
MX44X 1	Snd chk2+remt anlysr	£63.820	£74.990

**CASSETTE CLEANER**

**Cassette Head Cleaner and Demagnetiser**



This cassette contains a special cleaning tape and also incorporates a revolving magnet which quickly demagnetises the tape heads as well as cleaning them. The cassette is supplied with a bottle of head cleaning fluid.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YW89W	Cassette Cln & Demag	£2.540 £1.490 £1.200	£2.990

**Head Cleaner Cassette**

TDK



This head cleaner is a non-abrasive, simple to use head cleaner that effectively removes harmful oxide accumulations from cassette deck heads. It will help to maintain optimum sound quality and peak operating performance from virtually any cassette deck.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KR07H	Head Cleaner	£1.690 £1.520 £1.410	£1.990

**VIDEO CASSETTE CLEANER**

**VHS Video Head Cleaning System**



If you want the best from your video recorder it's important that you keep the recording heads clean and free of impurities. This video head cleaning system will do the job for you quickly, safely and efficiently. Just place 3 or 4 drops of the cleaning fluid through the cassette window, load the cassette into your video recorder and play it for 20 seconds. It's as simple as that!

Supplied with a non-abrasive woven cleaning tape in a VHS casing and one bottle of cleaning fluid (enough for around 30 cleaning sessions). Also for use on S/VHS systems.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM73Q	SVHS Head Cleaner	£4.240 £3.700 £3.300	£4.990

**Tape Head Cleaning Fluid**

An 18cc bottle of specially formulated cleaning fluid for use with the cleaning tools and as a replacement for the fluid supplied with the Head Cleaner Tapes.



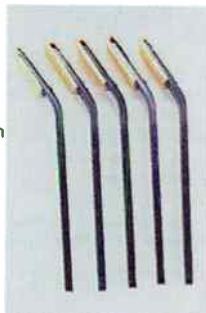
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FS88V	Head Cleaner Fluid	£0.842 £0.650 £0.590	£0.990

**VHS-C CLEANER**

**Video Tape Head Cleaning Tools**

A pack of five specially shaped tools for reaching the head in video cassette recorders. The probe tip is covered with a special material which will quickly clean the delicate precision head.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YN99H	Video Head Cleaner	£1.690 £1.000 £0.890	£1.990

**CAMCORDER CASSETTE**

**Camcorder Lens/Head Cleaners**



A range of cleaning products for use with camcorders including 8mm and VHS-C types. The range includes an 8mm Video Head Cleaner (BM71N), a Lens Cleaning Kit (CB84F) and a VHS-C Video Head and Lens Cleaning Kit (CB86T). Includes full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM71N	8mm Vid Head Cleaner	£4.240 £3.300 £2.950	£4.990
CB84F	Lens Cleaner Kit	£4.240 £3.450 £3.050	£4.990
CB85G	8mm Cam Cleaner Kit	£5.940 £4.300 £3.500	£6.990
CB86T	VHS-C Cam Cleaner	£4.240 £3.450 £3.050	£4.990

**Tape Head Cleaner Aerosol**

Electrolube

Removes contaminants from all magnetic tape heads, including critical video recording heads. Ensures peak response and best quality reproduction. It is electrically inert and safe in contact with all paints, rubbers and plastics. Leaves no residue.

Supplied in 100ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM81C	Tape Head Cleaner	£5.090 £4.950 £4.700	£5.990



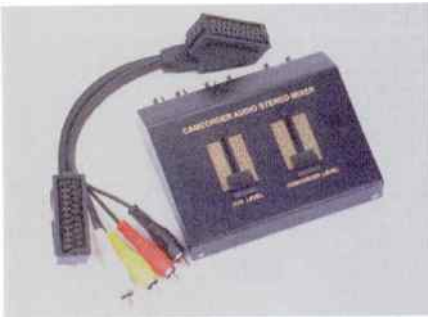
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## CAMCORDER ACCESSORIES

### Camcorder Audio Mixer



A simple yet effective audio mixer for use with camcorder applications. Allows the mixing of live and background audio, such as music from cassettes, to be adjusted to the correct levels prior to mastering to video cassette. Phono sockets are provided for connection of camcorder and auxiliary audio signals and outputs to video cassette. Slider controls allow separate adjustment of each input channel, with a smooth controllable action. Ideal for the home enthusiast. Supplied with full operating instructions and phono to SCART socket adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB87U	Cam. Aud./Stereo Mixer	£13.600 1+ £12.500 10+ £10.850 25+	£15.990 1+

### Dual Function Camcorder Battery Charger/Discharger

Uniross



This multi-function charger/discharger is suitable for a wide range of camcorder battery packs. It will charge 4-8V, 6V and 9-6V Ni-Cad packs of 800mA or higher capacity, and various physical shapes, e.g. Sony 6V and JVC 9-6V types. It can be used from the cigar lighter socket of your car or from the mains adaptor included. The charger stops automatically when charging is complete to prevent batteries from overcharging; a 4 LED status indicator decreases in brightness as charging proceeds and extinguishes when charging is completed. It takes about 5 to 6 hours to completely charge a 1000mA battery. A plug and lead to connect to a car's cigar lighter socket is included. The charger comes complete with operating instructions.

Dimensions of charger: 152 x 68 x 53mm  
Weight: 175g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
EM05F	Camcharger/Discharger	£25.520 1+ £23.650 5+ £22.950 10+	£29.990 1+

### Camcorder Battery Discharger



If you use your camcorder frequently, you may find that the battery life is gradually getting shorter. These effects are due to the memory effect of the Ni-Cd cells used in the battery pack. Memory effect occurs when the battery is recharged before it has run out. Battery packs can be rejuvenated by plugging them into the discharger featured here before recharging. This discharger is a universal type suitable for most 8mm and VHS-C camcorder 6V (check) batteries. It is designed to discharge the battery to an optimum discharge potential of 4-5V, sounding an alarm when this level has been reached. A 3 LED bargraph indicates the state of discharge. The unit also makes a handy battery tester.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB70M	Camcorder Discharger	£11.050 1+	£12.990 1+

### Uniross Camcorder Battery Discharger

Uniross



A fully automatic, simple to use discharger that is suitable for 90% of the NiCds currently in use. The unit will accept 6V and 9-6V batteries, and is supplied as a main discharger base with a 6V multi-batteries adaptor plate. Both items are housed in black plastic mouldings.

#### Specification

Discharge current: Constant current 500mA  
Discharge cut-off level: At 1V per 1-2V NiCd cell  
Suitable for battery types: Sony NP55/77  
Panasonic/JVC VBS1  
Canon BPE722/77  
Hitachi BP83  
Panasonic/JVC/Sharp 9-6V grip

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KC84F	Battery Discharger	£15.310 1+ £14.000 5+ £11.750 10+	£17.990 1+

### Medium Camcorder Bag



A soft camcorder bag with shoulder strap, fashioned from a black weatherproof material. Designed to accommodate the camcorder and accessories. The main section is padded for protection and is ideal for palmcoders. There are handy pockets to house accessories such as lenses, battery packs and external microphones.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB58N †	Camcorder Bag T089	£11.050 1+	£12.990 1+

### Large Camcorder Bag



A soft carrying bag for larger camcorders. With a shoulder strap, this bag is equipped with one internal and four zipped external pockets for accessories and is padded to prevent transit damage to the camcorder. Made from a silver weatherproof material.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB59P †	Camcorder Bag T089A	£12.750 1+	£14.990 1+

### Nylon Camcorder Bag



A soft black padded nylon camcorder bag with shoulder strap. There is an internal partition and two external pockets. Designed to carry camcorder and accessories. Dimensions: 200mm (h) x 310mm (w) x 140mm (d).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB60Q †	Camcorder Bag T089B	£17.010 1+	£19.990 1+

## Nylon Camcorder Bag with Adjustable Compartments



A soft padded black nylon camcorder bag with shoulder strap. The internal sections are adjustable in volume, making this bag ideal for palmcorders. There are three external pockets for accessories. Dimensions: 145mm (h) x 280mm (w) x 175mm (d).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB61R 1	Camcorder Bag T089C	£17.01D	£18.990

## Video Accessory Bracket



Got both video light and microphone, but only one accessory shoe on your camcorder? This bracket, which attaches to the accessory shoe and gives you two more, has been designed to overcome annoying problems such as these. The two shoes are mounted at right angles with respect to each other. There is a grip for better camera manageability, and a socket for tripod mounting

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB66W	Video Bracket	£3.500	£3.990

## SPARES

## REMOTE CONTROLS

### Minimate TV Remote Control



Simplicity itself, for those who just want to control the basic functions on their TVs. This remote will change channel +/-, power on/off, volume +/- and mute on/off.

- ★ Controls 1000s of TVs.
- ★ Easy to set up and use.
- ★ Large clear key layout.
- ★ Replaces broken and lost remotes.
- ★ Freephone helpline

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA29G	1to1 Remote	£11.050 £10.500 £10.000	£12.990

## 2 Way Remote Control



The 2 way is similar to the minimate but controls the basic functions on both Satellite Receivers and TVs. This remote will change channel +/-, power on/off, volume +/- and mute on/off.

- ★ Controls 1000s of TVs/Satellite receivers.
- ★ Easy to set up and use.
- ★ Large clear key layout.
- ★ Replaces broken and lost remotes.
- ★ Freephone helpline.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA30H	2 to 1 Remote	£13.600 £13.000 £12.500	£15.990

## 8 Way Remote Control



The 8 way has proved the most popular remote control. This single remote is preprogrammed to replace existing handsets for TVs, Videos, Satellite Receivers and cable TV systems.

- ★ Replaces up to 8 remote controls.
- ★ Covers 1000s of models.
- ★ Easy 4 digit set up.
- ★ Simple to operate
- ★ Teletext and Fasttext functions.
- ★ Clear large key layout.
- ★ Auto code search.
- ★ Freephone helpline.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA31J	4/8 Way Remote	£21.260 £20.500 £19.500	£24.990

## Visual 8 Remote Control



Top of the range the Visual 8 is not only preprogrammed but also has a learning capability. The liquid crystal display shows time, date, mode and step by step instructions making this remote even easier to use.

This single remote is preprogrammed to replace

existing handsets for TVs, Videos, Satellite Receivers 7 cable TV systems and the learning facility extends the coverage to almost any infra red remote including Cd/hifi.

- ★ Preprogrammed with learning capability (permanent memory).
- ★ Controls 1000s of models.
- ★ Easy to set up and operate.
- ★ Teletext functions with fastext.
- ★ Replaces up to 8 remotes.
- ★ Replaces broken and lost remotes.
- ★ Freephone helpline.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA32K	Visual8 Remote	£34.030 £33.500 £32.000	£39.990

## Programmable/Learning Remote Control Unit



A compact and versatile replacement remote control unit for controlling up to 8 separate devices, and includes a unique FF and REW thumbwheel for absolute control. Ideal for replacing lost or broken remote controls, or just as a means of eliminating the mass of remote controls needed to control all your appliances. Features simple code programming to select your current units and code 'learning' so that it can emulate a unit not supported on the device list. Eye catching illuminated keypad even allows you to use it in the dark! Supports PLAY, STOP, FF, REW, PAUSE, RECORD, channel selection, volume, teletext, stereo mode and fast text controls. Supplied with full operating and programming instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU15R 1	Remote Control	£32.330 £31.500 £30.500	£37.990

## The Angel Remote Control



**NEW**

The user friendly Remote Angel allows control of your home electronics systems and can replace up to 8 existing remotes.

The remote Angel LCD Touch control programmable learning remote allows one to program all the appliances to turn on and off in sequence, or even to turn on a system and start your favourite title.

Eliminates the need for having numerous remotes and the confusion as to which one to use. Programming the angel remote with commands is simple to accomplish with the instruction manual provided. The remote has 28 programmable visual keys for each system.

- ★ Back-up battery prevents memory loss
- ★ Full sized touch liquid crystal display.
- ★ Learns the functions of eight remote controls
- ★ Step by step instructions and easy to use set up routine.
- ★ 8 visual screens customised according to your requirements.
- ★ LCD panel lights up in the dark.
- ★ Customised screens for TV, VCR, CD, TAPE/TUNER & AMP
- ★ Macro function - program up to ten functions to operate at the touch of one button.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KM70M1	Angel remote	£85.060	£99.950

## Pace Universal Remote Control



**NEW**

Pace universal remote control. This handset can be used to replace any model in the PACE MSS range. The following models are compatible: APOLLO, MSS100, MSS1000, MSS1000IP, MSS1008, MSS1008P, MSS1038, MSS138, MSS200, MS238, MSS290, MSS300, MSS348, MSS500, MSS500IP, MSS508P, Hitachi - SR2070D, Sony - SAT301, Toshiba - TS540.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MY14Q	Pace remote control	£21.260	£24.990

## Multi-Link Remote Control



A compact remote control system that allows you to change channels on a satellite receiver, for example, while watching the video output in another room, that may be upstairs. Just point your remote control at the transmitter unit, and the receiver, which is situated in the same room as the video equipment you are controlling, will beam the IR signal to the equipment. The kit includes a transmitter and receiver and two power packs. An extra transmitter is available separately (FU87U). Dimension: 86(L) x 54(D) x 26(H)mm. Aerial length is 160mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV28F 1	Multi Link Remote	£42.540	£49.990
FU87U	Spare Transmitter	£25.520	£29.990

## DRIVE BELTS

### BSR Drive Belt

A replacement drive belt for use in models BDS95 and P163.

Diameter: 123mm Width: 5mm  
Thickness: 0.8mm Inside circumference: 387mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YW58N	BSR Drive Belt	£1.940	£2.290

### Garrard Drive Belt

A replacement drive belt for use in models SP25V, 86SBI, 86SB11, 125SB, GT10, GT20, GT35, GT55, 35SB.

Diameter: 138mm Width: 5mm  
Thickness: 0.8mm Inside circumference: 434mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC06P	Garrard Drive Belt	£1.940	£2.290

## Drive Belts For Japanese Turntables

A range of Record Turntable Drive Belts for the most popular Japanese record decks. All types have a flat cross-section and are 0.7mm thick.

	Pioneer	Sony/ Nat Pan	Hitachi
Diameter:	189	195	210
Width:	5	5	5
Inside Circumference:	594	613	660

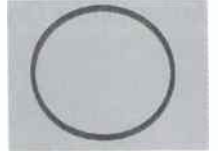
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FJ19V	Dr/Belt Pionr ASB189	£1.940	£2.290
FJ20W	Dr/Belt Sony ASB195	£1.940	£2.290
FJ23A	Dr/Belt Htch ASB210	£1.940	£2.290

See Stock Code Index For More Price Breaks

## Walkman-Type Drive Belt

A good quality drive belt for use with Walkman-type cassette recorders. Available with a square cross-section.



Diameter 26mm  
Cross-section 1mm<sup>2</sup>

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FD44X	Drive Belt 26mm	£0.587	£0.690

## Cassette Player Drive Belts

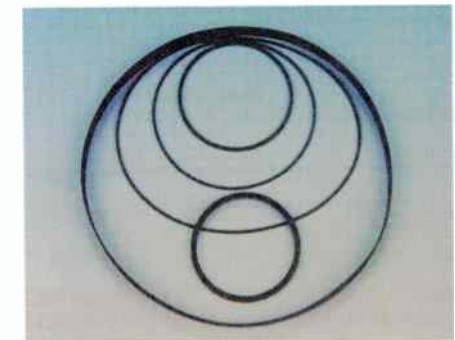
A range of good quality drive belts for use with cassette recorders. All belts have a square cross-section of 1.2mm<sup>2</sup>. The following sizes are available: 19mm, 30mm, 35mm, 46mm, 66mm, and 75.5mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FD36P	Drive Belt 19mm	£0.672	£0.790
FD37S	Drive Belt 30mm	£0.672	£0.790
FD38R	Drive Belt 35mm	£0.672	£0.790
YX76H	Drive Belt 46mm	£0.672	£0.790
YX78K	Drive Belt 66mm	£0.672	£0.790
YX79L	Drive Belt 75.5mm	£0.672	£0.790

## VIDEO BELTS

### Video Recorder Drive Belts



A range of kits each containing a complete set of replacement drive belts for the most popular video recorders.

Type	Use with Video Recorders type
HR3300	JVC HR3300/3320/3330/3600; Ferguson 3292; Baird 3V22 JVC HR3360/3660; Ferguson 3V16; Telefunken VR440
VC7300	Sharp VC7300/7700
3V29	Ferguson 3V29
VT11	Hitachi VT11

Retail Unit Price each (inc. VAT).

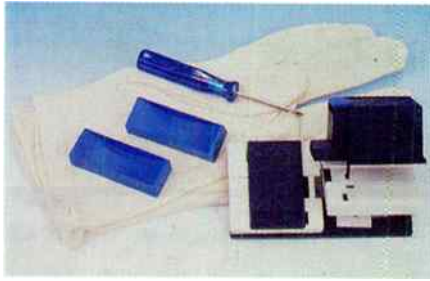
Order Code	Type	Price each exc. VAT	inc. VAT each
FJ06G	Video Belts HR3300	£2.970	£3.490
FD51F	Video Belts VC7300	£3.220	£3.790
MJ30H	Video Belts 3V29	£2.970	£3.490
MJ33L	Video Belts VT11	£2.970	£3.490

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## Automatic Video Cassette Tape Splicer



A very easy-to-use video cassette tape splicer which automatically dispenses a piece of pre-cut splicing tape onto the precise position of the tape join. Extremely detailed instructions are supplied showing how to repair the sort of typical damage that can be inflicted on VHS and Beta cassettes. The splicer is supplied with a screwdriver for dismantling cassettes; tape spool holders; a pair of gloves; and two spare blades. Replacement splicing tape cartridges are available.

Retail Unit Price each (inc. VAT).

Order Code	Type #822	Price each exc. VAT	inc. VAT each
YP60Q	Auto Video Splicer	£17.010	£19.990
FS63T	Vid Splicer Cartridge	£2.540	£2.990

## CASSETTE HEADS

### Standard Mono

A standard quality replacement cassette tape head with standard fixing bracket. Designed for use on mono cassette recorders as the record and/or playback head. Has tape guide fitted.



**Specification**  
DC resistance: 250Ω  
Impedance: 550Ω at 1kHz  
Record current: 56µA  
Bias current: 720µA at 50kHz  
Playback sensitivity: 550µV at 330Hz  
Dimensions of head:  
Width: 11mm  
Depth: 12.6mm  
Height: 8.5mm  
Bracket fixing centres: 17mm x M2 clear

Retail Unit Price each (inc. VAT).

Order Code	Type #644	Price each exc. VAT	inc. VAT each
FC64U	Mono Cassette Head	1+ 10+ 25+	1+ 10+ 25+
		£6.800 £4.440 £4.340	£7.990

### Standard Stereo

A standard quality replacement cassette tape head with standard fixing bracket. Designed for use on stereo cassette recorders as the record and/or playback head. Has tape guide fitted.



**Specification**  
DC Resistance: 220Ω  
Impedance: 850Ω at 1kHz  
Record current: 35µA  
Bias current: 350µA at 50kHz  
Playback sensitivity: 250µV at 333Hz  
Dimensions of head:  
Width: 11mm  
Depth: 12.6mm  
Height: 8.5mm  
Bracket fixing centres: 17mm x M2 clear

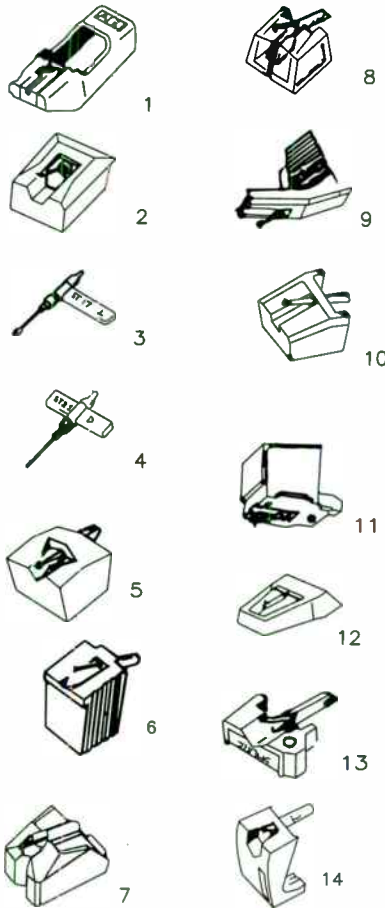
Retail Unit Price each (inc. VAT).

Order Code	Type #650	Price each exc. VAT	inc. VAT each
FC65V	Stereo Cassette Head	1+ 10+ 25+	1+ 10+ 25+
		£8.500 £6.020 £5.460	£9.990

## STYLI

### STYLI

High quality diamond tipped styli suitable for use as replacements for the models shown in the charts below. To keep your records in perfect condition, your stylus should be changed once or twice a year, depending on use.



## Styli Cross Reference Chart

Model	Order Code	Diagram Number	Model	Order Code	Diagram Number
ADC R-SQ30R	JX33L	1	Audio Technica		
Audio-Technica:			ATN81	FG94C	11
ATN3400	BK07H	2	ATN83	JX35Q	9
BSR ST17	HR74B	3	ATN3400	BK07H	2
BSR ST21	HR74R	4	ATN3451	BK07H	2
Goldring D113H	HR77J	5	ATN3451E	BK07H	2
Goldring D11CSR	HR48C	5	ATN3472E	JX35Q	9
Goldring D120SR	HR49D	6	ATN3472	JX35Q	9
Panasonic EPS24CS	JX25C	7	ATN3600	FG94C	11
Panasonic EPS270	FV23A	8	ATN3600L	FG94C	11
Pioneer PN805	JX35Q	9	ATN3601	FG94C	11
Sanyo ST-G10	JX31J	10	ATN3651	FG94C	11
Sharp STY123	FG94C	11	ATN3651E	FG94C	11
Sharp STY146	JX34M	12	BSR		
Shure N75-ED	FV30H	13	ST16	HR74B	3
Stanton D5107AL	BK19V	14	ST17	HR74B	3
			ST20	HR74R	4
			ST21	HR74R	4
ADC R-SQ30L	JX33L	1	C.E.C. (Chuo Denki)		
			N103	JX35Q	9
Aiwa			Columbia (Denon)		
AN5	BK07H	2	DSN66	JX31J	10
AN6	FV23A	10	DSN68	JX34M	12
AN10	BK19V	14	DSN72	FG94C	11
AN110C	FG94C	11			
Alai			Dual		
RS33	JX35Q	9	DN235	FG94C	11
RS35	JX35Q	9	DN239	FG94C	11
RS82	FG94C	11	DN450	JX35Q	9

Model	Order Code	Diagram Number	Model	Order Code	Diagram Number
Fisher ST44J	JX35Q	9	Philips GP209	JX34M	12
			GP498	BK07H	2
Goldring G800	HR48C	5	Piezo YMB18	JX31J	10
Goldring G800H	HR77J	5			
Goldring G850	HR49D	6	Pioneer		
			PN250	JX35Q	9
			PN295	JX35Q	9
			PN305	JX35Q	9
Hitachi DS-ST12	JX35Q	9	Pionette		
DS-ST14	JX35Q	9	RC214	HR74R	4
DS-ST18	JX35Q	9			
DS-ST36	BK07H	2			
DS-ST36	BK07H	2			
Jeico MC45	JX35Q	9	Sansui		
ND-45D	JX35Q	9	SN-P313	JX35Q	9
			SN-P515	JX35Q	9
JVC (Victor/Nivico)			Sanyo		
DT45	JX35Q	9	STC20	FG94C	11
DT45E	JX35Q	9	STG5D	FG94C	11
DT57	JX35Q	9	ST-G10	JX31J	10
DT60	FG94C	11	ST-G11	JX31J	10
			ST-G33	JX34M	12
			ST42D	BK07H	2
			ST44J	JX35Q	9
			ST55D	BK07H	2
			TPE8	JX35Q	9
Lenco M85	HR49D	6	Sharp		
			STY123	FG94C	11
			STY130	BK07H	2
			STY131	JX35Q	9
			STY141	FG94C	19
			STY143	JX31J	10
			STY145	JX34M	12
			STY146	JX34M	12
			STY147	JX31J	10
			STY149	JX31J	10
Mitsubishi 3D47M	BK07H	2	Shure		
3D66M	JX35Q	9	N75ED	FV30H	13
3D57M	JX35Q	9			
Nagaoaka MP5	JX31J	10	Sony		
321B	FV23A	8	ND138G	BK07H	2
			ND145G	JX35Q	9
			ND150P	HR49D	6
			ND155G	FG94C	11
NEC LP335D	BK07H	2	Stanton		
			D5100	BK19V	14
			D5100E	BK19V	14
			D5107A	BK19V	14
			D5107AL	BK19V	14
			D5107E	BK19V	14
			D5110	BK19V	14
Oniyo DN31	HR74R	4	Toshiba		
DN52	BK07H	2	C2800/10	JX34M	12
DN61	FG94C	11	N16D	FG94C	11
DN63	FG94C	11	N60DY	BK07H	2
			N70DY	BK07H	2
			N71D	BK07H	2
			Trio		
			NS2	BK07H	2
			N63	JX35Q	9
			Yamaha		
			N7700	FG94C	11
			N7800	FG94C	11

Retail Unit Price each (inc. VAT).

Order Code	Type #108	Price each exc. VAT	inc. VAT each
BK07H	Audio Tech ATN3400	£9.350	£10.990
HR47B	BSR ST17	£2.540	£2.990
HR74R	BSR ST21	£2.450	£2.890
HR77J	Goldring D110H	£5.940	£6.990
HR48C	Goldring D110SR	£5.940	£6.990
HR49D	Goldring D120SR	£5.940	£6.990
JX25C	Nat-Plan EPS24CS	£8.500	£9.990
FV23A	Panasonic EPS270	£8.500	£9.990
JX35Q	Pioneer-PN305	£8.500	£9.990
FV30H	Shure N75-ED	£19.560	£22.990
JX31J	Sanyo ST-G10	£8.500	£9.990
JX34M	Sharp-STY146	£5.940	£6.990
BK19V	Stanton D5107AL	£12.750	£14.990
JX33L	ADC-R-SQ3011	£8.500	£9.990

## CARTRIDGES

### Stereo Ceramic BSR SC12M and SC12H



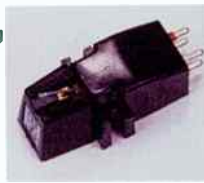
A ceramic stereo cartridge supplied with carrier for centre hole fixing or standard 12.7mm (1/2in.) fixing. Overall size: 28 x 9 x 8mm (excl. tabs and lugs). Fitted with a diamond stylus.

Output at 1cm/sec: 100mV (12M), 170mV (12H)  
 Tracking weight 2 to 6g (12M), 4 to 6g (12H)  
 Stylus fitted: ST20 LP or ST17  
 Replacement stylus: ST20

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
HR09K	Ctrdg BSR SC12M	£8.500	£7.450	£6.950	£9.990
HR10L	Ctrdg BSR SC12H	£8.500	£7.450	£6.950	£9.990

### Sonotone V100



A stereo magnetic cartridge. Standard 12.7mm (1/2in.) fixing only. Overall size: 28 x 11.5 x 13mm (excl. tabs and lugs). Fitted with a diamond stylus.

Output at 5cm/sec: 7mV rms  
 Tracking weight: 2 to 2.5g  
 Frequency response: 20Hz to 20kHz  
 Stereo separation: >20dB at 1kHz  
 Recommended load: 47kΩ  
 Channel balance: <2dB at 1kHz  
 Stylus: 0.0152mm (0.0006in.) diamond  
 Replacement stylus: V100

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	1+
HR17T	Ctrdg Sono V100	£8.500	£7.950	£9.990

## LEADS AND ADAPTERS

### PHONO LEADS

#### Phono Plug to Phono Plug

Phono plug to phono plug lead. Length 1.2m. Also see Video Connectors.

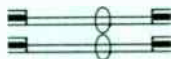


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RW48C	Single Phono-Phono Plg	£1.400	£0.750	£0.600	£1.650

#### Twin Phono Plug to Phono Plug

Two phono plugs to two phono plugs. Length 1.2m.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RW50E	Twin Phono-Phono Plg	£1.940	£0.950	£0.800	£2.290

See Stock Code Index For More Price Breaks

#### Quad Phono Plug to Phono Plug



Four phono plugs to four phono plugs. Length 1.2m approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RW51F	Quad Phono-Phono Plg	£2.280	£1.750	£1.500	£2.690

#### Phono Extension Lead

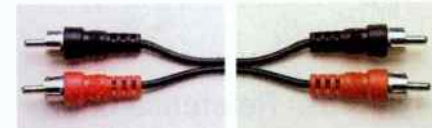


A high quality stereo phono to phono lead with gold plated plugs. Available in two lengths 1.5m (order code BV85G) and 5m (order code BV87U).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BV85G	2 Phono/2 Phono Lead	£5.090	£4.590	£4.030	£5.990
BV87U	Phono 5m	£6.800	£5.070	£4.490	£7.990

#### Twin Phono to Phono Plugs

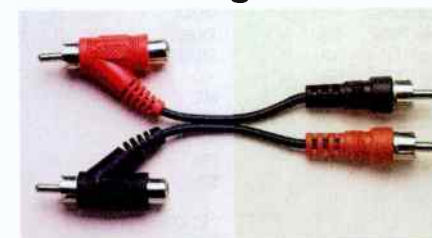


Two phono plugs to two phono plugs. Available in 3m length.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BV86T	Twin Phono/Phono	£3.390	£2.750	£2.400	£3.990

#### Phono Stacking leads

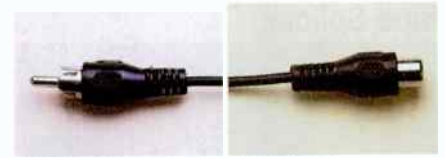


Two phono plugs and sockets to two phono plugs. Length 1.8m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BV84F	Phono Stack Leads	£3.390	£2.750	£2.400	£3.990

#### Phono Extension Lead



Phono plug to phono socket. Length 5m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BV83E	Phono Ext Lead	£2.540	£2.300	£2.150	£2.990

## HIGH QUALITY PHONO LEADS

### Phono to Phono Lead



VA09K 0.5 Meter Red Marker.  
 GT84F 0.5 Meter Black Marker  
 VA10L 2 Meter Red Marker  
 Gt83E 2 Meter Black Marker

These high specification phono to phono audio connecting leads are 100% double screened oxygen free cable and terminated with quality gold assembly phono sockets.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VA09K	Phono to Phono 0.5m	£6.800	£6.500	£6.000	£7.990
GT84F	Phono-Phono Bk 0.5m	£6.800	£6.500	£6.000	£7.990
VA10L	Phono to Phono 2m	£9.350	£9.000	£8.500	£10.990
GT83E	Phono-Phono Bk 2m	£9.350	£9.000	£8.500	£10.990

### Gold phono to phono plugs



Gold phono to phono plugs available with either two phono plugs to two plugs or three to three phono plugs. Available in two lengths

KM66W - 2 to 2 phono, 1.5 meters  
 KM67X - 2 to 2 phono, 3 meters  
 KM68Y - 3 to 3 phono, 1.5 meters  
 KM69A - 3 to 3 phono, 3 meters

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	25+	1+
KM66W	2-2 Phono PLG 1.5m	£8.500	£8.070	£7.650	£9.990
KM67X	3-2 Phono PLG 3m	£11.050	£10.500	£9.950	£12.990
KM68Y	3-3 Phono PLG 1.5m	£8.500	£8.070	£7.650	£9.990
KM69A	3-3 Phono PLG 3m	£12.750	£12.120	£11.480	£14.990

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.



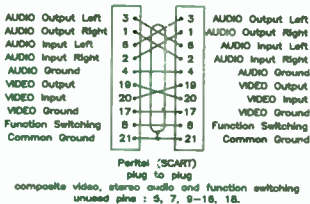
See Section 10, Connectors  
for our full range of audio connectors

**SCART LEADS**

**Peritel (SCART) Plug to Plug Connecting Cable (Composite Video & Audio)**



A 21-way Peritel (SCART) plug to plug connecting cable for interconnecting video equipment, such as TV's and VCR's. This cable provides connection for composite video, stereo audio and function switching. Length (approx.) 1.5m. The diagram below shows the connections between the plugs. Please Note: this cable does not provide connections for Data Communication, RGB Video and Blanking signals, for applications requiring these connections use Universal Cable (JW37S).



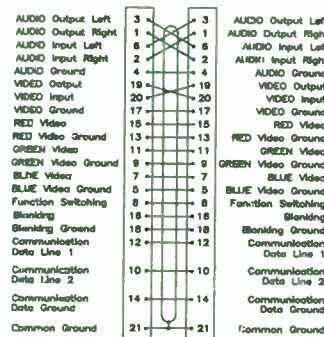
Retail Unit Price each (inc. VAT).

Order Code	Type 4829	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
W36P	Peritel St Aud&CommVid	£5.280	£5.000	£4.500	£6.990

**Peritel (SCART) Plug to Plug Connecting Cable (Universal)**



A 21-way Peritel (SCART) plug to plug connecting cable with all 21 pins connected for interconnecting video equipment, such as TV's, VCR's and computers. This cable provides connection for composite video, RGB video, blanking, stereo audio, data communication and function switching. Length (approx.) 1.5m. The diagram below shows the connections between the plugs.



Retail Unit Price each (inc. VAT)

Order Code	Type 4109	Price each exc. VAT			inc. VAT each
		1+	5+	25+	
JW37S	Peritel Univsl Cable	£8.500	£5.000	£3.750	£9.990

**Gold Contact SCART Plug to Plug Connecting Cable**



This top quality connecting cable comprises two gold-plated 21-way Peritel SCART plugs, connected by a 1.5m length of fully shielded coax cable and with all pins connected.

Retail Unit Price each (inc. VAT).

Order Code	Type 1384	Price each exc. VAT			inc. VAT each
		1+	5+	25+	
BV34M	Scart Plug/Plug Gold	£11.050	£9.050	£7.950	£12.990

**Scart Plug to Two Scart Plugs 2M**



A versatile SCART adaptor providing two sockets from a single plug in lead. Ideal for linking TV's, VCR's, satellite receivers and other SCART devices, providing highly configurable systems.

Retail Unit Price each (inc. VAT).

Order Code	Type 13384	Price each exc. VAT			inc. VAT each
		1+	5+	25+	
VA22Y	Scart-2 Scart 2m	£4.240	£4.030	£3.820	£4.990

**5m Universal SCART Lead**



A 5 metre long universal SCART lead connecting two 21-way Peritel (SCART) connectors.

Retail Unit Price each (inc. VAT).

Order Code	Type 11958	Price each exc. VAT			inc. VAT each
		1+	5+	25+	
LN9EE	5m Univ SCART Lead	£11.050	£10.500	£9.950	£12.990

**SCART Plug to SCART Plug Plus 4 Phono Plugs 1.5m**



Offers the normal 21 PIN SCART connection between TV and Video etc, with the addition of 4 moulded phono plugs. This allows the stereo audio and video signal to be connected via equipment with phono sockets.

Retail Unit Price each (inc. VAT).

Order Code	Type 11395	Price each exc. VAT			inc. VAT each
		1+	5+	25+	
VA23A	Scart-Scart+4 Phono	£4.240	£4.030	£3.820	£4.990

See Stock Code Index  
For More Price Breaks



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3

## SCART to Two Phono Plugs 5m

A 21 way Peritel (SCART) plug to 2 colour coded phono plugs ( Red,White ) connecting cable ideal for interconnecting audio/video equipment fitted with phono connectors. Lead length 5m Approx.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA25C	Scart to 2 Phono	1+ 5+ 25+ £4.240 £4.030 £3.820	1+ £4.990

## SCART to S-VHS & 2 x Phono Plugs.

A 21 way Peritel (SCART) plug to 2 colour coded phono connectors ( Red,White ) and a S-VHS connector ideal for interconnecting audio/video equipment. Lead length 1.5m Approx.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA26D	Scart-2 Phono+S-VHS	1+ 5+ 25+ £4.240 £4.030 £3.820	1+ £4.990

## SCART to 3 Phono Plugs 1.2m

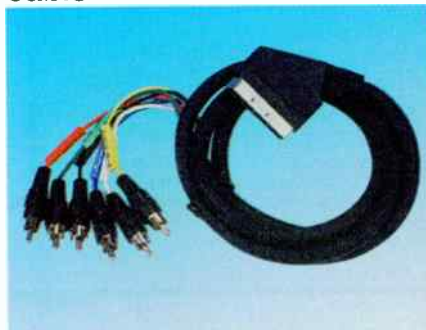
A 21 way Peritel (SCART) plug to 3 colour coded phono plugs (RED, YELLOW, WHITE) for interconnecting audio/video equipment fitted with phono connectors. Lead length: 1.2M approx.



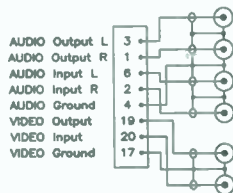
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA24B	Scart-3 Phono 1.2m	1+ 5+ 25+ £4.240 £4.030 £3.820	1+ £4.990

## Peritel (SCART) Plug to Phono Plugs Connecting Cable



A 21-way Peritel (SCART) plug to phono plug connecting cable for interconnecting audio/video equipment fitted with phono connectors. This cable provides connection to audio pins (left & right audio input, left & right audio output) and composite video pins (video input, video output). Length (approx.) 1.5m. The diagram shows the connections between the plugs. Please Note: this cable does not provide connections for Function Switching, Data Communication, RGB Video and Blanking signals.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JW38R	Peritel-Phono Cable	1+ 5+ 25+ £10.200 £7.000 £4.750	1+ £11.990

## Peritel (SCART) Plug to Phono & BNC Plugs



A 21-way Peritel (SCART) plug to standard phono and BNC plug connecting cable, for interconnecting audio/video equipment fitted with mating phono plugs and BNC connectors. This cable provides connection to audio pins (left/right audio input and left/right audio output) and composite video pins (video input and video output). Length: 1400mm. Please note that this cable does not provide any connections for Function switching, Data communication, RGB Video and Blanking signals.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CC04E	Scart - Phono Cable	1+ 5+ 25+ £8.920 £6.990 £4.750	1+ £10.490

## S-VHS to S-VHS Extension Lead



A very high quality lead for connecting between items with female S-VHS sockets. Ideal for camcorder to AV equipment like mixing desks and effects units. This lead is 3m in length and is terminated in high quality gold-plated connectors.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV35Q	SVHS/SVHS Lead	1+ 5+ 25+ £5.940 £5.250 £4.250	1+ £6.990



## Video Lead



Phono plug to coax plug with approx. 1.2m of cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FV90X	Phono/Coaxplg Vid Ld	1+ 10+ 25+ £1.350 £0.990 £0.790	1+ £1.590

## Satellite IF Connecting Lead



A connecting lead ideal for use with satellite equipment like amplifiers and splitters, etc., for connecting between items of equipment. The cable type used is RG59P and is terminated in two male F type connectors. Cable length approximately 1.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM89W	F Plug/Plug 1.5m	1+ 5+ 25+ £3.390 £2.950 £2.500	1+ £3.990

## Phono Lead



Phono plug to phono plug with approx 1.4m of coaxial cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CV49D	Phono Plg/Plg Vid Ld	1+ 5+ 25+ £1.690 £1.410 £1.250	1+ £1.990

## Peritel (SCART) to Phono Connector

A 21-way Peritel (SCART) line connector containing three colour coded phono sockets (one video IN and two audio IN).



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM76H	Scart To Phono Sckt	1+ 10+ 25+ £7.650 £6.400 £5.650	1+ £8.990

**SCART CONTROL**

**Gold Scart Switched Plug to 3 Gold Phono Plugs, 1.5 M**



An ideal connecting lead for audio, Video and Camcorder. Gold high 21 PIN peritel (Scart) connector to 3 gold phono plugs with built in 2 position switch allowing video and stereo audio signals to be reversed.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	25+	1+
VA11M	Scart to 3 Phono	£5.940	£5.650	£5.350	£6.990

**Gold Scart plug to 3 Gold Phono Plugs + SVHS 1.5M**



High quality connecting lead with gold plated connectors. Useful when a piece of equipment such as a camcorder, mixing deck or television is fitted with an SVHS outlet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	25+	1+
VA12N	Scart-3 Phono+SVHS	£5.940	£5.650	£5.350	£6.990

**SCART to 6-Pin DIN Adaptor**



A versatile adaptor, ideal for converting a SCART type socket to a female 6-pin DIN socket. Built-in 2-position switches allow selection of in/out signals between the source and destination device. Designed for use with camcorders and other devices requiring SCART to 6-pin conversion.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BM80B †	Scart/6-Pin Din I/O	£2.540	£2.390	£2.250	£2.990

See Stock Code Index For More Price Breaks

**SCART to 6-Pin AV Adaptors**



Two simple plug-in adaptors to enable signals from SCART and 6-pin DIN sources to be connected easily and efficiently. Simply plug the male SCART connector into your VCR or TV, and your camcorder, etc. into the 6-pin socket to allow playback and recording with the minimum of effort. Two versions are available, providing either IN or OUT signal configurations. BM78K is an IN adaptor and BM79L is for use as an OUT adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BM78K	Scart To 6-Pin Din I	£2.540	£2.390	£2.250	£2.990
BM79L	Scart To 6-Pin Din O	£2.540	£2.390	£2.250	£2.990

**Peritel (SCART) to 6 Pin DIN**

A 21-way Peritel (SCART) connector with an in-built 6 pin DIN socket. The connector can be set to IN or OUT at the flick of a switch.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BH84F †	Scart To 6 Pin Din	£2.540	£2.390	£2.250	£2.990

**21-way Peritel (SCART) Switchable 'T' Adaptor**



This clever switched adaptor removes the need to keep unplugging and reconnecting your video recorder, satellite receiver, computer, video game and TV, depending on which you are using or watching, or want to record. The unit consists of a box which has two interconnected 21-way Peritel (SCART) sockets mounted on it, and a 45cm long output cable terminated in a 21-way plug, which can be switched to either of the two sockets, by means of a latching push-button switch, also mounted on the box. The adaptor is suitable for Composite Video and Stereo Audio, and internal diodes prevent function control conflicts. Uses include connecting a satellite receiver and a video recorder to a single TV, or viewing a video recorder/satellite receiver on two TVs simultaneously.

Please note if one of the video sources has 12V on the switching line and the other source does not, then certain unwanted effects can result. A suitable plug to plug cable for use with this adaptor is Peritel Connecting Cable, JW36P. Extension leads ZB29G and JZ26D are also suitable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CC00A	SCART T-Adaptor	£8.500	£5.800	£4.600	£9.990

**2-Way SCART Switch Box**



A simple and effective switch box for use with SCART compatible equipment, providing simple and effective two-way device switching. Just connect your two source devices to the switch box and your TV to the output for simple, fast and efficient signal source swapping. Ideal for use with a VCR and satellite receiver, eliminating the need for aggravating cable swapping when you want to view or record.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BM84F	2Way Scart Ext W/Sw†	£8.500	£6.500	£5.750	£9.990

**2-Way SCART Switch – TC24**



A compact SCART switch ideal for use with two VCRs or a single VCR and a satellite receiver. Allows simple switching between two input sources, without the need to grapple with cables at the back of your TV. The simple press button selection adds simplicity to the whole affair. Simply connect the TV's SCART interface with the output from this switch, then plug in your accessories on inputs 1 and 2. Note that the input connectors are configured so that recording from either source is possible when the second source is placed in record mode. This allows recording from satellite when a video recorder is connected as a second source device. Video output, stereo audio output and RGB output signals are all switched when the front panel button is operated. The status voltages from pins 8 and 16 are connected directly with diode protection, allowing a degree of automatic operation, i.e. the TV will be automatically connected to its SCART input signal when a device sends it a signal.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BM86T	2 Way Scart Selector	£8.500	£6.500	£5.750	£9.990

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## Peritel (SCART) Switching Unit



A switch box providing an easy method of coupling a TV up to three separate items of ancillary video equipment using Peritel (SCART) video and audio connectors. With the TV plugged into the 'TELEVISION' outlet socket and set to the A/V or SCART input mode, any one of three inputs can be selected for viewing using the latch-button selector bank on the right-hand side of the front panel ('1', '2', '3'). These can be VCRs, satellite receivers, camcorders or computers having SCART standard composite video and sound output. The first two input sockets on the switch box are labelled 'VCR-1' and 'VCR-2', while the third is labelled 'VCR-3 / SATELLITE/ COMPUTER'. In addition signals from either input socket 2 or 3 can be recorded by a VCR on socket 1 using the left-hand switch bank if required. Left and right audio output for Hi-Fi or stereo from the selected channel is also available via two output phono sockets. The unit is housed in a black steel case with a non-slip foam base. Overall dimensions: 145(W) x 130(D) x 45(H)mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MK36P 1	Scart Switching Unit	£20.410	£14.450	£13.100	£23.990

## Scart Extension Leads



Three approximately 50cm long extension leads with 1 to 2-way, 1 to 3-way or 1 to 5-way adaptors, connecting a SCART plug at one end to two, three or five SCART sockets in a box 98 x 70 x 30mm, or 125 x 70 x 30mm, or 188 x 70 x 30mm respectively. The cable is a sleeved loom 10mm in diameter containing individually screened conductors where required. The lead is merely an extension and does not include any in/out line reversals, all pins on the plug connect directly to all equivalent pins in all sockets simultaneously. Use to connect two TVs to one VCR, etc., with the aid of twin plug connection leads (as above). Note that contention from more

than one audio/video, etc., outputs sharing one conductor must be avoided, but one output to two or more inputs is allowable. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BM81C	2Way Scart Slt Strip	£7.220	£5.750	£5.000	£8.490
AQ17T	Scart Ext/Adaptor 3W	£8.920	£5.950	£5.430	£10.490
BM82D	5Way Scart Slt Strip	£8.500	£6.500	£5.750	£9.990

## Video Duplication Lead Set



The ideal lead set for duplication of home movies and mastering camcorder footage to VHS cassette, etc. Supplied with all the leads and adaptors you're ever likely to need. The set comprises two phono to BNC adaptors, two 6-pin to 3-phono adaptor leads, a separate in and an out SCART to 6-pin DIN adaptor plug, two 5-pin DIN to 2-phono audio adaptor leads, a stereo to mono phono adaptor lead, a 6-pin male to male extension lead and a 6-pin to 8-pin camcorder adaptor lead. All connections are gold plated to ensure that high quality sound and audio is maintained.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BV33L	Video Dup Lead Set	£11.050	£10.250	£9.750	£12.990

## Stereo Video Copying Kit



A universal connector kit for audio/video equipment that includes Peritel and camcorder plugs. The kit includes the following items:  
 Peritel (SCART) to 6-pin DIN socket (150mm) 2 off  
 6-pin DIN socket to 3 x phono plugs (200mm) 2 off  
 5-pin DIN plug to 2 x phono sockets (200mm) 2 off  
 6-pin DIN plug to 6-pin DIN plug (2m) 1 off  
 Phono plug to 2 x phono sockets (150mm) 1 off  
 BNC plug to phono socket adaptor 2 off  
 UHF plug to phono socket adaptor 2 off  
 3.5mm plug to phono socket adaptor 2 off  
 Please note that this cable does not provide connections for function switching, data communications, RGB video or blanking signals.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JW35Q	Peritel Uni Conn Kit	£9.350	£9.000	£8.750	£10.990

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## Audio/Video Cable Set



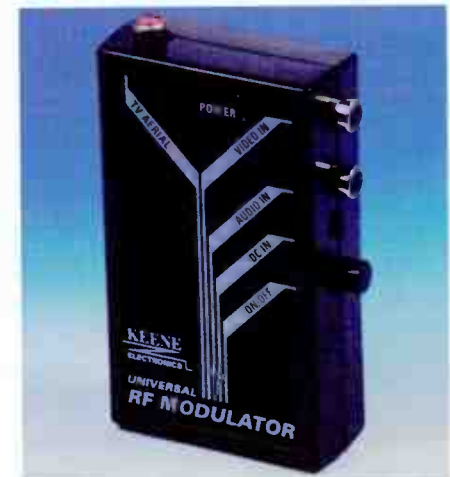
A set of audio/video cables and adaptors for dubbing and copying. The set comprises stereo phono to phono plugs (1m approx.), 200mm 5-pin DIN (180°) to 2 x phono sockets, 2 x BNC to phono sockets, 2 x 'F' plug to phono socket, mono jack to phono socket and 6-pin DIN (270°) to 4 x phono socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CN50E	Aud & Vid Cable Set	£5.940	£5.500	£5.050	£6.990

## Universal RF Modulator

Keene Electronics



The RF modulator allows easy camcorder hook-up to a non SCart TV, or use a portable TV as a second monitor whilst editing. Can be connected to any AV source and can be powered from either the camcorder, a PP3 type battery or a mains transformer. This unit may not be suitable for use in areas where Channel 5 is broadcast on channel number 37.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	
VM37S	RF Modulator	£25.520		£29.990



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See Section 10, Connectors for our full range of TV connectors.

**HOME CINEMA**

**Scart to Scart (Gold Connectors and Oxygen Free Cable)**



This 21 Pin scart to scart with gold connectors and oxygen free cable is particularly suitable for home cinema. Available in three lengths:

VA13P	0.75m
VA14Q	1.5m
VA15R	3m

Retail Unit Price each (inc. VAT).

Order Code	Type 13380	Price each exc. VAT			inc. VAT each
		1+	5+	25+	1+
VA13P	Scrt-Scrt OFC 0.75m	£11.060	£10.500	£9.950	£12.990
VA14Q	Scrt-Scrt OFC 1.5m	£12.750	£12.120	£11.480	£14.990
VA15R	Scrt-Scrt OFC 3m	£16.160	£15.350	£14.540	£18.990

**Scart plug to 2 phono plugs (Gold Connectors and oxygen free cable).**



Ideal for connecting any TV or Video to a Hi-Fi audio system as the high quality oxygen free cable ensures very signal loss. Suitable for home cinema. Available in three lengths:

VA17T	5m
VA18U	10m

Retail Unit Price each (inc. VAT).

Order Code	Type 13382	Price each exc. VAT			inc. VAT each
		1+	5+	25+	1+
VA17T	Scrt-2 Phono 5m	£11.050	£10.500	£9.950	£12.690
VA18U	Scrt-2 Phono 10m	£13.600	£12.920	£12.240	£15.690

**Scart to mono audio**



Switchable scart plug to mono audio connectors. Length 1.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type 17719	Price each exc. VAT		inc. VAT each
		1+	25+	1+
G188V	Scrt-Vid+audmono 1.5m	£5.520		£6.490

**Scart Switched plug to 3 Phono Plugs.**



Oxygen free connecting cable with gold connectors for interconnecting equipment with scart and phono sockets. Transfers both video and audio signal, which with built in scart switch allows signal to be Bi-directional. Suitable for home cinema. Available in two lengths:

VA19V	1.5m
VA20W	5m

Retail Unit Price each (inc. VAT).

Order Code	Type 13384	Price each exc. VAT			inc. VAT each
		1+	5+	25+	1+
VA19V	Scrt-3 Phono 1.5m	£10.200	£9.690	£9.180	£11.990
VA20W	Scrt-3 Phono 5m	£13.600	£12.920	£12.240	£15.990

**21 Pin Gold Scart Plug to 6 Gold Phono Plugs**



This low loss oxygen free cable provides high quality connection of audio/video equipment fitted with phono connectors via 5 gold phono plugs. Particularly suitable for home cinema. Note: this cable does not provide connections for function switching, data communication, RGB Video and blanking signals.

available in two lengths.  
VA21X - 5m  
KM65V - 1.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type 13391	Price each exc. VAT			inc. VAT each
		1+	5+	25+	1+
VA21X	Scart-6 Phono 5m	£17.010	£16.160	£15.310	£19.990
KM65V	Scart-6 phono 1.5m	£11.050	£10.500	£9.950	£12.990

**Audio/Video Cable Set**



A set of audio/video cables and adaptors for dubbing and copying. The set comprises stereo phono to phono plugs (1m approx.), 200mm 5-pin DIN (180°) to 2 x phono sockets, 2 x BNC to phono sockets, 2 x 'F' plug to phono socket, mono jack to phono socket and 6-pin DIN (270°) to 4 x phono socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 10550	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CN50E	Aud & Vid Cable Set	£5.940	£5.500	£5.050	£6.990

**LOUDSPEAKER PLUGS**

**L/S Plug to Socket Lead**



Loudspeaker plug to line socket. Length 5m or 10m.

Retail Unit Price each (inc. VAT).

Order Code	Type 1102	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW47B	5m L/Sprk Plg-Skt	£1.090	£0.860	£0.720	£1.290
RW25C	10m L/Sprk Plg-Skt	£1.990	£1.040	£0.880	£1.990

**L/S Plug to Open Lead**



Loudspeaker plug to open end. Length 3m.

Retail Unit Price each (inc. VAT).

Order Code	Type 1100	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW27E	3m L/S Open Lead	£1.090	£0.650	£0.560	£1.290

**HEADPHONE LEADS**

**Mini-Headphone Splitter (mono)**



Headphone adaptor lead. Mono 3.5mm jack plug to two mono 3.5mm line sockets. Length: 0.2m.

Retail Unit Price each (inc. VAT).

Order Code	Type 1169	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RK27E	Headphone Splitter	£1.260	£0.670	£0.710	£1.490

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## HEADPHONE LEADS

### Mini-Headphone Splitter (stereo)

Headphone adaptor lead. Stereo 3.5mm jack plug to two stereo 3.5mm line sockets (so that two sets of headphones can be connected to one outlet). Length: 0.2m.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RK58N	Mini HPhone Split	£1.690	£1.250	£1.100	£1.990

### Standard Headphone Splitter

A standard 6.5mm jack socket split to 2 single mono, left and right, 6.5mm jack plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CN75S	2 Plug To 1 Ste Jack	£1.690	£1.180	£0.980	£1.990

### Headphone Accessory Pack



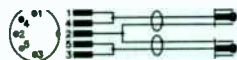
This is a Personal Portable Stereo Kit that contains a coiled expandable stereo lead terminated in a stereo 3.5mm jack plug and socket. Other accessories include a 6.5mm stereo socket to 6.5mm jack plug adaptor; a 3.5mm mono socket to 2.5mm jack plug adaptor; a 3.5mm mono socket to 3.5mm jack plug adaptor; a 2 times 3.5mm mono sockets to a stereo 3.5mm jack plug adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BH88V	Headphone Access Pak	£4.240	£4.000	£3.500	£4.990

## DIN LEADS

### 5-Pin DIN Plug to 3.5mm Plugs



5-pin A DIN plug (pins 1 & 4 and pins 3 & 5) to two 3.5mm jack plugs. Length: 1.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW24B	Spin Din-3.5mm Plgs	£1.260	£0.890	£0.740	£1.490

### 5-Pin Plug to Mirror-Image Lead



5-pin DIN plug to 5-pin DIN plug with reversal (mirror image) connections. Length: 1.2m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW43W	Spin Din Mirror Ld	£1.520	£0.980	£0.840	£1.790

### 5-Pin DIN Plug to Plug Lead



A 5-pin A DIN plug to 5-pin A DIN plug. Length 1.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CN76H	5 Pin Din Plg/Plg Ld	£1.690	£1.370	£1.200	£1.990

### 5-Pin Plug to 5-Pin Socket Mirror-Image Lead



5-pin A DIN plug to 5-pin A DIN socket with reversal (mirror image) connections. Length 1.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CN77J	5 Pin Din Plg/Skt Ld	£1.690	£1.180	£0.980	£1.990

## JACK LEADS

### 3.5mm Stereo Plug to Socket Lead



A miniature 3.5mm stereo plug to socket lead. Length 2.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CN79L	3.5mm Ste Plg/Skt Ld	£1.690	£1.290	£1.100	£1.990

### 3.5 to 3.5mm Stereo Jack Lead

Approximately 1.2m stereo jack lead with 3.5mm stereo jack plugs at each end.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CK27E	3.5mm Stereo Ext Ld	£1.430	£0.790	£0.620	£1.690

### Coiled Stereo Jack Plug to Socket Lead

An expandable stereo jack plug to socket lead with a standard 6.35mm stereo jack plug and socket. Ideal for extending the length of a headset for easy listening.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CN78K	Ste Jack Plug/Skt Ld	£1.940	£1.390	£1.110	£2.290

### Gold Phono to gold phono

Gold phono plug to gold phono plug lead. Length 2.5m.



NEW EXTENDED RANGE

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
KS43W	3.5mm gld st jk lead	£2.540			£2.990

### Isolation/Damping Pads



Do you want to protect your Hi-Fi, video or computer equipment from vibration or listen to your Hi-Fi's true sound without resonance from the surface your speakers are standing on? These damping pads are the perfect solution.

Simply place one of these high performance vibration absorbing supports under each corner of the equipment in question and the advanced polymer material will absorb all of the shocks. Designed using computer modelling techniques, the precisely moulded spherical surface of the pads always provide even contact and uniform energy distribution. Four pads are supplied in each pack.

#### Specification

Material: Advanced polymer  
 Colour: Dark grey  
 Overall diameter: 50mm  
 Overall height: 20mm  
 Max load per pad: 2.5kg

Retail Unit Price each (inc. VAT).

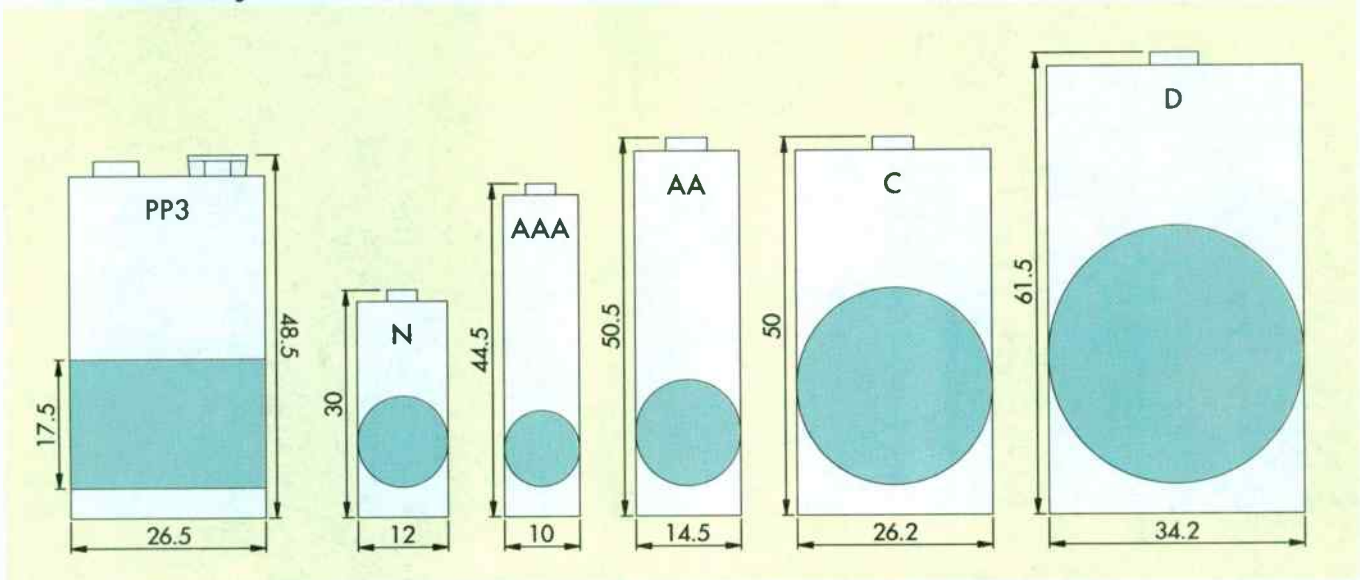
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AY12N	Focal Pads	£11.050	£10.550	£9.750	£12.990



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### BATTERIES

#### ALKALINE BATTERIES

#### Duracell Alkaline Batteries



A range of alkaline batteries by Duracell. The alkaline battery excels at powering continuous, heavy loads. There is no distinct upper load limit, and the chemistry is typically capable of supplying, intermittently, loads up to 2A at normal room temperature.

Duracell batteries are leak-proof under all normal conditions of operation and storage, however, the following should be avoided to prevent damage and possible leaks: wrong polarity; short circuit; reversed drive of series cells; or attempts at recharging. The alkaline system operates efficiently over a temperature range of  $-30^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ , subject to load and duty cycle regimes. Available individually or in packs.

#### Characteristics

Type	Mass	Nominal capacity
Size N	8.3g	0.91Ah at 100 $\Omega$ for 70 hrs to 0.8V
Size AAA	11g	1.1Ah at 10 $\Omega$ for 8.5 hrs to 0.8V
Size AA	22g	2.6Ah at 10 $\Omega$ for 20.2 hrs to 0.8V
Size C	67g	6.5Ah at 10 $\Omega$ for 50 hrs to 0.8V
Size D	141g	15.6Ah at 10 $\Omega$ for 120 hrs to 0.8V
Size PP3	45g	0.55Ah at 470 $\Omega$ for 36 hrs to 4.8V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JY51F	Duracell N	£0.927 £0.850 £0.800	£1.090
JY50E	Duracell AAA	£0.757 £0.700 £0.650	£0.890
JY48C	Duracell AA	£0.757 £0.700 £0.650	£0.890
JY47B	Duracell C	£1.410 £1.350 £1.250	£1.660
JY46A	Duracell D	£1.480 £1.370 £1.250	£1.750
JY49D	Duracell PP3	£2.800 £2.500 £2.200	£3.290

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AR47B	Duracell N x 1 Pack	£0.927 £0.850 £0.800	£1.090
AR42V	Duracell AAA x 4 Pk	£3.020 £2.850 £2.650	£3.560
AR43W	Duracell AA x 4 Pack	£3.020 £2.850 £2.650	£3.560
AB97F	Duracell 8 x AA	£5.520 £4.500 £4.300	£6.490
AR45Y	Duracell C x 2 Pack	£2.820 £2.700 £2.550	£3.320
AR44X	Duracell D x 2 Pack	£2.970 £2.750 £2.650	£3.500
AR46A	Duracell PP3 x 1 Pk	£2.880 £2.400 £2.350	£3.390
AB96E	Duracell 2 x PP3	£5.520 £4.500 £4.300	£6.490

### Alkaline

Panasonic



Recent progress in the complexity, performance and miniaturisation of electronic products of all types now demands more compact power supplies. Such products requiring greater battery capacity have increased in number, requiring the development of more advanced batteries. Alkaline batteries are now more widely used in place of other types for their high current and high capacity performance with minimum supply degradation for modern electronic circuitry. Available in packs only. 'AAA' and 'AA' sizes are sold in packs of four, 'C' and 'D' sizes sold in packs of two, PP3 and N sizes, singularly only.

#### Characteristics

Type	Mass	Nominal capacity
Alk N	9g	0.7Ah at 300 $\Omega$ for 12hrs/day to 0.9V
Alk AAA	12g	0.96Ah at 300 $\Omega$ for 12hrs/day to 1.0V
Alk AA	24g	2Ah at 75 $\Omega$ for 4hrs/day to 0.9V
Alk C	65g	6.2Ah at 39 $\Omega$ for 4hrs/day to 0.9V
Alk D	135g	12.4Ah at 39 $\Omega$ for 4hrs/day to 0.9V
Alk PP3	47g	0.53Ah at 620 $\Omega$ for 2hrs/day to 6V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FK67X	Alkaline PP3	£2.590 £2.070 £1.910	£3.050

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FM13P	Alkaline N	£0.868 £0.700 £0.600	£1.020
EM11M	Alkaline AAA x 4	£2.590 £2.200 £2.020	£3.050
EM12N	Alkaline AA x 4	£2.590 £2.200 £2.020	£3.050
EM13P	Alkaline C x 2	£2.420 £2.120 £1.990	£2.850
EM14Q	Alkaline D x 2	£2.420 £2.120 £1.990	£2.850

### 'AAAA' Alkaline Battery

Ever Ready

A 1.5V 'AAAA' alkaline battery used in laser light pointer pens.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC48C	Ever Ready AAAA Cell	£1.260 £0.980 £0.900	£1.490

### Alkaline Photographic and Test Meter Batteries

Ever Ready / Vinnic



A range of alkaline cells as used in photographic equipment and many test meters, key-fob remote controllers, radio pagers, electronic cigarette lighters, etc.

Voltage	Dimensions (mm)	Type
6V	10 dia. x 16	11A
6V	13 dia. x 25	476A
12V	7.7 dia x 28	27A



12V	10 dia. x 28	23A
15V	14.3 dia. x 35	504 (BLR154)
15V	27 x 16 x 37	BLR121
22-5V	27 x 16 x 51	412 (BLR122)

**Technical information**

Type	Mass	Nominal capacity
11A	4g	33mAh at 10kΩ for 66hrs to 3.6V
476A	10g	105mAh at 6kΩ for 125 hrs to 3.6V
27A	4.4g	18mAh at 20kΩ for 35.5hrs to 8V
23A	7.5g	33mAh at 20kΩ for 66h to 6V
504	13.2g	40mAh at 180kΩ for 24h/day to 12V
BLR121	16.1g	40mAh at 180kΩ for 24h/day to 12V
412	23.6g	40mAh at 270kΩ for 24h/day to 18V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	24+	1+
FM09K	BLR154 / 504	£4.280	£3.850	£3.690	£5.040
FM07H	BLR121	£5.090	£4.400	£3.650	£5.990
FM08J	BLR122 / 412	£5.140	£4.900	£4.700	£6.050

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	20+	100+	1+
ZB53H	GP11A	£1.100	£0.687	£0.606	£1.300
ZB54J	GP476A	£2.570	£1.820	£1.260	£3.020
ZB55K	GP27A	£2.570	£1.820	£1.260	£3.020
JG91Y	12V Lighter Batt 23A	£0.842	£0.700	£0.620	£0.990

## Rechargeable Alkaline Battery System

Pure Energy



- ★ Supplied charged - recharge up to 25 Times
- ★ Environmentally friendly - non toxic
- ★ High capacity - 1400 to 1600mAh
- ★ Full 1.5V
- ★ Long shelf life up to 5 years
- ★ Batteries out perform NiCd
- ★ Fully automatic charger

Pure Energy batteries are ideally suited for low to medium drain applications. Their higher capacity allows them to out perform NiCd batteries on a charge-by-charge basis, and their rechargeability provides a significant cost saving compared to single-use alkalines.

The EnviroCharger is a sleek, automatic, plug-in type charger for either 4 x AA or 4 x AAA batteries. Charging time varies up to a maximum of 12-14 hours for heavily discharged cells. Indicators show charging and when batteries are charged. The charger is supplied with 4 AA size batteries. Additional packs of AA and AAA batteries are available separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VM85G	Rech Alk AA Batt x 8	£8.070	£7.700	£7.400	£9.490
VM84F	Rech Alk AA Batt x 4	£4.240	£4.070	£3.950	£4.990
VM83E	Alk Plug Chgr + 4 AA	£15.310	£14.600	£13.950	£17.990
MC40T	Pure Energy 4xAAA	£4.680	£4.450	£4.250	£5.500

See Stock Code Index For More Price Breaks

## 4.5V Alkaline Battery

Varta



\* Type 3LR12 / 4012

A longlife alkaline battery commonly used in torches and many other applications, offering a greatly extended life over it's zinc-carbon counterpart.

**Technical information**

Nominal voltage: 4.5V.  
Dimensions: 62 x 22 x 67mm  
Weight: 160g  
Typical Capacity: 4400mAh

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	20+	50+	1+
JC94C	4.5V Alkaline Batt.	£2.540	£2.250	£2.100	£2.990

## ZINC CHLORIDE

### Zinc Chloride

Panasonic



A range of batteries with an electrolyte of zinc chloride used with manganese dioxide and zinc electrodes. Suited to heavier duty, high drain applications and are also 'environmentally friendlier'.

**Characteristics**

Type	Mass	Nominal capacity
Ultra AAA	9.7g	568mAh at 75Ω for 4h/day to 0.9V
Ultra AA	19g	1.0Ah at 75Ω for 4h/day to 0.9V
Ultra C	51.5g	2.8Ah at 75Ω for 4h/day to 0.8V
Ultra D	100g	7.2Ah at 39Ω for 4h/day to 0.8V
PP3	38g	0.38Ah at 900Ω for 4h/day to 5.5V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FC96E	Zinc Chloride AAAx4	£1.690	£1.340	£1.220	£1.990
EM18U	Zinc Chloride AA x 4	£1.730	£1.350	£1.230	£2.040
EM19V	Zinc Chloride C x 2	£1.730	£1.350	£1.230	£2.040
EM20W	Zinc Chloride D x 2	£1.730	£1.350	£1.230	£2.040
JY60Q	Zinc Chloride PP3 x1	£1.650	£1.230	£1.130	£1.940

**Businesses and Government Establishments – open a Maplin MPS Account**

Just complete form at back of catalogue

## ZINC CARBON

### Zinc Carbon General Purpose

Panasonic



A basic form of zinc carbon battery, having a positive electrode of manganese dioxide and a negative electrode of zinc. Offers value for money performance in not too demanding applications.

**Characteristics**

Type	Mass	Nominal capacity
AA	18g	1Ah at 75Ω for 4h/day to 0.7V
C	48g	1.9Ah at 75Ω for 4h/day to 0.8V
D	98g	5.2Ah at 39Ω for 4h/day to 0.8V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
EM15R	Zinc Carbon AA x 4	£1.340	£0.990	£0.909	£1.530
EM16S	Zinc Carbon C x 2	£1.340	£0.990	£0.909	£1.530
EM17T	Zinc Carbon D x 2	£1.300	£0.990	£0.909	£1.530

## Lighting and General Purpose



Zinc carbon batteries for a wide range of general-purpose and miscellaneous applications, such as doorbells and burglar alarms, etc.

Voltage	Dimensions (mm)	Type	Terminals
3V	21.8 dia. x 74.6 high	No.8	Stud
4.5V	62 x 22 x 67 high	312G	Flat Spring
4.5V	103 x 35 x 92 high	126	Screw
6V	67 x 67 x 102 high	908S	Coiled Spring
6V	137 x 73 x 127 high	918S	Screw
6V	67 x 67 x 110 high	HP992	Screw

**Technical information**

Type	Mass	Nominal capacity
No.8	42.5g	1.12Ah at 300Ω for 4 hours/day to 1.8V
312G	113g	2.3Ah at 225Ω for 4 hours/day to 2.7V
126	369g	5.76Ah at 75Ω for 4 hours/day to 2.7V
908S	600g	6.4Ah at 8.2Ω for 30 mins/day to 3.6V
918S	1086g	15Ah at 10Ω for 30 mins/day to 3.6V
HP992	581g	6.19Ah at 10Ω for 30 mins/day to 3.6V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	20+	1+
ZB63T	312G Battery	£0.944	£0.840	£0.768	£1.110
FK70M	Gen Purpose 126	£3.610	£3.250	£3.080	£4.250

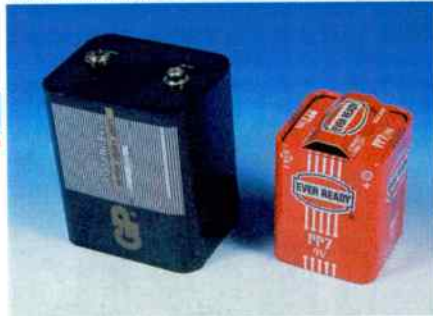
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	20+	100+	1+
FK68Y	Gen Purpose No.8	£0.851	£0.707	£0.651	£1.000

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	6+	12+	1+
ZB65V 1	908S	£2.740	£2.580	£2.120	£3.220
ZB66W 2	918S	£4.280	£3.950	£3.640	£5.040
YJ23A 2	Gen Purpose HP992	£6.000	£5.650	£5.170	£7.060

## Transistor Power Packs



Batteries especially developed for transistorised equipment where maximum performance in the minimum space is required.

Voltage	Dimensions (mm)	Type	Terminals
9V	46 x 46 x 62.2 high	PP7	Like PP9
9V	66 x 52 x 81 high	PP9	PP9-type

### Technical Information

#### Type Mass Nominal capacity

PP7	193g	1.95Ah at 450Ω for 4 hours/day to 5.4V
PP9	265g	4.25Ah at 450Ω for 4 hours/day to 5.4V

Retail Unit Price each (inc. VAT).

Order Code	Type 12	Price each exc. VAT			inc. VAT each
		1+	12+	24+	
FMD4E	Trans Pwr PP7 9V	£2.350	£2.150	£2.050	£2.770
ZB67X	Trans Pwr PP9 9V	£2.350	£2.150	£2.050	£2.770

## SEALED LEAD-ACID BATTERIES

## Rechargeable Lead-Acid Batteries

Yuasa



A range of maintenance free, sealed construction lead-acid batteries combining small size with high output and long life, in 6V and 12V versions from 1Ah to 38Ah. The batteries are classified as 'non-spillable', having unique sealing techniques to guarantee that no electrolyte leakage can occur. The batteries are provided with a means of recombining gas internally during normal usage, and in the event that a build-up of gas at excessive pressure should occur, a low pressure venting

Code	Type	Dimensions	Weight	Voltage	Capacity	Short duration max. discharge
YJ66W	NP 1-6	51 x 55 x 42mm	250g	6V	1Ah	45A
YJ67X	NP 1-2-6	97 x 54 x 25mm	300g	6V	1.2Ah	45A
YJ68Y	NP 2-8-6	134 x 64 x 34mm	560g	6V	2.8Ah	100A
XG70M	NP 4-6	70 x 108 x 46mm	850g	6V	4Ah	120A
XG71N	NP 7-6	151 x 98 x 33mm	1.28kg	6V	7Ah	180A
XG73Q	NP 10-6	151 x 98 x 50mm	2kg	6V	10Ah	300A
YJ69A	NP 1-2-12	97 x 55 x 47mm	600g	12V	1.2Ah	45A
XG74R	NP 2.1-12	178 x 66 x 34mm	830g	12V	2.1Ah	75A
YJ64U	NP 2-12	150 x 90 x 20mm	700g	12V	2Ah	80A
XG75S	NP 2.8-12	134 x 64 x 68mm	1.1kg	12V	2.8Ah	100A
XG76H	NP 4-12	90 x 105 x 70mm	1.75kg	12V	4Ah	120A
XG77J	NP 6-12	151 x 98 x 65mm	2.4kg	12V	6Ah	180A
XG78K	NP 17-12	180 x 167 x 76mm	5.9kg	12V	17Ah	400A
XG79L	NP 24-12B	175 x 125 x 165mm	8.65kg	12V	24Ah	500A
XG80B	NP 38-12	196 x 170 x 165mm	13.8kg	12V	38Ah	500A

Retail Unit Price each (inc. VAT).

Order Code	Type 181	Price each exc. VAT			inc. VAT each
		1+	5+	20+	
YJ66W	1Ah Lead Acid Bat 6V	£10.300	£8.940	£7.730	£12.110
YJ67X	1.2Ah Ld Acid Bat 6V	£7.720	£6.210	£5.450	£9.080
YJ68Y	2.8Ah Ld Acid Bat 6V	£9.440	£8.140	£7.210	£11.100
XG70M2	4Ah Lead Acid Bat 6V	£11.180	£9.440	£8.250	£13.120

## Titan 12V Sealed Lead-Acid Batteries

MFA



A high quality, high capacity sealed lead-acid battery available in either 3Ah (DX35Q) or 6Ah (WE91Y) capacities. Intended for electric powered boats and starters, but also suitable for power panels, mini-drills, alarm systems etc. Although supplied partially charged, the battery should be given a full charge before initial use (recommended charger, DX20W), at a charge of 0.5A for 7h for the 3Ah type and 13h for the 6Ah type. Connection is via 5mm 'lucar' style blade terminals.

Dimensions (L x W x H): 133 x 65 x 60mm, 3Ah  
150 x 65 x 95mm, 6Ah

Retail Unit Price each (inc. VAT).

Order Code	Type 11514	Price each exc. VAT		inc. VAT each
		1+	1+	
DX35Q	12V 3Ah SLA Battery	£17.010		£19.990
WE91Y	12V 6Ah SLA Battery	£18.710		£21.990

system, operating at 7 to 10 psi, will disperse the excess and reseal itself. The 'non-spillable' feature of these batteries means that they can be operated in any position, unlike the usual form of vented lead-acid battery which is strictly 'one-way-up'. A service life of 5 years should be expected if the batteries are used most often in the 'floating' or 'standby' modes of operation, where top-up trickle charging is regular and discharge is infrequent. The batteries also feature a low 'self discharge' rate of only 3% of rated capacity per month, allowing the battery to be left unused for some time without loss of efficiency or any appreciable deterioration of performance.

## Charging

Because these lead-acid batteries are sealed, some care has to be exercised whilst charging, and it is recommended that a stabilised, constant voltage source should be used, with current limiting proportional to the battery's Ah rating. Car battery type chargers must never be used. Battery performance and service life will be directly affected by the choice and efficiency of the charging circuit used. Constant voltage charging is the most suitable method, and the output must be within 2.25 to 2.30 volts per cell for trickle charging, or in the case of 'cyclic' use (regular discharging) 2.40 to

## Rechargeable Lead-Acid Battery for Cyclic Operations

Yuasa



A rechargeable lead-acid battery similar in construction to the Yuasa 'NP' series but specifically designed for cyclic operations.

The battery has been designed to withstand 500 charge/discharge cycles but, with care, should handle many more. As with the 'NP' series this battery is classed as 'non-spillable', having the same unique sealing properties and gas recombinant system. It is recommended that a stabilised, constant voltage charger is used with current limiting to restrict the current flow to the permitted maximum. Car battery type chargers must never be used. This battery should never be left in a severely discharged condition. Optimum charging time for this battery is 9 hours with a maximum charging time not exceeding 20 hours.

'SEE PAGE OPPOSITE'

2.50 volts per cell. It is also recommended that the current output be normally limited to a maximum of 0.25 x rated capacity of the battery (where Ah represents a ratio of current output versus time, e.g. 10Ah = 1 ampere discharge over 10 hours, or 10 amperes over 1 hour). Charging outside these limits will seriously damage the battery. These batteries, unlike some other makes, can recover full capacity even after they have been subjected to extreme overdischarge unless left standing in a totally discharged state for a long period.

## Terminations

The 6V and 12V batteries YJ66W to XG77J have a pair of moulded-in blade terminals which can accept the 6-35mm (1/4in.) push-on connectors shown in the Connectors section. XG78K to XG80B have terminals with which M5 bolts and nuts are used. These are supplied. Suitably sized metric solder tags for use with these fittings may be found in the Hardware & Sundries section - though note that neither of these methods of termination may be able to adequately cope with the maximum short duration discharge current from any battery.

All batteries are encased in grey high impact ABS plastic resin, with black sealed top covers.

### Preferred constant V charging @ A max.

For Cycle use:	For Standby use:
7.2 - 7.5V @ 0.25A max.	6.75 - 6.90V @ 2A max.
7.2 - 7.5V @ 0.3A max.	6.75 - 6.90V @ 2.4A max.
7.2 - 7.5V @ 0.65A max.	6.75 - 6.90V @ 5.2A max.
7.2 - 7.5V @ 1A max.	6.75 - 6.90V @ 8A max.
7.2 - 7.5V @ 1.75A max.	6.75 - 6.90V @ 14A max.
7.2 - 7.5V @ 2.5A max.	6.75 - 6.90V @ 20A max.
14.4 - 15V @ 0.3A max.	13.5 - 13.8V @ 2.4A max.
14.4 - 15V @ 0.475A max.	13.5 - 13.8V @ 3.8A max.
14.4 - 15V @ 0.5A max.	13.5 - 13.8V @ 4A max.
14.4 - 15V @ 0.65A max.	13.5 - 13.8V @ 5.2A max.
14.4 - 15V @ 1A max.	13.5 - 13.8V @ 8A max.
14.4 - 15V @ 1.5A max.	13.5 - 13.8V @ 12A max.
14.4 - 15V @ 3.75A max.	13.5 - 13.8V @ 30A max.
14.4 - 15V @ 6A max.	13.5 - 13.8V @ 48A max.
14.4 - 15V @ 9.5A max.	13.5 - 13.8V @ 76A max.

Order Code	Type 181	Price each exc. VAT			inc. VAT each
		1+	5+	20+	
XG71N 3	7Ah Lead Acid Bat 6V	£17.180	£15.150	£13.640	£20.190
XG73Q 4	10Ah Ld Acid Bat 6V	£15.020	£12.070	£10.150	£17.660
YJ69A 1	1.2Ah L/Acid Bat 12V	£13.600	£10.300	£10.050	£15.990
XG74R 2	2.1Ah L/Acid Bat 12V	£15.460	£12.570	£11.050	£18.170
YJ64U 1	2Ah L/Acid Bat 12V	£18.900	£15.060	£14.140	£22.210
XG75S 2	2.8Ah L/Acid Bat 12V	£16.320	£13.430	£11.530	£19.180

Order Code	Type 181	Price each exc. VAT			inc. VAT each
		1+	5+	20+	
XG76H 3	4Ah Ld Acid Bat 12V	£23.200	£16.610	£14.800	£27.260
XG77J 5	6Ah Ld Acid Bat 12V	£24.050	£19.440	£14.650	£28.270
XG78K 13	17Ah L/Acid Bat 12V	£48.980	£39.900	£36.100	£57.560
XG79L 19	24Ah L/Acid Bat 12V	£51.560	£43.380	£38.890	£60.590
XG80B 29	38Ah L/Acid Bat 12V	£77.350	£65.600	£60.600	£90.890

**Specification**

Voltage:	12V DC
Capacity:	24Ah
Charging voltage:	14.6 to 14.8V DC
Maximum charge current:	6A at 25°C (77°F)
Optimum charge current:	2.6A
Optimum charge time:	9h
Maximum charge time:	20h
Optimum discharge current:	Less than 24A
Maximum discharge current:	72A
Discharged voltage limit:	Not less than 11.8V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
R177J	18 24Ah Li/Acid CBat 12V	£60.160	£70.690

## LIQUID ELECTROLYTE LEAD-ACID BATTERIES

### Lead Acid Leisure Batteries



A range of top quality leisure batteries. The BSX Powerdrive range features a unique venting system and deep cycle capability. All batteries are supplied with a carry handle and a two year guarantee. Available in 60A, 75A, 100A capacities.

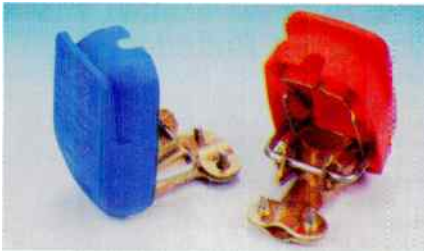
NOTE: These batteries are not available by mail order, selected stores only, call Customer Services for details.

Dimensions (mm): 60A and 75A 260W x 180D x 220H  
100A 350W x 180D x 230H

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD12N1	60Ah Leisure Battery	£39.050	£45.890
WD13P1	75Ah Leisure Battery	£47.730	£56.090
WD14Q1	100Ah Leisure Battery	£73.770	£86.690

### Lift Off Battery Clamps



Two very strong battery connector clamps (red=positive, blue=negative). Simply snap down the plastic cover for a strong and safe electrical connection, and lift the plastic cover for safe and instant disconnection.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD15R	Battery Clamps	£8.230	£9.680

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

## LITHIUM BATTERIES

### 1.5V Lithium AA Battery

**Ever Ready**

- ★ The World's Longest Lasting AA Cell
- ★ Lasts 3 Times Longer Than Long Life Alkaline batteries
- ★ Mercury and Cadmium Free

The L91 lithium battery is the world's longest lasting AA size battery. It lasts 3 times longer and is 30% lighter than long life alkaline batteries. It is mercury and cadmium free with a 10 year shelf life. Available in packs of 2.



Retail Unit Price each (inc. VAT).

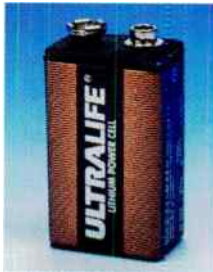
Order Code	Type	Price each exc. VAT	inc. VAT each
UG02C	Lithium 1.5V AA 2-Pk	£8.500	£9.990

### Smoke Detector/PIR Battery

**Ultralife**

Now there's no need to change batteries every year to keep your home and family protected by working detectors.

Ultralife uses the latest Lithium technology to produce a 9V battery which has been designed especially for low-energy equipment like smoke detectors and wireless alarm PIRs. Enjoy years of peace of mind with the longest lasting 9V battery in the world today, backed by the manufacturers 6-year warranty if used in a typical UL smoke detector.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC35Q	Lithium 9V	£6.800	£7.990

## Camera Batteries

**Panasonic**



Long-life, 3V and 6V lithium manganese dioxide batteries (except 4LR61, which is alkaline). Suitable for use with many automatic cameras.

Voltage	Dimensions (mm)	Type
3V	15.6 dia. x 27	CR2
3V	17 dia. x 34-2	CR123A
6V	34 x 19.5 x 36	CR-P2
6V	34 x 17 x 45	2CR5
6V	35.6 x 9 x 48.3	4LR61

**Technical Information**

Type	Mass	Nominal capacity
CR2	11g	800mAh
CR123A	16g	1300mAh
CR-P2	37g	1300mAh
2CR5	37g	1300mAh
4LR61	37g	1300mAh

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JC95D	Lithium CR2 Photo	£3.390	£3.990
KW68Y	Lithium Batt CR123A	£5.140	£6.050
EM32K	Lithium CR-2P	£8.580	£10.090
EM33L	Lithium 2CR5	£8.580	£10.090
EM31J	Alkaline 4LR61	£2.990	£3.520

## Camera Batteries

**Duracell**



★ Suitable for Olympus, Canon and many other Cameras

Long-life, 3V and 6V lithium manganese dioxide batteries.

Suitable for use with Olympus, Canon, and many other automatic cameras.

Voltage	Dimensions (mm)	Type
3V	11.6 dia. x 10.8	DL1/3N
6V	13 dia x 25.2	PX28L

**Technical Information**

Type	Mass	Nominal capacity
DL1/3N	3g	160mAh
PX28L	9.4g	150mAh

**Equivalents:**

DL1/3N replaces: CR11108, 2L76, CR1/3N, K58L  
PX28L replaces: 2CR11108, L544, V28PXL, K28L

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VP25C	Lithium PX28 Photo	£8.070	£9.490
VP26D	Lithium DL1/3N Photo	£3.990	£4.690

## Lithium Batteries



Lithium manganese cells all having a nominal voltage of 3V. Suitable for use where very low quiescent currents need to be maintained for very long periods, with only occasional demands for high current drain.

Type	Dimensions (mm) dia. x height	Nominal voltage	Capacity max. (mAh)
CR1220	12.5 x 2	3V	38
CR1616	16 x 1.6	3V	42
CR1620	16 x 2.0	3V	60
CR2016	20 x 1.6	3V	72
CR2025	20 x 2.5	3V	160
CR2032	20 x 3.2	3V	220
CR2325	22.7 x 2	3V	165
CR2430	24.5 x 3	3V	280

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS45Y	CR2325 Battery	£1.620	£1.910

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZB77J	CR1220	£1.450	£1.710
ZB73Q	CR2025	£1.450	£1.710
ZB76H	CR2430	£1.450	£1.710
ZB74R	CR2032	£1.450	£1.710
ZB71N	CR2016	£1.450	£1.710
ZB81C	CR1616	£1.450	£1.710
GU11M	CR1620	£1.450	£1.710

## Lithium Backup Batteries

Non-rechargeable, lithium poly-carbonmonofluoride 3V backup batteries. Recommended for use in calculators, hand-held instruments, and other high capacity, low current drain applications.



Two types are available:

BR1216: Capacity 25mAh; Dims: 12.5 dia. x 1.6mm  
BR2325: Capacity 165mAh; Dims: 22.7 dia. x 2mm

Price each shown, but sold only in multiples of 1.

Order Code	Type 7247	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
AP91Y	BR1216 Battery	£1.430	£1.150	£0.890	£1.690
AS45Y	CR2325 Battery	£1.620	£1.260	£1.110	£1.910

## Lithium Backup Battery



A non-rechargeable lithium 6V battery for use in computers and electronic equipment to maintain memory contents. Red and black leads from the battery terminate in a standard plug suitable for direct connection with computer motherboards etc. The battery may be fixed in place by means of a velcro pad, provided.

Nominal capacity 1.9Ah (200µA to 3V).  
Battery dimensions: 59 x 38.5 x 20mm (L x W x H).

**WARNING: Do not incinerate.**

Retail Unit Price each (inc. VAT).

Order Code	Type 7248	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AS44X	6V Lithium Battery	£12.880	£10.350	£9.490	£15.140

## Lithium Backup Battery



A non-rechargeable 3.6V high-energy lithium battery for use in computers and electrical equipment for memory retention. Two leads approximately 22cm long allow the battery to be connected easily to a motherboard etc, while a velcro pad facilitates fixing. The red and black colour coded cables are terminated in a standard socket. Nominal capacity 1.9Ah (200µA to 3V). Dimensions are 60 x 15 x 18mm (L x W x H).

**WARNING: Do not incinerate.**

Retail Unit Price each (inc. VAT).

Order Code	Type 7246	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AS46A	3.6V Battery	£12.020	£9.090	£8.330	£14.130

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## Lithium/Thionyl Chloride 1/2AA 3.6V Cell

- ★ 3.6V for Memory Backup
- ★ Suitable for Apple Macintosh Computers
- ★ 850mAh Capacity



An untagged 1/2AA size Lithium Thionyl Chloride Cell with a voltage of 3.6V for memory backup applications, including Apple Macintosh computers. Nominal capacity 850mAh. Approximate dimensions: 25 x 14.5mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 13516	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GS99H	1/2AA 3.6V Lith Batt	£4.240	£3.800	£3.500	£4.990

## MERCURY BATTERIES

### High Capacity Mercuric Oxide Batteries



High capacity zinc mercuric oxide cylindrical cells designed for use in calculators, electronic toys, cameras and other photographic equipment. Available only whilst stocks last.

Voltage	Dimensions (mm)	Type
5-6V	15.3 dia. x 20	23PX
5-6V	12.9 dia. x 20.5	27PX

#### Technical Information

Code	Mass	Nominal capacity	Replaces types
ZB60Q	9-2g	150mAh	PX23, EPX23, 4NR42, GP23PX, V23PX.
ZB62S	9-2g	150mAh	PX27, EPX27, 4NR43, GP27PX, V27PX.

Retail Unit Price each (inc. VAT).

Order Code	Type 4478	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
ZB60Q	Mercury Batt V23PX	£1.940	£1.810	£1.590	£2.290
ZB62S	Mercury Batt V27PX	£2.110	£1.970	£1.720	£2.490

## Mercuric Oxide Batteries



Recommended for use in a wide range of electronic, photographic, scientific and test equipment applications where the small size, stable voltage characteristics and long life are particularly suitable. These batteries are also for use in hearing aids. Available only whilst stocks last.

Voltage	Dimensions (mm)	Type
1.35V	7.9 dia. x 3.6 high	HG3
1.35V	11.6 dia. x 3.1 high	HG10
1.35V	11.6 dia. x 4.2 high	HG12
1.35V	11.6 dia. x 5.4 high	HG13
1.35V	16 dia. x 6.2 high	HD625

#### Technical Information

Type	Mass	Nominal capacity	Replaces types
HG3	0.75g	40mAh	RM312, 325, 507, 5, RW57, MR41
HG10	1.3g	100mAh	
HG12	1.8g	130mAh	354, 508, 4, RW54, MR43
HG13	2.7g	180mAh	PX675, 313, 501/4677, 13, RW52, MR44, H-C
HD625	4.6g	360mAh	RM625, 4625, MR9, H-D

Retail Unit Price each (inc. VAT).

Order Code	Type 65	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JG87U	Merc Batt HG3	£0.417	£0.240	£0.145	£0.490
JG88V	Merc Batt HG10	£0.468	£0.270	£0.160	£0.550
JG90X	Merc Batt HG12	£0.553	£0.310	£0.205	£0.650
FM24B	Mercury Batt HG13	£0.638	£0.310	£0.205	£0.750
FM18U	Mercury Batt HD625	£0.672	£0.330	£0.230	£0.790

## MERCURY EQUIVALENT

### Mercury Equivalent Cells

A range of alkaline cells with a voltage of 1.5V and a stable output making them suitable as equivalents to popular mercuric oxide cells in many applications. The cells contain no mercury and there are no special disposal requirements. Three types are available:



Stock Code	Replaces Types	Dimensions (mm)	Capacity (mAh)
VQ74R	PX1, MR50	16 dia x 16.5	650
VQ76H	PX625, HD625, 4625, MR9, H-D RM625	16 dia x 6.2	190
VQ77J	PX640, MR52, V640PX, EPX640	16 dia x 11.1	335

Retail Unit Price each (inc. VAT).

Order Code	Type 12105	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VQ74R	Mercury Equiv PX1	£1.260	£1.150	£1.070	£1.490
VQ76H	Mercury Equiv PX625	£0.817	£0.660	£0.600	£0.960
VQ77J	Mercury Equiv PX640	£1.260	£1.170	£1.100	£1.490

## ZINC-AIR BATTERIES

### Zinc-Air Top Batteries

Varta

A battery system specifically designed for use in hearing aids, where it will give twice the life of mercury types. These new style batteries give higher voltage levels for distortion free operation. A zinc-air battery is interchangeable with any similarly numbered mercuric oxide battery, and is activated by removing the sealing tab on the base immediately prior to use.



Type	Voltage	Dimensions (mm)
V10AT	1.4V	5.8 dia x 3.55 high
V312AT	1.4V	7.8 dia. x 3.56 high
V13AT	1.4V	7.8 dia. x 5.33 high
V675AT	1.4V	11.56 dia. x 5.33 high

Type	Mass	Nominal capacity
V10AT	0.3g	60mAh
V312AT	0.8g	90mAh
V13AT	0.9g	200mAh
V675AT	1.7g	520mAh

Retail Unit Price each (inc. VAT).

Order Code	Type 4469	Price each exc. VAT			inc. VAT each
		1+	4+	12+	
VP24B	Zinc Air V10AT	£0.544	£0.490	£0.450	£0.640
BN27E	Zinc Air V312AT	£0.544	£0.500	£0.465	£0.640
BN28F	Zinc Air V13AT	£0.544	£0.500	£0.465	£0.640
BN29G	Zinc Air V675AT	£0.544	£0.500	£0.465	£0.640

## NICKEL CADMIUM BATTERIES

### Sealed Nickel Cadmium Rechargeable Batteries

Unloss



Nickel cadmium (NiCd) cells will replace dry batteries in most medium and high current applications. They are very economical in applications where dry batteries constantly need replacing. They must be recharged using special constant current chargers but, even if the cost of the charger is added to the cost of the batteries, they still show a considerable saving over dry batteries after just a few changes. NiCd cells are not suitable for use in very low-power applications such as clocks, or any similar application where a dry cell would only need replacing infrequently.

All the batteries in the range should have a minimum life of at least 500 full charge/discharge cycles. Providing that the charge rate never exceeds the maximum current stated and the discharge rate never exceeds twice the current, the life should be around 3,000 full charge/discharge cycles. Cells may be charged at any current up to the maximum stated, but will take progressively longer to charge at lower currents. No harm will result if the cells are charged for longer periods.

Cell size	Nominal capacity (mAh)	Dimensions Dia. x Height (mm)	Weight (g)	Standard charge for 14 hours (mA)
AAA	240	10.5 x 44.5	10	24
AA	500	14.6 x 50.0	19	50
AA	650	14.6 x 50.0	22	65
C	1500	26.2 x 50.0	40	150
D	1500	34.2 x 61.5	50	160
PP3	110	48 x 25 x 16	45	12

Note: The 500mAh AA size is available singly or in a pack of four.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AG13P	NiCad 500 AA x 1	£1.370	£1.060	£0.909	£1.810
EM22Y	NiCad 500 AAx4	£4.970	£3.990	£3.690	£5.050
EM26D	NiCad 110 PP3	£5.830	£5.000	£4.650	£6.060
EM25C	NiCad 1500 Dx2	£5.140	£4.240	£3.990	£5.050
EM24B	NiCad 1500 Cx2	£5.140	£4.240	£3.990	£5.050
EM23A	NiCad 650 AAx4	£5.400	£4.700	£4.290	£5.350
EM21X	NiCad 240 AAx4	£5.000	£4.750	£4.340	£5.060

### High Capacity Nickel Cadmium Batteries



★ Available With or Without Tags  
Nickel Cadmium rechargeable batteries in standard sizes, but offering increased capacity over the standard range.

Maplin is opening new stores all the time.  
Call for latest details

The cylindrical cells are available plain, or with solder tags for making up into rechargeable battery packs.

Plain

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
AQ47B	N 150	£1.960	£1.480	£1.360	£2.310
VQ67X	NiCd AAA Cell	£1.610	£1.250	£1.080	£1.900
VN48C	NiCd AA 950mAh	£1.870	£1.650	£1.480	£2.200
AG19V	C 2000	£3.940	£3.280	£3.130	£4.640
AG20W	D 4000	£5.230	£3.990	£3.690	£6.150

Tagged

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
VN35Q	NiCd N Cell Tagged	£2.050	£1.790	£1.590	£2.410
VQ66W	NiCd AAA Tagged	£1.650	£1.290	£1.120	£1.950
VN39N	NiCd AA 950mAh Tagged	£1.910	£1.700	£1.520	£2.250
VN44X	NiCd C Cell Tagged	£4.030	£3.080	£2.650	£4.740
VN47B	NiCd D Cell Tagged	£5.310	£4.550	£3.980	£6.250

PP3

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
VN52G	NiCd PP3 150mAh	£6.200	£4.500	£3.750	£7.290

### Sealed Nickel Cadmium Batteries - Industrial Sizes

★ Available With or Without Tags

Batteries in the following list of industrial sizes and capacities are available plain, or fitted with tags for making up into rechargeable battery packs or wiring into equipment.

Cell size	Nominal capacity (mAh)	Dimensions Dia. x Height (mm)	Weight (g)	Standard charge for 14 hours (mA)
1/3AA	130	14.6 x 16.7	6	13
1/2AA	260	14.7 x 25.0	11.5	26
2/3AA	400	14.6 x 28.2	12	40
7/5AA	1100	14.6 x 66.0	30	110
2/3AF	700	17.0 x 29.0	18	70
4/5AF	1200	17.0 x 43.0	28	120
7/5AF	2000	17.2 x 66.0	43	200
AF	1400	17.0 x 50.0	33	140
4/5SUB-C	1200	22.7 x 34.0	45	120
1/2SUB-C	600	22.7 x 26.0	28	60
SUB-C	1200	22.7 x 42.1	55	120
SUB-C	1800	22.7 x 42.1	55	120
1/2D	2300	32.0 x 35.8	77	220

Plain

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
AG11M	1/3AA 130	£1.100	£0.900	£0.780	£1.300
VQ69A	NiCd 1/2AA Cell	£2.080	£1.960	£1.820	£2.450
AG12N	2/3AA 400	£1.230	£1.030	£0.910	£1.450
AG17T	7/5AA 1100	£2.400	£2.120	£1.870	£2.820
AG15R	2/3AF 700	£1.450	£1.160	£1.060	£1.710
AG18U	4/5AF 1200	£2.250	£1.620	£1.360	£2.650
AG24B	7/5AF 2000	£3.680	£3.030	£2.630	£4.330
AG23A	AF 1400	£2.510	£2.020	£1.720	£2.950
VN49D	NiCd 4/5 Sub-C	£1.870	£1.650	£1.480	£2.200
VN50E	NiCd 1/2 Sub-C Cell	£1.780	£1.580	£1.400	£2.100
AG22Y	SUB-C 1200	£2.220	£1.770	£1.620	£2.620
VN51F	SUB-C 1800	£3.170	£2.500	£2.160	£3.730
VQ71N	NiCd 1/2D Cell	£5.090	£4.800	£4.450	£5.990

Businesses and Government Establishments – open a Maplin MPS Account

Just complete form at back of catalogue

Tagged

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
VN36P	NiCd 1/3AA Cell Tagged	£1.190	£0.960	£0.860	£1.400
VQ68Y	NiCd 1/2AA Cell Tagged	£2.110	£2.030	£1.900	£2.490
VN37S	NiCd 2/3AA Cell Tagged	£1.250	£1.080	£0.950	£1.470
VN38R	NiCd 7/5AA Cell Tagged	£2.480	£2.260	£2.060	£2.920
VN40T	NiCd 2/3AF Cell Tagged	£1.540	£1.400	£1.270	£1.810
VN41U	NiCd 4/5AF Cell Tagged	£2.290	£1.980	£1.740	£2.700
VN42V	NiCd 7/5AF Cell Tagged	£3.770	£2.870	£2.470	£4.430
VN43W	NiCd AF Cell Tagged	£2.540	£2.300	£2.080	£2.990
VN45Y	NiCd 4/5 Sub-C Tagged	£1.950	£1.750	£1.570	£2.300
VN46A	NiCd 1/2 Sub-C Tagged	£1.870	£1.670	£1.500	£2.200
AG21X	SUB-C 1200 Tagged	£2.310	£1.920	£1.670	£2.620
JF99H	SUB-C 1800 Tagged	£3.250	£2.410	£2.150	£3.630
VQ70M	NiCd 1/2D Cell Tagged	£5.260	£4.950	£4.570	£6.190

### Nickel Cadmium Button Cells



Rechargeable button cell batteries with a life expectancy of 500 to 1000 charge/discharge cycles, much above the requirement of IEC standard. They have a high charge retention, and at 20°C the cells still retain 40% of the nominal capacity after 12 months of idleness, thus they are suitable for portable instruments that are used infrequently. A voltage level of 1.2V or more is maintained during 80% of the discharge cycle. Built-in chemical protection is provided if cell polarity is reversed, or the cell is otherwise misused. These cells exhibit no 'memory effect' and are suitable for continuous trickle charging, they will not experience voltage drop or lowered capacity during discharge.

Order Code	Nominal capacity (mAh)	Dimensions Dia. x Hght (mm)	Weight (g)	Standard charge for 14 hours (mA)
AG34M	60	15.45 x 6.2	4	6
AG35Q	170	25.1 x 6.7	10	17
AG36P	280	25.1 x 9	14	28

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
AG34M	Button NiCd 60	£1.100	£0.887	£0.566	£1.300
AG35Q	Button NiCd 170	£1.100	£0.727	£0.626	£1.300
AG36P	Button NiCd 280	£1.100	£0.727	£0.626	£1.300

ORDER BEFORE 5PM FOR SAME DAY DESPATCH

Tel: 01702 554000  
Fax: 01702 554001  
e-mail: Sales@maplin.co.uk

## NICKEL METAL HYDRIDE BATTERIES

### High Capacity NiMH AA Cell

Uniros

- ★ 1200mAh Capacity
- ★ 'Green' Technology
- ★ No 'Memory' Effect

RECENTLY INTRODUCED



These 'NiMH' or Nickel Metal Hydride cells, are free of toxic or hazardous elements such as cadmium, lead, mercury or lithium and can be used repeatedly and disposed of safely when finally thrown away. A service life of 500 to 1000 charge/discharge cycles can be expected, and the capacity related performance is normally 30 to 50% better than that of equivalent NiCd cells. The absence of cadmium in the formulation means that NiMH cells are free of the undesirable 'memory' effect which can reduce the capacity of NiCd cells. A resealing safety vent guards against accidental misuse.

Nominal voltage: 1.2V  
 Nominal capacity: 1200mAh.  
 Dimensions: 14.6 dia x 50mm  
 Std charge for 14 hrs 120mA  
 Sold in packs of 2.

Retail Unit Price each (inc. VAT).

Order Code	Type 13517	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
VN18U	NiMH AA Cell 2-Pack	£8.20	£6.20	£5.10	£9.90

### Nickel Metal Hydride Batteries - Standard Sizes

★ Available With or Without Tags



The new generation of rechargeable 'NiMH' or Nickel Metal Hydride cells, free of toxic or hazardous elements such as cadmium, lead, mercury or lithium, which can be used repeatedly and disposed of safely when finally thrown away. A service life of 500 to 1000 charge/discharge cycles can be expected, and the capacity related performance is normally 30 to 50% better than that of equivalent NiCd cells. (approx. 15% for PP3) Moreover, the absence of cadmium in the formulation means that NiMH cells are free of the undesirable memory effect. Voltage level is maintained at 1.2V or more during 80% of the discharge cycle, and up to 100% of the nominal capacity at a rate of 3C10A is possible. A resealing safety vent guards against possible misuse.

Nominal capacity (mAh)	Cell size	Dimensions Dia. x Height (mm)	Weight (g)	Standard charge for 14 hours (mA)
500	AAA	10 x 44.5	15	45
1200	AA	14.6 x 50.0	30	120
2400	C	26 x 46	70	240
4500	D	33.5 x 58	150	450
120	PP3	47 x 15 x 26	45	11

Plain  
 Retail Unit Price each (inc. VAT).

Order Code	Type 13517	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
VN28F	NiMH AAA Cell	£2.970	£2.300	£1.990	£3.490
VN15R	NiMH AA Cell	£4.220	£3.200	£2.650	£4.970
VN26D	NiMH C Cell	£8.500	£7.500	£6.750	£9.990
VN27E	NiMH D Cell	£12.750	£11.400	£10.250	£14.990

Tagged  
 Retail Unit Price each (inc. VAT).

Order Code	Type 13517	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
VN23A	NiMH AAA Cell Tagged	£2.970	£2.300	£1.990	£3.490
VN19V	NiMH AA Cell Tagged	£4.240	£3.050	£2.500	£4.990
VN21X	NiMH C Cell Tagged	£8.500	£7.500	£6.750	£9.990
VN22Y	NiMH D Cell Tagged	£12.750	£11.400	£10.250	£14.990

PP3  
 Retail Unit Price each (inc. VAT).

Order Code	Type 13517	Price each exc. VAT			inc. VAT each
		1+	50+	100+	
BN07H	NiMH 120 PP3	£5.090	£4.230	£3.960	£5.990

### Nickel Metal Hydride Batteries - Industrial Sizes

★ Available With or Without Tags



The new generation of rechargeable 'NiMH' or Nickel Metal Hydride cells, free of toxic or hazardous elements such as cadmium, lead, mercury or lithium, which can be used repeatedly and disposed of safely when finally thrown away. A service life of 500 to 1000 charge/discharge cycles can be expected, and the capacity related performance is normally 30 to 50% better than that of equivalent NiCd cells. (approx. 15% for PP3) Moreover, the absence of cadmium in the formulation means that NiMH cells are free of the undesirable memory effect. Voltage level is maintained at 1.2V or more during 80% of the discharge cycle, and up to 100% of the nominal capacity at a rate of 3C10A is possible. A resealing safety vent guards against possible misuse.

Nominal capacity (mAh)	Cell size	Dimensions Dia. x Height (mm)	Weight (g)	Standard charge for 14 hours (mA)
600	2/3AA	14.5 x 28.2	12	60
900	2/3AF	17.0 x 29.0	19	90
1500	4/5AF	17.0 x 43.0	30	150
1800	AF	17.0 x 50.0	35	180
2800	7/5AF	17.2 x 66.0	46	280

Plain  
 Retail Unit Price each (inc. VAT).

Order Code	Type 4486	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
VN34M	NiMH 2/3AA Cell	£2.170	£1.840	£1.600	£2.550
VN29G	NiMH 2/3AF Cell	£2.820	£2.400	£2.090	£3.320
VN30H	NiMH 4/5AF Cell	£4.360	£3.650	£3.100	£5.130
VN32K	NiMH AF Cell	£5.200	£4.300	£3.700	£6.120
VN33L	NiMH 7/5AF Cell	£7.550	£6.650	£4.750	£8.880

Tagged  
 Retail Unit Price each (inc. VAT).

Order Code	Type 4486	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
VN25C	NiMH 2/3AA Tagged	£2.210	£1.850	£1.600	£2.600
AG29G	NiMH 2/3AF Tagged	£2.850	£2.250	£1.980	£3.350
AG30H	NiMH 4/5AF Tagged	£4.390	£3.350	£2.950	£5.160
AG31J	NiMH AF Tagged	£5.230	£4.050	£3.600	£6.150
AG32K	NiMH 7/5AF 2800 Tagd	£7.570	£5.350	£4.700	£8.990

See Stock Code Index For More Price Breaks

### Prismatic NiMH Rechargeable Cells

Varta



A range of prism-shaped, Nickel Metal Hydride cells offering high-capacity in a low-profile package. The cells are fitted with tags and are ideal for making up into battery packs which offer higher capacity-versus-space than similar cylindrical cells. The VH types have a sealed construction, while the CB type has a resealable pressure relief vent. All of the cells have a nominal voltage of 1.2V.

Type	Nominal Capacity (mAh)	Dimensions HxWxD (mm)	Standard Charge for 14-16hrs (mA)
VH600F6	550	48x17x6.5	55
VH650F5	650	48x15x7.5	65
CB600F6	550	48x17x6.0	55

Retail Unit Price each (inc. VAT).

Order Code	Type 11893	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JC83E	Prism Cell VH600F6	£5.090	£4.560	£4.150	£5.990
JC84F	Prism Cell VH650F5	£4.970	£4.560	£4.150	£5.650
JC82D	Prism Cell CB600F6	£4.170	£3.750	£3.520	£4.900

### Nickel Hydride Button Cells



Rechargeable NiMH button cells with a life expectancy of 500 to 1000 charge/discharge cycles. They have a high charge retention, and at 20°C the cells still retain 40% of the nominal capacity after 12 months of idleness. Ideal for memory back-up, and infrequently used battery-powered equipment.

Order Code	Nominal capacity (mAh)	Dimensions Dia. x Hight (mm)	Max. Charging Voltage (V)	Standard charge for 14 hours (mA)
JC96E	35	11.5 x 5.3	1.5	3.5
JC97F	70	15.4 x 6.0	1.5	7.0

Retail Unit Price each (inc. VAT).

Order Code	Type 12975	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JC96E	NiMH Button Cell 35	£0.672	£0.600	£0.535	£0.790
JC97F	NiMH Button Cell 70	£0.842	£0.670	£0.590	£0.990

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## SILVER OXIDE BATTERIES

### Silver Oxide Batteries



Especially recommended for quartz watches and small calculators where the long and stable discharge characteristics are important. Nominal voltage of all types 1.5V.

Type	Dimensions (dia. x h mm)	Nominal capacity	Mass
CX521	5.8 x 2.1	10mAh	0.3g
SG1	6.8 x 2.1	12mAh	0.34g
CX626/SG4	6.8 x 2.6	20mAh	0.4g
CX721	7.9 x 2.1	16mAh	0.45g
SG2	7.9 x 2.6	23mAh	0.5g
SG3	7.9 x 3.6	30mAh	0.7g
SG5	7.9 x 5.4	58mAh	1.1g
CX921	9.5 x 2.1	25mAh	0.6g
CX926	9.5 x 2.6	34mAh	0.75g
CX936	9.5 x 3.6	52mAh	1.0g
SG8	11.6 x 2.1	35mAh	0.9g
SG10	11.6 x 3.1	64mAh	1.3g
SG12	11.6 x 4.2	110mAh	1.8g
SG13	11.6 x 5.4	150mAh	2.7g

#### Type Will directly replace types

CX521	SR521SW, 379, 50
SG1	SR621SW, 364, 51, 531, D364, RW320, SR60
CX626	SR626SW, 377, 37, SG4
CX721	SR721SW, 361/362, 19/46, 532, D361, RW310/RW410, SR58
SG2	396/397, 26/29, 536/556, D396, RW311/RW411, SR59
SG3	384/392, 2/10/49, 547, D384/D392, RW37/RW47, SR41
SG5	309/393, 15/16, 526/546, D309/D393, RW38/RW48, SR48, WS6
CX921	SR920SW, 371, 30, 537, RW316, SR69
CX926	SR926SW, 395/399, 25/35, 523/543, RW313/RW413, SR57
CX936	SR936SW, 394, 27, 524, D394, RW33, SR45
SG8	SR1120SW, 381/391, 23/24, 533/553, D381/D391, RW30/RW40, SR55
SG10	SR1130SW, 389/390, 11/17, 534/554, D389, RW39/RW49, SR54, SW10
SG12	301/386, 1/6, 528/548, D301/D386, RW34/RW44, SR43
SG13	303/357, 7/9, 521/541, D303/D357, RW32/RW42, SR44, WS14

These cells are also superior replacements for types marked LR instead of SR where SR is shown in above lists, e.g. LR44 is a lower quality version of SR44 which is our model SG13.

Retail Unit Price each (inc. VAT).

Order Code	Type 31	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JK33L	Silver Batt CX521	£0.851	£0.556	£0.424	£1.000
FM36P	Silver Batt SG1	£0.680	£0.434	£0.303	£0.800
JG83E	Silver Batt CX626	£0.851	£0.556	£0.424	£1.000
FM33L	Silver Batt CX721	£0.851	£0.556	£0.424	£1.000
FM35Q	Silver Batt SG2	£0.680	£0.434	£0.303	£0.800
FM30H	Silver Batt SG3	£0.851	£0.556	£0.424	£1.000
FM32K	Silver Batt SG5	£0.851	£0.556	£0.424	£1.000
FS76H	Silver Batt CX921	£0.851	£0.556	£0.424	£1.000
FS75S	Silver Batt CX926	£0.851	£0.556	£0.424	£1.000
FS74R	Silver Batt CX936	£0.851	£0.556	£0.424	£1.000
FS73Q	Silver Batt SG8	£0.851	£0.556	£0.424	£1.000
FM31J	Silver Batt SG10	£0.851	£0.556	£0.424	£1.000
FM29G	Silver Batt SG12	£1.020	£0.697	£0.495	£1.200
FM28F	Silver Batt SG13	£1.270	£0.869	£0.586	£1.500

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

## SPECIALISED BATTERIES

### 'AAAA' Alkaline Battery

Ever Ready

A 1.5V 'AAAA' alkaline battery used in laser light pointer pens.



Retail Unit Price each (inc. VAT).

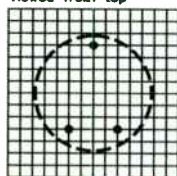
Order Code	Type 11427	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
WC48C	Energizer AAAA Cell	£1.260	£0.980	£0.900	£1.490

### PCB Mounting Batteries

Univercell



Viewed from top



0.1 inch modtz. Hole ø1.2mm

Specially designed as a cost-effective power back-up, these batteries offer extended working life combined with a sealed leak-proof construction. With high nominal capacity and excellent charge-retention characteristics they offer good protection against extended supply interruption. Their lower internal resistance also makes them suitable for high-current power back-up applications. Charge may be maintained by a trickle current with no requirement for regulation or smoothing. VP22Y and VP23A are Nickel Metal Hydride (NiMH) versions of RK46A and VP21X, offering higher capacity and no special disposal requirements.

Stock Code	Nom. Vltg (V)	Nom. Cpcy (mAh)	Max. Trickle (mA)	Max. Dschrg (mA)	Dimensions Dia. x Height (mm)
VP20W	2.4	110	1.0	40	23.5 x 8.6
RK46A	3.6	110	1.0	165	23.5 x 13.5
VP21X	4.8	110	1.0	165	23.5 x 16.5
VP22Y	3.6	130	1.5-3.0	26	23.5 x 12.7
VP23A	4.8	130	1.5-3.0	26	23.5 x 16.1

14-hour charge current is 11mA (all types).

Retail Unit Price each (inc. VAT).

Order Code	Type 114	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VP20W	2.4V Batt MP2/110EA	£3.530	£3.200	£2.950	£4.150
RK46A	3.6V Batt MP3/110EA	£5.140	£4.190	£3.880	£6.050
VP21X	4.8V Batt MP4/110EA	£5.600	£5.050	£4.650	£6.590
VP22Y	3.6V Batt MP3/130EAH	£5.530	£4.950	£4.500	£6.500
VP23A	4.8V Batt MP4/130EAH	£6.040	£5.350	£4.900	£7.100

Want the best price but not all at once?

- Schedule your Deliveries

Call 01702 554000 and ask for "Schedules"

## Lithium/Thionyl Chloride 1/2AA 3.6V Cell

- ★ 3.6V for Memory Backup
- ★ Suitable for Apple Macintosh Computers
- ★ 850mAh Capacity



An untagged 1/2AA size Lithium Thionyl Chloride Cell with a voltage of 3.6V for memory backup applications, including Apple Macintosh computers. Nominal capacity 850mAh. Approximate dimensions: 25 x 14.5mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 13518	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GS99H	1/2AA 3.6V Lith Batt	£4.240	£3.800	£3.500	£4.990

## Lithium Batteries - Plain or PCB Mount

Varta



A range of non-rechargeable lithium batteries ideal for use as volatile memory backup. Features include long shelf life, low self discharge and maintenance free operation.

Description	Mounting Type	Voltage (V)	Capacity (mAh)	Order Code
CR1/2AACD	Wire Ended	3	950	BN08J
CR1/2AASLF	PCB (Horiz)	3	950	BN09K
CR1/2AA	Plain	3	950	JG99H
CRAACD	Wire Ended	3	2000	BN10L
CRAASLF	PCB (Horiz)	3	2000	JC98G
CRAA	Plain	3	2000	JC99H
CR2032PCB	PCB (Horiz)	3	220	BN11M
CR2430PCB	PCB (Horiz)	3	280	BN12N
CR2032SLF	PCB (Vertical)	3	220	BN13P
CR2430SLF	PCB (Vertical)	3	280	BN14Q

Retail Unit Price each (inc. VAT).

Order Code	Type 352	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BN08J	Lithium CR1/2AACD	£3.420	£2.900	£2.700	£4.030
BN09K	Lithium CR1/2AASLF	£3.420	£2.900	£2.700	£4.030
JC99H	Lithium CRAA	£3.980	£3.650	£3.450	£4.680
BN10L	Lithium CRAACD	£4.170	£4.030	£3.780	£4.910
JC98W	Lithium CRAASLF	£4.170	£3.850	£3.620	£4.910
JC99H	Lithium CR1/2AA	£3.390	£2.950	£2.700	£3.990
BN11M	Lithium CR2032PCB	£1.800	£1.530	£1.430	£2.120
BN12N	Lithium CR2430PCB	£2.050	£1.780	£1.670	£2.410
BN13P	Lithium CR2032SLF	£1.800	£1.530	£1.430	£2.120
BN14Q	Lithium CR2430SLF	£2.050	£1.780	£1.670	£2.410

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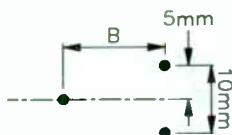
## PCB Mounted NiCd/NiMH Batteries

Varta

- ★ Long life
- ★ Requires no maintenance
- ★ Withstands constant trickle charge
- ★ PCB mounting
- ★ Low self discharge
- ★ Fully charged in approx. 14 hours



A range of rechargeable nickel cadmium and nickel metal hydride batteries for battery backup applications and memory preservation during power fluctuations. Particularly suitable for backing up CMOS and NMOS memories.



### NiCd

Description	Voltage (V)	Capacity (mAh)	Fixing B(mm)	Order Code
2V110R	2.4	110	13.0	BN17T
3V110R	3.6	110	19.2	BN18U
4V110R	4.8	110	23.2	BN19V
5V280R	6	280	45.3	BN20W

### Nickel Metal Hydride

Description	Voltage (V)	Capacity (mAh)	Fixing B(mm)	Order Code
2V60H	2.4	60	13.2	BN21X
3V60H	3.6	60	19.5	BN22Y
2V110H	2.4	110	13.0	BN23A
3V110H	3.6	110	19.2	BN24B
4V110H	4.8	110	23.2	BN25C
5V280H	6	280	45.3	BN26D

3V110H is also available untagged - please quote Order Code VQ81C.

Retail Unit Price each (inc. VAT).

Order Code	Type 3853	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BN17T	PCB NiCd 2V110R	£1.800	£1.650	£1.570	£2.120
BN18U	PCB NiCd 3V110R	£2.540	£2.250	£2.120	£2.990
BN19V	PCB NiCd 4V110R	£3.600	£3.200	£3.050	£4.240
BN20W	PCB NiCd 5V280R	£4.400	£4.000	£3.750	£5.180
BN21X	PCB NiMH 2V60H	£1.880	£1.540	£1.420	£2.210
BN22Y	PCB NiMH 3V60H	£2.640	£2.260	£2.110	£3.110
BN23A	PCB NiMH 2V110H	£2.300	£2.060	£1.890	£2.710
BN24B	PCB NiMH 3V110H	£3.350	£2.900	£2.660	£3.940
BN25C	PCB NiMH 4V110H	£4.450	£3.910	£3.590	£5.240
BN26D	PCB NiMH 5V280H	£5.800	£5.020	£4.560	£6.820
VQ81C	NiMH 3V110H	£3.270	£2.900	£2.650	£3.850

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## PCB Mounted NiMH Rechargeable Battery

Varta

A Nickel Metal Hydride replacement for the popular 3V111R, offering typically 10-15% improved capacity, a wider operational temperature range and no special disposal requirements. Typical applications include memory back-up and clock support for VCRs, PCs, car stereos, etc.



Type No.	3V11H
Nominal Voltage	3.6V
Capacity (mAh)	11(Nom.), 12(Typ.)
Charge Rate	1.2mA for 14 hours (Cyclic) 0.3 - 0.5mA (Trickle)
Charge Retention	50% after 12 months
Diameter	12.4mm
Mounting Pitch	10.2mm

Retail Unit Price each (inc. VAT).

Order Code	Type 12048	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JC85G	PCB NiMH 3V11H	£1.700	£1.410	£1.320	£2.000

## COMPUTER BATTERIES

### Battery Packs for Notebook Computers

GP



Replacement rechargeable battery packs for common makes and models of notebook computer.

Order Code	Type	Fits model Computers
AG72P	B101	Toshiba T1200-XE
AG74R	B201	Panasonic 170/270/370
AG75S	B301	AST 286/12, 386SX/20/25
AG76H	B402	Macintosh Powerbook 140/145/160/165C/170/180
AG78K	B601	Compaq LTE-286, Twinhead 386, Dell NX-20/200-L

Order Code	Voltage	Capacity (mAh)	Composition
AG72P	7.2V	1,400	NiCd
AG74R	12.0V	1,400	NiCd
AG75S	4.8V	5,000	NiCd
AG76H	6.0V	2,800	NiCd
AG78K	4.8V	5,000	NiCd

Price each shown, but sold only in multiples of 1.

Order Code	Type 4476	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
AG72P	B101	£36.950	£33.280	£30.250	£43.420
AG74R	B201	£51.560	£47.420	£43.380	£50.590
AG75S	B301	£60.160	£55.450	£51.010	£70.690
AG76H	B402E	£60.160	£55.450	£51.010	£70.690
AG78K	B601	£60.160	£55.450	£51.010	£70.690

## MOBILE PHONE BATTERIES

### Replacement Batteries for Cellular Telephones



YS39N

YS45Y



YS57M

YS63T

A range of replacement battery packs for popular models of cellular phones. All battery packs are supplied in a discharged state and should be given a first charge at the standard (C10) rate for 16 to 20 hours. Subsequent recharging can then be at the standard (C10) or rapid (C1) rate. Brand names mentioned in the following list are registered trademarks of the respective manufacturers.



YS68Y

Order Code	Fits cellular phone model
YS39N	Ericsson 237/337
YS45Y	Motorola 5200/7200/8200/9800, Microtac I & II
YS57M	Nokia 101/121, Technophone 417/405
YS63T	Nokia 2110/2140
YS68Y	NEC P100

Retail Unit Price each (inc. VAT).

Order Code	Type 11485	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
YS39N	Ericsson 237/337 Bat	£22.970	£19.250	£17.850	£26.990
YS45Y	Motorola 5200/7200 Bat	£22.970	£20.020	£18.580	£26.990
YS57M	Nokia 101/121 Bat	£22.970	£19.250	£17.850	£26.990
YS63T	Nokia 2110/2140 Bat	£22.970	£19.250	£17.850	£26.990
YS68Y	NEC P100 Battery	£22.970	£19.250	£17.850	£26.990



RS12750  
BS EN ISO 9002

Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

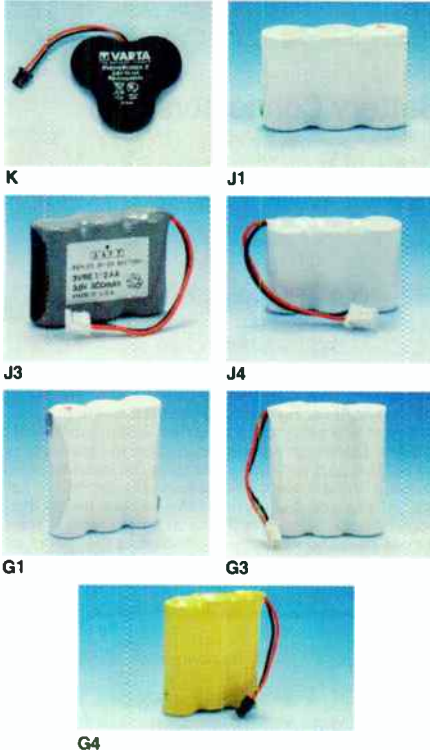


Stockist of Assessed Capability  
**YOUR GUARANTEE OF QUALITY & SERVICE**



## CORDLESS PHONE BATTERIES

### Replacement Batteries for Cordless Telephones



A range of quality battery packs for a wide range of popular cordless telephones. Brands of cordless telephones mentioned in the following list are registered trademarks of the respective manufacturers.

- Type K**  
GEC Envoy 1043, GEC Esprit 1042/1042H, Geemarc M400/Pt400/Pt400B, Geemarc Europa Pt, Geemarc Capital 3M.
- Type J1**  
Geemarc G-2000, Southwestern Bell 700/770, Answercall Ranger 1000/2000, Panasonic KXT3806/26/36/4300, Geemarc Atlanta 100.
- Type J3**  
Betacom Premier, Betacom Venture XT/XT2.
- Type J4**  
BT Freestyle 50, Betacom Quest, Betacom Roma, Binatone Airlink 8, Southwestern Bell 760/790/830.
- Type G1**  
Betacom 7000/Mk1/Mk11, Betacom C1000, BT Freeway, BT Freestyle, BT Freelance 1 + 2, Geemarc Capital, Uniden 300E, Commtel 829.
- Type G3**  
BT Freelance 100/200, Southwestern Bell 650/1150/1735. BT Freestyle 500/600/1000.
- Type G4**  
Panasonic 3816, Sharp CLS200E, Sharp CLA400E, Sharp CLA500E.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AG39A	Phone Battery K	£5.090	£3.740	£3.080	£5.990
MB52G	Phone Battery J1	£6.800	£5.130	£4.490	£7.990
MB53B	Phone Battery J3	£6.800	£5.130	£4.490	£7.990
MB54J	Phone Battery J4	£6.800	£5.130	£4.490	£7.990
MB55K	Phone Battery G1	£6.800	£5.130	£4.490	£7.990
MB56L	Phone Battery G3	£6.800	£5.130	£4.490	£7.990
MB57M	Phone Battery G4	£6.800	£5.130	£4.490	£7.990

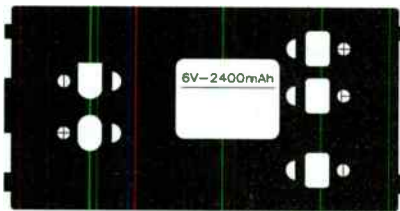
## CAMCORDER BATTERIES

### Camcorder Batteries

A range of camcorder battery packs to suit most popular camcorders. Type D601-N is an economy 6V two-way design suitable for Sony, Panasonic, Sharp and most others, equivalent to Sony NP55 and NP77, etc. The C602-N is an economy equivalent to the Canon BPE77. The D605 is a higher capacity version of the D601-N. The C602-N includes an extension strap to allow you to extend the length of your hand strap if the battery mount is located in the grip of your camcorder. In this event replacement packs may protrude more than the original packs, requiring a longer hand strap. The H601-N and H605 are economy packs to fit Hitachi, RCA, Minolta, etc. The D608 is an extended capacity version of the 6V D601 or D605. The J961 is a 9-6V pack equivalent to JVC NBP6U or NPB8U.



#### D Models

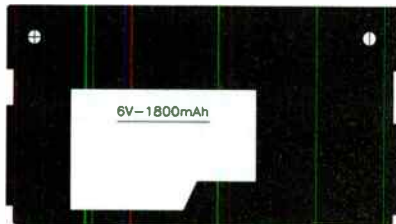


Capacities			
Type	Voltage	Capacity	Notes
D601-N	6V	1700mAh	Economy
H601-N	6V	1700mAh	Economy
H605	6V	2400mAh	Economy
C602-N	6V	1700mAh	Economy with strap
D605	6V	2400mAh	High capacity
D608	6V	3200mAh	Extended capacity
J961	9-6V	1400mAh	VHS-C battery

#### C Models



#### H Models



There is one drawback with the Ni-Cd battery which is familiarly known as the 'memory effect'. If a Ni-Cd is charged frequently from a condition other than fully discharged, the capacity will be significantly reduced. It is therefore always recommended to refresh a Ni-Cd battery by discharging it fully before recharging.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GW78K	D601-N 6V 1700mAh	£22.970	£18.400	£16.250	£26.990
GW79L	H601-N 6V 1700mAh	£22.970	£18.400	£16.250	£26.990
GW80B	C602-N 6V 1700mAh	£22.970	£18.400	£16.250	£26.990
GW81C1	D605 6V 2400mAh	£36.580	£32.000	£29.500	£42.990
GW84F	J961 9-6V 1400mAh	£25.520	£21.750	£19.850	£29.990
GW85G1	D608 6V 3200mAh	£46.800	£41.750	£37.000	£54.990
GW82D+	H605 6V 2400mAh	£36.090	£32.320	£29.800	£42.410

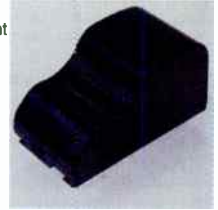
## Camcorder Batteries

### Uniros

Rechargeable replacement batteries compatible with original equipment portable VCRs and Camcorders. The batteries are supplied discharged for transit and must be charged before use. Each battery (except type VP77) includes a 'charge marker' beneath a small sliding cover which indicates the battery's state of charge and which can be red (discharged) or black (fully charged) and may be switched over after use to indicate that the pack is discharged. Five types are available as follows:

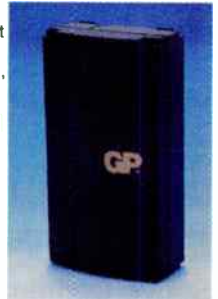
#### VP66

6V 1800mAh. Replacement for Fisher FVC901, Fuji F610, Nikon VN9000, Pentax PVC840, PVC840E, Ricoh R610, R630, Sanyo VMD3, VMD5, Sony CCDV88, CCDV90, CCDV95, CCDF330, CCDF335, CCDF340, SP5, Tamron CX7. Equivalent replacement for Sony NP55, NP77, Fuji NP55, NP77, Sanyo NP55, NP77, Tamron NP77, Pentax PVBT810, PVBT820, Ricoh NP55.



#### VP10

6V 1200mAh. Replacement for Panasonic MS70, NV-S1, NV-G1, NV-G2, NV-G3, VBS1E, VBS2E, PV-10, NVM10, PV-BP15, PV-20, PV-40, MS70, NV-MS70E, Ferguson FC31, JVC GR-AX2, GR-AX7, GR-SX9, GR65, Minolta C-606, C-660, Philips VKR6847, VKR6875. Equivalent replacement for battery models Panasonic VW, and others.



#### VP77

6V 1200mAh. Replacement for Canon A1, A-1H1, A1-H1B, A-2-H, A-9, A-10, A-11, BP-E77, BP-E77K, BP-E718, BP-E722, E6, E30, E51, E57, E60, E70, E77, E80, E90, E440, E640, E660, E680, E708, E800H1, E808, EX1H1, H460, Bauer/Bosch C81, VCC810, and others. Equivalent replacement for battery models Canon BPE77.



#### VP962

9-6V 1300mAh. Replacement for Bauer Bosch VCC606AF, VCC616AF, VCC656AF, Ferguson FC05, FC06, FC07, FC08, FC15, JVC GRC9, GRC11, GRC30, GRC45, GRC60, GRS77E, Minolta C50, Nordmende 2201, RP3000, Philips VKR6835, VKR6841, Panasonic VMC6, VMC10, MS50, Telefunken VM2895, VM2892, VM4000, VM4100, Toshiba A1420BK. Equivalent replacement for Bauer Bosch, Ferguson VA314, VA315, JVC BNV6GU, Telefunken V2932, Nordmende AC1100, Minolta VBP501, VBP500.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AG49D	VP66 1800mAh	£20.410	£15.750	£14.650	£23.990
AG51F 1	VP10 2400mAh	£28.920	£24.250	£22.500	£33.990
AG52G	VP10 1200mAh	£17.010	£15.250	£14.250	£19.990
AG54J	VP77 1800mAh	£17.010	£15.250	£14.250	£19.990
AG55K	VP962 1300mAh	£25.520	£20.700	£19.500	£29.990

Maplin is opening new stores all the time. Call for latest details

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on the Net  
<http://www.maplin.co.uk>

## NiMH Camcorder Batteries

Duracell



A range of multi-fit camcorder batteries which use Nickel Hydride (NiMH) technology to offer a capacity increase of up to 40% over Nickel Cadmium (NiCd) and with no necessity to discharge before topping-up.

DR10 is a 6V battery with a capacity of 1500mAh and is compatible with most VHS-C and 8mm camcorders, except Canon models. Makes catered for include JVC (and clones), Sony (and clones), Panasonic, Fujix, Minolta, Mitsubishi, Philips, Samsung and Sanyo.

DR11 is a 3000mAh version of DR10.

DR12 is a 6V battery with a capacity of 3000mAh for Canon camcorders.

DR14 is a 4.8V, 3200mAh version for Blaupunkt, Grundig, Metz, Panasonic, Philips, and Seimens machines.

Retail Unit Price each (inc. VAT).

Order Code	Type #181	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
CB67X	Universal Batt DR10	£34.030	£32.500	£31.200	£39.990
CB68Y	Universal Batt DR11	£51.050	£48.500	£47.350	£59.990
CB69A	Universal Batt DR12	£51.050	£48.500	£47.350	£59.990
VP27E	Universal Batt DR14	£51.050	£48.750	£44.650	£59.990

## RACE PACKS

### Sanyo Cadnica Race Packs



High-quality sealed 7.2V SCR racing packs with a capacity of, 1400mAh or 1700mAh. The 50mm temperature-resistant output leads are terminated in a standard Tamiya type connector.

Charging information

1400mAh (DX04E): 140mA for 14 to 16 hours  
1700mAh (DX05F): 170mA for 14 to 16 hours

Dimensions: 45 x 135 x 23mm

Weight: 327g (DX04E)  
337g (DX05F)

Retail Unit Price each (inc. VAT).

Order Code	Type #777	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DX04E	7.2V 1.4Ah Pro Pack	£22.110	£21.250	£19.950	£25.990
DX05F	7.2V 1.7Ah Pro Pack	£25.520	£21.650	£19.100	£29.990

## Racing Packs



Top quality, economically priced, nickel-cadmium racing packs available in four sizes/capacities. All packs are shrink-wrapped and supplied with silicone coated, high temperature leads and standard

'Tamiya-style' racing pack plug. The packs must be charged as indicated in the table below, charging time is 14hrs.

Stock Code	Voltage	Number of Cells & Type	Capacity
BN05F	4.8V	4 x 'AA'	700mAh
BN03D	7.2V	6 x 'C'	1300mAh
EM06G	7.2V	6 x 'C'	1800mAh
BN04E	9.6V	8 x 'AA'	700mAh

Stock Code	Charging Current	Dimensions (Approx)	Weight (Approx)
BN05F	70mA	57 x 57 x 14mm	92g
BN03D	120mA	45 x 131 x 23mm	313g
EM06G	170mA	45 x 131 x 23mm	313g
BN04E	170mA	57 x 103 x 14mm	178g

Retail Unit Price each (inc. VAT).

Order Code	Type #778	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BN05F	4.8V 0.7Ah Race Pack	£6.060	£5.110	£4.790	£7.130
BN03D	7.2V 1.2Ah Race Pack	£13.880	£10.250	£9.160	£16.310
EM06G	7.2V 1.7Ah Race Pack	£17.010	£12.150	£10.930	£19.990
BN04E	9.6V 0.7Ah Race Pack	£8.670	£8.110	£7.850	£10.190

## Heatshrink Sleeving for Radio Control Models

A heat-shrinkable crosslinked polyolefin material that will shrink to 50% of its original diameter when heated to over 121°C. For more rapid shrinking, higher temperatures may be used without detrimental effect. Shrinkage can be achieved by hot air guns, gas flame etc. The sleeving is self-extinguishing and has a high tensile strength and is resistant to solvents, acids, alkalis, fuel and oil. Breakdown voltage 11kV. Colour is black. Size as supplied 50-8mm diameter. Minimum diameter after shrinkage 25-4mm. Minimum wall thickness after shrinkage 1-14mm. Supplied in 200mm lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type #208	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
XS11M	Race Pk Heatshrink	£1.550	£0.969	£0.836	£1.830

## Kyosho Race Pack Connector



Comprising two crimp/solder terminals and one housing. Ideal for assembly of custom cables (use BJ40T/BJ41U 32A Silicone Wire-see cables section) and replacement of broken/damaged connectors on motors, speed controllers, battery packs, etc.

Retail Unit Price each (inc. VAT).

Order Code	Type #1474	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GZ38G	Kyosho Connector	£0.585	£0.520	£0.474	£0.700

## Tamiya Race Pack Connector



Comprising two crimp/solder terminals and one housing. Ideal for assembly of custom cables (use BJ40T/BJ41U 32A Silicone Wire-see cables

section) and replacement of broken/damaged connectors on motors, speed controllers, battery packs, etc.

Retail Unit Price each (inc. VAT).

Order Code	Type #1455	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GZ39H	Tamiya Connector	£0.595	£0.520	£0.474	£0.700

## Battery Connectors



Male

Female

For making your own battery packs and chargers, the standard racing pack plugs and sockets are available pre-assembled to 150mm (6in.) lengths of red and black high-temperature silicone insulated wires. The part with the pins inside the connector housing is the male part and normally connected to the battery, and the part with the sockets inside the housing which also has the latch mechanism is the female part and normally connected to the model or charger.

Retail Unit Price each (inc. VAT).

Order Code	Type #397	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JG04E	Race Pk Lead Male	£1.090	£0.640	£0.530	£1.290
JG05F	Race Pk Lead Female	£1.090	£0.640	£0.530	£1.290

## CHARGERS

### SEALED LEAD ACID BATTERIES

## Sealed Lead Acid Battery Charger

Yuasa



A 12V 4A 3-stage battery charger specifically intended for sealed lead acid batteries types 12V 24Ah cyclic battery (RT77J), 12V 24Ah (XG79L) and 12V 38Ah (XG80B), but suitable for sealed lead acid batteries in the range 15Ah to 38Ah. The charger has LED indication of float and bulk charge (float indicates 95% approx charge), reverse polarity protection with LED indication, short circuit and over voltage protection. Manufactured to BS 415, BS 3456, IEC 335, UL 1236.

Specification

Input:	100, 110, 220, 240V AC ±10%, 50/60Hz ±5%
Output:	13.8V ±1% temperature compensated float charge 14.5V nominal bulk charge <600mV (resistive load)
Ripple:	
Bulk to float transition current:	900mA ±20%

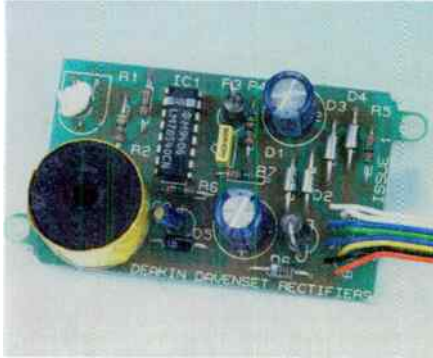
Overvoltage protection: operates >16V  
Dimensions: 200 x 96 x 173mm  
Weight: 2.15kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AQ19V 5	SLA Lead Acid Batt Chg	£73.050	£85.840

## Sealed Lead-Acid Battery Charger

Yuasa



A constant voltage battery charger which takes stepped down AC on the input and provides regulated and accurate DC at the output for charging our range of sealed lead acid batteries. For use in float charge applications, providing the battery with regulated DC even under fluctuating load conditions, which should ensure maximum battery life. Available in both 6V and 12V output versions. Input must be in the range 11 to 13V AC or 12 to 15V DC and for 12V version 17 to 19V AC. Output is 6-9V DC with a max. current of 700mA and 13-6V DC with a max current of 500mA. This charger is only suitable for batteries up to 8Ah, Size 71 x 45 x 25mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JY65V †	SLA Charger 6V	£24.910	£29.280
JY64U	SLA Charger 12V	£24.910	£29.280

## 6V/12V Sealed Lead-Acid Battery Chargers (to 4Ah)



Specifically designed for 6V and 12V sealed lead-acid batteries in the capacity range 1 to 4Ah, these two stage chargers will bulk charge to 90% then automatically switch to float charging. These plug-in chargers have approximately 1.8m of flying lead with insulated colour coded push-on spade connectors. The chargers are very rugged with reverse polarity, short-circuit and over voltage protection.

**Specification**  
Input voltage: 220V/240V AC  
Output voltages 12V (GU07H): 14.5V DC bulk, 13.8V DC float.  
6V (GU08J): 7.2V DC bulk, 6.9V DC float.  
Output current: 300mA ±10%

Indicators  
bulk: red LED  
float: green LED  
fault: both LEDs extinguished

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GU07H	12V 4Ah SLA Charger	£25.520	£29.390
GU08J	6V 4Ah SLA Charger	£25.520	£29.390

## 6V/12V Sealed Lead-Acid Battery Chargers (to 15Ah)



Available in 6V and 12V versions, these high quality constant voltage units are suitable for sealed lead-acid type batteries up to 15Ah. The chargers first Bulk charge the battery to 90% of its capacity, then automatically switch to Float charging, (temperature compensated) for the remainder of the charging process. The chargers are Reverse Polarity, Short Circuit and Over Voltage Protected.

**Technical Specification**

Input Voltage 220/240 VAC  
Output Voltages 12V (JC87U) Bulk 14.4 to 15.0 VDC, Float 13.6 to 13.8 VDC, Bulk 7.2 to 7.5 VDC, Float 6.75 to 6.9 VDC, 1.5A ± 10%  
6V (JC88V)  
Output Current Bulk to Float 180mA ± 10%  
Transition Current 180mA ± 10%  
Transition Voltage 12V 12.6 VDC ± 5%, 6V 6.3 VDC ± 5%  
Indicators Bulk Red LED, Float Green LED  
Fault i.e. Polarity Both LEDs extinguished

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JC87U †	12V 15Ah SLA Charger	£34.030	£39.990
JC88V †	6V 15Ah SLA Charger	£34.030	£39.990

## Sealed Lead-Acid Battery Multi-Charger

MFA



Suitable for trickle-charging Sealed lead-acid batteries of 2V, 6V and 12V capacity, selectable by a rotary switch. The charger is regulated to approximately 500mA, the recommended charge rate for most model size batteries. LEDs show that mains power is on (Red), and that the output is charging (Green). Includes internal fuse for overload protection and a thermal cut-out in the transformer

(self-resetting). Dimensions of unit: 128 x 97 x 54mm. In addition to a 1.9m long mains lead and plug, unit also has an output lead terminated with 5mm 'lucar' style connectors.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX20W	Lead-Acid Charger	£21.260	£24.99†

## LEAD ACID BATTERIES

### 10A Transformer Charger Unit

Designed for use with liquid electrolyte lead-acid batteries. Suitable for charging 12V marine & leisure batteries such as WD12N, WD13P & WD14Q. This fully automatic transformer/charger features protection against over-current, short circuit and reverse polarity (battery).

**Specification**  
Mains Input: 230V AC  
Frequency: 50Hz  
Output Voltage: 12V DC  
Output Current: 13V 0.5A, 12.6V 10A  
Fuses: 10A max (15A quick blow for DC output)  
Dimensions: 175 x 150 x 65mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD36P1	10A Charger	£69.430	£81.590

### Switched Mode Charger x7

Zig



This powerful charger uses switched mode technology, offering maximum power output and fast and efficient charging from a compact, lightweight unit operating automatically from any input voltage between 198 to 264V AC (making it ideal for use in Ireland and on the continent). The output is regulated and stabilised at 13.8V to eliminate overcharging. Other safety features include automatic reset and protection from short circuits, reverse battery connection and overheating. As the output is stable, battery charging time is significantly reduced and on-board accessories can be run without a battery in circuit. This is certified to EN 60335-2-9 (safety); EN 60555-2; EN 60555-3; EN 55014 and EN 50082-1 (EMC and power factor correction).

**Specification**  
Input range: 198 - 264V AC  
Output: 13.8V (±100mV)  
Maximum output: 12.5A  
Weight: 1kg  
Safety protection: Input fuse (non accessible), 5 x 20mm time delay fuse 2A, over voltage protection 15.4V (±0.6V)  
Dimensions: 104 x 70 x 200mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD31J1	X7 SM Charger	£82.450	£96.990

## Active Line Booster

Antares



The Antares system electronically 'pumps' power into your caravan battery, on demand and at high rates without the risk of damage. This active line booster allows you to recharge at a continuous rate of 5A (equivalent to 10-12A rms chargers) whilst towing, even when the caravan fridge is on. It quickly replaces on-site electricity usage and provides effective power from the towing vehicle when there is no mains available. It's fully automatic, very compact, easy to install and built to the highest standards.

It substantially improves your battery's life expectancy by constantly monitoring its load and keeping it continually charged up to 100% and, unlike passive systems, there's no risk of over- or undercharge and no acid spray due to excess gassing!

Supplied with fitting kit and full instructions.

### Specification

DC supply:	12V DC (nominal) from towing socket
Output voltage:	13.8 - 15V DC, Auto controlled over a wide temperature range
Output power:	75W continuous during charging
Indicators:	Green active charging light
Dimensions:	140 x 67 x 37mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD72P1	Line Booster	£86.800	£101.990

## Active Line Booster with Mains Input

Antares



This unit has all the advantages of WD72P, but can also be operated from the mains (anywhere in Europe) or from generators to give overnight and long term overwinter charging without any tiresome maintenance. It can also be used as a high performance standalone power supply equivalent to 10A rms! Supplied with fitting kit and full instructions.

### Specification

AC supply:	Mains or generators anywhere in Europe (180 to 260V AC 50/60Hz)
DC supply:	12V DC (nominal) from towing socket
Output voltage:	13.8 to 15V DC, Auto controlled over a wide temperature range
Output power:	75W continuous during charging
Indicators:	Mains on, active boost and float charge
Dimensions:	140 x 187 x 37mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD73Q1	Active Booster Mains	£151.900	£178.480

## TP2 MK VI Trailer Pack



This comprehensive Trailer Pack provides you with everything you need (except the battery) to assemble a portable power supply to give your caravan, trailer, boat or holiday home its own self-contained power source. The pack includes: **Deluxe Battery Box** - constructed in acid-resistant plastic, this strong battery box has been specifically designed for use with the 4A battery charger supplied. The charger is secured inside the box with its sockets protruding through purpose-cut holes in the side of the box. The box also features an internal divider to prevent any spill acid contacting electrical equipment and fully complies with the latest British Standard (BS6765 part 2). Supplied complete with strap and ventilation kit.

**4A Battery Charger** - an electronically controlled battery charger, suitable for mounting in the TP2 battery box or for use as a free-standing unit.

### Three way recharging facility

1. Direct from mains (electronically controlled).
2. Trickle charge in caravan or trailer whilst towing.
3. Boost charge in car boot when connected to car circuit (up to 8A).

Whichever method you select, charging is electronically controlled to prevent over- or undercharging and the circuits are protected against accidental overload. For extra safety, external indicators provide continuous monitoring of battery condition, mains status and charge condition. The charger has the following features: An electronic control switches the charger on when battery volts reduce to approximately 10.8V and switches the charger off when the battery is fully charged. Indicators show mains on/off, charging status and battery state - high or low. Fuses to give extra protection against overload or misconnection. Mounting brackets for use when free standing. Easily installed in the TP2 Trailer Pack with one single screw fixing.

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
WD71N1	TP2 Trailer Pack	£78.110	£91.790

## Charging and Distribution Panels

Zig



The complete charging and power distribution system, this unit offers battery charging and 230V AC to 12V DC conversion, supplying up to 4.5A continuously. The panel is supplied complete with 25A in-line battery fuse and no less than 8 protection devices to eliminate overheating or overcurrent problems.

### Features include:

- ★ Switched selection of source - car or auxiliary battery
- ★ Double pole illuminated mains switch
- ★ Three 10A switched and fused outlets for the vehicle's accessories
- ★ Battery condition monitor
- ★ Automatic self resetting, current overload and thermal trip
- ★ Certified to British Standard NCC & SMMT safety regulations

### Specification

Input:	230V AC 50/60Hz
Output:	4.5A continuous, 7A maximum 10 to 14.2V (depending on battery state)
Dimensions:	205 x 160 x 100mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD28F1	CF8 Dist Panel	£89.430	£81.590
WD29G1	CF9 Dist Panel	£86.800	£101.990

## CAMCORDER BATTERIES

### Dual Function Camcorder Battery Charger/Discharger

Uniros



This multi-function charger/discharger is suitable for a wide range of camcorder battery packs. It will charge 4.8V, 6V and 9.6V Ni-Cad packs of 800mA

ORDER BEFORE 5PM FOR SAME DAY DESPATCH

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e-mail: Sales@maplin.co.uk

or higher capacity, and various physical shapes, e.g. Sony 6V and JVC 9-6V types. It can be used from the cigar lighter socket of your car or from the mains adaptor included. The charger stops automatically when charging is complete to prevent batteries from overcharging; a 4 LED status indicator decreases in brightness as charging proceeds and extinguishes when charging is completed. It takes about 5 to 6 hours to completely charge a 1000mA battery. A plug and lead to connect to a car's cigar lighter socket is included. The charger comes complete with operating instructions.

Dimensions of charger: 152 x 68 x 53mm  
Weight: 175g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
EM05F	Camcharger/Discharger	£25.520 £23.650 £22.950	£29.990

## Camcorder Battery Discharger

If you use your camcorder frequently, you may find that the battery life is gradually getting shorter. These effects are due to the memory effect of the Ni-Cd cells used in the battery pack. Memory effect occurs when the battery is recharged before it has run out. Battery packs can be rejuvenated by plugging them into the discharger featured here before recharging. This discharger is a universal type suitable for most 8mm and VHS-C camcorder 6V (check) batteries. It is designed to discharge the battery to an optimum discharge potential of 4.5V, sounding an alarm when this level has been reached. A 3 LED bargraph indicates the state of discharge. The unit also makes a handy battery tester.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB70M	Camcorder Discharger	£11.050	£12.530

## Uniross Camcorder Battery Discharger

Uniross



A fully automatic, simple to use discharger that is suitable for 90% of the NiCds currently in use. The unit will accept 6V and 9-6V batteries, and is supplied as a main discharger base with a 6V multi-batteries adaptor plate. Both items are housed in black plastic mouldings.

**Specification**  
Discharge current: Constant current 500mA  
Discharge cut-off level: At 1V per 1-2V NiCd cell

Suitable for battery types: Sony NP55/77  
Panasonic/JVC VBS1  
Canon BPE722/77  
Hitachi BP83  
Panasonic/JVC/Sharp 9-6V grip

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KC84F	Battery Discharger	£15.310 £14.000 £11.750	£17.990

## UNIVERSAL Battery Manager Ultra



- ★ Get extra-ordinary life out of ordinary batteries
- ★ Recharges Zinc Chloride, Alkaline, Alkaline or Ni-Cad Rechargeables and Nickel Hydride battery types
- ★ Charges AAA, AA, C or D Sizes

Over 12 billion ordinary batteries are used and disposed of worldwide every year. Any home which regularly consumes batteries will immediately benefit from the Battery Manager Ultra. Users of products such as hand-held games, portable cassette and CD players, portable TVs and electronic toys will find the Ultra indispensable. Best results are obtained by careful and regular recharging of good quality batteries. The Ultra is fully automatic and therefore very easy and safe to use. It automatically recognises which size and type of battery is fitted and can charge any mixture of types and sizes. Defective batteries are automatically rejected. Charging time is normally between 8-12 hours. The battery voltage is updated at regular intervals and displayed on the LCD display. When charging is complete, a tick is shown on the display and an indication of the expected life of the recharged battery is shown. Supplied with comprehensive instruction leaflet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
UG00A	Battery Mng. Ultra	£25.520 £22.900 £20.950	£29.990

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## NiCd BATTERIES

### Automatic NiCd Charger and Discharger



A compact automatic charger/discharger for AAA and AA NiCd batteries. A slide switch on the base of the unit selects the charge rate and battery type. The batteries are discharged first before being fast charged. A built-in timer automatically changes from fast charge to trickle charge. This discharge/charge cycle helps to prevent 'memory' effect. Each cell has an LED which indicates the state of the charge/discharge process. The unit will accept one to four batteries. Dimensions: 125 x 85 x 50mm.

**Specification**  
Charge Time Battery Type and Capacity

Charge Time	AAA	AA
3h:	—	500mAh
3h 45m:	180mAh	600mAh
4h 15m:	220mAh	700mAh

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RZ14Q	Auto Chrg/Discharge	£12.880 £10.100 £9.190	£15.140

### Fast NiCd Charger with Discharger



A fast, compact NiCd charger that will charge 2 or 4 AAA or AA type batteries in 2h. A slide switch selects either the charge or discharge function. After the batteries have been discharged, they are fast charged for 2h and then automatically switched to a trickle charge mode. This sequence will prevent the 'memory' effect that is often found in NiCd batteries. The unit will automatically adjust for AA or AAA type batteries - 380mA for AA, and 100mA for AAA with a trickle charge of 20mA. LEDs indicate when the unit is in the fast, trickle or discharge mode. Dimensions 125 x 85 x 50mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RZ08J	4xAA Cell Fast Chrg	£10.300 £9.080 £7.170	£12.110

## Fast 8 Cell NiCd Charger



A fast, eight cell NiCd battery charger for 'AAA' or 'AA' type batteries that will fully charge 500mAh batteries in 2h. After this time the batteries are charged at the 20mA trickle rate. Batteries are charged in pairs, and four LEDs indicate that each pair is being charged correctly. A selector switch on the base of the unit selects different battery capacities.

Dimensions 125 x 85 x 50mm.

### Specification

Charge Time	Battery Type and Capacity	
	AAA	AA
2h:	—	500mAh
2h 24m:	180mAh	600mAh
2h 48m:	220mAh	700mAh

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RZ10L 1	V968 Charger	£13.740	£11.360	£9.950	£16.150

## Universal NiCd Battery Charger and Discharger



A very high quality universal automatic NiCd charger that has a discharge cycle built-in. It accepts AAA, AA, C, D and PP3 sizes and automatically selects the correct charge/discharge rate for the different sizes of batteries. Fast charge takes place when all the batteries have been fully discharged, and a built-in timer automatically changes from fast to trickle charge. This process helps to prevent 'memory' effect. The unit will accept just one, or a group of cells. Either one or two PP3 size batteries can be charged at the standard rate. Each charging position (except PP3) has an LED which indicates the state of the charge/discharge process. This charger is designed for NiCd batteries only and is not recommended for other types of cells. Please note that the discharge facility does not operate on the PP3 positions.

Dimensions: 225 x 65 x 115mm

### Specification

Battery type	Capacity	Charging Time
C/D:	1500mAh	1.5h
AA:	500mAh	2h
AAA:	240mAh	4h
PP3:	110mAh	15h

Please note that the overall discharge/charging time will vary dependant on the level of charge remaining when the battery was first inserted.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RZ18U 2	V1299 Charger	£20.620	£15.150	£13.230	£24.230

## AA Charger with Fast Charge



A nickel-cadmium battery charger capable of charging 2 or 4 AA cells simultaneously. A switch permits charging at standard rate 14 to 16 hours, or fast rate 3 hours max. Charge current at standard rate is 45mA approx. and at fast rate 150mA. Two LEDs are provided, one for each pair of cells and the LED lights when charging is in progress. The unit has 1.8m mains lead. Overall size: 99 x 72 x 42mm. This charger is ONLY for use with nickel-cadmium rechargeable cells.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YN28F	AA Nicad Charger	£5.940	£4.800	£4.340	£6.990

## Musicmate Battery Charger

### Uniros

Ideal for use with walkmans, CD players and portable radios, etc. A simple and compact plug-in battery charger suitable for NiCd 'AA' type cells. Provides a 7 hour charge cycle for two or four cells at a time with charging indicators to show correct connection. Full operating instructions.

Supplied with four rechargeable AA cells.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FC35Q	Lithium PP3	£6.800	£5.710	£5.240	£7.990

## Standard Charger



A nickel-cadmium battery charger capable of charging between 1 and 4 AA, C or D cells singly or simultaneously in any combination. In addition one PP3-size ni-cad can also be charged. Five LEDs are provided which light to show which charge positions are in use. Also one position may be used to test the cells (not PP3). With the cell in this position throw the switch provided to 'test' and the strength of glow of a special lamp shows the cell condition. If the lamp fails to glow or is very dim, charge the cell fully. If the lamp shines strongly the cell is charged. The unit has 1.7m mains lead. Overall size: 214 x 108 x 56mm.

### Charge rates for full charge

AA	14 to 16 hours
C Commercial	20 to 25 hours
C Industrial	35 to 40 hours
D Commercial	20 to 25 hours

D Industrial 70 to 75 hours  
PP3 14 to 16 hours (24 hours max)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
WY22Y 1	Ni-Cad Charger	£6.800	£5.960	£5.250	£7.990

## Universal Charger



A nickel-cadmium battery charger capable of charging AAA, AA, C, D, PP3 and rechargeable button cells singly or simultaneously in numerous combinations. There are two charge sockets for PP3 batteries and either one or two may be charged together. There are two positions where AAA or AA cells may be charged and four positions where AA, C or D cells may be charged. In addition there are two positions for rechargeable button cells, diameters 16mm, 11.6mm or 8mm. All ten charge positions may be used simultaneously or in any combination.

Each of the eight main charge positions (i.e. not the button cells) has an LED associated with it which lights when charging is in progress. In addition three test positions are provided, one for AAA and AA, one for C and D cells and one for PP3 batteries. When the charging switch is off, depressing the test button for the test position in use allows the meter to show if the battery is flat. The unit has 1.7m mains lead. Overall size: 185 x 155 x 56mm.

### Charge rates for full charge

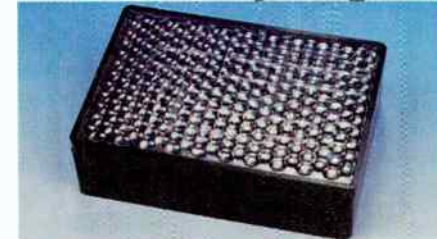
AAA in position marked UM3,4,5	5 to 7 hours
AA in position marked UM3,4,5	13 to 17 hours
AA in position marked UM1,2,3	5 to 7 hours
C Commercial	13 to 17 hours
C Industrial	22 to 28 hours
D Commercial	13 to 17 hours
D Industrial	45 to 55 hours
Button cells	5 to 7 hours
PP3	11 to 13 hours (20 hours max)

Note that of the 6 positions for AA cells, four will give a fast charge and two a standard charge.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YN27E 1	Deluxe Nicad Charger	£11.050	£9.030	£8.280	£12.990

## 'AA' Solar Battery Charger



A small, neat solar powered battery charger which will accommodate up to four AA size Ni-Cd cells. Very simple to use; simply place your AA batteries into the battery compartment of the charger, and set the lid, which carries the solar panel, to face the sun rays. A single battery can be charged in 2 to 3 hours; 2 batteries, 4 to 6 hours; 3 batteries, 7 to 10 hours; 4 batteries, 10 to 14 hours. Times will vary depending on the strength of the sunlight and/or the depth of discharge of the batteries. Dimensions of

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unit (closed): 95 x 65 x 28mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CJ350	4AA Solar Charger	£7.650	£6.500	£5.740	£8.990

## Universal Solar Powered Battery Charger

This universal battery charger will accept the most popular battery sizes - 'AAA', 'AA', 'C' and 'D', and charge two of the same size and type simultaneously.

On a good sunny day, two 'AA' batteries will be charged in about three to four hours. There is a built-in blocking diode to protect the solar cells during poor lighting conditions. On the base there is an adjustable stand to help position the charger for optimum charging. Dimensions: 170 x 76 x 56mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CL02C	Multi Solar Charger	£8.500	£7.650	£7.230	£9.990

## NICKEL METAL HYDRIDE BATTERIES

### Nickel Metal Hydride Charger with 4 Batteries

Unross

- ★ Automatic Plug-In Charger
- ★ Four High Capacity NiMH AA Cells
- ★ Ideal for Personal CDs and Stereos



This fully automatic plug-in charger comes complete with four 1200mAh NiMH cells giving extended playing time to personal CD players, cassette players and other equipment that uses AA size batteries.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VN14Q	NiMH Charger + 4xAA	£25.520	£22.600	£21.000	£29.990

## RACE PACKS

### Mains and 12V Rapid Ni-Cd Charger for Radio Control Models



A fast charger for recharging 7.2V 1200mAh nickel-cadmium radio control battery packs. The charger can be powered from either 240V AC mains or from 12V DC car accessory socket (the charger must not be plugged into 24V DC sockets found on lorries). The charger incorporates a timer that will fast charge a battery pack for 20 minutes and then switch to trickle charge. This prevents battery packs from being overcharged, yet continues to top up the charge at a low enough rate such that it could be left on indefinitely without harming the battery pack. 90% of full charge will be reached during fast charge, the remaining charge to 100% is obtained by safe trickle charging. To use: connect the charger's connector to the battery pack. Plug the charger into the power source (either 240V AC or 12V DC), the red LED will illuminate indicating fast charging. After 20 minutes the LED will extinguish and the charger switches automatically to trickle charge. When charging is completed, disconnect the charger from the power source and detach the battery pack. It is essential to disconnect the charger before recharging another battery pack to allow the timer to reset. Battery packs should not be recharged when they are warm (i.e. straight after removal from a model after racing) nor should battery packs be recharged whilst still fitted in a model. During charging both battery pack and charger will become warm, this is normal. The charger is fitted with a mains lead (and plug), a 12V DC power lead and suit standard battery packs. Overall dimensions: 81 x 67 x 131mm (excluding lead outs).

Charging current: 2-4A  
Charging voltage: 7-2V

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YP89W2	Rapid Charger	£30.370	£0.000	£0.000	£35.690

### NiCd Pack Multi-Charger and Charging Monitor

MFA



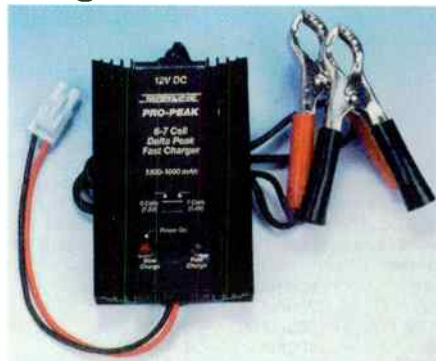
A 12V input, rapid NiCd charger incorporating a trickle charge facility. Can be used to rapid charge 500mAh and 1-2Ah NiCds in packs of 5, 6, 7 or 8

cells (includes rotary switch for 6, 7-2, 8-4 and 9-6V). Rapid charging duration is controlled by a timer which can be set between 5 and 30 minutes. An ammeter shows the charging current. After the time has elapsed, the unit shuts-off and goes into trickle-charge mode. The unit is connected to a 12V battery, e.g. a 12V car battery or sealed lead-acid battery WE91Y. Internal fuse for overload protection. Dimensions: 128 x 97 x 54mm. Unit includes power source connection leads, output leads with racing-pack connection socket, battery connection crocodile clips and instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	1+
DX19V	Ni-Cd Charger	£21.260		£24.990

### Teamline Ni-Cd Race Pack Charger



This automatic charger, designed to charge Ni-Cd Race Packs from a car battery or similar 12V DC source, is probably the most advanced, lightweight and easy to use on the market. Features include:

- ★ High efficiency Delta Peak charging unit
- ★ Protection for switched polarity or short circuit
- ★ Built-in electronic safety timer
- ★ Alligator clip 12V connection
- ★ Switch for 6 (7-2V) or 7 (8-4V) cells
- ★ Compact, lightweight aluminium heatsink case
- ★ Red/green charging indicators

#### Specification

Constant charging current: 3-2A  
Maximum timer limit: 66 minute auto cut-off  
Charging voltage range: 6 to 7 cells (7-2to 8-4V)  
Input voltage: 12 to 16V DC (3-2A)  
Weight: 185g  
Dimensions: 116 x 62 x 22mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	1+
GZ95D	Teamline Charger	£14.740		£17.330

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## 12V CONVERTERS

### LOW VOLTAGE OUTPUT

#### Car Voltage Step-down Converter



An easy-to-use car voltage step-down converter and regulator which simply plugs into any cigar lighter socket and converts the car battery supply to any of seven levels, 1.5V, 3V, 4.5V, 6V, 7.5V, 9V or 12V DC. The output is selected by a 7-way slide switch and max. current rating for each voltage is as follows:

12V	800mA	9.6W
9V	700mA	6.3W
7.5V	500mA	3.75W
6V	400mA	2.4W
4.5V	350mA	1.58W
3V	300mA	900mW
1.5V	250mA	375mW

Fitted with a 1.7m long lead terminated with a moulded 2-pin line socket. To this any one of six little right-angled adaptor plugs can be connected in either polarity. These comprise a 3.5mm jack, then miniature 1.3mm, standard 2.1 and 2.5mm, 'narrow sleeve' 2.1mm (5mm o/d), and 'fat sleeve' 1.3mm (5.5mm o/d) power plugs, one of which should fit nearly all items using these types of connectors. (For 2.5mm use a 3.5/2.5mm adaptor.) A flexible plastic keeper strip has six holes to hold all adaptors. All power plugs are long reach type for both short and long reach sockets. Max. insertion depth of car plug, 55mm; diameter 20mm. Dimensions of regulator unit 80 x 55 x 28mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 217	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JY53H	Car Power Adaptor	£7.650	£4.770	£3.520	£8.990

### MAINS VOLTAGE OUTPUT

#### Car Battery to 230V Mains Converter



A very efficient and compact 12V car battery to 230V AC converter, that can be used to power domestic appliances up to 200W. Designed to be permanently installed in the vehicle with direct connections to the battery, by two heavy duty leads. A third low current signal lead taken to the ignition switch turns the unit on and off via an internal

electronic relay. The mains output, indicated by a neon light, is by a standard 13A socket. The unit is fitted with an audible warning that sounds when the battery is becoming discharged. The warning tone gets louder as the battery voltage falls, and if the battery voltage falls below a critical level, the unit will switch off. The unit is designed to operate with the car engine idling when supplying high power continuously. Overcurrent protection is provided, so that if the unit is plugged into unsuitable equipment, for a short time, it will not be damaged.

**Specification**  
 Voltage input: 11V to 15V DC, 12V nominal  
 Input current: 1A approx. for every 10W of load  
 0.3A approx. with no load  
 Output voltage: 230V AC RMS nominal, 216V to 255V RMS over continuous load range up to 1.1A  
 Power output: 200W continuous, 250W short term, 500W surge  
 Size: 141 x 94 x 45mm  
 Weight: 800g

**Mounting Bracket Kit**  
 A mounting bracket kit for permanent installation of the 12V DC to mains converter is also available.

Retail Unit Price each (inc. VAT).

Order Code	Type 218	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KR64U	12VDC/230VAC PSU	£35.310	£79.750	£71.750	£111.990
KR65V	Fixing Kit	£5.090	£4.550	£4.300	£5.990

#### Handy Mains Inverter



#### CC86T - 12V Handy Mains Inverter

Similar to the Car Battery Converter KR64U but mounted on an alloy base with a pressed steel cover and plugs directly into the cigar lighter socket of cars with negative earth. It converts 11V to 15V DC to 230V AC RMS 48-53Hz 200W continuous, 250W short term and 500W surge. Powers domestic appliances up to 200W continuously by a standard UK 13A socket outlet. There is an audible warning if the battery voltage drops too low (approximately 11V) and the unit turns off when the voltage falls below approximately 10V. The output is a stepped quasi sine wave. A red neon indicator illuminates when an output is present. Over current protection is provided to prevent any damage. If overloaded the output will 'latch off', requiring the load to be removed and the plug withdrawn from the cigar lighter socket to reset it. A 30A fuse in the supply input helps prevent damage should the unit be seriously overloaded or misconnected; this is user replaceable. There is a wiring kit available for a direct connection to a high current source if the in-car lighter wiring is insufficient. Under no circumstances should the cigar lighter fuse be changed for a higher fuse rating as this can result in a fire hazard.

**Specification**  
 Voltage input: 11V to 15V DC, 12V nominal  
 Input current: 1A approx. for every 10W of load  
 0.3A approx. with no load  
 Output voltage: 230V AC RMS nominal, 216V to 255V RMS over continuous load range up to 1.1A  
 Power output: 200W continuous, 250W short term, 500W surge  
 Size: 141 x 94 x 45mm  
 Weight: 739g

**Direct Wiring Kit**  
 A heavy duty wiring kit that can be used in conjunction with this product is available (CC87U).

#### GT82D - 24V Handy Mains Inverter

Similar to CC86 but for use with a 24V battery. Specification

Voltage input: 20V to 36V DC  
 Input Current: 1 amp (at 12V) or 0.5 amp (at 24V) for every 10W of load.  
 Voltage output: 240V AC rms nominal, 216 to 255 V rms over continuous load range up to 1.1amps.  
 Power output: 200 watts continuous, 250 watts short term. Surge capability of 500 W  
 Size: 141 x 94 x 45mm  
 Weight: 739g

Retail Unit Price each (inc. VAT).

Order Code	Type 217	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CC86T	1 Mobile Mains Adaptor	£93.600	£77.500	£71.250	£109.990
GT82D	24V Mains Inverter	£127.650			£149.990

#### Movable Converter Direct Wiring Kit



A heavy duty wiring kit for the movable converter (CC86T). Contains a cigar lighter socket mounted on the end of two metres of heavy duty flex which can be connected to heavy current supply that has a fuse rating in excess of 20A. Used when existing car cigar lighter circuit is not capable of supporting the power requirements of the Movable Converter. It is essential that the supply to the cable is correctly fused. The positive lead should not be connected directly to the battery under any circumstances.

**Specification**  
 Voltage input: 11V to 15V DC  
 Current Rating: 20A  
 Fuse Rating: 30A maximum

Retail Unit Price each (inc. VAT).

Order Code	Type 218	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CC87U	Direct Wiring Kit	£7.650	£7.000	£6.750	£8.990

### MAINS ADAPTORS

### VARIABLE OUTPUT

#### Regulated Variable PSU

Uniross



These plug-in units are regulated to keep the output voltage constant at all output currents. Two models are available with maximum output currents of 300mA and 500mA. Voltage output is switchable for 3, 4.5, 6, 7.5, 9 and 12V DC, via a front mounted switch with screwdriver slot. A second, similar switch reverses the polarity of the output as



required. A LED indicator shows when the unit is on. Body dimensions: (excluding mains pins)  
300mA version: 70 x 52 x 43mm  
500mA version: 80 x 73 x 58mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YB23A	Mains Adptr Reg 300mA	£8.590 £6.570 £5.910	£10.090
UG01B	Mains Adptr Reg 500mA	£10.200 £8.250 £7.400	£11.990

## Regulated Variable 1200mA

Unross

- ★ 1.2A Regulated Output
- ★ Reversible polarity
- ★ Range of Adaptors

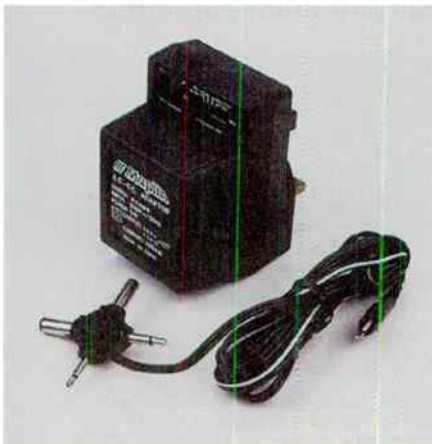


A regulated desktop power supply with output voltages of 1.5, 3, 4.5, 6, 7.5, 9 & 12V, selected via a top-mounted switch with a screwdriver slot. Maximum output current is 1200mA. An LED indicator shows when the unit is powered. Dimensions: 77 x 150 x 62mm excluding leads.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VN10L	Var Mains Adptr 1.2A	£11.900 £10.700 £9.850	£13.190

## Unregulated 300mA Variable

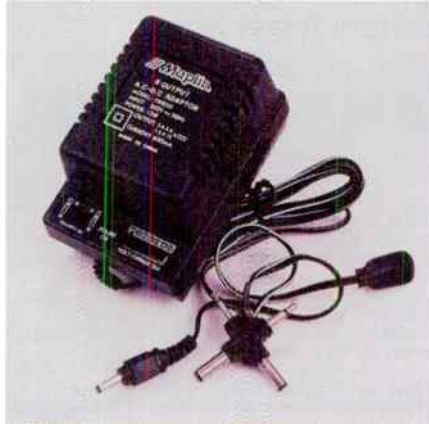


This unit has outputs of 3, 4.5, 6, 7.5, 9 and 12V DC at 300mA (max). The unit is not stabilised and therefore at low current drains the voltage rises. At less than 150mA this rise could be considerable. If you wish to use this adaptor at current drains less than 150mA you should increase voltage slowly from the lowest voltage setting until the input is at the required voltage. (A meter placed across any of the 3 spare spider connections will allow you to monitor the voltage.)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XX09K	AC Adptr Unreg 300mA	£6.000 £3.430 £2.980	£7.060

## Unregulated 800mA Variable



This unit has outputs of 3, 4.5, 6, 7.5, 9 and 12V DC at 800mA (max). There is a power 'on' indicator and a polarity switch. In addition to the four standard output plugs, the unit has a 1.3mm Walkman-type plug as well. Overall size of body 98 x 67 x 57mm. Note that this unit is unbalanced and therefore at low current drains, the voltage can approach double the full load voltage.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YM85G	AC Adptr Unreg 800mA	£8.580 £4.850 £3.690	£10.090

## FIXED OUTPUT

### Fixed Voltage Unregulated Mains Adaptors



A range of high quality fixed-voltage, unregulated mains adaptors for personal computers, radios, calculators, video games, cassette players, small TVs and battery operated equipment, which do not require a regulated power supply. The adaptors feature short circuit protection, plus automatic thermal and overload cut-off. The output is via a flying lead with a multi-type plug featuring 1.3, 2.1 & 2.5mm DC plugs and 2.5 & 3.5mm jack plugs. Polarity is centre positive when the '+' symbols on the output lead are aligned, and is reversible.

Output voltage	Output current	Order code
9V	500mA	GS74R
12V	500mA	GS75S
15V	500mA	GS78H

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS74R	Unreg 9V 500mA PSU	£6.070 £7.150 £6.500	£9.490
GS75S	Unreg 12V 500mA PSU	£6.070 £7.150 £6.500	£9.490
GS78H	Unreg 15V 500mA PSU	£9.350 £7.950 £7.050	£10.990

See Stock Code Index For More Price Breaks

## High Quality Fixed Voltage Regulated Mains Adaptors



A range of high quality fixed voltage regulated mains adaptors for personal computers, radios, calculators, video games, cassette players, small TVs and battery operated equipment. The adaptors feature short circuit protection, plus automatic thermal and overload cut-off. The regulated output ensures a constant DC supply with minimal ripple. The output is via a flying lead with a multi-type plug featuring 1.3, 2.1 & 2.5mm DC plugs and 2.5 & 3.5mm jack plugs. Polarity is centre positive when the '+' symbols on the output lead are aligned, and is reversible.

Output voltage	Output current	Order code
3V	300mA	JC89W
6V	300mA	JC90X
7.5V	500mA	GS77J
9V	500mA	JC91Y
12V	500mA	JC92A
12V	1.5A	JC93B
15V	300mA	GS78K



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS77J	Reg 7.5V 500mA PSU	£9.770 £8.720 £7.950	£11.490
GS78K	Reg 15V 300mA PSU	£10.620 £9.100 £8.150	£12.490

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JC89W	3V 300mA Mains Adptr	£7.650 £7.210 £7.100	£8.990
JC90X	6V 300mA Mains Adptr	£7.650 £7.210 £7.100	£8.990
JC91Y	9V 500mA Mains Adptr	£9.770 £9.080 £8.920	£11.490
JC92A	12V 500mA Mains Adptr	£9.770 £9.080 £8.920	£11.490
JC93B	12V 1.5A Mains Adptr	£18.140 £17.060 £16.920	£22.490

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## High Quality Switched-Mode Mains Adaptors



A range of high quality fixed-voltage, switched mode, regulated mains adaptors for personal computers, computer peripherals, radios, calculators, video games, cassette players, TVs and other battery/low voltage operated equipment, requiring higher output currents.

The adaptors feature short-circuit protection, plus automatic thermal and overload recovery. The regulated output ensures a constant DC supply with minimal ripple. Output for the single-voltage types is via a flying lead with a 2.1mm DC plug. Mains input for all models is via an IEC connector, a suitable mains lead for UK use is stock code MK41U. Mains input voltage range is 100-240V, 50/60Hz.

Output voltage	Output current	Dimensions	Order code
5V	4A	110 x 60 x 33mm	GS82D
12V	2.5A	110 x 60 x 33mm	GS83E
15V	2A	110 x 60 x 33mm	GS84F
24V	1.25A	110 x 60 x 33mm	GS85G

A multi-voltage model is also available providing outputs of 5V @ 3A, +12V @ 1.5A, & -12V @ 0.2A. It has a 2m output lead terminated in a 5-pin 180 DIN plug wired as follows:

Dimensions: 140 x 60 x 40mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1345S	Price each exc. VAT	inc. VAT each
GS82D	5V 4A SMPSU	£29.770 £25.900	£34.990
GS83E	12V 2.5A SMPSU	£29.770 £25.900	£34.990
GS84F	15V 2A SMPSU	£29.770 £25.900	£34.990
GS85G	24V 1.25A SMPSU	£29.770 £25.900	£34.990
GS81C	5 & +/-12V SMPSU	£42.540 £36.500	£49.990

## AC/AC Mains Adaptor Plugs



A range of quality mains AC/AC adaptor plugs ideal for electronic keyboards and other AC powered equipment. Power is supplied via a 1.8m lead terminated in a 2.5mm connector.

Overall dimensions: 50 x 65 x 65mm  
Input: 230V AC 50Hz

Code	Output Voltage	Max. Current
GS79L	6V AC	500mA
GU09K	9V AC	500mA
GU10L	12V AC	500mA
GS80B	15V AC	400mA

Retail Unit Price each (inc. VAT).

Order Code	Type 11384	Price each exc. VAT	inc. VAT each
GS79L	6V 500mA AC/O/P PSU	£9.350 £8.700	£10.990
GU09K	9V 500mA AC/O/P PSU	£9.350 £8.420	£10.990
GU10L	12V 500mA AC/O/P PSU	£9.350 £8.420	£10.990
GS80B	15V 400mA AC/O/P PSU	£9.350 £8.700	£10.990

## BATTERY TESTERS

### Battery Tester Strip



A liquid crystal battery tester for use with 1.5V cells (not Ni-Cad types). The tester is a clear flexible plastic strip which is folded around the battery so that the two silvered spots on the back of the tester make contact with the positive and negative terminals of the battery. The coloured marks on the face of the tester then 'light up' to show the condition of the battery. Full instructions for use are printed on the tester.

Retail Unit Price each (inc. VAT).

Order Code	Type 24	Price each exc. VAT	inc. VAT each
FP60Q	Battery Tester	1+ 5+ 10+	£0.212 £0.180 £0.160

### Battery Tester



A low-cost and compact battery tester suitable for determining the state of both dry and NiCd cells. The state of the cell is shown as 'Replace/Recharge', 'Low' and 'Good' on the integrated moving coil meter. The spring loaded arm is used for testing 'N', 'AAA', 'AA', 'C' and 'D' cells and all similar 1.5V cells, while PP3 batteries are held against two contacts on the side of the unit. In addition, the spring loaded arm can also be used to test button cells from watches and calculators. Please note that the unit draws 220mA; button cells should not be tested regularly.

Retail Unit Price each (inc. VAT).

Order Code	Type 8036	Price each exc. VAT	inc. VAT each
DM75S	Handy Battery Tester	1+ 10+ 20+	£3.820 £3.110 £2.880

## Car Battery Analyzer



A handy device for checking the state of a car's battery and charging circuit. Simply plug the device into the car's cigar lighter socket and read the display. For testing the battery turn the engine off and leave the car with the lights on dipped beam for one minute. Now connect the device and read the display. If the battery is defective the meter will register low. To check the alternator/dynamo state just check the meter scale after driving for more than 15 minutes. A healthy charging circuit will register in the middle of the scale. The legend on the meter is easy to read, and colour coded to show easily which areas of the scale are healthy and which are bad. Suitable for negative ground electrical systems.

Retail Unit Price each (inc. VAT).

Order Code	Type 10042	Price each exc. VAT	inc. VAT each
RJ91Y	Car Battery Analyzer	1+	£4.240

## Battery Condition Meter



Ideal for automotive, marine and caravan applications using 12V battery electrics. Only two connections are needed for accurate and up to date analogue reading of your battery condition. The meter's scale reads from 9 to 16V with warning areas indicated on either side of the optimum voltage.

Dimensions: 82 x 70 x 50mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3004	Price each exc. VAT	inc. VAT each
WD34M	VM Battery Meter	1+	£13.010

## Inspect Before You Buy

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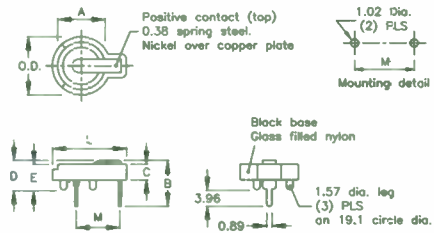
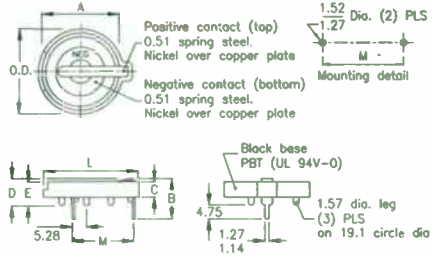
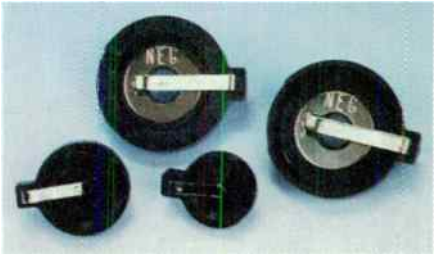


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## BATTERY HOLDERS

### Coin Cell Battery Holders



Printed Circuit Board mounting holders for common Lithium Coin Cells. Reliable spring tension assures low contact resistance and secure retention to withstand shock and vibration. Clearly marked polarity.

Order Code	GU00A	GU01B	GU02C	GU03D
Dia. (mm)	12	16	20	24
Dwg No.	2	2	1	1
A (mm)	12.57	16.13	20.22	25.02
B (mm)	11.05	11.68	13.03	13.03
C (mm)	3.81	3.81	4.95	4.95
D (mm)	7.92	7.92	8.51	8.51
E (mm)	6.35	6.35	7.49	7.49
L (mm)	19.05	22.78	30.96	30.96
O.D. (mm)	15.06	19.05	27.76	27.76
M (mm)	9.98	11.76	20.49	20.49

**Battery Cross Reference**  
 Use GU00A for: BR1216, CR1216, BR1220, CL1220, CR1220, BR1225.  
 Use GU01B for: BR1616, CR1616, CR1620, CR1632.  
 Use GU02C for: BR2016, CR2016, DL2016, BR2020, CL2020, BR2025, CR2025, DL2025, BR2032, CR2032, DL2032.  
 Use GU03D for: CR2430, DL2430.

Retail Unit Price each (inc. VAT).

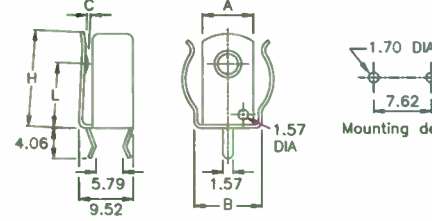
Order Code	Type 11443	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GU00A	Coin Cell Holder 12mm	£1.090	£1.010	£0.950	£1.290
GU01B	Coin Cell Holder 16mm	£1.090	£1.010	£0.950	£1.290
GU02C	Coin Cell Holder 20mm	£1.090	£1.010	£0.950	£1.290
GU03D	Coin Cell Holder 24mm	£1.090	£1.010	£0.950	£1.290

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## Snap-in PC Battery Clips



Two battery clips in nickel plated spring steel, giving reliable low contact resistance. The snap-in design gives secure through hole mounting to the PC Board. One size suits 'A' and 'AA' size cells, the other suits 'AAA' and 'N' cells.



Order Code	GU65V	GU66W
Battery Size	AAA or N	A or AA
Battery Dia. (mm)	9.53 to 11.68	13.49 to 16.89
A (mm)	6.35	7.92
B (mm)	6.96	8.97
C (mm)	1.02	1.52
H (mm)	12.70	15.06
L (mm)	6.60	9.12
Mat'l Thickness	0.30	0.38

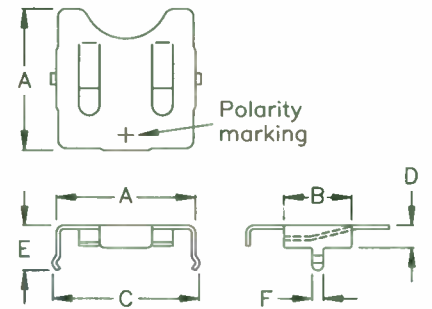
Retail Unit Price each (inc. VAT).

Order Code	Type 11458	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GU65V	PCB Clip AA/N	£0.204	£0.190	£0.170	£0.240
GU66W	PCB Clip AAA	£0.204	£0.190	£0.170	£0.240

## Coin Cell Retainer Clips



Reliable and economical retainer clips for quick and easy battery replacement. Low profile through-hole mounting with dual spring contact and clearly marked polarity. GU06G is a negative contact for use with boards where it is not possible to provide a printed negative contact area.



Order Code	GU04E	GU05F
Cell Dia. (mm)	20	24
A (mm)	20.85	25.40

B (mm)	9.42	9.42
C (mm)	22.50	27.05
D (mm)	3.68	3.68
E (mm)	6.50	6.50
F (mm)	1.57	1.57

**Battery Cross Reference**  
 Use GU04E for: BR2016, CR2016, DL2016, BR2020, CL2020, BR2025, CR2025, DL2025, DR2032, CR2032, DL2032.  
 Use GU05F for: CR2430, DL2430.

Retail Unit Price each (inc. VAT).

Order Code	Type 11442	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GU04E	Coin Cell Clip 20mm	£0.502	£0.427	£0.351	£0.590
GU05F	Coin Cell Clip 24mm	£0.502	£0.427	£0.351	£0.590
GU06G	Coin Cell Clip -VE	£0.127	£0.114	£0.102	£0.150

## PP3 Battery Holder

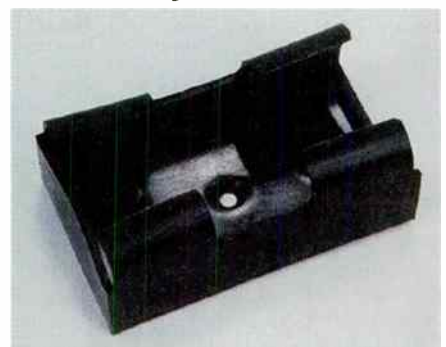


A clip-in battery holder moulded in grey polypropylene and designed to accept one PP3 9V battery. Will fit panels from 18swg to 10swg and a 58.5 x 24.5mm cut out is required. The cover, moulded as part of the holder, opens easily for battery changing and snaps shut securely. The holder comes complete with PP3 battery-clip and lead. Overall size 67.5 x 27.5 x 34mm deep. Depth behind front of panel: 29mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 262	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
XX33L	PP3 Battery Holder	£2.000	£1.900	£1.850	£2.350

## PP3 Battery Box



A black plastic battery box that securely holds one PP3 battery. Three countersunk holes in the base allow the box to be screwed to a suitable surface. A suitable battery clip, HF28F is not supplied. Overall size: 49 x 29 x 20mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 265	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CK65V	PP3 Batt Box	£0.944	£0.727	£0.636	£1.110

**Urgent Requirement?**  
 Call and collect from your local Maplin store.

## High Grade PCB Battery Holders for AA and D Cells

Buign

High quality, PCB mounting battery holders for round cells. Both types have solder tags in addition to 1mm wide PCB pins, and are attached to the PCB with countersunk M3 screws. Each type holds one cell only; holders can be stacked for two or more cells.



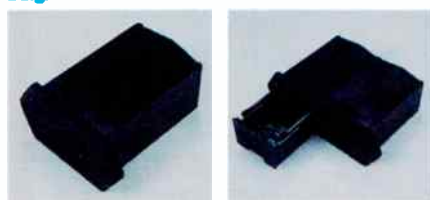
Cell Code	Type	Standard Battery Voltage	Ni-Cd Battery Voltage	Overall Size (mm)	Fixing Centres
MJ48C	AA PCB Batt Box	1.5V	1.2V	60x18x32	33mm
MJ50E	D PCB Batt Box	1.5V	1.2V	71x38x36	35mm

Retail Unit Price each (inc. VAT).

Order Code	Type 271	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
MJ48C	AA PCB Batt Box	£0.851	£0.808	£0.766	£1.000
MJ50E	D PCB Batt Box	£1.260	£1.200	£1.140	£1.480

## High Grade PP3 Battery Compartments

Buign



Chassis mounting battery holders for PP3 batteries having a removable drawer in which the PP3 is placed; when the drawer is re-inserted an internal spring presses the top contacts of the battery against the contacts at the rear of the compartment. These connections are brought out to solder tags at the rear. The compartment body is designed to be mounted in a rectangular hole in a panel and fixed with two countersunk M3 screws, making battery changing very quick and simple. Single and dual PP3 versions are available, the dual version has separate drawers. All drawers are keyed so accidental reversal is impossible.

### Dimensions

Stock Code	Type	Overall Depth	Panel Cutout	Fixing Centres
MJ45Y	Single	65mm	34.5x24.5mm	43mm
MJ46A	Dual	65mm	67x24.5mm	75mm

Retail Unit Price each (inc. VAT).

Order Code	Type 274	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
MJ45Y	Single PP3 Ch Holder	£1.830	£1.740	£1.650	£2.160
MJ46A	Dual PP3 Ch Holder	£3.420	£3.240	£3.070	£4.020

## PCB Mounting Battery Boxes



A range of black plastic PCB mounting battery boxes.

Cell Size	No. of Cells	Standard Voltage	NiCd Voltage	Dimensions l x w x h (mm)	Order Code
N	1	1.5	1.2V	37 x 15 x 13	CL11M
N	2	3.0	2.4V	37 x 27 x 13	CL12N
AAA	1	1.5	1.2V	50 x 13 x 11	CL13P
AAA	2	3.0	2.4V	52 x 29 x 13	CL14Q
AAA	4	6.0	4.8V	50 x 47 x 13	CL15R
AA	1	1.5	1.2V	51 x 13 x 16	CL16S
AA	2	3.0	2.4V	58 x 30 x 15	CL17T
AA	3	4.5	3.6V	57 x 49 x 17	CL18U
AA	4	6.0	4.8V	57 x 60 x 15	CL19V

Retail Unit Price each (inc. VAT).

Order Code	Type 10400	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CL11M	PCB Mtg N Batt Box	£0.221	£0.190	£0.161	£0.260
CL12N	PCB Mtg 2N Batt Box	£0.238	£0.205	£0.174	£0.280
CL13P	PCB Mtg AAA Batt Box	£0.221	£0.190	£0.161	£0.260
CL14Q	PCB Mtg 2AAA Batt Box	£0.255	£0.217	£0.179	£0.300
CL15R	PCB Mtg 4AAA Batt Box	£0.382	£0.329	£0.279	£0.450
CL16S	PCB Mtg AA Batt Box	£0.221	£0.190	£0.161	£0.260
CL17T	PCB Mtg 2AA Batt Box	£0.255	£0.217	£0.179	£0.300
CL18U	PCB Mtg 3AA Batt Box	£0.323	£0.275	£0.226	£0.380
CL19V	PCB Mtg 4AA Batt Box	£0.382	£0.329	£0.279	£0.450

## PCB Mounting PP3 Battery Holder

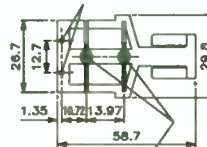
Buign



A PCB mounting battery holder for PP3 9V batteries. Connections are via the PCB pins or solder tags either of which may be easily clipped off if not required. The moulding is clearly marked positive and negative. Moulded in nylon with nickel-silver contacts.

Viewed from below. Dimensions in mm.

2 x PCB pins. Holes in board #1.4



2 x holes. Fit M3 C'SK Hd screws x 10mm

Overall size: 58.7 x 29.8 x 38.5mm high  
Height above pcb: 33.8mm with solder tags.  
26.8mm without solder tags.

Retail Unit Price each (inc. VAT).

Order Code	Type 257	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JK65V	PP3 PCB Batt Holder	£1.020	£0.969	£0.918	£1.200

## Versatile Battery Holder

Vero



A battery holder in grey polypropylene that will accept two PP3 batteries or four AA cells in a '4AA Battery Box' (HF29G). The holder has a hinged cover (overall size 60.5mm wide x 48mm high) which opens easily for battery change and snaps closed securely. The holder will clip into any panels with a 1.5mm or 3mm gauge or it may be screw fixed (M3) to any thickness panel. A 45.25mm square cut-out is required in the panel. The battery holder (overall depth 70mm) is supplied with two PP3 battery snaps.

Retail Unit Price each (inc. VAT).

Order Code	Type 280	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
HY32K	Large Batt Hldr	£3.250	£3.080	£3.000	£3.820

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## Holders for N, AAA, AA, C and D Cells

A range of battery holders to suit the standard range of small round cells. The holders are moulded in black polythene.

Cell size	Equivalent types
N	UM5, R1, MN9100, Lady, E90
AAA	UM4, HP16, R03, MN2400, Micro, E92
AA	UM3, HP7, R6, MN1500, Mignon, E91
C	UM2, HP11, R14, MN1400, Baby, E93
D	UM1, HP2, R20, MN1300, Mono, E95



Cell size	No. of cells	Standard battery voltage	Ni-cad battery voltage	Overall size (mm)	Connector required	Layout	Type	Order code
N	1	1.5V	1.2V	36 x 14 x 14	Solder to tag	-	N Batt Box	JB84F
N	2	3V	2.4V	34 x 22 x 14	Solder to tag	Side-by-side	2N Batt Box	JG80B
AAA	1	1.5V	1.2V	51 x 14 x 14	Solder to tag	-	AAA Batt Box	JY45Y
AAA	2	3V	2.4V	51 x 24 x 13	Solder to tag	Side-by-side	2AAA Batt Box	JB83E
AAA	4	6V	4.8V	51 x 25 x 24	PP3 Clip	Side-by-side x 2	4AAA Batt Box	JG79L
AA	1	1.5V	1.2V	56 x 16 x 13	Solder to tag	-	AA Batt Box	YR59P
AA	2	3V	2.4V	57 x 30 x 15	PP3 Clip	Side-by-side	2AA Batt Box	YR60Q
AA	3	4.5V	3.6V	57 x 48 x 16	PP3 Clip	Side-by-side	3AA Batt Box	YR61R
AA	4	6V	4.8V	57 x 30 x 27	PP3 Clip	Side-by-side x 2	4AA Batt Box	HF29G
AA	4	6V	4.8V	109 x 26 x 16	PP3 Clip	2 x 2	Long 4AA Batt Box	HF94C
AA	6	9V	7.2V	58 x 44 x 28	PP3 Clip	Side-by-side x 2	9V Battery Box 6 x AA	HQ01B
AA	6	9V	7.2V	156 x 25 x 16	PP3 Clip	3 x 2	Long 9V Batt Holder	JG78K
AA	8	12V	9.6V	58 x 59 x 29	PP3 Clip	Side-by-side x 2	12V Batt Box 8 x AA	RK44X
AA	10	15V	12V	58 x 75 x 29	PP3 Clip	Side-by-side x 2	12V Ni-cad Box 10 x AA	RK45Y
C	1	1.5V	1.2V	61 x 29 x 25	Solder to tag	-	C Single Box	BK45Y
C	2	3V	2.4V	60 x 55 x 24	PP3 Clip	Side-by-side	C x 2 Batt Box	JG75S
C	3	4.5V	3.6V	160 x 29 x 25	Solder to tag	Inline	C x 3 Batt Box	YU27E
C	4	6V	4.8V	109 x 53 x 25	PP3 Clip	2 x 2	C x 4 Batt Box	HF95D
C	6	9V	7.2V	157 x 54 x 25	PP3 Clip	3 x 2	C x 6 Batt Box	JG76H
C	8	12V	9.6V	108 x 53 x 52	PP3 Clip	2 x 2 x 2	C x 8 Batt Box	JG77J
D	1	1.5V	1.2V	68 x 35 x 27	Solder to tag	-	D x 1 Single Box	BK46A
D	2	3V	2.4V	70 x 70 x 31	PP3 Clip	Side-by-side	D x 2 Batt Box	JG72P
D	3	4.5V	3.6V	115 x 70 x 28	PP3 Clip	Side-by-side	D x 3 Batt Box	YU28F
D	4	6V	4.8V	130 x 70 x 32	Solder to tag	2 x 2	D x 4 Batt Box	JK34M
D	6	9V	7.2V	202 x 73 x 32	PP9 Clip	3 x 2	D x 6 Batt Box	JG73Q
D	8	12V	9.6V	138 x 72 x 58	Solder to tag	Side-by-side x 2	D x 8 Batt Box	JG74R

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JB84F	N Batt Box	£0.212	£0.172	£0.136	£0.250
JG80B	2N Batt Box	£0.255	£0.197	£0.157	£0.300
JY45Y	1AAA Batt Box	£0.212	£0.172	£0.136	£0.250
JB83E	2AAA Batt Box	£0.306	£0.232	£0.177	£0.360
JG79L	4AAA Batt Box	£0.382	£0.278	£0.232	£0.450
YR59P	AA Batt Box	£0.212	£0.172	£0.136	£0.250
YR60Q	2AA Batt Box	£0.255	£0.197	£0.157	£0.300
YR61R	3AA Batt Box	£0.382	£0.293	£0.222	£0.450
HF29G	4AA Batt Box	£0.382	£0.293	£0.222	£0.450
HF94C	Long 4AA Batt Box	£0.382	£0.293	£0.222	£0.450
HQ01B	9V Battery Box 6xAA	£0.468	£0.364	£0.283	£0.550
JG78K	Long 9V Batt Box 6AA	£0.485	£0.404	£0.313	£0.570
RK44X	12V Batt Box 8 x AA	£0.510	£0.394	£0.318	£0.600
RK45Y	12V NiCd Box 10 x AA	£0.595	£0.465	£0.374	£0.700
BK45Y	C Cell x 1 Batt Box	£0.374	£0.263	£0.202	£0.440
JG75S	C Cell x 2 Batt Box	£0.417	£0.354	£0.273	£0.480
YU27E	C Cell x 3 Batt Box	£0.468	£0.369	£0.272	£0.550
HF95D	C Cell x 4 Batt Box	£0.595	£0.465	£0.374	£0.700
JG76H	C Cell x 6 Batt Box	£0.680	£0.525	£0.424	£0.800
JG77J	C Cell x 8 Batt Box	£0.817	£0.657	£0.586	£0.980
BK46A	D Cell x 1 Batt Box	£0.382	£0.303	£0.242	£0.450
JG72P	D Cell x 2 Batt Box	£0.510	£0.394	£0.323	£0.600
YU28F	D Cell x 3 Batt Box	£0.638	£0.515	£0.424	£0.750
JK34M	D Cell x 4 Batt Box	£0.680	£0.525	£0.424	£0.800
JG73Q	D Cell x 6 Batt Box	£0.902	£0.838	£0.697	£1.060
JG74R	D Cell x 8 Batt Box	£1.150	£0.889	£0.808	£1.360

## 4 x 'AA' Ni-Cd Battery Pack Box



A battery pack box for permanently housing 4 x 'AA' tagged Ni-Cd cells; Comprising two plastic box-halves and a grommet. Tagged cells are hardwired and then fitted into the box-halves, leadout wires pass through the grommet and cable exit hole, the two box halves are then either taped or glued together. Intended for use with radio control receiver equipment, but equally suited for use in other applications.  
Dimensions: 54 x 32 x 32mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DX98G	4AA Batt Pack Box	£0.595			£0.700

## BATTERY CLIPS

### PP9 Type

Standard separate press-stud type clips for PP9 size batteries and battery packs. Diameter of stud: 15mm. Wire length: 180mm. Suitable for use with batteries PP1, 4, 7, 8, 9 etc.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HF27E	PP9-Clips	£0.680	£0.556	£0.485	£0.800

## Urgent Requirement?

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## PP3 Type



Dual miniature clip for PP3, 6 etc. Insulated overall with twin wire lead approximately 14cm long.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	100+	1000+	1+
HF28F	PP3 Clip	£0.161	£0.111	£0.071	£0.190

## DUMMY BATTERY

### AA Dummy Battery



A plastic spacer with straight through metal contact for use as a dummy in our AA size battery holders and nickel cadmium battery chargers. The dummy is exactly the same size as an AA (HP7) size battery.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
Y92A	Dummy Battery	£0.638	£0.515	£0.434	£0.750

## LASER POINTER

### Infiniter Laser Pointer



You can really impress the audience at your next presentation and leave them in no doubt where their attention should be with this high quality Class IIIA laser pointer. Gently press the clip and the pointer throws out a powerful beam that places a bright red point of light on the surface you want to draw attention to. This is a very high quality product in a smart satin metal finish, supplied with full instructions and presented in a plush velour-type gift case.

Powered by 2 x AAA cells (included), replacements may be ordered as 2 x JY50E.

**CAUTION:** Do not stare directly into the laser output aperture as retinal damage may occur. Keep out of reach of children.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	1+	1+	1+
BS36P 1	Infiniter Laser Ptr	£59.560			£69.990

## PORTABLE LIGHTING

### TORCHES

#### Cliptrix Metal Pen-Torch

Varta



- ★ Convenient Top-Pocket Style
- ★ Rugged Metal Construction
- ★ Takes 2 AA Batteries

A neatly styled, chrome-finish pen-torch, with a well focussed beam. The torch is operated by pressing and holding the integral pocket clip. A plastic collar can be rotated under the clip to prevent accidental operation. Takes 2 AA batteries. Replacement bulbs are available: stock code GT19V (pack of 2).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VM77J	Cliptrix Pen Torch	£5.350	£5.050	£4.650	£5.290
GT19V	2 x Bulb for VM77	£0.842			£0.990

#### MityLite

Pell Products



The technically advanced pen torch with a powerful, laser sharp high intensity beam that gives 400% more light than a conventional torch. MityLite's unbreakable, corrosion-proof and submersible (to 500 feet) casing is O-ring sealed. The casing incorporates a pocket clip and includes a hole for keychain attachment.

- ★ Lifetime guarantee.
- ★ Supplied with a free 'Litebender' that bends the beam through 90°.
- ★ Powered by 2 x 'AAA' cells (supplied).

For replacement batteries see Batteries, Torches & Accessories section.

Replacement lamp module available, EL07H

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BS60Q	MityLite	£10.910	£10.360	£10.090	£12.620
EL07H	MityLite Lamp	£3.820	£3.630	£3.540	£4.500

#### MityLite Mini System

Pell Products



This comprehensive MityLite kit includes all of the features of the basic unit (Order Code BS60Q) and adds a replacement bulb unit, a detachable 'Bugaway' night vision lens and a keychain ring, all in a neat presentation case.

Lifetime guarantee. Replacement lamp module

available (Order Code EL07H).  
Powered by 2 x 'AAA' (JY50E, supplied)  
Pack quantity: 1 (all items).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BS62S	MityLite Mini System	£15.770	£14.980	£14.580	£18.530
EL07H	MityLite Lamp	£3.820	£3.630	£3.540	£4.500

#### Super MityLite

Pell Products



Super MityLite's very powerful pre-focused xenon lamp provides a 6,000 candlepower beam - that's 600% more light than a conventional torch.

The unbreakable, corrosion-proof and submersible (to 500 feet) casing is O-ring sealed, comes with a lifetime guarantee and includes a pocket clip and keychain ring. Supplied with a free 'Litebender' that bends the beam through 90°. Replacement lamp module available (Order Code EL08J). Powered by 2 x 'AAA' (JY50E, supplied). Pack quantity: 1 (all items).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BS63T	SuperMityLight	£12.130	£11.530	£11.230	£14.260
EL08J	SuperMity Lamp	£4.890	£4.640	£4.520	£5.750

#### SuperDuper MityLite

Pell Products



- ★ Powerful Xenon Beam
- ★ Lifetime Guarantee
- ★ Submersible to 500 Feet

This compact, yet powerful xenon mini-torch produces a beam 600% brighter than most ordinary pocket torches. The body is made of chemical-resistant resin and is built to perform in the most severe weather conditions. Ideal for industrial, recreational and underwater activities. Powered by 2 AA cells, supplied. Recommended replacements 2 x JY48C.

Replacement lamp units available: Stock code AA84F.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AA79L	SuperDuper MityLite	£13.600	£12.920	£12.580	£15.960
AA84F	SDuper MityLite Lamp	£5.090	£4.840	£4.710	£5.990

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## StealthLite

Pell Products



★ Submersible to 500 Feet

★ Lifetime Guarantee

★ Collimated Beam

This 'Technically Advanced Lighting Instrument' produces an amazingly powerful, collimated beam of light to cut through fog, mist, or clouded water. It's rugged, chemical-resistant body and sheer power have helped to make this torch standard issue for leading fire, police, navy, army, air force, and search and rescue teams.

Powered by 4 AA cells, supplied. Recommended replacements: 4 x JY48C.

Replacement lamp units are available, stock code AA96E.

Retail Unit Price each (inc. VAT).

Order Code	Type 13858	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AA82D	StealthLite	£20.410			£23.990
AA96E	StealthLite Lamp	£9.350	£8.880	£8.640	£10.990

## BriteLite

Pell Products

★ Watertight to 500 feet

★ 60,000 Candle Power Light Source

★ Compact, Hand Held

This rugged hand held worklight housed in an unbreakable ABS housing and incorporating a high impact polycarbonate lens is ideal for use where high illumination is needed at depths of up to 500 feet.

Powered by 4 x D cells, not supplied, the unit will operate for 10-12 hours.

For replacement batteries see Batteries, Torches & Accessories section.

Replacement lamp unit: Stock code WZ38R.

Retail Unit Price each (inc. VAT).

Order Code	Type 13859	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
WZ37S	BriteLite	£52.750	£50.120	£48.800	£61.990
WZ38R	BriteLite Lamp	£11.900	£11.310	£11.010	£13.990

## Pocket Torch

Varta

A bright, powerful torch in a conveniently shaped style which makes it ideal for pocket or handbag use. The torch is powered by a 4.5V battery, included, and operated by a pull-back thumb switch. Replacement batteries are available as ZB63T, zinc chloride, or long life alkaline JC94C. Replacement bulbs are available: stock code WL76H.



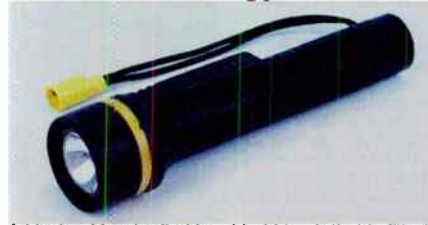
★ Convenient pocket size and flat shape

★ Complete with Battery

Retail Unit Price each (inc. VAT).

Order Code	Type 13010	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VM78K	Pocket Torch	£1.650	£1.590	£1.540	£1.990

## Small Rubber Krypton Torch

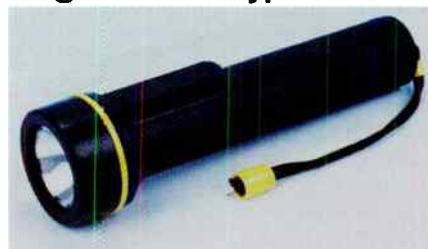


A black rubber-bodied hand-held torch that is fitted with a high brightness krypton bulb. The lens is made from transparent plastic and the torch is powered by two 'AA' cells (JY48C). Three interchangeable lenses in red, green and yellow are also supplied with the torch. The lens unscrews giving access to the two 'AA' type batteries and the bulb holder. The rubberised body features two flush-mounted 'snap' action switches for 'on' and 'off' which are unlikely to be operated inadvertently. The torch has a wrist strap attached to its body. Supplied with two 'AA' type batteries. Overall dimensions: 165 x 38mm diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type 3011E	Price each exc. VAT			inc. VAT each
		1+			1+
UK90X	Small Rubber Torch	£3.460			£4.070

## Large Rubber Krypton Torch

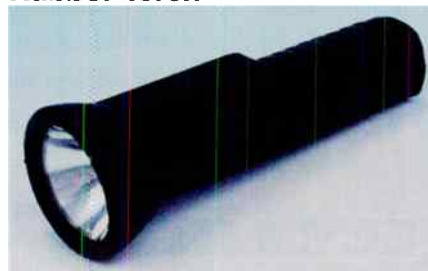


A large black rubber-bodied hand-held torch that is fitted with a high brightness krypton bulb. The lens is made from transparent plastic and the torch is powered by three 'D' cells (JY46A). The lens unscrews giving access to the three 'D' type batteries and the bulb holder. The rubberised body features two flush-mounted 'snap' action switches for 'on' and 'off' which are unlikely to be operated inadvertently. The torch has a wrist strap attached to its body. Supplied with three 'D' type batteries. Overall dimensions: 260 x 65mm diameter. The Krypton bulb (3-6V, 0-8A) is available separately (KU02C).

Retail Unit Price each (inc. VAT).

Order Code	Type 3017	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
UK91Y 1	Large Rubber Torch	£4.330			£5.090
KU02C	Krypton 3.6V 0.8A	£0.468	£0.340	£0.220	£0.550

## Rubber Torch



A very high quality durable rubber-bodied torch which represents very good value for money. The lens is made of toughened clear plastic instead of glass for longevity and safety. The water resistant body features two flush-mounted 'snap' action switches for 'on' and 'off' which are unlikely to be operated inadvertently. The base of the torch is unscrewable for simplicity of battery replacement, and features a recessed ring so that the torch may be easily hung up. Batteries supplied (replacement 2 x 'D' type cells (JY46A)).

Overall dimensions: 205mm length, 75mm dia. A replacement 2-4V bulb is available separately (BT66W).

Retail Unit Price each (inc. VAT).

Order Code	Type 2037	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
ZC08K	Rubber Torch	£3.890	£3.060	£2.810	£4.580

Retail Unit Price each (inc. VAT).

Order Code	Type 2037	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT66W	Bulb 2.4V Prefocus	£0.289	£0.215	£0.190	£0.340

## Water Resistant Torch



A bright, hand-held torch especially designed for outdoor use. It uses a 'krypton' bulb for high efficiency and a light output superior to conventional filament bulbs, with a generous 98mm round reflector. A resilient, plain plastic lens is used instead of glass for safety, and the whole lampholder is removable to gain access to the bulb itself and the battery compartment. This is held in place by a screw-on ring which retains the reflector. The reflector and lens are sealed to the ring with a thick rubber circular bead, and the joint between the screw-on ring and the body is protected by a red synthetic gasket or 'O' ring of square-section. As they stand these render the torch adequately splash-proof, but improvement may be possible by the sensible application of a non-hardening compound to improve the sealing of these joints – such as the Multi-Purpose Grease (FM80B), to be found in the tools section of this catalogue – in the right places. The torch uses four 'D' type cells which preferably should be alkaline (not included, JX50E). The body is a one piece black plastic moulding, with handle and wrist-strap, a security ring for a lanyard and a free-standing base. The on/off switch is a push button on top with a rubber cover. Overall dimensions are 170 x 140 x 120mm. The Krypton bulb is available separately (JX50E).

Retail Unit Price each (inc. VAT).

Order Code	Type 6098	Price each exc. VAT			inc. VAT each
		1+			1+
JU21X	Water Resist Torch	£5.200			£6.110
JX50E	Krypton Bulb For JU21	£0.510			£0.600



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## Rechargeable Emergency Lamp

Uniros

- ★ Continuously Chargeable For Immediate Use
- ★ Supplied with Mains Adaptor and Car Lead
- ★ Built-in Rechargeable Battery



This handy dual function lamp can be used as a bright spotlight or a flashing emergency light. The light has a convenient 90° swivel head and when attached to its wall-mounting bracket is automatically charged via the plug-in charger adaptor. The rechargeable batteries are built-in to the lamp and take about 16 hours of charging to provide about one hour of continuous spotlight use. In addition, the car cigarette lighter lead allows the torch to be charged and used from a vehicle's electrical system. To avoid discharging the vehicle's battery, the plug should be removed from the lighter socket when the engine is not running. Replacement bulbs available (BT66W).

Retail Unit Price each (inc. VAT).

Order Code	Type 5011	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VN16S	Rechargeable Torch	£11.900	£10.950	£10.350	£13.990

## LANTERNS

### Mini Fluorescent Lantern



A handy miniature lantern with a bright 150mm 4W fluorescent tube. It is powered by 4 'AA' cells (alkaline recommended JY48C) which are not included. Two self-adhesive sets of Velcro-type pads are supplied, which allow the lantern to be securely fixed to a surface and yet be easily removed. The high brightness offered in such a small size makes this lantern ideal as a pocket torch, or for camping. A replacement tube is available (JX45Y). Dimensions: 160 x 40 x 35mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5011	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
ZC11M	Mini Fluor Lantern	£4.240	£3.750	£3.150	£4.990
JX45Y	Tube for YT10ZC11	£1.550	£1.080	£0.979	£1.830

### Mini Lantern

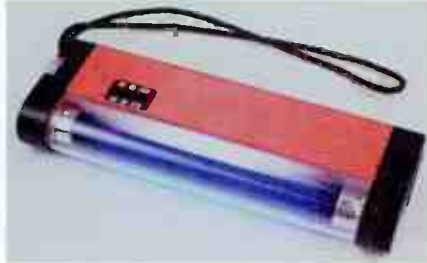
A very useful, compact torch and fluorescent tube combined. A switch on the side of the unit switches from off to torch or tube. The torch uses a MES tubular pre-focused bulb and the fluorescent light uses a 150mm 4W tube. It is ideal for use in power cuts, garages, sheds, in the car or for camping, fishing etc. The lamp has a remarkably bright light for such a compact unit and a carry strap so that it can be hung up. The lamp requires four 'AA' cells (alkaline recommended JY48C) not supplied. Replacement bulbs (JX46A) and tubes (JX45Y) are available. Overall size 152 x 53 x 21mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 5011	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YT10L	Mini Lantern	£4.330	£3.320	£2.810	£5.090
JX46A	Bulb For YT10ZC10	£0.425	£0.255	£0.224	£0.500
JX45Y	Tube for YT10ZC11	£1.550	£1.080	£0.979	£1.830

### Ultraviolet Mini Lantern



A very useful miniature torch combined with an ultra-violet (UV) fluorescent tube, offering exceptional value for money. A switch on the side of the lantern selects torch beam on, UV tube on, or power off. The torch uses a readily available MES, tubular pre-focused bulb, and a 152mm 4W UV tube. The UV light facility is especially useful to stamp collectors for reading the phosphor dots on postage stamps. It can also be used to detect UV security ink and to check the authenticity of bank notes. The lamp body features a carry strap so that it may be hung up, and the lamp itself requires four 'AA' cells (alkaline recommended JY48C) not supplied. Replacement bulbs (JX46A) and tubes (CR48C) are available separately. Overall size 152 x 53 x 21mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 2040	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
ZC10L	UV Mini Lantern	£8.670	£6.710	£5.720	£10.190
JX46A	Bulb For YT10ZC10	£0.425	£0.255	£0.224	£0.500
CR48C	UV Tube for ZC10	£3.460	£2.500	£2.350	£4.070

### Multi-Purpose Lantern

A slim multi-purpose lantern with three different light sources. A very bright spotlight that uses a krypton bulb, is mounted on a 180° swivel head, while on one side, a fluorescent lamp is fitted, and on the opposite side an amber flashing light is fitted. The lantern can be used as a table lamp by using the swivel head as a stand, or stood on end, to allow use of the spotlight. A belt clip is also provided. The lantern requires four 'AA' type batteries, which are not included (JY48C).



Rechargeable batteries can be used, and a socket is provided for charging the batteries from an AC/DC 6V adaptor (JC90X, not supplied). A red LED indicates that the batteries are charging. Dimensions: 225 x 68 x 32mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5002	Price each exc. VAT		inc. VAT each
		1+	1+	
BZ63T	MultiPurpose Lantern	£5.200		£6.110

### Multi-Function Emergency Lantern



This compact multifunction lantern features a powerful spotlight, fluorescent light and amber/red emergency flashing lights. Requires six 'C' cells that can be either dry cells (JY47B) or NiCd rechargeable cells (EM24B). Additionally, if a suitable 12V DC mains adaptor is used then the lantern can be operated from the mains, and rechargeable batteries, if used, can be charged. Similarly, a 12V car cigar lighter adaptor can be used to power the lantern and recharge suitable batteries.

Retail Unit Price each (inc. VAT).

Order Code	Type 1010S	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BP40T	Multi Functn Lantern	£8.500	£5.450	£4.700	£9.990



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## Rechargeable Hand-Held Security Lantern

Unloss

- ★ One or Two Tube Operation
- ★ Rechargeable Lead-Acid Battery
- ★ Can Operate Automatically if Mains Falls



A rechargeable hand-held security lantern with two fluorescent tubes. One or both tubes may be selected depending on the light output required. The unit is designed to stay on constant charge when not in use, and can operate automatically in the event of a mains failure, allowing it to provide automatic emergency lighting. From a discharged state, charging time is approximately 20-24 hours. Operating time is around 3.5 hours using both tubes extending to 4.5 hours using just one tube. Approximate dimensions: 300 x 160 x 87mm. Replacement tubes are available: stock code GS98G.

Retail Unit Price each (inc. VAT).

Order Code	Type 43157	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VN17T	Rechargeable Lantern	£25.520	£23.250	£21.650	£28.990
GS98G	Spare Tube for VN17	£1.690			£1.390

## Cupboard Light



A white plastic, battery operated wall light ideal for caravans or boats. The lamp is operated by a pull-switch and is powered by two 'D' size batteries, which are not included. Three screws are provided for mounting to a suitable surface. Dimensions: 123mm dia. x 68mm. Suitable batteries: JY46A

Retail Unit Price each (inc. VAT).

Order Code	Type 3008	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KR34M	Cupboard Light	£3.720	£2.600	£2.280	£4.380

## DESK/BENCH LIGHTING

### Fluorescent Reader's Light



A compact, black, portable battery powered lamp fitted with a 14mm fluorescent tube mounted on a flexible neck. It features a sturdy clip which enables it to be secured to a shelf, panel edge, headboard etc. It can be used as a 'hands free' source of illumination for situations where you need a torch but require the use of both hands. The lamp itself requires 4 'AA' type cells (JY48C, not included) which should preferably be of the alkaline type, particularly if the unit is to be left on continuously for prolonged periods. The integral clamp will open to a maximum of 40mm and is capable of gripping shelves, table edges etc. up to 30mm thick. The lamp body features an on/off slider switch and a reflector mounted behind the tube.

Retail Unit Price each (inc. VAT).

Order Code	Type 5099	Price each exc. VAT		inc. VAT each
		1+	5+	
ZC12N	Fluor Reading Lamp	£6.800		£7.990

### Reader's Light



A small, portable battery powered lamp that may be either free standing or clipped to a shelf or the edge of a panel etc. Can be used to help illuminate the interior of an instrument case or similar confined space to provide close-up, on the spot lighting for fiddly soldering jobs, or in any situation where you need a small torch, but at the same time need both hands free. The lamp uses four 'AA' size batteries (JY48C, not supplied) contained in the base and providing stability in the free-standing mode. The integral clamp will open to 40mm maximum and is capable of gripping shelves, edges of tables etc. up to 30mm thick. A flush on-off slide switch is provided plus a 2.5mm jack socket for an external 6V supply (BZ81C, not supplied). The lamp proper is mounted at the end of a jointed arm which has a rotatable hood, and uses an easily replaceable MES bulb (RZ39N). Overall dimensions, folded - 120 x 45 x 60mm. Maximum reach of arm - 208mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5111	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FM99H	Reader's Light	£3.390			£3.990
RZ39N	Replacement Bulb	£0.417	£0.295	£0.265	£0.490

## Illuminated Glass Magnifier



An illuminated x 2.5 glass magnifier that is ideal as an aid for fine inspection of electronic components and circuit boards, but equally suited for reading fine print, maps etc. The handle incorporates an on/off slide switch for the lamp, which is powered by 4 x AA size batteries (not supplied JY48C). Magnifier 90mm dia., handle length 135mm. A replacement bulb is available (RZ39N).

Retail Unit Price each (inc. VAT).

Order Code	Type 4023	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BZ53H	Illuminated Glass	£3.460	£2.350	£1.990	£4.070
RZ39N	Replacement Bulb	£0.417	£0.295	£0.265	£0.490

## INSPECTION LIGHTING

### Auto Hand Lamp



An extremely useful hand lamp with a 12V, 6W bulb and 4.55m cord terminated in a standard car cigarette lighter plug. The main body is constructed from sturdy black plastic and features an on/off switch. The top grille is orange in colour and features a hook from which the lamp can be suspended. It incorporates a safe plastic lens to protect the bulb and is detachable from the main body to facilitate bulb replacement. Replacement bulbs are available from most auto part suppliers. Overall dimensions: 166mm x 50mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 5095	Price each exc. VAT		inc. VAT each
		1+	5+	
ZC18U	6W Auto Hand Lamp	£2.970		£3.490

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## Cyclops Bendy Torch



- ★ Convenient hands-free design
- ★ Flexible neck bends as required
- ★ Illuminates hard-to-see areas
- ★ Versatile and easy-to-use
- ★ Portable, practical and durable
- ★ A must in every home and work area
- ★ Great value for money

This ingenious torch will prove invaluable to DIYers, hobbyists, engineers, installers and mechanics. Using a bright krypton bulb, it provides light conveniently where you want it and still leaves you with two hands free to work with! Simply snake the torch around any convenient support point, or use it free-standing. Powered by 2 x Alkaline 'C' Cells (supplied), order replacement cells as 2 x JY47B. Replacement bulb krypton 2.4V 0.7A pre-focused (KU00A).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CR97F	Cyclops Bendy Torch	£12.750	£12.120	£11.500	£14.990

## VersaBrite

Pell Products



This is a real workman's torch, producing a 6,000 candlepower xenon laser spot beam from a directable swivel head (through 180°) and with all the attachments you need to clip, stick or attach it to virtually any surface for hands-free operation. The powerful beam will penetrate water, smoke and dust and the unit's unbreakable and water-resistant polycarbonate casing is backed by an unconditional lifetime guarantee. Pack includes a detachable 'Bugsaway' night vision lens. Replacement lamp module available (Order Code EL09K). Powered by two 2 x AA (Order Code JY48C) batteries (supplied). Pack quantity: 1 (all items).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JY48C	Duracell AA	£0.757	£0.700	£0.650	£0.890

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
EL09K	VersaBrite Lamp	£4.890	£4.640	£4.520	£5.750
BS61R	VersaBrite	£17.420	£16.540	£16.110	£20.470

## VersaBrite II

Pell Products



- ★ Clips on Caps, Coats, Helmets, etc.
- ★ Night Vision Lens
- ★ Keeps Hands Free to Work

A powerful, 8,000 candlepower torch which clips on to clothing, headgear, etc., for hands-free illumination. The body is made of a rugged, chemical-resistant resin, and carries a lifetime guarantee. The 'nite vision' red lens allows use at night without attracting moths and other bugs. Powered by 2 AA cells, supplied. Recommended replacements 2 x JY48C. Replacement lamp units are available: stock code AA71N.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AA70M	VersaBrite II	£18.320	£17.400	£16.940	£21.530
AA71N	VersaBrite II Lamp	£6.380	£6.060	£5.900	£7.500

## Powerlite 6V

Lago



A novel, extremely robust and dependable headtorch, as supplied to the Ministry of Defence, BR and UK electricity companies. It consists of a bright 6V lamp with an adjustable 56mm parabolic lens to cover the field of view. This is fitted to a comfortable, adjustable and elasticated 30mm wide headband, which can be used with a safety helmet if the optional clips are used. A pair of battery packs, which between them take four 'AA' cells (alkaline recommended, not included JY48C) are strapped to the sides of the headband. A fresh set of batteries will yield between 6 and 7 hours of continuous operation. The bulb is a lens-ended brilliant type, and provides a 30m beam of illumination. For convenience, the lens also acts as the on/off switch, and has three operating modes: off, wide and spot beam. A compartment just under the lamp provides storage for spare bulbs. Weight (without batteries): 105g. Please note: this product is not waterproof, but will continue to work if immersed in water. It can be quickly opened up and dried, when convenient. The electrical contacts are rustproof and the lens varnished, for long service life under moisture-rich environmental conditions. A spare 3.5V 200mA lens-ended MES bulb (BP86T) is available for the above, as is a pouch (BN78K) and helmet clips (BN80B).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
BP86T	Spare Bulb	£0.638			£0.750
BN78L	Powerlite	£17.860			£20.990
BN78K	Pouch	£4.890			£5.750
BN80B	Helmet Clips	£1.650			£1.950



## Halogen Headtorch

Lago



A robust general-purpose head-torch, with all of the features of BN79X above. Instead of the prefocused bulb, though, a superbright halogen bulb is used to provide up to 100m of illumination. A fresh LR12 battery (not included ZB63T), will power the torch for between 6 and 7 hours. For longer battery life, an alkaline battery is available, JC94C. In this case, the battery pack is mounted on the back of the headband. Weight (without batteries): 135g. A pouch is available (BN78K). Helmet clips (BN80B) and a replacement bulb (BP87U) are also available.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
BN77J	Halogen Head Torch	£21.260			£24.990
BN78K	Pouch	£4.890			£5.750
BP87U	Spare Bulb	£3.190			£3.750
BN80B	Helmet Clips	£1.650			£1.950

## SAFETY LIGHTING

### Electroluminescent Harness



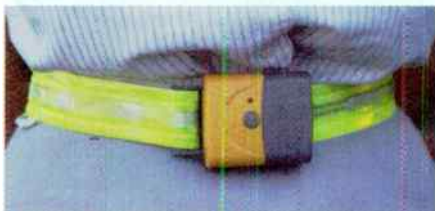
Reflective harnesses for wearing on the body have been on the market for some time. While useful for areas where there is light to reflect, they are not quite so handy for the occasions when you are in pitch darkness. If you have hiked across a field in the dead of night with a companion, you will know how difficult it is to keep track of each other. All of this is a thing of the past, thanks to a new innovation. The electroluminescent harness has bands of a special chemically-coated material running through its straps. When energised by a high-voltage (but tiny current) electricity source derived from an inverter circuit, these bands will flash with a cold green glow. In darkness, this glow can be seen from a distance of 300m. The harness accommodates an inverter/battery pack with an on/off switch. Since little or no wasteful heat is generated, a pair of alkaline 'AA' batteries (JY48C, not included) will power the harness for around 50 hours. Cheaper to run than a torch, this ingenious bodywear will find numerous applications amongst workmen, cyclists, campers, dog-walkers and hikers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
BM15R1	Electro Harness	£30.370			£35.690

See Stock Code Index For More Price Breaks

**Electroluminescent Belt**



Be seen in the dark, with this clever electroluminescent belt. The adjustable belt clips round the waist and the buckle houses the two 'AA' batteries (JY48C, not supplied), an on/off switch and a red LED indicates when on. Ideal for all outdoor leisure activities and work.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC63T	Electro Belt	£13.010	£15.290

**Safety Xenon Strobe**



Increase your visibility for safer cycling with this high intensity xenon strobe. Can be used in flashing mode, with a range of up to 300m. Easy to mount on a bike, clipped to a belt or pocket, this compact safety light is lightweight and weatherproof. Supplied with 2 x 'AAA' cells (JY50E).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC64U	Xenon Strobe Clear	£17.010	£19.990

**LED Safety Lamp**

A compact, lightweight lamp that is ideal for mounting on a cycle or as a red warning lamp when walking, running, or roller skating, clipped onto a belt. The high-brightness, triple-LED lamp can be switched to steady or flashing mode. Requires two 'AA' size batteries (JY48C). Dimensions: 66 x 47 x 26mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW52G	LED Safety Lamp	£3.390	£3.990

**LiteBand KL175 Reflective Armband with LEDs**



A fluorescent yellow reflective armband with a difference – it provides its own light source if there is nothing to reflect. Over the surface of the 425mm (fully extended) band are four equally-spaced superbright LEDs. Powered by a single CR2032 battery (ZB74R, supplied) for up to 50 hours, the KL175 will ensure that you can be seen even when all around is inky black. Ideal for all outdoor activities, the weatherproof KL175 is lightweight, Velcro-fastening and elasticated for a snug fit. The reflective armband is also available without the LEDs, model KL150 (order code BM19V).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM15U	KL175 LiteBand	£7.800	£9.170
BM19V	KL150 KnightBand	£3.020	£3.560

**12V LIGHTING**

**High Power Halogen Spotlight**



A robust, powerful, hand-held halogen 55W spotlight that plugs into the 12V DC cigarette lighter socket fitted to most motor vehicles. The high light output makes this a very useful spotlight for mobile and emergency lighting. A metal hanger is provided in the top of the spotlight which also houses an on/off switch. The spotlight is provided with three metres of coiled cord and a protective cover. Please note that, in use, the lamp will get very hot and will draw a very high current from the vehicle's battery. Care should be taken to avoid discharging the battery. Overall dimensions: 160 x 117 x 90mm. Replacement bulb available: KP62S

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CJ50E	Halogen Spotlight	£8.500	£10.000
KP62S	Bulb for AG90/CJ50	£1.690	£1.990

**Halogen Spotlight**



A 12V DC, hand held halogen lamp with a glass lens which is designed to plug into a car cigarette lighter socket. The lamp produces light equivalent to 300,000 candle power. The on/off switch is located on the handle of the unit and a pull-out metal hanger is provided at the base. When in use the lamp becomes very hot and may exceed 90°C; for this reason caution should be exercised to avoid touching the glass when the unit is in use. Also, the lamp should not be operated with the lens covered as this may lead to excessive heat build up. The lamp is supplied with a coiled lead approximately 3m long terminated with a car cigarette lighter plug, and a wall mounting bracket. Spare bulbs (KP62S) available separately. Please note: The unit should always be operated from a suitably fused supply. If the unit is operated from a car cigarette lighter socket, this will normally be fused.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AG90X1	12V Hand Spotlight	£8.580	£10.090
KP62S	Bulb for AG90/CJ50	£1.690	£1.990



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## Slimfit 12V 16W Fluorescent Lamp

Alexander



- ★ Plastic construction with attractive fluted diffuser
- ★ Easy to install/maintain with clip-on diffuser
- ★ Can be easily fitted horizontally or vertically
- ★ 2 x 8W fluorescent tubes
- ★ 12V DC operation
- ★ Reverse polarity protected
- ★ Integral end-mounted on/off rocker switch
- ★ CE marked for EMC compliance to BS EN 55015:1993

An attractive, modern styled, slimline 12V 16W fluorescent lamp with numerous uses: automotive, camper, caravan, marine, etc. Light output is provided by two 8W 300mm fluorescent tubes driven by an integral DC inverter. An on/off rocker switch is located in one end of the lamp.

Fitting of the lamp is achieved by removing the diffuser and securing the base to the desired surface by means of M5 bolts (or other suitable 5mm diameter fastener) through the 4 fixing holes in the base. An additional hole will need to be drilled through which a fuse-protected 12V supply should be provided to the lamp - 90mm leadout wires are fitted to the lamp to facilitate connection of the supply. Leadout wires are coloured red (positive) and black (negative). The diffuser must be re-fitted prior to use.

Tubes should be replaced when they show signs of ageing - replacement tubes are available. Do not use the lamp with a faulty tube fitted or a tube missing.

**Caution:** Hazardous voltage will be present on the tube terminals when the lamp is switched on, therefore to avoid risk of electric shock:

- Do not operate the lamp with the diffuser removed or if the diffuser is broken
- Always disconnect the supply when changing fluorescent tubes

### Specifications

Dimensions:	76mm (W) x 23mm (D) x 380mm (L)
Fixings:	4 x 5mm (centres 36mm x 367mm)
Operating voltage:	12V DC nominal, 10V DC (min) to 14V DC (max)
Supply current:	<1A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RC56L	12V 16W Fluores Lamp	£12.750	£14.990
LQ11M	12V Tube	£3.460 £2.390	£4.070

## Small 4 Function Trailer Lamp

This solidly constructed, high quality trailer lamp assembly will provide stop light, tail light, indicator and number plate illumination.

Requires 1 x R380 and 1 x R382 bulbs (supplied).



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD84F	Small 4 Function Lamp	£3.460	£4.070

## Large 4 Function Trailer Lamp



This solidly constructed, high quality trailer lamp assembly provides stop light, tail light, indicator and number plate illumination. Requires 1 x R380 and 1 x R382 bulbs (supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD83E	Large 4 Function Lamp	£4.390	£5.090

## Bulb & Fuse Kit



A handy plastic box with a selection of all of the bulbs and fuses that might be needed in an emergency. This comprehensive kit includes:

<b>Bulbs</b>	Number Plate Lamp (233SEB)
1 x 4W	Festoon (239SEB)
1 x 5W	Festoon (265SEB)
1 x 10W	Festoon (265SEB)
1 x 10W	Spot Lamp (245SEB)
1 x 21W	Flasher (382SEB)
1 x 21/5W	Stop/Tail (380SEB)
1 x 5W	Tail Lamp (380SEB)
<b>Fuses</b>	
1 x 1A	20 x 5mm quick blow
1 x 2A	20 x 5mm quick blow
1 x 3A	20 x 5mm quick blow
1 x 5A	20 x 5mm quick blow
1 x 10A	20 x 5mm quick blow
1 x 800mA	200 x 5mm Anti-Surge
1 x 8A	Continental Fuse
1 x 5A	31mm (1.25in.) quick blow
1 x 10A	31mm (1.25in.) quick blow
1 x 15A	31mm (1.25in.) quick blow
1 x 5A	Blade Fuse
1 x 10A	Blade Fuse
1 x 15A	Blade Fuse
1 x 25A	Blade Fuse

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD22Y	Fuse & Bulb Kit	£6.900	£8.150

## CYCLE LIGHTING

### Cateye HL-NC210 Single Daylite



Where bright light is essential, so is the Cateye Single Daylite. Powered by a slimline rechargeable lead-acid battery, the Single Daylite will produce 5000 candlepower from its halogen bulb for up to 8 hours continuously (when used with an optional 2.4W bulb). Other bulbs will increase light output, but at the expense of battery life. The vibration-proof offset lamp mounting bracket is adjustable both horizontally and vertically, while the battery pack attaches to the top tube of the frame. Single Daylite has been designed to be water-resistant. Combined weight: 1kg. Supplied with mains charger, Single Daylite has many applications other than cycle use. Spare halogen bulbs also available: 2.4W (WC38R), 6W (WC39N) and 10W (WC40T).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC37S1	HL-NC210 Singl Daylit	£59.560	£69.990
WC38R	2.4W Bulb	£8.670	£10.190
WC39N	6W Bulb	£8.670	£10.190
WC40T	10W Bulb	£8.670	£10.190

### Cateye HL-NC200 Double Daylite



If Single Daylite is not powerful enough for you, then Double Daylite - with its dual halogen beams - will be. A versatile rechargeable lighting system with the same design philosophy as the Single Daylite, up to 22,000 candlepower of illumination can be produced. The two lamps supplied are 2.4W broad-beam and 10W spot-beam types, although different combinations can be used to improve performance or battery life. Supplied with a vibration-proof centre-mounting bracket, Double Daylite is water-resistant. The battery pack is fastened to the top tube. Combined weight: 1.1kg. Supplied with mains charger, Double Daylite has many applications other than cycle use. Spare halogen bulbs are also available: 2.4W (WC38R), 6W (WC39N) and 10W (WC40T).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC40T	10W Bulb	£8.670	£10.190
WC39N	6W Bulb	£8.670	£10.190
WC38R	2.4W Bulb	£8.670	£10.190
BM04E1	HL-NC200 Doubl Daylit	£85.090	£99.990

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## Cateye HL-500 Halogen Front Cycle Lamp



Compact yet powerful, this front lamp will illuminate your path with greater brightness than conventional types. A 1.2W halogen bulb and computer-designed lens provide wide-angle coverage. A large positive-action switch aids operation in the dark. The lamp, when powered by 2 alkaline 'C' cells (JY47B, not included) provides up to 8 hours of illumination. Supplied with a fixed quick-release handlebar bracket. Complements the halogen rear lamp (BM06G). Pack of two replacement halogen bulbs available (WC41U).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM05F	Cateye HL500 FLight	£12.750	£14.990
WC41U	500mA Bulb x 2	£7.800	£9.170

## Cateye TL-510 Rear Cycle Lamp

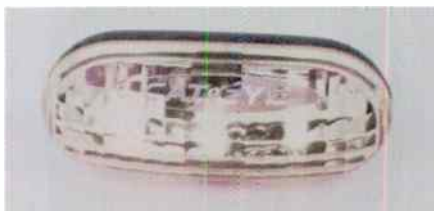
Designed to complement BM05F above, the rear lamp will warn those behind you of your presence with a bright red light. Incorporating a wide rear lens with additional side lenses for high side-on visibility, the lamp is supplied with a quick-release anti-slip mounting strap. Four alkaline 'AA' cells (JY48C, not supplied) will power the lamp for up to 8 hours continuously. Replacement bulb available (BT96E).



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BT96E	Torch Bulb 2.5V	£0.425   £0.301   £0.270	£0.500
BM06G	Cateye TL510 RLlight	£12.750	£14.990

## Cateye Dual-Mode LED Front and Rear Lights



BM08J



BM09K

With its three LEDs, these water-resistant safety lamps are capable of producing light levels of 6000mcd. Since LEDs are considerably more efficient than conventional filament bulbs, a pair of

'AAA' alkaline cells (JY50E, not included) will power the lamps for 50 hours. If the lamps are used in the attention-grabbing 'flashing' mode, battery life is doubled to 100 hours. Each light is supplied with a vibration-proof quick-release mounting bracket and a belt clip. Each light is sold separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM08J	Cateye HL120 FILED	£6.800	£7.990
BM09K	Cateye TL120 FILED	£6.800	£7.990

## Cateye TL-LD300 5-LED Rear Cycle Lamp



This large wide-angle rear safety lamp is capable of producing light levels of 13,000mcd with its five energy-efficient LEDs. To attract attention, it can be switched to flash randomly, in addition to a more conventional 'constantly-on' mode. 180 degrees of visibility are afforded by the lamp, which is water-resistant and supplied with a vibration-proof quick-release mounting bracket. A pair of alkaline 'AA' cells (JY48C, not included) will power the device for 100 hours in flashing mode, or 50 hours in constantly-on mode.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM07H	Cateye TL300 FILED	£16.160	£18.990

## Duracell Lockable Front and Rear Cycle Light Set



A complete bicycle light solution from this well-known manufacturer. With their unique key-operated locks, these are the only pillar-proof cycle lamps available. Each stylish BS-approved lamp is supplied with a universal bracket, which allows it to fit all sizes of bike. The lamp clicks onto the bracket, and is firmly secured when the key is removed. With the key in place, the lamp can be removed and used as a torch. The casings are shockproof, water resistant and contain a powerful krypton bulb, efficient lens and reflector. For each lamp, the power is supplied from two 'D' cells (JY46A, included). Replacement bulbs sets (pair) are available (WC45Y).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM20W†	Duracell Lockable Set	£25.520	£29.990
WC45Y	Bulb Set-Lockable Set	£2.160	£2.540

## Duracell Compact Front and Rear Bike Light Set

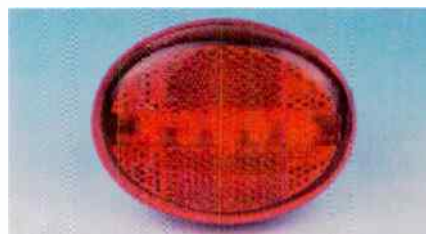
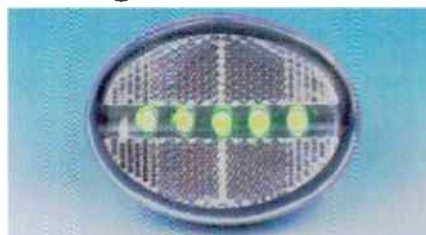


Ideal for general recreational use or travelling to and from work, the stylish Duracell Compact lamp set makes an ideal gift. The front lamp has a powerful halogen bulb for maximum visibility, while the rear lamp uses a krypton rear bulb for providing 70% more light output than standard types. Made from tough ABS plastic, the casing is shockproof and water resistant, and has a lifetime guarantee. Thanks to the universal brackets supplied, the lights will fit all sizes of bicycle. Each lamp requires 2 'C' cells (JY47B, supplied). Replacement halogen and krypton bulb sets (pair) are available (WC46A).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM21X†	Duracell Compact Set	£17.010	£19.990
WC46A†	Bulb Set-Compact Set	£4.330	£5.090

## Knightlite 5-LED Front and Rear Lights



A pair of high-quality LED lamps with a variety of mounting options and operation modes. A pair of press buttons on the rear of the lamp select between flash rate (slow, fast, permanently on, off) and LED brightness. In darkness, the lamps are visible from a distance of upto 900m (3000ft.). A total of five high-brightness 5mm LEDs form the light source, which is powered by two 'AAA' batteries (JY50E, included). In steady mode, up to 100 hours of continuous operation, or 200 hours in pulse mode, are possible from one set of batteries. The clear lens (front version) also acts as a reflector, and is joined to the main body with a weatherproof silicone gasket. Also suitable for walking, jogging and all other outdoor activities, the lamps are supplied with adjustable bracket fixings for bike frames, and solid/fabric surfaces with a thickness of up to 10mm. The lamps are sold separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM24B	KL251 KnightLite Front	£11.050	£12.990
BM25C	KL250 KnightLite Rear	£11.050	£12.990

## KnightFly KL50 Clip-on Spoke Light/Reflector

For maximum side-on visibility, it is worth fitting your bike wheels with reflector discs, which clip onto the spokes. The KL50 consists of an amber reflector, and an amber single-LED lamp that fits onto the base of the reflector on the other side of the wheel. Together, the two only weigh 12g – two reflector/lamp pairs are supplied for fitting to both front and rear wheels. The weatherproof lamp, which also has a reflective surface, has flashing and permanently-on modes, which are selected by a push button. The lamp is powered by a pair of SG13 button cells (FM28G, supplied). Intended to supplement, rather than replace, approved reflectors.



Retail Unit Price each (inc. VAT).

Order Code	Type 9498	Price each exc. VAT	inc. VAT each
BM177 †	KL50 Knightfly	£6.800	£7.990

## Electroluminous Saddle Bag



A capacious nylon zip-up saddle bag with an electroluminous strip. When energised by an inverter circuit contained within the battery pack, this strip will flash with a bright green glow that can be seen in the dark from a distance of 300m. Two 'AA' alkaline cells (JY48C, not included) will power the strip for up to 50 hours continuously. The bag is attached to the saddle by means of a strap.

Retail Unit Price each (inc. VAT).

Order Code	Type 9494	Price each exc. VAT	inc. VAT each
BM16S †	Electro Saddle Bag	£12.750	£14.990

## CYCLE COMPUTERS

# Cyclist Performance Computers

If you're a dedicated cyclist, you will want some method of assessing your speed and distance so that you can improve on your performance. All of the items on this page have a large LCD display, and mount on the handlebars for visibility. Each is supplied with a RPM sensor that clips onto the cycle's front forks.



BM03D

### Vetta C5 (BM03D)

The C5 is a simple cycle computer from a leading manufacturer. The black case accommodates a large and readable single-function display. The four functions – speed, trip distance, odometer and clock – are cyclically accessed with a large, single button. Requires SG13 battery (FM28F).



BM01B

### Cateye Mity 2 (BM01B)

The Cateye Mity 2 comes in a functional black housing, with a two-functional LCD information panel. Any two of the following parameters can be monitored - current speed, elapsed time, trip distance, total distance, maximum and average speed. The clock is a 12-hour type with auto stop/start. Requires CR1620 battery (GU11M) included.



BM02C

### Tri-Pro TP5 (BM02C)

The compact TP5 is dominated by a large single-function display is very light in weight and unobtrusive, and will appeal to 'purists' who wouldn't normally consider a cyclocomputer. Functions include current speed, trip odometer, trip elapsed time, cumulative odometer and auto stop/start. Requires SG12 battery (FM29G).

### Tri-Pro TP8 (BJ34M)

An expanded version of the TP5, the TP8 includes three additional functions – average speed, maximum speed and 12/24 hour clock. Two large anti-slip function buttons aid operation in wet weather. Requires CR2032 battery (ZB74R). Another top quality product in this extensive range.



BJ34M

Model	Current Speed	Max Speed	Av Speed	Elapsed Time	Trip Distance	Total Distance	Auto Start/Stop	Clock	Pacer
Cateye Mity 2	★	★	★	★	★	★	★	★	
Vetta C5	★				★	★		★	
Tri-Pro TP5	★			★	★	★	★		
Tri-Pro TP8	★	★	★	★	★	★	★	★	

Retail Unit Price each (inc. VAT).

Order Code	Type 9891	Price each exc. VAT	inc. VAT each
BM03D	Vetta C5 Cycle Comp	£12.750	£14.990
BM02C	Tri-Pro 5 Cycle Comp	£12.750	£14.990

Retail Unit Price each (inc. VAT).

Order Code	Type 9891	Price each exc. VAT	inc. VAT each
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2000 AD

Problem Solver

## Year 2000 Problem Solver

Bryce Ragland  
McGraw-Hill

The year 2000 date conversion crisis is not a small problem - and if you use computers, it's probably your problem, too. News sources from Forbes to Infoworld say businesses will spend more than \$300 billion to remedy their computers' inability to tell the difference between 1900 and 2000. And this issue affects nearly everyone who uses computers! If you don't know where your business stands with this problem, it's time to find out! This book gives you a simple introduction to the far-reaching consequences of the decision made years ago to code years as two-digit numbers, helps you construct the needed remedies, validate your solution and apply the cure. This is the one manual that all businesses need to get started on defusing the year 2000 time bomb!



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NC94C	Yr 2000 Problem Solv	£22.990	£22.990 NV

## Audio Hi Fi & Loudspeaker

### Killer Car Stereo on a Budget

by Daniel L. Ferguson  
Car stereo systems have come a long way in the last few years, particularly in the field of electronics. However, what the driver and passengers hear has remained largely unchanged, normally due to the severe limitations posed by the loudspeaker systems installed by the car manufacturer. The purpose of this handy little book is to describe in detail how to build and install a high-powered, biamped in-car loudspeaker system.



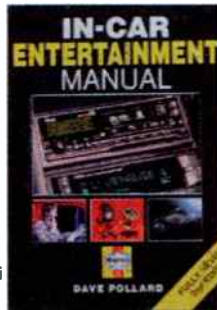
Although an American book, there are many suggestions and ideas that can be adapted by anyone with enthusiasm and a reasonable understanding of electronics and loudspeakers. The book includes circuit and construction details for an electronic filter-crossover designed for use with a sub-woofer, that can be made from readily available components. There are suggested systems for saloon, hatchback and pickups, with in-depth guides on installation. 1989. 126 pages. 216 x 152mm, illustrated. American book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA77J	Budget Car Stereo	£7.990	£7.990 NV

## In-Car Entertainment Manual

Second Edition  
by Dave Pollard  
In-Car Entertainment (ICE) is a sure-fire way to relieve the stress and frustrations of motoring today, which is why many people are now installing sophisticated stereo systems in their vehicles, with a sound quality that matches, or even exceeds, their home Hi-Fi equipment. This book shows every step of the way, of how to go about creating your own, customised ICE system, that may even make those traffic queues enjoyable, or at least, bearable! Described is how to make your choice of equipment, effective installation techniques, dealing with interference, upgrading the system, fitting in-car telephones, and a security section on how to protect your investment, with plenty of photographs to support the informative text. 1993. 192 pages. 280 x 214mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS96E	The ICE Manual	£12.990	£12.990 NV

## Auto Audio

by Andrew Yoder  
Choosing a stereo system for a car can be intimidating. With the vast range of components to choose from many audiophiles and enthusiasts just pick what they can afford and hope for the best - or rely on a dealer. However with this guide, you can arm yourself with the information necessary to make an intelligent choice. As well as offering practical advice on how to select and install in-car systems, it also shows you how to maintain and keep your system sounding great. There are complete chapters on amplifiers; speakers and speaker enclosures; filters and crossovers; antennas; wire, cabling, connectors and transmission systems; installations; maintenance. A wealth of information in an easy to read and follow style. 1995. 360 pages. 233 x 187mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LA09K	Auto Audio	£23.990	£23.990 NV

## Loudspeaker Enclosure Design and Construction

Selection of cabinet designs and enclosures for the chassis loudspeaker units in Maplin's BIG CAT range of loudspeakers and many others. Comprehensive guidelines are given for tackling construction, stressing important points such as the care needed and details to consider in selecting materials, making joints, sealing, baffle mounting the driver units, wadding the cabinet and paying proper attention to electrical connections to guarantee a worthwhile finished product. Twenty-nine designs are described, from small-sized bass reflex cabinets using 305mm (12in.) dia. full range drivers, through folded horns, to monster multi-way



high power systems. 1991. 165 pages. 298 x 210mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WM82D	Splr Cabinet Designs	£9.950	£9.950 NV

## Loudspeakers for Musicians

Vivian Capel  
Babani  
Have you ever seen the response of a bass loudspeaker given as from G#3 to F#4? More likely it will appear as 50Hz to 3,000Hz. This illustrates the terminology gap between the technician and the musician, both have their own terms for the same thing. In this book we set out to narrow the gap by relating technical expressions to musical terms. It contains all that a working musician needs to know about loudspeakers; the different types, how they work, the most suitable for different instruments, for cabaret work, and for vocals. It gives tips on constructing, cabinets, wiring up, when and where to use wadding, and when not to, what fittings are available, finishing, how to ensure they travel well, how to connect multi-speaker arrays and much more. Ten practical enclosure designs with plans and comments are given in the last chapter, but by the time you've read that far you should be able to design your own!



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NP60B	Ldsprs Musicians	£4.990	£4.990 NV

## An Introduction to Loudspeakers and Enclosure Design

Bernard Babani  
by V. Capel  
There is more to building a loudspeaker enclosure than just fitting a couple of speaker units into a box. There are many types of enclosure and drive units, each having their own features, good points and snags. This book explores these, and in particular examines the whys and wherefores so that the reader can understand the principles involved and so make an informed choice of design, or even design loudspeaker enclosures for him or herself. Crossover units are also explained, the various types, how they work, the distortions they produce and how to avoid them. Finally, there is a step-by-step description of the construction of the Kapellmeister loudspeaker enclosure, a design that involves novel features which overcome many of the disadvantages of more conventional types. It is a transmission line speaker that has remarkable stereo imaging, an uncoloured musical sound, occupies minimal floor space and is inexpensive to build. 1988. 160 pages, 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

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WS31J	Intr L/S End Design	£3.990	£3.990 NV

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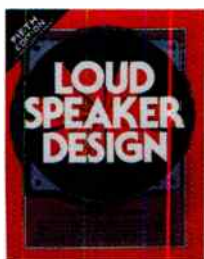


## The Loudspeaker Design Cookbook – Fifth Edition

by Vance Dickason

This latest edition of this highly regarded book provides a comprehensive listing of the most widely accepted engineering procedure that can be used to construct a pair of high quality loudspeakers – with the minimum of test gear. Additionally, the text describes the science of loudspeaker design and, using all this information, will yield numerous possible variations in loudspeaker design, with a wide range of subtle and not so subtle differences.

The opening chapter gives a very detailed but easily understandable insight into how loudspeakers work. The following chapters delve into closed box, vented-box, passive radiator and transmission-line low frequency systems. These chapters are followed by cabinet construction, mid and high frequency drivers, passive and active crossover networks and loudspeaker testing. This latest edition includes chapters on home theatre and in-car audio speakers. A highly recommended book for all those who wish to build a pair of high quality loudspeakers to be proud of. 1995. 218 pages. 279 x 214mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA75S 1	Loudspeaker Cookbook	£22.990	£22.990 NV

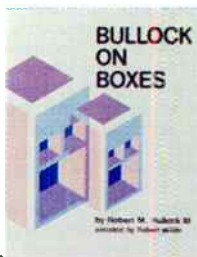
## Bullock on Boxes

by Robert M. Bullock III

This book is a compilation of a series of articles written by the author for the highly regarded magazine Speaker Builder. It is an easy to read guide to designing and building vented-box systems based on Thiele-Small models. In addition to the background theory and descriptions of the models, the text covers a host of related information drawn from a variety of sources. By far the best way to tackle the design of a loudspeaker box is to use a computer program of the model to investigate the various options. The use of computer programs is explained in clear detail with programs supplied and developed by the author.

Filled with tables, graphs and design tables this book is a must for the serious home loudspeaker constructor.

1991. 79 pages. 279 x 215mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA76H	Bullock On Boxes	£9.990	£9.990 NV

## Designing, Building and Testing Your Own Loudspeaker System

by D. B. Weems

The book contains many detailed plans for speaker-box construction, for one, two or three-way systems. Simplified design charts are provided so that it is easy to design your own system. Full circuit details of many different types of crossover networks are given and much of the theory is explained, and includes



much background theory with useful mathematical formulae. The appendix even includes a speaker design program listing to run on IBM compatible computers.

1990. 222 pages. 236 x 186mm, illustrated. American book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WG82D	Loudspeaker Systems	£18.990	£18.990 NV

## How to Set Up a Home Recording Studio

by David Mellor

For musicians, recording enthusiasts and students, this book explains how to set up a home recording studio with practical details on equipment, wiring, acoustics and sound-proofing, with a useful glossary of terms and lists of useful addresses. The book describes the setting up of an eight to sixteen track studio with an outline of the musical and recording equipment needed, but concentrates on the techniques of putting that equipment together into an efficient and productive recording studio in the home. Includes invaluable but hard to come by advice on patchbay wiring schemes, and describes how to custom build a rack to suit your own particular requirements. If you already have a studio at home or are thinking about setting one up, there's something in this book for you. 1990. 124 pages. 215 x 136mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS88V	Setup Home Rec Studio	£6.950	£6.950 NV

## Maplin Approach to Professional Audio

By Tim Wilkinson

Newnes

This is an introduction to the sound industry from a technical point of view. It provides not only a fascinating tour of the state of the art, but also will encourage anyone with an interest in audio to examine best practice and improve their own skills.

Defining 'professional' is professional audio is no easy task, as there is no single parameter that categorises a piece of equipment as being particularly suited for use in a professional environment. It is more a case of taking a look at the way in which certain types of equipment are used in a certain environment, and to what standards they have to conform.

Based on the acclaimed series of articles published in *Electronics - The Maplin Magazine* this book will give audio enthusiasts of all levels a view of the future of audio, and ideas as to how to achieve the highest standards of sound.

273 pages. 213 x 134mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN41U	Maplin Pro Audio	£12.990	£12.990 NV

Account Enquiries: 01702 554187

## Troubleshooting and Repairing Audio Equipment

3rd Edition 1996

Homer L Davidson

This book is written in an easy-to-understand style with clear illustrations and test readings. It is packed with more than 500 practical how-to photos, circuit schematics, and illustrations. It is a must, not only for the professional, but for the aspiring trainee. The book has 13 chapters dealing with repairs on pocket-size cassette stereo players, compact stereo tape decks, boom-box players, deluxe AM/FM/MPX tuners, deluxe amplifiers, car stereo cassette players, turntables, CD players, car cassette/disc players, telephone answering machines, stereo speakers and high-power car radios.

1993. 482 pages. 187 x 234mm, illustrated. American book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LA11M	Audio Equip Repair	£17.950	£17.950 NV

## Audio Amplifier Construction

by R. A. Penfold

Bernard Babani

Circuits of a wide range of preamplifier and power amplifier designs, from low noise microphone and tape head preamps to 100W MOSFET amps, are provided in this book. The projects are relatively easy to construct using the PCB or stripboard designs given. Setting up and testing procedures are described, although in most cases no test gear is required.

1997. 128 pages. 178 x 110mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WM31J	Audio Amp Construct	£3.990	£3.990 NV



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## High Power Audio Amplifier Construction

by R. A. Penfold

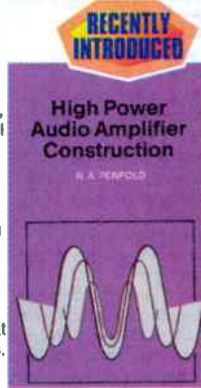
**Bernard Babani Books**

This book provides background information on high power audio amplifiers, together with some practical designs capable of output powers up to around 300 to 400 watts rms.

the high power amplifier designs include type having power MOSFETs in the output stage. These give excellent performance over the full audio range, and offer good reliability for what are relatively simple circuits. Printed circuit designs are included for these power MOSFET circuits, as are suitable mains power supply designs.

Using one of the MOSFET amplifiers it is possible to obtain powers of up to 50 to 200 watts rms, depending on the load impedance and the number of output devices used. By using two amplifiers (one inverting and the other non-inverting) a bridge amplifier is produced, enabling very high output powers to be achieved (300 to 400 watts rms into a standard 8 ohm impedance load).

For those who prefer to use bipolar output transistors, inverting and non-inverting circuits are provided. These can be used in single-ended or bridge configurations, and provide comparable output powers to the power MOSFET designs. 1991. 76 pages. 178 x 111mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN64U	High Power Amp Const	£3.950	£3.950 NV

## Audio Electronics

by John Linsley Hood

The author is one of the most highly regarded and authoritative writers in the field of audio engineering. He is responsible for numerous amplifier designs that have appeared over many years, which have set many standards. This book represents a wide-ranging survey of the field of audio and is presented in the author's typical no-nonsense analytical approach that has become so well respected by the audio world. All aspects are covered including CD and digital technology. Highly recommended. 1995. 364 pages. 233 x 155mm, illustrated.



Price each shown, but sold only in multiples of 1.

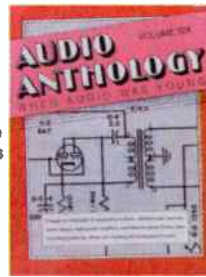
Order Code	Type	Price each exc. VAT	inc. VAT each
BS14Q	Audio Electronics	£18.990	£18.990 NV

## Audio Anthology – Volume 6

When Audio was Young

This is a compilation of important articles that appeared in the American magazine Audio in the early 60s. Two of the most significant milestones in the field of high fidelity are covered by various articles in the book – FM stereo and transistors in audio equipment. This book will provide a meaningful and historical reference for everyone in the diverse fields of audio engineering as well as the amateur enthusiast, who have made the hi-fi business what it is today.

Only Available While Stocks Last 1994. 144 pages. 279 x 215mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS11M	Audio Anthology	£16.990	£16.990 NV

## Acoustic Feedback – How to Avoid It

by Vivian Capel

**Bernard Babani**

While feedback cannot be completely eliminated, there are certain things that can be done to reduce it to a level at which it is no longer a problem. Some types of microphones and certain loudspeaker systems can affect feedback, as well as the way the units are positioned. Additionally, live concerts have special requirements which can affect feedback. All these matters are fully explored, as well as electronic aids such as equalisers, frequency shifters and notch filters. Also includes a circuit and layout for an inexpensive, but highly successful, twin-notch filter, with instructions on use. 1991. 96 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

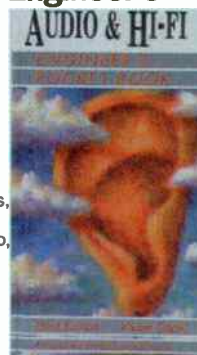
Order Code	Type	Price each exc. VAT	inc. VAT each
WT89W	Acoustic Feedback	£3.950	£3.950 NV

## Audio and Hi-Fi Engineer's Pocket Book

Third Edition

by Vivian Capel

A concise collection of practical and relevant data for anyone working on sound systems. The topics covered include microphones, gramophones, compact discs, tape recording, high quality radio, amplifiers, loudspeakers and public address. Acoustics is not often dealt with in audio books, so a section has been included dealing with most aspects the technician is likely to encounter, from human hearing to sound insulation. 1994. 334 pages. 196 x 95mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WP90X	Audio/Hi-Fi Pocket Bk	£12.990	£12.990 NV

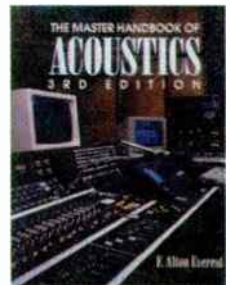
## The Master Handbook of Acoustics

3rd Edition

by F. Alton Everest

This is a good reference book for the serious minded who want to understand the theoretical and practical side of acoustics. The applied side of acoustics is well covered for those who desire to build their own sound and control rooms.

This 3rd edition is completely updated and expanded to include new chapters on computer-aided acoustical room design, digital and analogue sound processing, and synthesizer/midi studio acoustics. Other subjects covered include: frequency; octaves; comb-filter effects; the Schroeder diffusor; digital recording systems; setting up your home listening room; multitrack recording; recording studio design and setting up the control room of a sound studio. 1994. 455 pages. 187 x 234mm. Illustrated. American book.



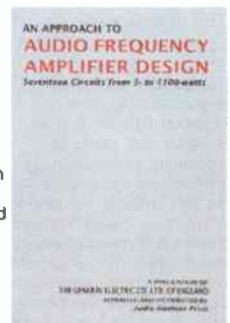
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LA07H	Master Acoustics	£19.990	£19.990 NV

## An Approach to Audio Frequency Amplifier Design

An original publication of GEC Ltd.

This book will appeal to all valve enthusiasts, young or old. It contains 17 high quality designs covering 5W to 1100W, that originated from the research laboratories of GEC Ltd. (UK). Many of the designs are based on the KT66 and KT88 tetrodes, which were, and still are, probably the most highly regarded valves ever produced for audio amplification. The designs include a simple amplifier for home use, to a very large amplifier for public address in auditoriums and stadiums. Two high quality preamplifiers are included, one being a simple minimal one and the other a more sophisticated design with full bass and treble controls. Each circuit includes a comprehensive parts list and specifications allowing the reader to construct their own version of the designs. Ratings for all the valves used are provided in tabular form, and include both European and US equivalents, wherever possible. 1994. 140 pages. 227 x 150mm, illustrated. American book.



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AN28F	Approach AF Amp Dsgn	£13.950	£13.950 NV

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## Audio Projects

by F. G. Rayer  
**Bernard Babani**

The book covers the construction of a wide range of audio projects including preamps, mixers, power amps, tone controls, matching and a range of miscellaneous projects including audio tracer, level meters, sine wave source, dummy load, audio limiter, light modulator, VOX unit etc. 1981. 96 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WG46A	Book BP90	£2.500	£2.500 NV

## Maplin Series – Audio IC Projects

Each of the circuits in this book is based on those appearing in the popular 'Data Files' feature in Electronics – The Maplin Magazine. 'Data Files' are building blocks which constructors can use to experiment with components and use as a starting point for further development. Each of the circuits is based around readily available chips, and provide an excellent way to become familiar with the characteristics of the chip as well as providing constructional details of useful projects. Each project includes pinouts and pin designations, output waveforms, parts lists, circuit diagrams, PCB layouts and photographs of the boards. This book will provide a useful toolkit for building audio systems and circuits based on readily available components using straight forward techniques. 1994. 200 pages. 216 x 138mm, illustrated.



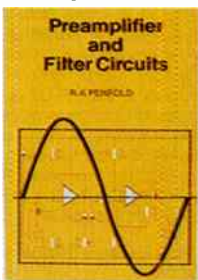
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Order Code	Type	Price each exc. VAT	inc. VAT each
AA89W	Maplin Audio IC Pjct	£9.990	£9.990 NV

## Preamplifier and Filter Circuits

by R. A. Penfold  
**Bernard Babani**

This book provides both circuits and background information for a range of preamplifiers, together with tone controls, filters and mixers etc. to go with the amplifiers. The use of modern, low noise operational amplifiers and a specialist, high performance audio preamplifier IC results in designs having excellent performance but which are still quite simple. All the circuits featured can be built at quite low cost, in most cases, for just a few pounds. In fact, everything you need to put together your own, custom preamplifier system is in this book. 1991. 96 pages. 178 x 111mm, illustrated.



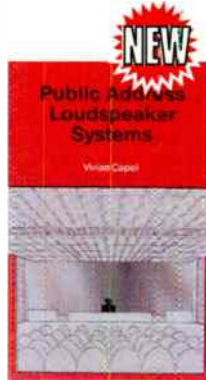
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ19V	Preamps & Filters	£3.950	£3.950 NV

## Public Address Loudspeaker Systems

by Vivian Capel  
**Bernard Babani**

The loudspeaker system is a critical part of any public address installation. All too often, it is woefully inadequate, resulting in poor intelligibility and unnatural reproduction. This book examines the various systems and their drawbacks, describing LISCA, the LIne Source Ceiling Array. This gives astonishing clarity, coverage and reduced feedback, natural source location and even a pseudo-stereo effect. It promises to be the ultimate system for small to medium sized halls. Full step-by-step constructional and installation details are given. Also included: low impedance matching, 100V line systems, transmission lines, and how to design and install inductive hearing-aid loops. Few public address systems could not be improved from the information supplied in this book. 1997. 128 pages, 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT25C	Public Address Spkrs	£3.950	£3.950 NV

## Computer Books

### PC Handbooks

## The PC & MAC Handbook - Systems, Upgrades & Troubleshooting

By Steve Heath

This handbook is a compendium of information about PCs and Macs that is not normally available, or supplied with manufacturers' documentation. It combines practical experience and guidance with reference material to provide help and information for anyone using, upgrading, fault finding, or just interested in computers. The book has chapters dedicated to both types of computers and chapters on common components such as memory, disk drives etc. Each chapter starts with an explanation of the technology involved and gradually moves through technical detail and finishes with explanations and examples. Screen shots from both Macs and PCs have been used to illustrate these points. Also, the guide can be used by those who are considering switching from one machine to the other, as it provides valuable information as to what may or may not be re-usable. Additionally, there is a whole chapter devoted to explaining how to move data from one machine to the other using serial links, floppy disks and other methods. 1995. 591 pages. 247 x 189mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ51F	PC & Mac Handbook	£35.000	£35.000 NV

## How to Expand, Modify and Repair PCs and Compatibles

by R. A. Penfold  
**Bernard Babani**

Not only are PCs and compatibles very expandable, but before long many users actually wish to take advantage of that expandability and upgrade their PC systems. Some aspects of this can be a bit confusing, but this book provides advice and guidance on the popular forms of internal PC expansion, and should help to make things reasonably straightforward and painless, and little knowledge of computing or computer hardware is assumed. All you need is to have and be able to operate a PC of some description. Topics include a PC overview, memory upgrades, how to add a hard drive, how to add an extra floppy drive, display adaptors and monitors, fitting a maths co-processor, keyboards, ports, mice and digitisers. All are covered in detail with emphasis on practical advice rather than theory. The final two chapters deal with maintenance (including the preventive kind) and repairs, and the increasingly popular subject of DIY PCs. 1994, Revised Edition. 176 pages. 198 x 130mm, illustrated.



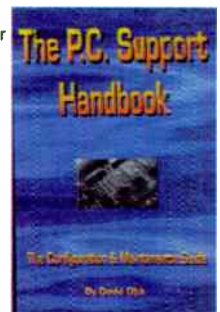
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Order Code	Type	Price each exc. VAT	inc. VAT each
WS95D	Mod & Repair PCs	£5.990	£5.990 NV

## The PC Support Handbook

by David Dick

This British book was written by a senior lecturer who specialises in microcomputer technical support. The A4 spiral-bound book offers a more general approach and covers a wide range of material, that includes basic DOS commands (up to DOS 6) to advanced subjects such as disk organisation and memory management techniques. This well written, illustrated book brings together material not normally found in one volume and covers the latest techniques such as clock-doubling, local bus systems, PCMCIA, etc. The book is filled with numerous facts, diagrams and explanations and is divided into 15 chapters with each chapter having its own contents page. 1995. 400 pages. 298 x 230mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA11M2	PC Support Handbook	£22.500	£22.500 NV

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## Easy PCs

Suzanne Weixel

### Que

Save time and effort - discover the fastest, easiest way to get up to speed with your personal computer. Easy PCs Fourth Edition shows you all the essentials in full colour, so understanding your PC becomes as easy as can be. This fully illustrated guide uses a proven approach to learning the basics. Just follow the simple directions, watch the tasks unfold on sample screen pictures, and then do it yourself! Plus, you get special coverage of Windows 95!



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ90X	Easy PCs	1+ £22.990	1+ £22.990 NV

## Upgrading PC's Illustrated

Jim Boyce

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So it's time to upgrade your PC but you aren't quite sure how to do it. Well look no further! This one-of-a-kind book from Que shows you how to successfully install or upgrade any part of your system in an easy, step-by-step, illustrated format. You don't have to be an expert to upgrade your PC. Instead, rely on our expert author, Jim Boyce, to explain each step and tell you exactly which upgrades will and won't work with your system and how to save money by installing parts yourself. Add sound cards, modems, memory, hard drives, CD-ROM drives, and more to your system - everything you need to know about upgrading is included in this handy guide.



Retail Unit Price each (inc. VAT).

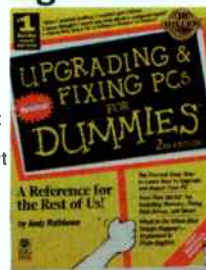
Order Code	Type	Price each exc. VAT	inc. VAT each
NQ60Q1	Upgrading PC's	1+ £32.490	1+ £32.490 NV

## Upgrading & Fixing PCs for Dummies

2nd Edition

by Andy Rathbone

As with the other books in this series, this book is not really for dummies, but for those people who are short of time and are not really interested in becoming a PC whiz-kid. With the help of this book and suitable screwdrivers, you should be able to repair or upgrade your PC and you will not need to learn anything during the process. This book is more a reference that provides a host of little gems of information. By following the step-by-step instructions and pictures, you can upgrade your computer to run today's most powerful software by adding memory, or a new or bigger hard drive. 1995. 360 pages. 235 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA55K1	Upgrade PCs/Dummies	1+ £18.990	1+ £18.990 NV

## Pocket PC Ref

5th Edition

by Thomas J. Glover and Millie M. Young

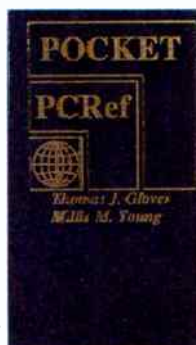
### Sequoia Publishing

This incredible little book is an absolute mine of information, containing information on just about everything you ever wanted or needed to know about IBM PCs and compatibles, and all in a handy pocket sized format!

Sections cover:

- ASCII Codes and Numerics
- PC Hardware - video standards; keyboard scan codes; CPU processor and co-processor types; resistor colour codes; paper size tables; port pinouts and cabling; memory map, I/O map, interrupts, errors; audio error codes; IBM PC/XT error codes
- Printer Control Codes
- Modems and Bulletin Boards- modem standards; UARTs; Hayes modem AT command set; top 100 BBS
- MS-DOS - commands and history
- Windows 3.1 Keyboard Shortcuts
- Hard Drive Specifications - standard 286/386/486 hard drive types and manufacturers directory
- Floppy Drive - specifications and manufacturers directory
- PC Industry Phone Book

This is one book that no PC user, systems administrator, installer or service engineer should be without! 1996. 543 pages. 136 x 80mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CR98G	Pocket PC Ref	1+ £12.990	1+ £12.990 NV

## Why Not Personalise Your PC?

by P. R. M. Oliver and N. Kantaris

### Bernard Babani Books

Are you a PC user who would like to customise and maintain your PC without spending hours doing so? This book explains how to do this

in both Windows and DOS formats. Windows format shows: How to set-up and organise groups of programs and data files and how to change the opening logo; How to use the Control Panel to personalise your working environment, use screen savers and wall paper files; How to manage the DOS prompt and how to transfer your customisation files to a new Windows installation.

The DOS format shows: How to write specialised batch files and create specialist programs with the use of the debug program; How to design and set-up your own professional looking menus, so you or others can run program applications and packages easily. Now covers Windows 95. 1997. 83 pages. 198 x 130mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ58N	Personalise Your PC	1+ £4.950	1+ £4.950 NV

## The PC Configuration Handbook

A Complete Guide to Troubleshooting, Enhancing and Maintaining Your PC

Second Edition by John Woram

Newly revised and updated, this is the only book you'll need to keep your PC, XT, AT, or state-of-the-art 386 or 486 machine running trouble-free. The handbook gathers into one place all the relevant facts hidden in the manufacturers' technical reference manuals and translates them in to simple English. The result is a problem-solving book that's essential reading for anyone trying to configure, reconfigure or troubleshoot a PC. Even if you would prefer not to make any repairs yourself, your ability to make a well-informed diagnosis will go a very long way toward helping to get your computer back up and running quickly. Whatever diagnostics you can do yourself will likely save a service engineer's time and your money. Packed full of detailed information, including DOS 6, this book is recommended. 1990. 744 pages. 235 x 175mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ16S21	PC Config Book	1+ £26.990	1+ £26.990 NV

## Understanding PC Specifications

by R. A. Penfold

### Bernard Babani

If you require a microcomputer for business applications or a high quality home computer, an IBM PC or compatible is often the obvious choice. They are competitively priced and are backed up by an enormous number of applications programs, hardware additions, etc.

The main difficulty for the uninitiated is deciding on the specification that will best suit his or her needs.

It would be very easy to choose a PC system that is inadequate to run your particular applications efficiently, or one which goes beyond your needs and consequently represents poor value for money. While explaining PC specifications in detail, subjects covered include: differences between types of PC (XT, AT, 80386 etc.); maths co-processors; input devices (keyboards, mice, and digitisers); memory, including both expanded (EMS) and extended RAM; RAM disks and disk drives caches; floppy disk drive formats and compatibility; hard disk drives (including interleave factors and access times); display adaptors, including all standard PC types (CGA, Hercules, Super VGA, etc.). Contains everything you need to know if you cannot tell your EMS from your EGA!

1994, Revised Edition. 128 pages. 198 x 130mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT26D	Understanding PC Spc	1+ £4.950	1+ £4.950 NV



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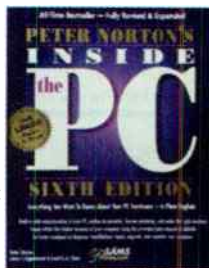
There are even more Maplin catalogue stores Nationwide. See it before you buy it.

Account Enquiries: 01702 554187

**Inside the IBM PC**

Sixth Edition  
by P. Norton

This best-seller has been thoroughly updated to include every model of the IBM microcomputer family! Detailed in content yet brisk in style. The book reviews fundamentals and then moves on to discover new ways of using your microcomputer to its fullest potential. Definitive in all respects. Includes a detailed look at all of the special features of the IBM PC family, its 'clones' and their compatibility; the fundamentals of the 80286, 386 and 486 microprocessors, plus the DOS operating system and BIOS. Programming examples to show how each feature works in BASIC, Pascal, and Assembly Language are included, plus disk drive operation and data storage techniques, how ROM is allocated and much more. This latest edition includes coverage of plug-n-play, RISC architecture, Windows 95 and Multimedia. 1995. 653 pages. 233 x 188mm, illustrated. American book.



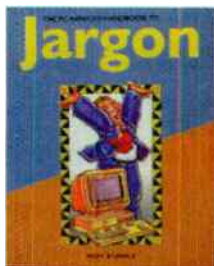
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS68Y11	Inside The IBM PC	£26.950	£26.950 NV

**The PC Novice's Handbook to Jargon**

by Roy Bunce

A proliferation of a heterogeneous conglomeration of miscellaneous objects. Computer language is even worse. This book is a computer dictionary with a difference. All commonly-used PC terms are explained in a humorous, friendly style, so that you will easily remember them. It is also packed with lots of cartoons to make learning computers more fun! 1995. 188 pages. 228 x 185mm. Illustrated.



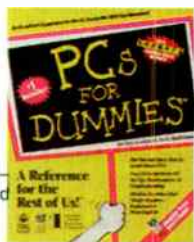
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ43W1	Jargon	£9.950	£9.950 NV

**PCs for Dummies**

by Dan Gookin & Andy Rathbone

As with other titles in the 'Dummies' series, this book is designed for those people who wish to do the job and not to become computer geniuses. This book is more a reference as each topic is independent and can be read in isolation - cross references are provided for the times when further information is required. Everything you need to know about your PC is covered in the text, except information on using the software and using DOS. 1992. 395 pages. 235 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA63T1	PCs For Dummies	£18.990	£18.990 NV

**Computers & Interfacing**

**Computers Simplified**

by Richard Maran and Eric Feistmantl

With so many PCs on the market, potential buyers are often bamboozled as to which machines suit their particular needs. Computers Simplified explains, in an original beginner-friendly format, how to choose the correct machine and peripherals, breaking through the jargon with cartoons, easy-to-understand text and graphics. Subjects covered include processors, input/output devices, storage, portable computers, networking, operating systems and application software. A glossary provides an explanation of terms often bandied around by the PC industry. 1994. 121 pages, paperback, 254 x 216mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD33L1	Simplified-Computers	£18.990	£18.990 NV

**The Winn L Rosch Hardware Bible Third Edition**

Winn L Rosch

Sams Publishing

Voted as one of the 20 best computer books by Computer Magazine, The Winn L Rosch Hardware Bible provides up-to-the-minute information on the latest developments in PC technology. Like previous editions, this revised book explains the inner workings of a PC in an easy-to-read and familiar style. As the most comprehensive book on the market, it covers all PC components and peripherals - from purchasing, setting up, and repairing a personal computer system to explaining technology and upgrading information. User level: Beginner to Advanced.



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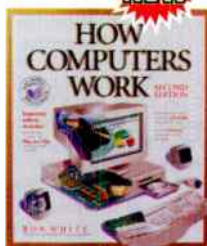
Order Code	Type	Price each exc. VAT	inc. VAT each
NQ27E	Hardware Bible	£26.950	£26.950 NV

**How Computers Work**

Ron White

Ziff-Davis Press

Find what makes your computer tick with the second edition of this colourful, captivating classic. Whether you're a computer novice or a pro, learning about your computer has never been so easy! Take a trip through the neural pathways and vital organs of your personal computer with the newest edition of this long-standing bestseller. Glorious full-colour illustrations make even the most complex subjects easy to understand. Whatever your age level or experience, you'll find that *How Computers Work* will capture your imagination, delight your eyes and expand your mind!



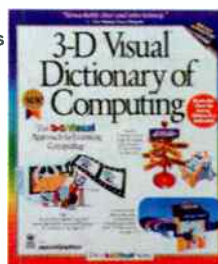
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
N050E	How Computers Work	£22.990	£22.990 NV

**3-D Visual Dictionary of Computing**

from maramGraphicsTM

The book shows and tells you what all those computer terms really mean by the use of text and individualised graphics that are the trademark of 'maramGraphics'. The graphics are brilliantly coloured and the text is very easy to understand. The book covers the most common computer terms likely to be encountered when reading about hardware, software, multimedia, and the Internet. As a result of the innovative way of using their award-winning communication technology, the book is both entertaining and as accurate as a technical manual. 1995. 213 pages. 254 X 215mm. Illustrated. American book.



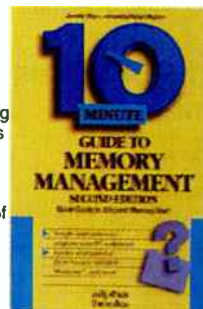
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ46A1	3-D Visual Dict	£18.990	£18.990 NV

**10 Minute Guide to Memory Management - Second Edition**

by Jennifer Flynn, revised by Robert Mullen

This handy guide offers a proven approach to learning for people who want results fast, for the concise and accurate text shows you how to improve your PC's memory in a short period of time. The easy-to-follow lessons help you understand and use memory management techniques. You quickly learn to work with extended and expanded memory, RAM disks, caches and much more. A detailed glossary provides an easy access to the terms you need to fully understand. The techniques that can be acquired from this book will enable you to overcome the limitations of DOS and to manage memory efficiently. 1993. 178 pages. 214 x 141mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA14Q	Mem Management	£9.950	£9.950 NV



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## Interfacing Standards for Computers

Second Edition  
by D. J. Marnham

This monograph is a revision of the same title first published by the Institution of Electronics and Electrical Incorporated Engineers in 1986.

The publication has been updated to include relevant additional information on current standards. The book serves as an introduction to the interfacing techniques and standards used by computers. It is invaluable to anyone who requires a basic understanding of the common computer interfaces in use today. The author discusses the various interfacing techniques and standards in ten clearly defined chapters. Some of the interfaces looked at are the RS-232 serial interface; serial interface standards; parallel interfaces; IEEE-488 general purpose parallel interface bus; VME bus; the small computer system interface (SCSI); wiring systems and character code standards.

1994. 105 pages. 210 x 147mm. Illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ42V	Interface Standards	£9.500	£9.500 NV

## The SCSI Bus and IDE Interface

by Friedhelm Schmidt

The SCSI bus and the IDE interface are without question the two most important interfaces for computer peripherals in use today. The IDE hard disk interface is found almost exclusively in the world of IBM PC compatibles.

However, the SCSI bus is designed to interface to hard drives, tape drives, CD-ROM, scanners and printers. Almost all modern computers from PCs, workstations and Macs to mainframes are equipped with an SCSI interface. This book provides a thorough description of both interfaces, including an explanation of essential technology together with a breakdown of commands and protocols. Includes software supplied on 88mm disk.

1995. 310 pages. 234 x 170mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD00A	SCSI & IDE Interface	£24.340	£28.600

## Interfacing PCs and Compatibles

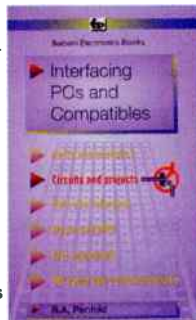
by R. A. Penfold

Bernard Babani Books

With many of the popular eight-bit computers now obsolete and no longer on sale, the PC is the clear choice for anyone who requires a computer that can take their own add-on projects. Its expansion bus, in the form of the internal expansion slots, represents a reasonably easy means of adding your own temperature sensors, relay drivers, or whatever. Utilizing the expansion slots for do-it-yourself projects is more straightforward than you might think. Once you know, PC interfacing is less involved than interfacing to many eight-bit machines, which have tended to use some unusual interfacing methods.

This book gives you:

- A detailed description of the lines present on the PC expansion bus
  - A detailed discussion of the physical characteristics of PC expansion cards
  - The I/O map and details of the areas where your add-ons can be fitted
  - A discussion of address decoding techniques
  - Practical address decoder circuits
  - Simple TTL 8-bit input and output ports
  - Details on using the 8255 parallel interface adaptor IC
  - Digital to analogue convertor circuits
  - Analogue to digital convertor circuits
  - Everything you need to know in order to produce successful PC add-ons
1992. 96 pages. 178 x 111mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ANS1F	Interfacing PCs	£4.990	£4.990 NV

## Easy PC Interfacing

by R. A. Penfold

Bernard Babani Books

PCs and compatibles are the 'standard' choice for anyone who is interested in practically any aspect of computing, including those who like to experiment with do-it-yourself hardware add-ons. Although the internal expansion slots provide full access to the computer's buses, and are suitable for user add-ons, making your own expansion cards requires a fair amount of expertise and equipment. The built-in ports provide what is often a much easier and hassle-free way of interfacing your own circuits to a PC. In particular, a PC printer port plus a small amount of external hardware provides a surprisingly versatile input/output port. The PC 'game' port is less useful for general interfacing purposes, but it can be used in some applications.

This book provides a number of useful PC add-on circuits including the following:

- Digital input/output ports
- Analogue to digital convertor
- Digital to analogue convertor
- Voltage and current measurement circuits
- Resistance meter
- Capacitance meter
- Temperature measurement interface
- Biofeedback monitor
- Constant voltage model train controller
- Pulsed model train controllers
- Position sensors (optical, Hall effect, etc.)
- Stepper motor interface



- Relay and LED drivers
- Triac mains switching interface

A useful range of interesting projects that can be used with any PC or compatible that has a parallel printer port and a 'game' port.

1995. 179 pages. 178 x 111mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ANS3H	Easy PC Interfacing	£4.950	£4.950 NV

## Electronic Projects for Your PC

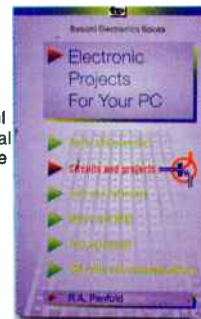
by R. A. Penfold

Bernard Babani Books

This handy little book provides a number of useful PC add-ons including: digital input/output ports, analogue to digital and digital to analogue converters, voltage and current measurement circuits, resistance meter, capacitance meters, temperature measurement interface, constant voltage model train controller, pulsed model train controller, position sensors, stepper motor interface, relay and LED drivers and triac mains switching interface. The ports and projects featured utilise the basic eight bit PC expansion bus, and are therefore suitable for use with any PC or compatible which has the standard ISA or EISA expansion bus. In practice, this means anything from the original PC through to the modern 386 and 486 PCs.

The book assumes that the reader has a certain knowledge of PC computer interfacing.

1992. 112 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ76H	Electr Pjts For PC	£3.990	£3.990 NV

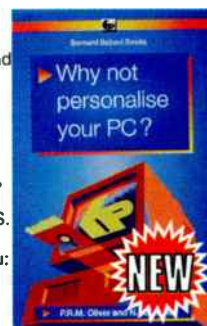
## Why not personalise your PC?

P R M Oliver and N Kantaris

Babani

Are you a PC user who would like to customise and maintain your working environment without spending hours doing so? Then this book is for you. We show you how to do just this, with Windows 95, with older versions of Windows, or with just DOS. In the Windows 95 environment, we show you:

- ★ how to customise the desktop with shortcuts and how to change the background.
  - ★ how to change the Taskbar and START menus.
  - ★ how to use the Control Panel to personalise your setup.
  - ★ how to rename the Recycle Bin in the Registry, and 'activate' DOS 7.
- In the Windows 3.xx environment, we show you:
- ★ how to set up and organise groups of programs and data files and how to change the opening logo.
  - ★ how to use the Control Panel and use screen savers and wallpaper files.
- In the DOS environment, we show you:
- ★ how to write customised batch files and use ANSI.SYS commands to set up your own professional looking menu system.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ06G	Personalise PC	£4.990	£4.990 NV



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**Maplin Series – Computer Interfacing**

by **Graham Dixey**

In an informative and straightforward manner, the author describes how to turn what might seem an incomprehensible 'black box' into a powerful and enjoyable tool that can help you in all areas of your work and leisure. The book explains how computers interact with the world around them and therefore make them a useful tool. Topics covered include descriptions of all the components that make up a computer, principles of data exchange, interaction with peripherals, serial communications, input devices, recording methods, computer-controlled motors and printers. Filled with plenty of handy tips and clear illustrations, this book can improve your computer system. 1994. 200 pages. 216 x 138mm, illustrated.



Retail Unit Price each (inc. VAT).

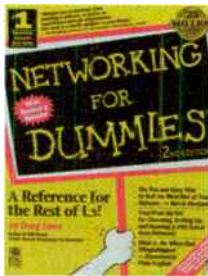
Order Code	Type	Price each exc. VAT	inc. VAT each
NP81C	Computer Security	£5.990	£5.990 NV

**Networks**

**Networking for Dummies**

by **Doug Lowe**

This book breaks down all the excessively technical language and helps the reader to really understand what networks are all about. Those mysterious phrases such as print queues, queuing, redirection, as well as software selection and management are tackled in an enjoyable and friendly way.



The book does not specialise in any one system and deals with Novell's NetWare, NetWare Lite, LANtastic and Windows for Workgroups. There is also coverage of Macintosh networking basics. Explanations of printer networking, Ethernet, types of network cable, coaxial cable, twisted pair cables, installation adaptor cards and other networking paraphernalia are all covered in detail. In fact everything you need to know to select, set up, use and manage a small computer network, in a plain English style. 1994. 382 pages, 232 x 188mm, illustrated. American book.

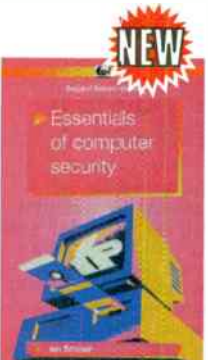
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA95D 1	Network For Dummies	£17.990	£17.990 NV

**Essentials of computer security**

by **Ian Sinclair Babani**

Security of computers and their files in these days has become more and more of a problem, and not only for the large scale commercial user of computers. Security embraces all the hazards that endanger your precious data, from power supply failure through hard drive failure to theft of computers or files, and some users are more at risk than others from particular hazards. This book deals with the problems of security for the small to medium size business or the home user of computers, and emphasises throughout that the



main hazards are not the ones that provide newspaper headlines, but are the often forgotten points such as limited life of a hard drive or the risks from fire or flood. The use of Windows 95 is assumed, but descriptions of important methods applicable to Windows 3.1 are also included because of the large numbers of computer users who have not yet changed to the later version.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NP81C	Computer Security	£5.990	£5.990 NV

**Netscape Internet Navigator Assistant**

by **Ian Sinclair Babani**

Whether you are a novice Internet user or are accustomed to other software, this is the book that offers the assistance that you need with Netscape Internet Navigator, together with its Mail and News sections. What makes this book so different and so useful, is the way in which the information is organised. The book provides:

- ★ Concise descriptions of the most-needed actions.
  - ★ A cross-reference index and list of newsgroups.
  - ★ Clear topic identification.
  - ★ Hints and tips about common requirements.
  - ★ Tables of items (such as key shortcuts) that are not easy to find.
  - ★ Clear instructions for the most difficult tasks.
  - ★ Quicker access to assistance.
  - ★ Help even when the computer is switched off!
- This invaluable reference work is ideal for all Navigator users be they novice or more experienced.



Retail Unit Price each (inc. VAT).

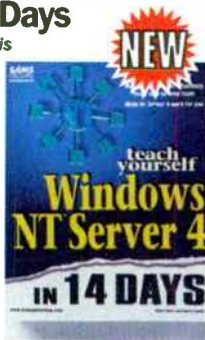
Order Code	Type	Price each exc. VAT	inc. VAT each
NP73Q	Netscape Internet	£5.990	£5.990 NV

**Teach Yourself Windows NT Server 4 in 14 Days**

by **Peter Davis and Barry Lewis**

**SAMS Publishing**

In just two short weeks, you will be thoroughly grounded in the fundamentals involved in setting up and running an NT server. More than 100 skill-building tasks contained in this book will teach you everything you need to know to be an effective NT administrator. You will learn how to make the switch from another network operating system, troubleshoot your server, optimise your network, and more! If you're looking for the quickest, easiest way to get up to speed with NT Server, prepare to *Teach Yourself Windows NT Server in 14 Days!*



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ03D 1	Windows NT Server	£31.950	£31.950 NV

**Urgent Requirement?**

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**CSE Study Guide: Windows NT Server and Workstation 4**

by **Joe Casad & Ken Rosen**

**New Riders**



This comprehensive study guide contains test questions, lists, tables, notes, tips and step-by-step exercises to completely prepare you for the Windows NT Server and Workstation exams. MCSE Study Guide: Windows NT Server and Workstation 4 lets you take advantage of the experience and expertise of MCSEs and Microsoft Certified Trainers. CD included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ19V 1	MCSE Win NT	£79.490	£79.490 NV

**How Networks Work**

by **Frank J Derfler, Jr. and Les Freed**

**Ziff-Davis Press**

This Bestseller Edition includes expanded coverage of the world's largest network - the Internet. Whether you build and maintain networks or are simply curious about their inner workings, you'll love discovering *How Networks Work*.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ69P	How Networks Work	£26.950	£26.950 NV

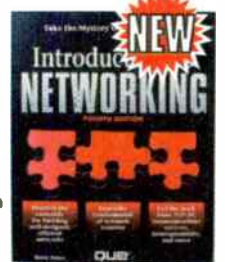
**Introduction to Networking**

by **Barry Nance**

**Que**

In plain, easy-to-understand language, this book helps you get started in the increasingly valuable world of networking technologies, so you can design the system that best fits your business need.

The book starts you off on the ground floor, where you learn the basics of sharing computer resources. You quickly learn how networks are put together using file servers, workstations and protocols, and you discover how to manage a network. This book also shows you all recent product releases, from Windows NT Server 4 and Warp Server to Netware 4.11.



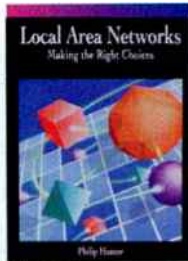
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NQ02C	Intro To Networking	£27.490	£27.490 NV

## Local Area Networks – Making the Right Choices

by Phillip Hunter

Local area networks (LANs) are now an indispensable part of computer installations in small and medium size businesses being the only practical way to share applications and resources such as printers. Without a LAN, it is extremely difficult for companies to exploit information technology (IT) efficiently or competitively. For those who are about to install a LAN, or upgrade or expand an existing one, then this book will help you choose a LAN system that is compatible with your business requirements and objectives. The book has been written in a non-technical style and is intended to help you to select the most suitable LAN components for your particular requirements or installations. 1993. 340 pages. 233 x 173mm, illustrated.



Retail Unit Price each (inc. VAT).

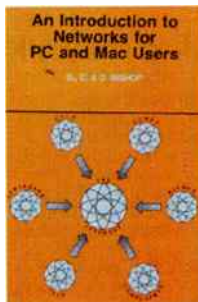
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AA19V	Local Area Networks	£21.950	£21.950 NV

## An Introduction to Networks for PC and Mac Users

by D. C. and O. Bishop

Bernard Babani Books

This book is for the PC or Macintosh user, who may be considering linking their computer to a computer network, or may have already done so, and wants to know what networks are, what they can offer, and how to get the best from the 'net'. Networks can be used for business, research or leisure.



Topics covered include how to:

- Make the most of your network
- Keep on the right side of your network systems administrator
- Access the many thousands of shareware and freeware games and other programs available in archives around the world.
- Avoid computer viruses
- Exchange messages, mail, faxes, programs and pictures with friends and colleagues on the network
- Use other computers remotely from your own
- Join the global community of network news readers
- Access the vast resources of the information archives all over the world

With its extensive glossary, this book will guide you through the quagmire of jargon which surrounds the subject of networks. Popular network computer programs such as those from Novell and Microsoft are explained as examples. Useful network addresses are given to get you started on your journey through the Internet. Now is the time to connect to the evolving 'Information Superhighway' which is revolutionising the world in which we live - don't be left behind! 1995. 169 pages. 198 x 130mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

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AN58N	PC & Mac Networks	£5.950	£5.950 NV

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Second Edition

by Rick Sant'Angelo

This definitive and comprehensive manual will help you get your NetWare network up and running fast. Everything is covered from the fundamentals of network installation and configuration, detailed instructions on system administration and efficient day-to-day operation, to advanced tips on network management, internetworking and troubleshooting. This book is primarily written for an intermediate to an advanced integrator or system administrator who is responsible for managing a NetWare 3.x or 4.x system, and provides a first line of support for any project using NetWare. Includes a 89mm (3.5in) disk which has a powerful collection of freeware and shareware utilities. Highly recommended! 1995. 1374 pages. 231 x 188mm, illustrated. American book.



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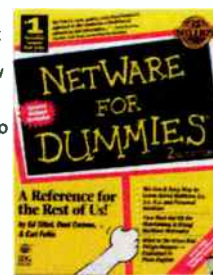
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JJ41U	Netware Unleashed	£35.500	£35.500 NV

## NetWare for Dummies

2nd Edition

by Ed Tittel and Deni Conner

Networking is a very important topic, and most computer users on a network will need to know about networking. This latest edition provides straightforward answers to all common NetWare problems. This Dummies is fun and easy to learn and provides a first-aid kit for navigating and managing a NetWare network. 1995. 435 pages. 235 x 188mm, illustrated. American book.



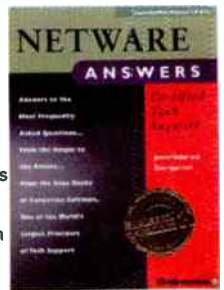
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Order Code	Type	Price each exc. VAT	inc. VAT each
ZD18U	Netware for Dummies	£18.990	£18.990 NV

## NetWare Answers: Certified Tech Support

by James Naider and Don Guarneri

If you are a user of Novell NetWare 3.x or 4.x then there is a distinct possibility that you have many technical questions or are in need of troubleshooting advice! If so, then this book may well be the answer, for it is based on actual technical support calls fielded by Corporate Software Inc. in the US, who are one of the world's largest providers of third-party technical support. Organised by topic, this book includes answers to all areas of Novell NetWare including system start-up, network management, printing, server configurations, utilities, error messages, and much more. You no longer have to spend time on the phone waiting for someone to answer your technical question, for this single volume is the most authoritative collection of answers to your Novell NetWare questions. 1994. 251 pages. 231 x 186mm, illustrated. American book.



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Order Code	Type	Price each exc. VAT	inc. VAT each
JJ47B	Netware Answers	£16.990	£16.990 NV

## LAN Times Guide to Networking Windows '95

by Brad Shimmin and Eric Harper

Windows '95 contains an assortment of networking challenges, such as how to utilise its built-in peer-to-peer networking environment and simplified user interface to meet particular networking requirements? The authors are networking experts and show the reader how to take advantage of Windows '95s powerful features to create a state-of-the-art network.

Written in straight-forward language, the book begins with the basics, such as installation procedures and troubleshooting, and goes on to discuss Windows '95 in a networking environment and on its own. Helpful tips are provided for using its tools to implement e-mail and other networking functions. Advanced features discussed include using Windows '95 with other major networking platforms such as Windows NT, NetWare and Unix, and a look at the communications facilities including TCP/IP, Mail, and the Network Neighbourhood. 1995. 335 pages. 230 x 186mm, illustrated. American book.



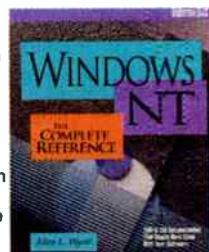
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Order Code	Type	Price each exc. VAT	inc. VAT each
JJ48C	Networking Win 95	£24.990	£24.990 NV

## Windows NT – The Complete Reference

by Allen L. Wyatt

Windows NT is the long-awaited and highly regarded operating system from Microsoft, being a direct descendant of Microsoft Windows. NT provides fresh competition for the OS/2 and Unix operating systems, but with the advantage of being able to draw from the huge base of Windows users.



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This book is carefully designed to teach you all you want to know about the Windows NT operating system. It offers an excellent and detailed tutorial on all aspects of the topic. The book provides total coverage from installation and basic commands to advanced operating systems, so allowing a successful change to Windows NT. 1993. 660 pages. 185 x 230mm, illustrated. American book.

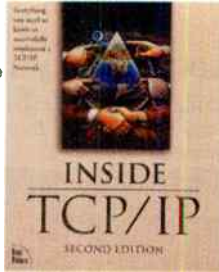
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A469A 2	Windows NT Comp Ref	1+ £23.990	1+ £23.990 NV

## Inside TCP/IP

Second Edition  
from New Riders

This book is designed for system administrators who plan to work with the TCP/IP protocol suite, and is not specifically aimed at a particular major operating system, but strives to address as many different versions and flavours as possible. This all-in-one reference teaches you how to successfully implement TCP/IP on Netware, Windows, OS/2, DOS, Windows NT and Unix. A detailed troubleshooting section helps you to keep your network up and running to its fullest capacity. Network administrators will be able to explore frame relay, ATM, Domain Name Systems, Internet addressing, security and much more. In addition, the book will provide a detailed understanding of IPng, and provide information on how to create and successfully maintain a system that accesses the Internet, and learn how to officially register your site. 1995. 608 pages. 232 x 188mm, illustrated. American book.



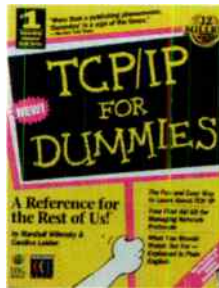
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J449D 1	Inside TCP/IP	1+ £36.990	1+ £36.990 NV

## TCP/IP for Dummies

by Marshall Wilensky

Transfer Control Protocol/Internet Protocol (TCP/IP) is designed to make connecting computers to peripherals and Internet easy and consistent. Aimed at network managers, this book explains how to set up computer networks by describing the types of cables, how to link PCs and Internet lines, and much more. Internet is very much the 'in-thing' and will dominate the computer world, this Dummies book provides a straightforward non-jargon guide to this expanding topic. 1995. 400 pages. 235 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

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ZD30H	TCP/IP for Dummies	1+ £18.990	1+ £18.990 NV

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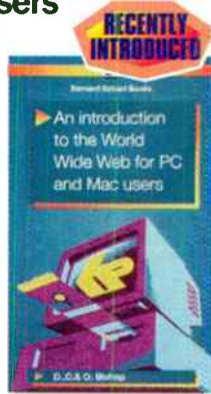
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## Internet & WWW Web

### An Introduction to the World Wide Web for PC and Mac Users

D., C. & O. Bishop  
Bernard Babani Books

The Internet, a computer network linking over 30 million people in more than 80 countries, is rapidly becoming part of everyday life for many of us. It provides a high-speed channel for exchange of information and ideas, with a myriad of applications in commerce, education, leisure and entertainment. the World Wide Web, also known simply as the Web, is a true multimedia tool for interacting with the Internet, providing not just text, but also full colour graphics, pictures, and video, and CD-quality digital audio. With a Web program installed in your PC or Mac, and an Internet connection; you can access a huge variety of information, such as news weather, business reports, science, and the latest in art and fashion. You can get software for your computer, images, sound and video clips; browse through on-line libraries, encyclopedias and dictionaries; or indulge in mail-order shopping. Thousands of companies in the UK and elsewhere are now offering Web services, including such well known names as Apple Computers, IBM, Microsoft, the BBC, The Times, Time Magazine, Virgin and Maplin Electronics. This book is ideal for the PC or Mac user who wants to find out more about the World Wide Web and the Internet. It explains how the Web has developed, how it works, how to use it, and shows you how to get quickly to the best sources of information and entertainment on the Web. A guide to some of the very best sources is provided. throughout the book there are hints and tips on getting the most from Netscape Navigator, probably the world's most popular program for 'surfing' the Web, available free to most PC and MAC users. Includes a full glossary. 1996. 220 pages. 131 x 198mm, illustrated. British/Australian book.



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GS35Q	Intro WWW PC & Mac	1+ £6.990	1+ £6.990 NV

### How to Create Pages for the Web Using HTML

by J. Shelly  
Bernard Babani Books

Companies, organisations and institutions around the world, as well as many PC users, are fast becoming aware of the World Wide Web (WWW) as a means of publishing information over the internet.

HTML is the language used to create documents for Web browsers such as Mosaic, Netscape and the Internet Explorer. These programs recognise this language as the method used to format the text, insert images, create hypertext and fill-in forms. Today, more and more people are learning HTML in order to create their own Web page documents or to amend existing pages. Fortunately, HTML is easy to learn and use. This book explains the main features of the language and suggests some principles of style and design. Within a few hours, anyone could create a personal Home Page, research paper, company profile, questionnaire,



etc., for world wide publication on the Web. 1996. 144 pages. 131 x 198mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

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GS37S	Create Pages for WWW	1+ £5.990	1+ £5.990 NV

### Using Netscape on the Internet

by P. R. M. Oliver & N. Kantaris  
Bernard Babani Books

If you want to get to grips with the Internet in general and with surfing, or browsing, the World Wide Web with Netscape Navigator in particular, then this is the book for you. It was written with Netscape running under different versions of Windows, but should also be useful for Mac or UNIX based systems.

The book explains:

- The Internet and how the World Wide Web fits into the general scenario
  - How to go about getting an internet connection of your own
  - How to download and install the various versions of Netscape browsing software that are available
  - How to use Netscape Navigator to surf the Web, to find and maintain lists of useful sites, how to save pictures, and how to print out Web pages
  - How to use the program's very powerful e-mail features
  - How to find your way through the thousands of newsgroups that have proliferated on the Internet
  - How to steer clear of some of the Internet's more peculiar users.
- A glossary of Web and general computer terms is included along with appendices of menu and manual keyboard command and details of the most common file formats used on the Internet. 1996. 152 pages. 130 x 198mm, illustrated. British book.



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## Using Microsoft Explorer on the Internet

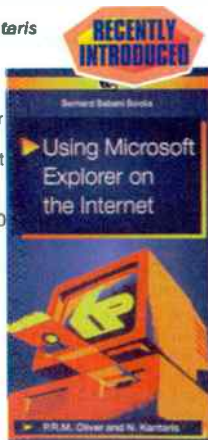
by P. R. M. Oliver & N. Kantaris  
**Bernard Babani Books**

If you want to get to grips with the Internet in general and with surfing, or browsing, the World Wide Web with Microsoft Internet Explorer in particular, then this is the book for you. It was written with version 3.0 of the software running under Windows 95.

### The book explains:

- The Internet and how the World Wide Web fits into the general scenario
- How to go about getting an internet connection of your own
- How to download and install the various versions of Microsoft Internet Explorer browsing software that are available
- How to use Microsoft Internet Explorer to surf the Web, to find and maintain lists of useful sites, how to save pictures, and how to print out Web pages
- How to use the program's very powerful e-mail features
- How to find your way through the thousands of newsgroups that have proliferated on the Internet
- How to steer clear of some of the Internet's more peculiar users.

A glossary of Web and general computer terms is included along with appendices of menu and manual keyboard command and details of the most common file formats used on the Internet. 1997. 176 pages. 130 x 198mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

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GS49D	Using MS Explorer	1+ £5.990	1+ £6.990 NV

## Email on the Internet

by P. R. M. Oliver & N. Kantaris  
**Bernard Babani Books**

All you need to know about getting started and using E-mail, the new way of communicating in the '90s for individuals and businesses. Helps you get to grips with the practical concepts in the least amount of time and with the minimum of effort.

Full of all the information you are ever likely to need to set up and use E-mail on the Internet.

1997. 176 pages. 130 x 198mm, illustrated. British book.



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GS50E	Email On The Int.	1+ £5.990	1+ £6.990 NV

## The Internet for Dummies – 4th Edition

by John R. Levine and Carol Baroudi

Includes information on networking with DOS, Windows, Mac and Unix platforms and has been revised and updated to reflect the changes happening in cyberspace. Includes a new complete Internet glossary explaining all the terms commonly used. Uncover more resources at your fingertips with expanded coverage of mosaic and World Wide Web and learn how to retrieve multimedia sounds and pictures from the Internet. This book also shows you all the ins and outs of downloading megabytes of information, shortcuts to make the Internet easier, and cool Internet things you can do. 1997. 427 pages. 235 x 188mm, illustrated. American book.



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AN17T 2	Internet For Dummies	1+ £18.990	1+ £18.990 NV

## PC Hardware Assistant

Ian Sinclair

**Babani**

All software nowadays offers you Help screens, but it is unusual to get help with your hardware, often struggling with meaningless computer-speak and abbreviations. You often have to decide on necessary upgrades and install them yourself. If things go wrong, can you fix them yourself or do you have to seek expensive outside assistance. Help is now at hand within the covers of this unique book, hopefully helping to solve your hardware problems. The book provides:

- ★ Concise descriptions of the hardware items and actions.
- ★ A cross-reference index of terms to help you find what you are looking for.
- ★ Clear topic identification.
- ★ Hints and tips about common requirements.
- ★ Tables of items (such as pin connections) that are not easy to find.
- ★ Clear instructions for the more difficult tasks.
- ★ Quicker access to assistance.
- ★ Help even when the computer is switched off!
- ★ An essential reference guide for all PC users.



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NP70M	PC Hwre Asst	1+ £5.990	1+ £6.990 NV

## Microsoft Internet Explorer Assistant

Ian Sinclair

**Babani**

Whether you are a novice Internet user or are accustomed to other software, this is the book that offers the assistance that you need with Microsoft Internet Explorer, together with its Mail and News sections. What makes this book so different and so useful, is the way in which the information is organised and presented. The book provides:



- ★ Concise descriptions of the most-needed actions.
  - ★ A cross-reference index and list of newsgroups.
  - ★ Clear topic identification.
  - ★ Hints and tips about common requirements.
  - ★ Tables of items (such as key shortcuts) that are not easy to find.
  - ★ Clear instructions for more difficult tasks.
  - ★ Quicker access to assistance.
  - ★ Help even when the computer is switched off!
- This invaluable reference work is ideal for all Explorer users be they novice or more experienced.

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Molly E Holzschlag & Laura Lemay

**Sams.net**



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Marc Saltzman and Sean McFadden

**Lucas Press**



Compiled using the powerful Lycos search engine, the *Internet Games Directory* helps both new and experienced game enthusiasts find out both where and how to play Internet games. This comprehensive guide includes thousands of Web sites and game-related news groups and mailing lists. Kids and adults alike will find this directory a valuable addition to their gaming resources.

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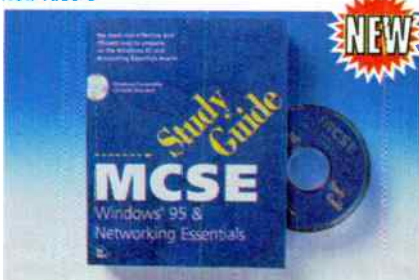
Check the weather in Ghana, browse the latest news about underground music in Finland, find out what's happening on the Tokyo stock market, or go online, live, with Star Trek fans the world over. It's all in the *Internet International Directory 1997*. More than 3,000 sites are reviewed on topics ranging from online weddings to alternative architecture to theoretical physics to experimental film. You'll be inspired to explore on your own, wandering through the world's information resource - the Internet.

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Que



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Michael Morrison  
Sams.net



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- ★ **Part VIII, "Integrating Java with Other Technologies,"** which provides a close look at how Java can be used with other emerging technologies such as VRML, JavaScript, ActiveX and VBScript.
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Chris Shipley and Matthew Fish  
Ziff-Davis Press

Packed with lavish illustrations, this book graphically unravels the mysteries of this most compelling new communications medium. You'll see in technically rich, full-colour detail:

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- ★ *How a browser lets you surf the Web*
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**The Complete Idiot's Guide To The Internet**

Peter Kent  
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You've heard about the Internet, e-mail, and the World Wide Web - but they still seem distant and inaccessible. You know there is a lot of great information on the Internet, but it seems to be locked away. Now you can unlock the Internet! *The Complete Idiot's Guide to the Internet, Third Edition* gives you all the information you need to get up and running on the Internet quickly and easily! Don't let the Internet wave pass you by! User level: New to Casual.

Retail Unit Price each (inc. VAT).

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NQ61R	Idiot's Guide To Net	£23.490	£23.490 NV

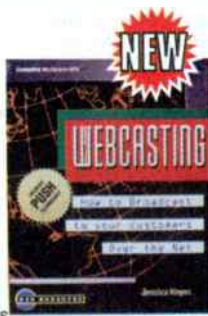
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Waltz Group Press



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Laura Lemay & Charles L. Perkins  
Sams.net



By the time you've finished this book, you'll have complete understanding of the Java language and how to design Java applets. You'll know how to create, use, and integrate Java applets into your Web design. Learn the basic concepts of object-oriented programming with Java. Use the book's numerous examples and tutorials to get hands-on practice creating Java applets. Add interactivity, animation and full multimedia to your web presentations, such as 3D models, "bouncing" graphics, educational tools, games and stock quotes. Create stand-alone operating system-independent programs in Java. User level: Casual to Accomplished.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ79L 1	Java In 21 Days	£37.490	£37.490 NV

## Netscape Internet Navigator Assistant

Ian Sinclair

Whether you are a novice Internet user or are accustomed to other software, this is the book that offers the assistance that you need with Netscape Internet Navigator, together with its Mail and News sections. What makes this book so different and so useful, is the way in which the information is organised and presented.

The book provides:

- ★ Concise descriptions of the most-needed actions.
  - ★ A cross-reference index and list of newsgroups.
  - ★ Clear topic identification.
  - ★ Hints and tips about common requirements.
  - ★ Tables of items (such as key shortcuts) that are not easy to find.
  - ★ Clear instructions for the more difficult tasks.
  - ★ Help even when the computer is switched off!
- This invaluable reference work is ideal for all Navigator users be they novice or more experienced.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ86T	Netscape Internet	£5.990	£5.990 NV

## E-Mail on the Internet

P.R.M. Oliver and N. Kantaris  
Babani

If you want to get to grips with using e-mail, then this is the book for you. It was written with Windows 95 software, but should also be useful for Mac and Unix based systems.

The book explains:

- ★ The Internet and how the use of e-mail fits into the general scenario
  - ★ What you need to get up and running on your own
  - ★ How to download and install four of the main free e-mail programs available on the Internet
  - ★ How to use Pegasus Mail
  - ★ How to use Netscape Navigator Mail
  - ★ How to use Microsoft Explorer Mail
  - ★ How to use Eudora Light for Windows 95.
- A glossary of Web and general computer terms is included, along with an appendix of keyboard shortcut commands for the four e-mail programs described.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ87U	E-Mail Internet	£8.990	£8.990 NV

## World Wide Web Yellow Pages

New Riders



From foreign languages to programming languages, popular beverages to travel tips - it's in here! The CD-ROM included in this book contains a fully-searchable electronic version of the *World Wide Web Yellow Pages*. Just click the site you want to see and travel the Web - hassle free. Whether you know exactly what you're looking for, or you want to browse a certain topic, you can find anything you need quickly and easily. Site descriptions and links to over 10,000 sites on the World Wide Web!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ92A 1	WWW Yellow Pages	£32.990	£32.990 NV

## The Totally Wired Web Toolkit

Nathan J Muller  
McGraw-Hill

Most Internet users don't realise that the Web offers much more than just a place to find information. It can also enhance your ability to communicate in numerous ways that make your life easier and save you big money. The *Totally Wired Web Toolkit* shows you how to tap the full power of the Web - without paying a single extra fee or buying expensive software. This guide makes it easy to do everything from share applications to set



up an audio or video conference over the Internet. Don't just surf the Net ... make the Net surf for you!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ98G	17107 Wired Web Toolkit	1+ £18.990	1+ £18.990 NV

### Special Edition: Using Netscape LiveConnect

Lori Leonardo

Que

Que's Special Edition Using Netscape LiveConnect goes beyond traditional JavaScript or Web site management books and gives you the details to develop, execute, maintain, and upgrade your Web site. With an emphasis on site function and aesthetics, this complete guide provides valuable information on the JavaScript language and database connectivity. User Level: Casual to Expert.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NR02C 1	17811 Netscape Live Conn	1+ £32.490	1+ £32.490 NV

### Teach Yourself Great Web Design in a Week

Anne-Rae Vasquez-Peterson and Paul Chow  
Sams.net



Great Web design is just a week away with this hands-on guide. Anyone can learn HTML and publish their pages on the Web, but it is great Web design that separates the good from the bad. You'll learn how to use basic design elements - such as white space, layout, typography, colour, graphics and animation - to set your site apart from thousands of other Web pages. *Teach Yourself Great Web Design in a Week* shows you how to design your Web site from the initial planning stages to the online testing and publishing stage. You'll also learn the common design errors and how to avoid them.

User Level: New to Casual.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NR05F 1	17817 Great Web Design	1+ £46.950	1+ £46.950 NV

### Teach Yourself Java in 21 Days

Laura Lemay and Charles L Perkins  
Sams.net



*Teach Yourself Java in 21 Days* carefully steps you through all you need to learn to transform your static Web pages into living, interactive applications with Java. You'll learn the fundamental concepts of the Java language as well as the basics of applet design and integration with Web presentations. Java opens up an entire new world of possibilities previously unthinkable on the Web. You'll find out how to create applets for animations, computer simulations, interactive games and models, teaching tools and more.

User level: Casual to Accomplished.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NR13P 1	17128 Java In 21 Days	1+ £54.950	1+ £54.950 NV

### Java How to Program with an Introduction to Visual J++

Dettel & Dettel  
Prentice Hall

Java is revolutionising software development with platform-independent, object-oriented code for conventional, Internet - and Intranet-based applets and applications. This is the first Java textbook to include Microsoft's Visual J++ Publisher's Edition integrated development environment on CD-ROM. With hundreds of "live-code" programs with screen captures that show exact outputs, extensive exercises (many with answers) accompanying every chapter and hundreds of tips, recommended practices, and cautions, - all with marked icons. It is the centrepiece of a family of resources for teaching and learning Java and Visual J++, including a World Wide Web site. Includes source-code examples and other information for faculty, students and professional programmers; an optional interactive CD-ROM for Windows 95/Windows NT and e-mail access to the authors.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NR15R	17028 Java How To	1+ £27.950	1+ £27.950 NV

### The UK Internet Book

by Sue Schofield

All the information you will need to launch yourself into the world of Internet including: one month's free on-line access to a Demon Internet account; free MacTCP for Macintosh users taking a Demon Internet Account; 35% off the recommended UK retail price for NetManage Internet Chameleon and a discount offer on BABT approved modems. Everything you need to know to get started on the Internet in one single book, including troubleshooting modems, and setting up the correct software for your machine. Step-by-step tutorials on how to set up and run DOS, Windows, Mac and Amiga Internet software with the minimum amount of time or effort. Once you're up and running, comprehensive pointers help you explore the Internet.

1995. 301 pages. 230 x 170mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD44X †	8930 The UK Internet Book	1+ £19.950	1+ £19.950 NV

### Internet UK

by Ivan Pope

Internet is literally a network of networks, that is not owned or controlled by any company, government or organisation. It is an example of co-operation and communal provision that spans the globe, respecting no borders or political divisions. Information can be moved around the globe from site-to-site and from individual-to-individual, and when access is gained there are no time charges, but access to a huge range of organisations, individuals, companies and institutions who have made access to the Internet a vital part of their operating methods. This book is not intended to be an in-depth guide to Internet, but it will provide a good starting point. The author gives details on how to get started, where to find information, what you need, how to use it, who is on it, what is available, the future - in fact, everything you need to know about Internet in the UK. Additionally there is information on the Internet in Europe, which is essential for anybody interested in Internet.

1995. 300 pages. 253 x 174mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN23A	7045 Internet UK	1+ £19.950	1+ £19.950 NV



## The Internet and World Wide Web Explained

by J. Shelly

**Bernard Babani Books**

Whenever the media get hold of something new, they make a meal of it, hyping it up out of all recognition. This book explains what the Information Superhighway really is and how it relates to the Internet and the World Wide Web. However, whether we wish to find out information or to 'converse' with others on the Internet who share our particular interest, we come face to face with the jargon: protocols, ftp, gopher, TCP, hypertext, http, URL, home pages, threads, HTML, FAQs, domains, etc. These and other terms are explained in plain simple English. Once you understand them, then you too can talk to, and at the same level as, the gurus who dreamed them up. But of more importance, you will have the knowledge and expertise to use the Internet.

Major topics include:

- Where did the Internet come from and what can I get from it?
  - How do I contact others with similar interests?
  - How do I send e-mail and other things over the Internet?
  - What will it cost and what do I need to connect to the Internet?
  - \* Will my machine be violated by hackers and infected with viruses?
  - Where is the Internet going?
- 198 x 130mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN68Y	Internet & WWW Expl	£5.950	£5.950 NV

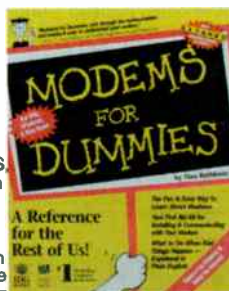
## Modems & Communications

### Modems for Dummies

by Tina Rathbone

With modems finding more use in business and homes, a lot more people are hooking up these devices for communications, research or just plain fun. Modems for Dummies will show DOS, Windows and Macintosh users how to choose, install and use modems and modem software, and then how to squelch the urge to call everyone you know. Covers setting up a modem and software; all about file transfer protocols and other modem terminology; enables users to reap the benefits of e-mail, downloading and sending files; and explains how connection to the Internet works, together with discussion on bulletin board systems, on-line services and what they can do for you!

1993. 457 pages. 235 x 188mm. Illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD08J	Modems for Dummies	£18.990	£18.990 NV

### More Modems for Dummies

by Tina Rathbone

Modems are essential for anyone working via the Internet, E-Mail, Compuserve etc., and with the rapid growth in these services, modems will become an increasing and important part of computer life. Continuing on from the popular Modems for Dummies by the same author this new book covers tips on advanced troubleshooting, overcoming viruses, discusses sending mail between the Internet, on-line services and much, much more.

1995. 420 pages. 235 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD32K	More Modems for Dumm	£18.990	£18.990 NV

### Compuserve for Dummies

by Wallace Wang

The fun and easy way to learn about Compuserve, this book will be your first-aid kit for accessing the best business and entertainment information. You will know what to do when things go wrong, explained in plain English.

1995. 234 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD22Y	Compuserve for Dumm	£16.160	£16.160 NV

### How Intranets Work

Preston Gralla

**Ziff-Davis Press**

The intranet phenomenon reflects a shift to virtual information delivery. Businesses everywhere have recognised the power of the Internet and the Web and are bringing them inside the company to streamline business processes, be more competitive, enhance internal and external communication, and improve the bottom line. Covering today's complex collaborative computing environments, How Intranets Work explains these new technologies and how they can be applied in your company.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ57M	How Intranets Work	£26.950	£26.950 NV

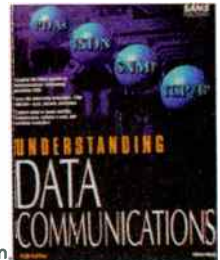
## Understanding Data Communications

Fourth Edition

by Gilbert Held

Data communications – the transmission of words or symbols from a source to a destination – is no longer exclusive to the business world. You can learn the basic principles in this easy-to-understand book, and a whole lot more. Ten chapters cover basic concepts and fundamentals of transmission and reception, asynchronous and synchronous, protocols, error control and networking. Subjects include two wire and coaxial cable communication, waveguides, modems, fibre optics and satellite communication to name a few.

1994. 380 pages. 230 x 180mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WP28F	Data Communications	£27.500	£27.500 NV

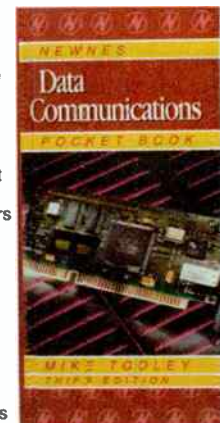
## Data Communications Pocket Book

Second Edition

by Michael Tooley

Presenting, in as succinct a manner as possible, information of everyday relevance to the world of data communications. Despite the apparent complexity of the subject, care has been taken to ensure that the book is meaningful to as wide a range of readers as possible. Tabulated reference material has been interspersed with brief explanatory text and relevant diagrams. Invaluable to anyone involved with the interconnection of computer systems: technicians and engineers involved with the installation, commissioning and maintenance of data communications equipment; executives and clerical staff as the 'end users' of data communications related products; and managers involved with the specification and purchasing of such products and systems. Similarly the book should also appeal to the growing number of enthusiasts using data communications for home management and leisure pursuits.

1992. 176 pages. 195 x 95mm hardcover, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS77J	Data Comms Pkt Book	£12.990	£12.990 NV

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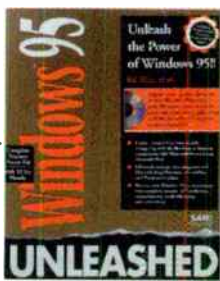
**Windows95 & Operating Systems**

**Windows '95 Unleashed**

Compiled by Ed Tiley

A team of expert authors have come together to create a definitive, comprehensive reference to master this new and exciting operating system. Through extensive research, they have gathered all the essential information on the features and functions of Windows '95, including installation, programming, customisation and optimisation. With the help of tips, cautions and real world examples you can easily identify important key concepts. Included is a CD-ROM containing the latest 32-bit Windows '95 applications, the best of 16-bit applications, source code from the book and much, much more. With this excellent book you get an all-in-one resource for in-depth coverage of networking, multimedia, automation, programming languages, and much more.

1995. 1071 pages. 231 x 187mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JQ83E 1	Windows 95 Unleashed	£28.040	£28.049 NV

**MS-DOS Explained**

N Kantaris and PRM Oliver  
Babani

If you have a PC and want to get the most out of it in terms of efficiency and productivity, then you must learn the intricacies of its operating system. With the help of this book, you will learn to do just that in the shortest and most cost effective way. The book covers all versions of DOS particularly those from 6 to 7. The book explains:-  
How the DOS operating system is structured so that you can understand what happens when you first switch on your computer.



★ **How directories and subdirectories can be employed to structure your hard disc for maximum efficiency.**

★ **How to manage disc files and how to use the MS-DOS Editor to fully configure your system by writing your own CONFIG.SYS and AUTOEXEC.BAT files.**

★ **How to optimise your system by either increasing its conventional memory manually or automatically with the use of MemMaker, or increasing its speed.**

★ **How to write batch files to automate the operation of your system, and how to write and implement multiple configurations.**

★ **How to use the Microsoft Utilities, such as DoubleSpace, MsBackup, Undelete and Anti-Virus.**

★ **How to resurrect MS-DOS 97 which is buried under Windows 95.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ04E	MSDOS Explained	£6.990	£6.990 NV

**MCSE Training Guide: Windows 95**

Michael Wolfe and Rob Tidrow  
New Riders



This Microsoft approved, comprehensive training guide contains test questions, tables, notes, tips, and step-by-step exercises to completely prepare you for the Implementing and Supporting Microsoft Windows 95 exam. MCSE Training Guide: Windows 95 will not only help you pass the Implementing and Supporting Microsoft Windows 95 exam but also help you increase your net worth, so don't wait - learn from the experts and achieve certification!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ15R 1	Win 95 MCSE Guide	£56.490	£56.490 NV

**Bulletproofing Windows 95**

Glenn E Weadock

McGraw-Hill

Migrating your company to Windows 95? With **Bulletproofing Windows 95**, you can ARMOUR PLATE your organisation against the crashes, glitches, down time, overload on tech staff, and user frustration that generally accompany such a move. This indispensable guidebook will show you how to bring Microsoft's operating system into your organisation or business smoothly - with maximum benefit for, and minimum bruising of, both users and support staff. Entertainingly written, this authoritative resource offers serious medicine to tech and administrative staff who want trouble free installation, efficient configuration, optimal performance and low-cost maintenance of Windows 95.



Retail Unit Price each (inc. VAT).

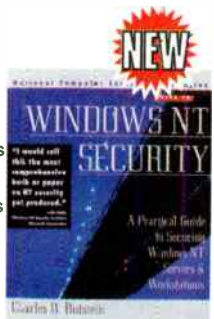
Order Code	Type	Price each exc. VAT	inc. VAT each
NQ25K	BulletProofingWin95	£26.990	£26.990 NV

**Guide To Windows NT Security**

Charles B Rutstein

McGraw-Hill

Co-sponsored by the National Computer Security Association, this authoritative guide explains how to maximise the sophisticated security capabilities of the Windows NT Desktop Operating System. Written by a foremost systems security expert, it shows how to design, administer and manage secure NT networks - encompassing NT workstations, servers and popular add-ons. Windows NT Security offers



practical guidance on making existing NT networks more secure, as well as suggestions for avoiding common pitfalls and security traps.

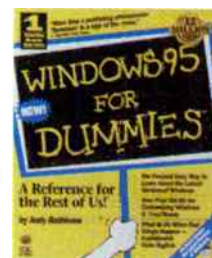
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ93B	Win NT Security	£22.990	£22.990 NV

**Windows 95 for Dummies**

by Andy Rathbone

The fun and easy way to learn about the latest version of Windows, this book will be your first-aid kit for customising Windows to your needs. Know what to do when things go wrong, explained in plain English 1995. 234 x 188mm, illustrated. American book.



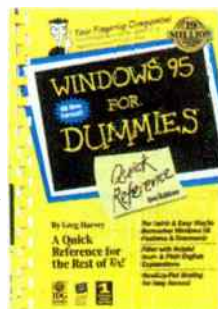
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD26D	Win 95 for Dummies	£18.990	£18.990 NV

**Windows 95 for Dummies Quick Reference**

by Greg Harvey-2nd Edition

The quick and friendly way to remember Windows features and commands. Covers the latest version of Windows, loaded with helpful icons and plain English explanations. 1995. 226 pages 234 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD27E	Win 95 Dumm Quick Ref	£11.990	£11.990 NV

**Windows 95 Simplified**

by Ruth Maran

Get started with Windows 95 by exploring this 3-D full-colour guide, packed with handy tips. In simple visual spreads, Windows 95 Simplified shows you how to use the built-in services and features of Windows 95 to manage your PC and work like a professional. Full colour on every page, with complete fusion of text and graphics for quick and easy learning. Traditional index and table of contents also provided. 1995. 234 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

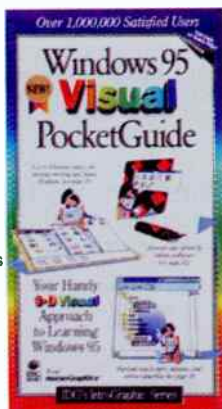
Order Code	Type	Price each exc. VAT	inc. VAT each
ZD35Q	Win 95 Simplified	£18.990	£18.990 NV



## Windows 95 Visual Pocket Guide

by Ruth Maran

Let Windows 95 Visual Pocket Guide get you started quickly with this 3-D full-colour guide. Packed with handy tips and simple spreads, this pocket sized book shows you how to use the built-in services and features of Windows 95. For managing your PC and professional working, this visual pocket guide has what it takes. 1995. 258 x 140mm, illustrated. American book.



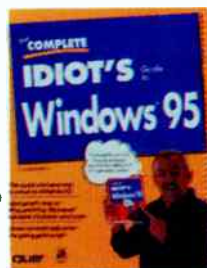
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD36P	Win 95 Pocket Guide	£13.990	£13.990 NV

## Idiot's Guide to Windows '95

by Paul McFedries

The revolution has been and gone; there is now time to understand how the revolution works. This book is the key to unlocking all of the secrets of this exciting new operating system. In a light-hearted, entertaining approach, you get complete coverage of all of the important features. You will discover the quick and easy way to: install Windows '95; juggle files, folders, and programs with authority; master all the Windows accessories, including Notepad, Calculator and more; boldly customise Windows '95 to do what you want; jump onto the Information Superhighway with Microsoft Network. 1995. 385 pages. Illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JQ82D	Idiot's Gde to Win95	£18.490	£18.490 NV

## 10 Minute Guide to Windows '95

by Trudi Relsner

With 26 ten-minute lessons, the 10 Minute Guide to Windows '95 offers simple, practical help for busy people who need a quick and easy guide to upgrading. Through goal-oriented, 10-minute lessons, you learn all the skills you need to become productive with Windows '95. Within these lessons you will learn how to: install or upgrade to Windows '95; start and exit applications; customise your desktop; manage files and folders; create and print documents; run DOS applications; add graphics; work with CD player, media player, sound recorder and volume control. 1995. 180 pages. 138 x 213mm. Illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JQ88V	10 Min Gde to Win95	£10.200	£10.200 NV

## Windows 95 In Easy Steps

by Harshad Kotecha

From one of the leading British software publishers this welcome addition to the 'easy step' series will have you mastering all the basic and more advanced features of Windows 95. Written in concise language, the book has plenty of easy to follow diagrams plus a host of handy tips to make computing interesting and easier to master. This book is particularly recommended for those people who need to get on with their everyday work and have not got the time, or inclination, to spend playing with Windows 95. Highly recommended. 1996. 158pages. 226 x 185mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ44X	Win 95 Easy Steps	£7.500	£7.500 NV

## Windows '95 Explained

by P. R. M. Oliver and N. Kantaris

Bernard Babani

Still struggling with the new Windows '95? This book will ease the problem. With the easy writing style of these two authors you will soon grasp the overview of the Windows '95 environment, how to work with programs, folders and documents; how to control Windows '95 and use the many accessories that come with it. There are many illustrations accompanying the text to aid your understanding of this new system. A book worth having. 1995. 175 pages. 198 x 130mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ63T	Win 95 Explained	£5.950	£5.950 NV

## Windows 95 Assistant

by Ian Sinclair

Bernard Babani Books

The Windows 95 Assistant is a new concept, a way of getting help whether you have the computer switched on or not. What makes this book different and so useful is the way in which the information is organised and presented. This book provides:

- Concise descriptions of the most needed actions
- A cross-reference index
- Clear topic identification
- Hints and tips about common requirements
- Tables of items (such as languages) that are not easy to find
- Clear instructions for the more difficult tasks
- Quicker access to assistance
- Help even when the computer is switched off

Ideal for all Windows 95 users be they novice or more experienced. Also extremely useful for those people who are upgrading from earlier versions of Windows. 1997. 176 pages. 130 x 198mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS51F	MS Win 95 Assistant	£6.990	£6.990 NV

## Windows 95 One Step at a Time

by N. Kantaris and P. R. M. Oliver

Bernard Babani Books

If you want to know what to do next when confronted with Microsoft's Windows 95 screen, then this book is for you. The book was written with the non-expert, busy person in mind. It explains what hardware requirements you need in order to run Windows 95 successfully, and gives an overview of the Windows 95 environment. The book explains:

- How to manipulate Windows, and how to use the Control Panel to add or change your printer, and change your display
- How to control information with the use of WordPad and Notepad, and how to use the Clipboard/Clipbook facility to transfer information from one Windows application to another
- How to be in control of your filing system with the use of the My Computer and Explorer programs
- How to manage print jobs and fonts, and how to add hardware and software to your system.

1996.83 pages.198 x 130mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN62S	Win 95 One Step	£4.950	£4.950 NV



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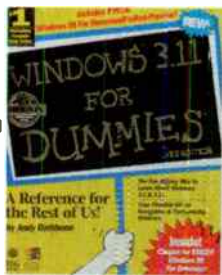
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## Windows 3.11 for Dummies

by Andy Rathbone

Windows for Dummies has helped thousands of novice Windows users learn to get around the Windows interface like their own back yard. Now it has been updated to bring it up to date with all the new changes in Windows 3.11 (Windows for Workgroups). In addition a booklet on Windows '95 is included, previewing some of the major features the final version will support. 1995. 386 pages. 235 x 188mm. Illustrated. American book.



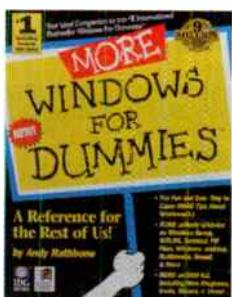
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Order Code	Type	Price each exc. VAT	inc. VAT each
AAG1R 2	Windows For Dummies	£15.990	£15.990 NV

## More Windows for Dummies

by Andy Rathbone

While the companion book 'Windows 3.11 for Dummies' helps the complete novice to start moving around in Windows for the first time, this book is perfect for people that have used Windows 3.1 for a while and had time to come across the type of problems that it just loves to throw your way when you think you have everything pegged. Topics include software installation, drivers, working with DOS, personalised desktops, PIF files, Windows on a laptop, multimedia, INI files, working with modems and much more. Like the other books in the series, 'More Windows for Dummies' is designed to be dipped into for easy reference when you come across something new and it's full of useful tips and hints. The book does not cover the new features in Windows 95. 1994. 378 pages. 235 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

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ZD16S	More Win for Dummies	£18.990	£18.990 NV

## A Concise User's Guide to Windows 3.1

by N. Kantaris  
Bernard Babani

This book was written to help the newcomer to Windows 3.1, consequently the material is presented on the 'what you need to know first, appears first' basis. Each section of the book has been designed to be self-contained, so the more experienced user can start at any section. Windows not only acts as a graphical front-end to your PC's disc operating system (DOS), but also contains its own word processor, database, communications, and electronic calendar modules, to name but a few, all of which are examined in this book. An understanding of Windows cuts down the learning curve on other available packages specifically



designed to run under the Windows environment. 1992. 160 pages. 198 x 130mm. illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ71N	Guide To Windows 3.1	£4.950	£4.950 NV

## Windows One Step At A Time

by N. Kantaris and P.R.M. Oliver  
Bernard Babani

This book is written for those that find Windows confusing when seeing a screen full of Window icons. It explains what hardware requirements you need in order to run Windows and Windows for Workgroups successfully, how to install and optimise your systems resources, and gives an overview of the Windows environment. Later chapters deal in more detail with the use of the Control Panel, how to use the Clipboard/Clipbook facility and generally how to be in control of your filing, programming and printing operations. 1995. 85 pages. 198 x 128mm. Illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ56L	Win One Step	£4.950	£4.950 NV

## Windows 3.1 Simplified

by Ruth Maran

Windows 3.1 is currently the most popular version of Microsoft's user-friendly mouse-driven user interface for MS-DOS. Designed to make PCs less intimidating, Windows is now supplied with virtually all PCs sold, and many thousands of programs that run under it are available. Although Windows 3.1 - and the application programs bundled with it - are easy to use, there is much capability lurking under that user interface. Windows 3.1 Simplified explains in full colour, using an ingenious mix of screen displays, plain English and cartoon graphics, how to make the best of the program. Beginners can find their way round easily and quickly, and discover Windows features that help them to work more efficiently. The subjects covered include the user interface, applications management, file and directory housekeeping, the accessories (Write, Cardfile, Paintbrush and Calendar), printing, running DOS programs, customisation and enhancing performance. 1994. 233 pages, 254 x 216mm, illustrated. American book.



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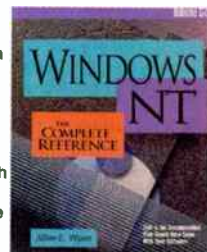
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## Windows NT - The Complete Reference

by Allen L. Wyatt

Windows NT is the long-awaited and highly regarded operating system from Microsoft, being a direct descendant of Microsoft Windows. NT provides fresh competition for the OS/2 and Unix operating systems, but with the advantage of being able to draw from the huge base of Windows users.

This book is carefully designed to teach you all you want to know about the Windows NT operating system. It offers an excellent and detailed tutorial on all aspects of the topic. The book provides total coverage from installation and basic commands to advanced operating systems, so allowing a successful change to Windows NT. 1993. 660 pages. 185 x 230mm, illustrated. American book.



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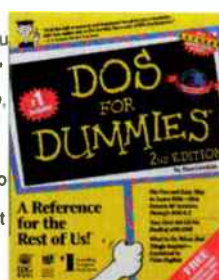
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AAGA 2	Windows NT Comp Ref	£23.990	£23.990 NV

## DOS for Dummies

A Reference Book for the Rest of Us!  
2nd Edition  
by Dan Gookin

The basic idea of this book is very simple - you are an intelligent person, but don't know anything about DOS. What's more, you have absolutely no intention of becoming a DOS wizard. If you just want to be using your PC, then this is the book for you. It covers 100% of all the things you will be doing with your computer. All the common activities, the daily chores, the painful things that go with living with a computer are all described in plain English. The book is meant to be treated like a reference and not read from cover to cover. The book is essentially written for DOS 5 and 6, but is also relevant for earlier versions 4.0/1 and 3.3.

Highly recommended, and amusing. 1993. 340 pages. 234 x 188mm, illustrated. American book.



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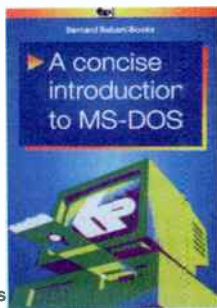
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WZ45Y 1	DOS for Dummies	£14.990	£14.990 NV

## A Concise Introduction to MS-DOS

by N. Kantaris

**Bernard Babani Books**

PC users who want to get the best out of their computer in terms of efficiency and productivity must learn its PC/MS-DOS operating system. This book will help you to do just that in the shortest and most effective way. The book provides enlightenment about such things as what happens when the computer is first switched on, and the files it uses as it 'auto-boots' from a system disk, how to use 'EDLIN.COM' to write your own 'CONFIG.SYS' and 'AUTOEXEC.BAT' files (and also what to write!), and how to organise your disk storage using sub-directories. Covers all versions of 3.x and 4.x of both PC-DOS and MS-DOS as implemented by IBM and other manufacturers of 'compatibles' including Amstrad. Now covers DOS 6.2.



1995, Revised Edition. 160 pages. 198 x 130mm, illustrated.

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WS94C	Crse Intro MS-DOS	£4.990	£4.990 NV

## MS-DOS 7 Explained

by N. Kantaris & P. R. M. Oliver

**Bernard Babani Books**

This book deals with the latest version of the PC operating system MS-DOS version 6 and includes the very latest 6.2 update. No previous knowledge of DOS is assumed, and each section is self-contained, so that the more experienced user will also find this book very useful. The book is not intended to replace the documentation that is supplied with MS-DOS 6 but to supplement and explain it. Additionally, the book covers the enhancements to be found in versions 6.0 and 6.2 of MS-DOS, several aspects of which are new. As with other books in this series, it is not necessary to read several hundred pages that cover every aspect of the subject, when a few selected pages are more than adequate. The book seeks to highlight the simplicity of the MS-DOS operating system by presenting with examples, the principle of what you need to know, when you need to know it. Also includes DOS7



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AA57M	MSDOS 6 Explained	£5.950	£5.950 NV

## DOS - One Step at a Time

by P. R. M. Oliver and N. Kantaris

**Bernard Babani Books**

This book covers all versions and varieties of DOS. It is written for those who want to use DOS to carry out certain 'housekeeping' functions. The book explains the structure of the DOS operating system, how to use a formatted disk, how directories and subdirectories enable your hard disk to be managed effectively. A couple of chapters deal with System Configuration and Controlling Your System.



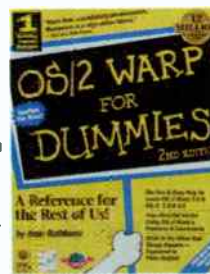
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by Andy Rathbone

Learn how to get the most from IBM's new OS/2 Warp with the friendly guidance inside this book. You'll find a wealth of OS/2 hints and tips written in plain English on everything you should know about OS/2 Warp, from installing the software to using the hot OS/2 Internet connection. Discover the 10 most common tweaks to make OS/2 Warp run smoothly, the 10 most common popular ways to arrange your desktop and the 10 most common problems and how to fix them



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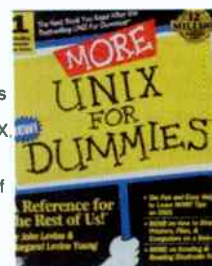
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ZD12N	Unix for Dummies	£18.990	£18.990 NV

## More UNIX for Dummies

by John Levine and Margaret Levine Young

More UNIX for Dummies follows the Dummies tradition and takes readers on an informative tour of the powerful world of UNIX. The author builds on the success of the first book by expanding the scope of his discussion in a humorous fashion. This friendly style helps to overcome the technical and non-intuitive barriers presented by UNIX and advances the reader's perception.



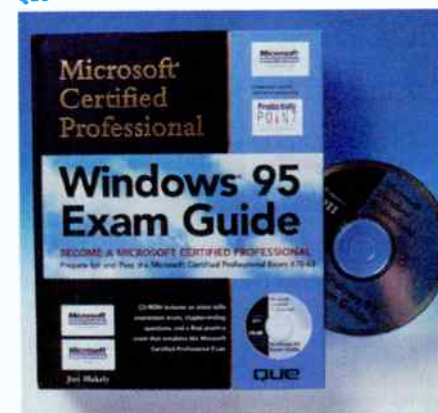
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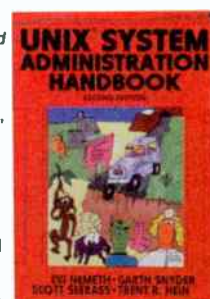
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NQ33E 1	Win 95 Exam Guide	£93.990	£93.990 NV

## Unix System Administration Handbook

by Evi Memeth, Garth Snyder, Scott Seebass and Trent R. Hein

A comprehensive guide to system administration on the Unix operating system, by a team of authors with many years' experience both using and programming this very advanced and complex environment. In addition, this book offers a practical approach to system problems and practical solutions; Unix networking with all the gory details; different kinds of Unix system are covered to give as broad a coverage as possible, and true-life situations and the best



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ZD01B	11 Unix Sys Admin Book	£37.430	£37.430 NV

## A Concise Introduction To UNIX

by N. Kantaris  
(Revised Edition)  
Bernard Babeni



UNIX is a multi-user operating system and to use it efficiently and effectively, this book is a must. The sections are written as standalone items which enable anyone to go to a particular section to solve a problem. Some of the topics covered include: How the UNIX operating system is structured; how directories and subdirectories can be employed to organise the way files are kept on your disk; the use of UNIX commands to perform various housekeeping operations on your disk files. The book covers both the command-line mode and the shell mode of processing under UNIX. 1995. 83 pages. 198 x 130mm. Illustrated.

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JJ68Y	Intro to UNIX	£4.950	£4.950 NV

## Programming

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Third Edition  
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C is the most popular professional programming language in the world and the environments in which C is being extensively used continues to expand such as DOS, Windows, OS/2 and UNIX, to name a few. This book covers in detail all aspects of the C language and its libraries. Its main emphasis is on ANSI standard C. However, the older 'K & R' standard is also discussed when appropriate. The book is divided into five parts covering the C language, the C libraries, common algorithms and applications, the C programming environment and the creation of a C interpreter. The many and varied examples that clarify each major concept set this compendium apart from any other C reference book. Whether you are a beginner to C programming or a seasoned professional, the answers to all your C questions can be found in this one-step resource. 1995. 859 pages. 230 x 186mm, illustrated. American book.

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JJ53H	C The Complete Ref	£28.990	£28.990 NV

## DOS - one step at a time

P R M Oliver and N Kantaris  
Babeni



If you want to know enough about DOS so that you do not panic when confronted with the DOS prompt, can keep your system running efficiently and keep your programs and data secure, then this book is for you. The book was written with the non-expert, busy person in mind. It starts with an overview of the history of DOS and lays the foundations for later chapters which cover *One Step at a Time* the commands for handling discs, directories and files. The book explains:-

- ★ How the DOS operating system is structured so that you can understand what happens when you first switch on your PC.
  - ★ How to format a floppy disc so that it can be recognised and used by your PC, how to list a disc's directory, copy a disc, and compare the contents of two discs.
  - ★ How directories and subdirectories can be employed to structure your hard disc for maximum efficiency, view a directory structure and its contents by using filters and pipes, redirect output, save a structure to disc, and how to create, delete and rename a directory.
  - ★ How to manage disc files by using different copying techniques, how to find, delete, rename, protect and undelete files, read the contents of a file, and back-up and restore files on to your hard disc.
  - ★ How to use the system configuration files CONFIG.SYS and AUTOEXEC.BAT, and how to write simple batch files to automate the operation of your system.
- Covers all versions and varieties of DOS.

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Dan Appleman  
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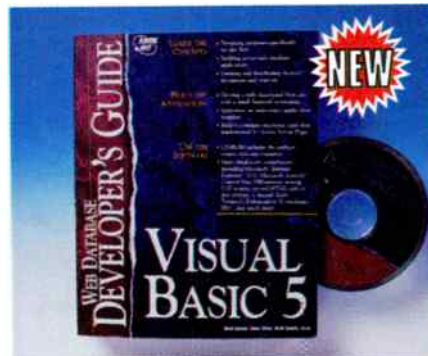
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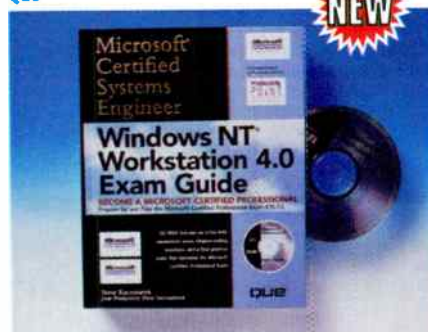
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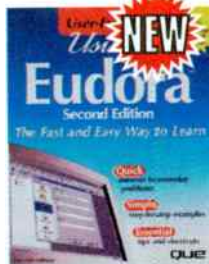
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Jesse Liberty

Sams Publishing

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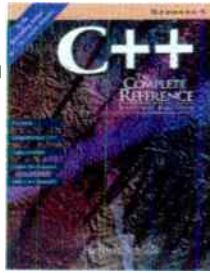
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NQ20W1	C++ Interactive	£46.950	£46.950 NV

## C++ The Complete Reference

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This book covers both the C-like aspects of C++ and its C++ specific features, with emphasis placed on those features unique to C++, and is intended as a reference for all C++ programmers regardless of their experience level. The book covers in detail all aspects of this popular programming language



and is divided in to three parts - the C language foundation, the C++ language and sample C++ applications. In this expanded edition there is new information about templates (which support generic functions and classes), exception handling, class libraries and new features added by the proposed ANSI C++ standard. With the aid of numerous programming examples, this comprehensive guide with its attention to detail will provide the definitive answers to all your C++ questions. 1995. 704 pages. 232 x 185mm, illustrated. American book.

Retail Unit Price each (inc. VAT).

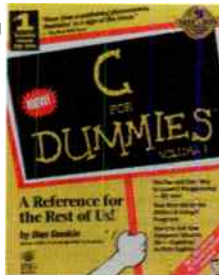
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J154J	C++ The Complete Ref	£28.990	£28.990 NV

## C for Dummies - Volume 1

by Dan Gookin

C for Dummies, Volume 1 is intended for anyone who's ever tried to learn C programming but has met with keyboard-pounding frustration. This book assumes you don't have a Ph.D. or work at a highly computerised company. You're a bright person, but you require a bit more handholding than you've found in any other C book. With this book in hand, you'll be writing - and understanding - C programs in no time.

1994. 559 pages. 235 x 188mm. Illustrated. American book.



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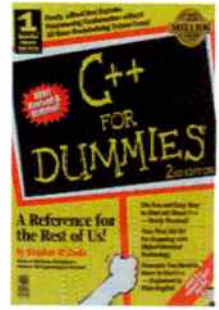
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1994. 409 pages. 235 x 188mm. Illustrated.



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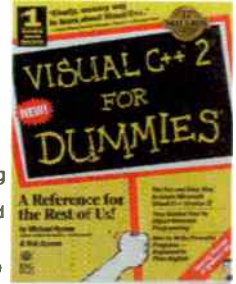
by Michael Hyman

and Bob Armon

If you want to be a C++ Programmer then this book will prove to be invaluable to you! C++ for Dummies includes all you need to start learning this complex language and its quirks, rules, and confusing terms.

Whether you're a brand new programmer or have been using BASIC, COBOL, Pascal, or C, you'll see how your previous experiences can be translated in C++ object oriented code. Includes the basics of C++ with a crash course into Visual C++ fundamentals, how to use the included libraries and all the background information into object oriented programming.

1995. 487 pages. 235 x 190mm. Illustrated. American book.



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This book is a guide to C programming. C statements are introduced and explained with the help of simple, but completely working programs. Graded problems are set at the end of each chapter, some with a financial or scientific bent, so that the users can choose their own level of problem difficulty on which to practise with some additional choice in preference of the field of application. Full working solutions appear at the back of the book.

1993, Revised Edition. 144 pages. 198 x 130mm, illustrated.



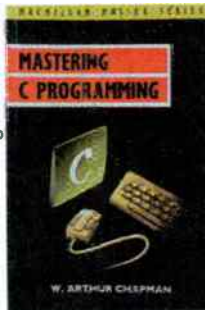
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## PASCAL Programming

The Complete Course Text  
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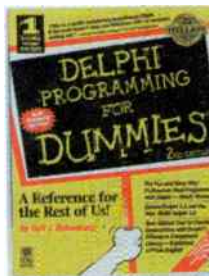
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producing working programs. 1995. 400 pages. 234 x 187mm, illustrated. American book.

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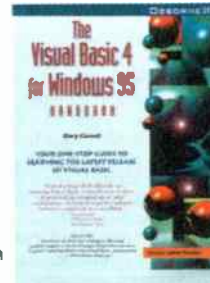
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## The Visual Basic 4 for Windows 95 Handbook

by Gary Cornell

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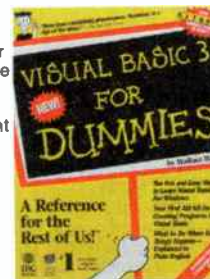
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by Wallace Wang

Microsoft's Visual Basic has been around for over four years, and is now the leading choice for programmers working in the Windows environment more than any other development language. Microsoft have made Visual Basic the cornerstone of Windows programming. Within the near future the Visual Basic language will be embedded in all of Microsoft's major Windows applications. Written in plain English, this book provides interesting programming trivia, example programs and step-by-step instructions for writing programs in Visual Basic. Programming does not have to be difficult, and can actually be fun, which is the style in which this book is written. This book will show you all the steps needed to write a Visual Basic program, and give you all the confidence to do it without the need for technical details and elaborate explanations. You will learn the fundamentals of writing Basic code; the crucial differences between Visual Basic and other languages; to design a user interface; to write subprograms; how your program can retrieve data from a user interface, and much more. 1994. 477 pages. 235 x 187mm, illustrated. American book.



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AN29G 2	Vis Basic 3 Dummies	£17.990	£17.990 NV

## Programming in Visual BASIC for Windows

by P. R. M. Oliver and N. Kantaris

Bernard Babani

This book contains details of the installation and set-up of Visual BASIC for Windows including a description of the graphic based environment it uses. An extensive use of examples accompanies the primer on the BASIC language used by the package. There are complete references to the Event procedures, Statements, Methods and Functions used in the language. These act as a good reference when Visual BASIC is being used. 1995. 166 pages. 198 x 130mm. Illustrated.



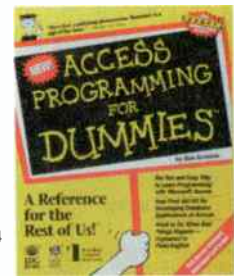
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The fun and easy way to learn programming with Microsoft Access. This book will be your first-aid kit for developing database applications in Access. You will also know what to do when things go wrong, explained in plain English. 1995. 234 x 188mm, illustrated. American book.



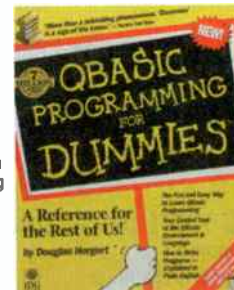
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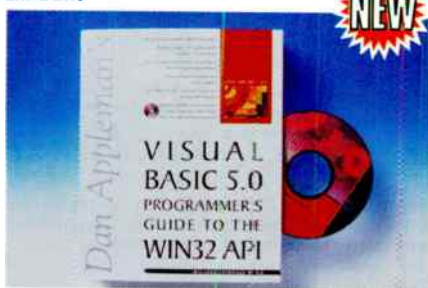
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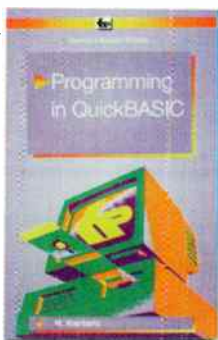
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as Pascal or C, can possibly provide. This third edition book can act as both a tutorial and a permanent reference, including DOS feature through to version 4.01, information unique to the IBM PS/2 series, features of Borland's turbo assembler, features of Intel's 80386 and 80486 processors, the use of simplified segment (addressing) directives and later additional interrupts, memory management, program overlays and keyboard buffer details. 1995. 560 pages. 234 x 176mm, illustrated. American book.

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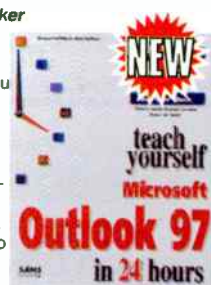
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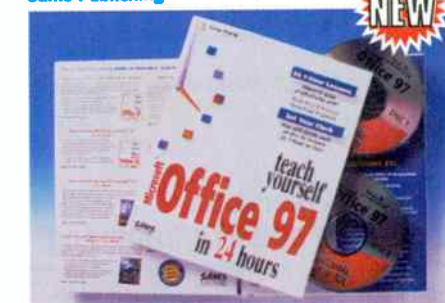


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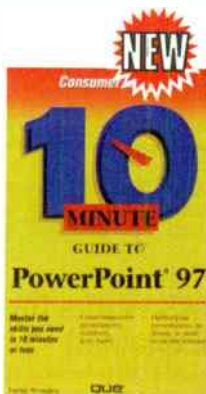
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Scott Basham

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- ★ Are you self-employed with no time for formal training?
- ★ Are you looking for cost-effective training for your staff?
- ★ Do you want to be more productive on your computer?



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NR06G	LotusNotes4.5	£22.990	£22.990 NV

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Martin S Matthews

### Osborne

See for yourself how much easier it is to share information and collaborate with colleagues the intelligent new way - by using Microsoft Outlook and this rare find of a book. The Microsoft Outlook Handbook shows you, step by step, how to become more productive by using Outlook to seamlessly integrate all your Internet and intranet communications with your desktop information. You'll learn how to use Outlook to manage your email, scheduling, tasks, contacts and files, and see examples of four realistic scenarios that demonstrate how to exploit Outlook to the max!



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NR14Q	Outlook Hand	£19.990	£19.990 NV

## Microsoft Office 4 for Dummies

by Roger C. Parker

A fun and easy guide to making the most of the top-selling programs included with Microsoft Office 4. This book includes comprehensive coverage of each program to help you master just the ones you need right away. You'll also find friendly, easy-to-follow advice on sharing information between Microsoft's powerful programs so you can become more efficient than you ever imagined. 1994. 450 pages. 235 x 188mm. Illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD04E	OffWin 4 for Dummies	£18.990	£18.990 NV

## MS Office One Step at a Time

by N. Kantaris and P. Oliver

### Bernard Babani Books

If you are a PC user and want to get started with MS Office's applications for Windows 95; Word, Excel, PowerPoint, Access and Schedule+ as quickly as possible, then this book is for you - no previous knowledge is assumed.

This book explains:

- How to benefit from the built in Answer Wizard and Help system, and how to become familiar with the Office environment and its applications
  - How to use Word to enter, edit and enhance text and how to use document page layouts, paragraph styles, and document templates to format your work
  - How to use Excel to build up simple spreadsheet examples, format your work, generate 3-D worksheets, generate and add graphs to a workbook
  - How to use PowerPoint to design a presentation in the shortest possible time
  - How to use Access to create a relational database, design forms, queries and reports
  - How to use Schedule+ to organise your time effectively
  - How to share information between the various Office applications by linking and embedding
1996. 241 pages. 198 x 130mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN59P	MS Office95 One Step	£6.990	£6.990 NV

## Microsoft Office Simplified

by Ruth Maran

The 3-D visual approach to learning Microsoft Office. Learn to master Excel, the powerful spreadsheet program, and produce great presentations with Powerpoint. Learn how to create beautifully formatted documents easily, using the award winning Word for Windows. Full colour on every page. 1995. 234 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD34M	M/Soft Office Smpld	£26.990	£26.990 NV

## MS Works for Windows 95 Explained

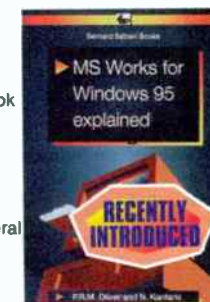
by P. R. M. Oliver and N. Kantaris

### Bernard Babani Books

If you are a PC user and want to get to grips with Microsoft Works for Windows 95, then this book will help you do just that, with the least amount of time and effort.

The book explains:

- How the Works 4.0 package fits into the general Microsoft Windows 95 environment
- How to use the word processor and Microsoft Draw, to enter, edit and enhance text and graphics and how to print and save documents



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The book also details all Microsoft Works for Windows 95 functions so that it is self contained and should prove a handy reference long after you have mastered the program.  
198 x 130mm, illustrated. British book.

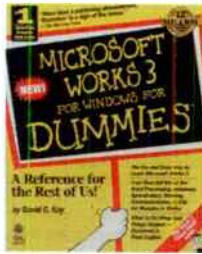
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Order Code	Type	Price each exc. VAT	inc. VAT each
AN67X	MS Works 95 Explained	£5.950	£5.950 NV

## Microsoft Works 3 for Dummies

by David C. Kay

This book guides you through Windows, spreadsheets, graphics, word processing, databases and communications with ease. Whether you want the whole scoop or just the quick stuff to work faster and smarter, the tips and fundamentals in this book are basic, fact-packed and fun. Master the tools of Works from start-up to print-out. Discover Works Wizards and templates that practically do the work for you. Save time by using in-built short-cuts, and generally improve your productivity across the board.  
1994. 380 pages. 235 x 188mm. Illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD05F	WkWin 3 for Dummies	£18.990	£18.990 NV

## A Concise Introduction to Microsoft Works for Windows

by P. R. M. Oliver and N. Kantaris

Bernard Babani Books

If you are a PC users and want to get to grips with Microsoft Works for Windows, then this book will help you do just that, with the least amount of time and effort.

This book explains and details:

- How the Works for Windows package fits into the general Microsoft Windows environment
- How to use the word processor to advantage to type, edit enhance, print and save documents
- How to use Microsoft Draw to create and edit graphics and place them in your documents
- How to build up simple spreadsheet examples, edit them, save them, print them and retrieve them
- How single, and multiple charts, or graphs, of different type can be generated, edited and printed
- How to set up, sort and search a database management system; and how to use it to create top quality printed reports

The book also includes all Microsoft Works for Windows functions and keyboard commands so that it is self contained and should prove a handy reference long after you have mastered the program.  
198 x 130mm, illustrated. British book.



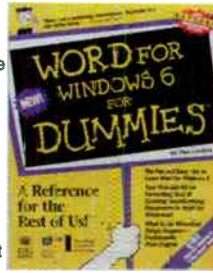
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Order Code	Type	Price each exc. VAT	inc. VAT each
AN71N	Concise Intro MS Wks	£5.950	£5.950 NV

## Word for Windows 6 for Dummies

by Dan Gookin

Word for Windows 6 is the powerful new version of Microsoft's popular word processor. For those who fear that 'new' means more complex - relax. Learn how to create awesome documents in no time at all. The humorous, easy-to-follow style of this book makes it simple to master Word 6 basics as well as its new desktop publishing features, such as customisable toolbars, tons of automatic features, and much more.  
1994. 360 pages. 235 x 188mm. Illustrated



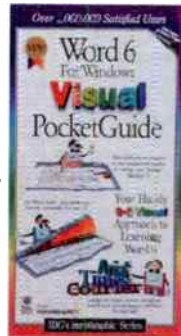
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Order Code	Type	Price each exc. VAT	inc. VAT each
ZD03D	WrdWin 6 for Dummies	£14.990	£14.990 NV

## Word 6 for Windows Visual Pocket Guide

by Ruth Maran

This book must be the most visual guide to Word 6 available. With easy to read text and amusing illustrations, it acts as a guide to all the concepts of using the most powerful processing packages around. All explanations are down to earth and in simple concise language, covering concepts, hardware devices, procedures and how to get the most out of Word with the minimum of effort. A simple index system shows the current topic at the top of every left hand page, allowing fast access to relevant information on each topic. If you can't use Word 6 after reading this book, you must be truly stupid!  
1994. 245 pages. 115 x 220mm. Illustrated in colour.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD41U	WrdWin6 Pocket Guide	£13.990	£13.990 NV

## Word 6 for Windows Simplified

Ruth Maran

Microsoft Word is one of the UK's best-selling word processing packages. Now at Version 6, Word incorporates many features that make the creation of a document easier than ever. Indeed, professional DTP-type results can be obtained. Word For Windows Version 6 Simplified explains in full colour, using an ingenious mix of screen displays, plain English and cartoon graphics, how to make the best of the program. Beginners can find their way round easily and quickly, and so can get productive in a short space of time. The subjects covered include the Windows environment, editing, multiple documents, page layout, templates, sharing data with other Windows applications, graphics, tables and program customisation.  
1994. 244 pages, 254 x 216mm illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD39N	WordWin6 Simplified	£18.990	£18.990 NV

## MS Word 95 Explained

by N. Kantaris and P. R. M. Oliver

Bernard Babani Books

If you are a PC user and want to get to grips with Microsoft's Word for Windows 95 word processor as quickly as possible, then this book is for you; no previous knowledge is assumed.

The book explains:

- What hardware specification you need to run the package, and how to install it onto your system
  - How to benefit from the Help system, and how to become familiar with the Word environment
  - How to enter, edit and enhance text and how to become comfortable working with document page layouts, paragraph styles, document templates and frames
  - How to use some of the program's more advanced features, including Drawing, Tables, Graphing and how to manage large documents with Outlining
  - How to manage your files, import, embed or link information from other packages and how to create simple recorded macros
1996. 192 pages. 198 x 130mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN49D	MS Word Explained	£5.990	£5.990 NV

## Word 95 Assistant

by Ian Sinclair

Bernard Babani Books

The Word 95 assistant is a new concept, a way of getting help whether or not you have your computer switched on or not. What makes this book different and so useful, is the way in which the information is organised and presented.

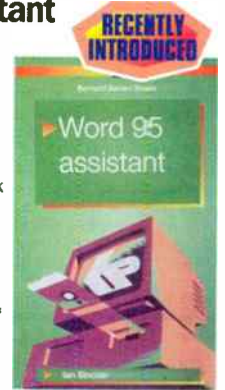
This book provides:

- Concise descriptions of the most needed actions, arranged in alphabetical order
- A cross-reference index
- Clear topic identification
- Hints and tips about common requirements
- Tables of items (such as field names) that are not available readily elsewhere
- Clear instructions for difficult tasks
- Quicker access to assistance

The text has been written for both new and more experienced Word 7 users, and will serve as an easy-to-follow reference guide long after you have mastered the program.  
1996. 241 pages. 130 x 198mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS48C	MS Word 95 Assistant	£5.990	£5.990 NV



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## Word 6 for Windows Explained

by N. Kantaris and P. R. M. Oliver  
**Bernard Babani**

The contents of this book will enable you to get to grips with the Microsoft Word for Windows (version 6) word processor and desktop publishing package in the fastest possible time. The topics available include the hardware specification you need to run the package; how to enter, edit and enhance text; how to use some of the program's more advanced features, including Drawing, Tables, Graphing and how to manage large documents with Outlining. 1995. 175 pages. 198 x 128mm. Illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ65V	Word 6 for Win	£5.950	£5.950 NV

## PowerPoint For Windows Explained

by D. Weale

**Bernard Babani**

Using this book will help you effortlessly produce your first presentation. This book takes you easily and simply through the learning process to understanding the use of Microsoft's PowerPoint program. Specific aspects of the program and various hints and techniques are covered in each chapter of the book. The aim of the author is to assist the new user with the program as well as presenting the more advanced aspects of the program for the more experienced user. 1995. 114 pages. 198 x 130mm, illustrated.



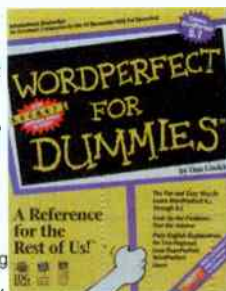
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ60Q	Powerpoint for Win	£5.950	£5.950 NV

## WordPerfect for Dummies

by Dan Gookin

One of the most popular word processors around now has one of the most popular guide books! WordPerfect for Dummies enables you to quickly find information on a particular topic, letting you get on with your work as quickly as possible. Includes information on editing, correcting text, formatting information, tables, graphics handling and all the hundreds of things you need to know about getting the most out of WordPerfect versions 4.2, 5.0 and 5.1. If you're a genius then that's fine, but if you're not, this book shows you how to perform like one! 1992. 302 pages. 235 x 188mm. Illustrated. American book.



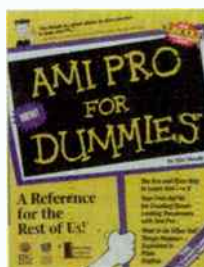
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ZD15R †	Wpdc5.1 for Dummies	£15.450	£15.450 NV

## Ami Pro for Dummies

by Jim Meade

Ami Pro is packed with many tools and features for creating professional documents, and has become one of the most popular word processors available. This Dummies book takes you on a quick and friendly tour of this powerful package, so that in a short space of time you will soon be managing Ami Pro's menus, style sheets, frames and macros to create documents you can be proud of. 1994. 350 pages. 235 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD10L	AmiPro for Dummies	£17.990	£17.990 NV

## A Concise User's Guide to Lotus 1-2-3 for Windows

by N. Kantaris & P. R. M. Oliver

**Bernard Babani Books**

Written for the newcomer to spreadsheets, as well as the experienced spreadsheet user, this book aims to cover all the basics necessary to get the most out of Lotus 1-2-3. The material in this book is helpfully arranged so that the novice can start using the software right from the onset. Detailed screen dumps act as a guide to help you through the basics as well as the complex operations of a spreadsheet. The book always builds on what you already know, so you don't keep going over the same explanations repeatedly. Topics covered by the book include all the basic aspects of a spreadsheet; 3-D worksheets and applications, linking sheets and punching data through from one sheet to another, and graphing facilities. Even if you already know how to create spreadsheets and use them effectively, with the aid of this book you will be able to increase your productivity, and enhance your spreadsheet's usefulness and versatility. 1994. 176 pages. 198 x 130mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN01B †	Concise Lotus123 Win	£5.950	£5.950 NV

## MS-Excel 95 Explained

by N. Kantaris & P. R. M. Oliver

**Bernard Babani Books**

If you are a PC user and want to learn how to use the 3D Excel spreadsheet for Windows 95, then this book will teach you how to do just that in the shortest and most effective way. The book was written with both the newcomer to spreadsheets and the existing spreadsheet user in mind.

**The book explains:**

- How to build up simple spreadsheets examples, edit entries, format cells and ranges, and save and open worksheets
- How to generate and use 3-dimensional worksheets and how to link them together
- How to generate and add graphs to a worksheet, edit, preview and print the results
- How to set up and query a database management system
- How to record a simple macro, and how to



understand and use Visual Basic code

- How to use the Auditor, Goal Seek, What-If-Tables, Solver and What-If Scenarios
  - How to share information with other applications by linking and embedding
1996. 157 pages, 131 x 198mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS38R	MS Excel 95 Explained	£6.990	£6.990 NV

## A Practical Approach to Excel for Windows 95

by D. Thompson

**Bernard Babani Books**

This book adopts a practical approach which will help you master the latest Windows 95 version of the popular spreadsheet Excel. This book is based upon a series of structured and progressively more complex practical exercises, that are clearly explained, and these will help familiarise you with the most important features of Excel, in a short time you will find that you have become quite knowledgeable and can proceed with confidence. Aimed at both beginners and the more experienced spreadsheet user, this book will take you from the basics onwards to learning new and exciting ways of using Excel. 1996. 89 pages, 130 x 198mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS43W	Pract MS Excel Win	£4.990	£4.990 NV

## Excel for Windows 95 Unleashed

by Paul McFedries

Excel 7.0 is a 32-bit program that takes full advantage of some of Windows 95's most advanced features, and with the help of some performance tweaking is now much faster than any of its predecessors – up to 40% faster. This comprehensive guide has topic-specific chapters that allow you to easily reference your most needed Excel for Windows 95 subjects, plus you will quickly master formulas, functions, worksheets, data exchange, charting and graphics capabilities and how to customise Excel for Windows 95 to meet your needs. In addition you will learn about databases and lists, data analysis wizardry, spreadsheet applications with VBA, working with OLE and DDE and creating an on-line help system. A CD-ROM is included which contains sample spreadsheets, Barnes Utilities (version 5.5), applications and utility demos. 1995. 1117 pages. 231 x 187mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ52G †	Excel Unleashed	£37.500	£37.500 NV

Account Enquiries: 01702 554187

**Excel for Dummies**

2nd Edition  
by Greg Harvey

The second edition of Excel for Dummies, contains all the information you need to get the newest version of Excel up and running, presented in the usual amusing Dummies style. Includes the new features like TipWizard, tabbed dialogue boxes, Function Wizard, editing in cells and more.  
1995. 234 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD39K	Excel 5 for Dummies	£14.990	£18.990 NV

**Excel 5 Explained**

by N. Kantaris and P. R. M. Oliver  
Bernard Babani

The authors set about in an easy and efficient way to show you how to use the 3D Excel Spreadsheet for Windows. The book sets out to explain the following: How to build up simple spreadsheet examples, edit entries, format cells and ranges, and save and open worksheets. How to produce and use 3-dimensional worksheets and link them together. It also includes chapters on both the Excel and Windows Environment, Filling in a worksheet. 3-Dimensional Worksheets, Spreadsheet Graphs and Using Macros.  
1994. 157 pages. 198 x 130mm, illustrated.



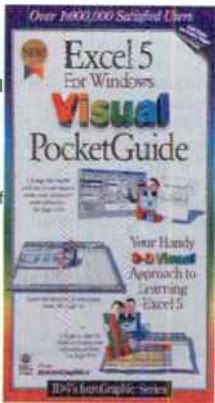
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ61R	Excel 5 Explained	£5.950	£8.950 NV

**Excel 5 for Windows Visual Pocket Guide**

by Ruth Maran

An extremely colourful guide to using Excel 5 for Windows and how to get the most out of it. Powerful applications like Excel require a certain amount of background understanding before you can start to reap the benefits of the hundreds of built-in, powerful and time saving functions. This book will helpfully guide you through the early stages of getting to know Excel including: how to get data into a spreadsheet; how to analyse data; and how to represent the information in graphical formats.  
1994. 245 pages. 215 x 115mm. Illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD42V	ExcelWin5 Pocket Guide	£13.990	£18.990 NV

**Excel 5 for Windows Simplified**

Expanded Edition

Microsoft Excel 5 for Windows is a spread – sheet program that will save you time and increase the accuracy of your calculations. It will help you keep track of your mortgage, balance your chequebook, create a personal budget, compare investments and prepare your taxes. Businesses of all sizes use spreadsheets to analyse financial information. Excel's formatting and charting features help you present your results in professional looking documents. Charts can easily be created from spreadsheet data. Charts will visually illustrate the relationship between different items.  
1994. 252 x 215mm, illustrated. American.



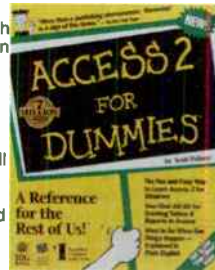
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ZD37S	ExcelWin5 Simplified	£18.990	£18.990 NV

**Access 2 for Dummies**

by Scott Palmer

This Dummies eases your database anxiety with just enough information on Access 2 to help you create reports and run queries right away. Along with easy-to-follow guidance on the newest version of Access, you will find friendly advice on developing tables, customising your data and creating great looking reports.  
1995. 300 pages. 235 x 188mm, illustrated. American book.



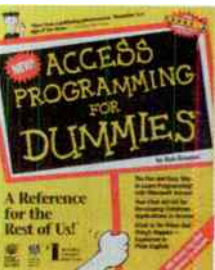
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD07H	Access 2 for Dummies	£17.990	£17.990 NV

**Access Programming for Dummies**

by Rob Krumm

The fun and easy way to learn programming with Microsoft Access. This book will be your first-aid kit for developing database applications in Access. You will also know what to do when things go wrong, explained in plain English. 1995. 234 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD17T	Access Prog for Dumm	£18.990	£18.990 NV

**Access 95 One Step at a Time**

by N. Kantaris and P. R. M. Oliver

Bernard Babani Books

If you are a PC user and want to get started with Microsoft's Access for Windows 95, as quickly as possible, then this book is for you - no previous knowledge of database design is assumed. The book does discuss the main features of the package using simple examples that the user is encouraged to type in, save and modify as more advanced features of the package are introduced.

The book explains:

- How to install and start the Access package and what the various elements are that make up a database management system
  - How to use the Table Wizard to automatically design an example database
  - How to use the Form Wizard to create input masks to facilitate data entry
  - How to use the Query Wizard to create complex queries to help manage your data
  - How to link together database tables to form a relational database management system
  - How to design forms and reports to display and print information in a professional manner
  - How to import data from other packages and build tables by removing duplicate information, and rebuild calculated fields so that you can benefit from Access' superior handling capability
1996. 96 pages. 190 x 210mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN48C	Access 95 One Step	£5.990	£8.990 NV

**Access One Step At A Time**

by N. Kantaris and P. R. M. Oliver

Bernard Babani

Access is Microsoft's latest Windows database and this book sets out to help you to get to grips with it.

- You are shown:
- How to manipulate windows on your screen.
  - How to start the Access package.
  - How to use Table, Form and Query Wizards.
  - How to design forms and reports to display and print information in a professional manner.
1995. 85 pages. 198 x 130mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ62S	Access One Step	£4.950	£4.950 NV

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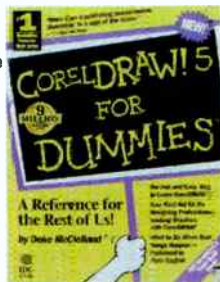
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## CorelDRAW! 5 for Dummies

by Deke McClelland

CorelDRAW is the most popular graphics software for the PC, and now includes 12 separate programs, each of which can be used independently or in conjunction with one of the other supplied programs. There are several important enhancements to all of the programs which now includes the new CorelVENTURA! (also known as Ventura Publisher, a comprehensive desktop publishing program). As with all Dummies books, the reader is taken on an informative and humorous tour of this comprehensive package, providing the information needed to create professional quality logos, illustrations and special effects very quickly. The reader will be able to integrate the powerful programs: DRAW!, PHOTO-PAINT!, CHART!, MOVE! and VENTURA! and learn professional techniques for designing documents, editing scanned photos, and creating on-screen presentations. Additionally, you are shown how to combine text and graphics to create impressive documents, along with simple time-saving ideas for creating special effects such as rotating and stretching graphics. 1994. 432 pages. 234 x 188mm, illustrated. American book.



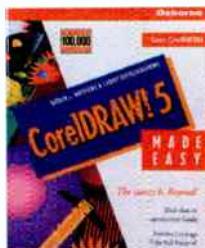
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN25C 1	CorelDraw 5 Dummies	£18.990	£18.990 NV

## CorelDRAW! 5 Made Easy

by Martin S. Matthews and Carole Boggs Matthews

CorelDraw! 5 has become one of the most widely used graphics software packages for the PC, as probably no other drawing package offers so many powerful drawing, text handling, autotracing, colour separation, and special effects facilities in one package. Version 5 adds a new range of desktop publishing features in the form of CorelVENTURA, and includes other superb features such as CorelCHART, CorelPHOTO-PAINT, CorelMOVE and CorelSHOW. This profusely illustrated book takes the reader from an elementary skill through to more complex ones. Each of the detailed chapters contains hands-on exercises to follow on your computer screen. No graphics experience is required, as the earlier exercises are designed for the beginner - it is not even necessary to have used a mouse or worked with a drawing package. The book is primarily designed to let the reader learn skills by doing exercises, and is not dependent on past experience, as you begin to draw straight away. As you work through the book you build on the skills you have learned in previous chapters. A highly recommended book. 1994. 826 pages. 231 x 187mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA26D 2	CorelDraw 5	£23.950	£23.950 NV



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## Explaining Microsoft Publisher for Windows 95

by D. Weale

Bernard Babani Books

This book is intended to make the learning and practical use of Microsoft Publisher for Windows 95 a quicker, easier, more effective and enjoyable process.

Each section of the book covers a different aspect of the program and contains various hints, tips and techniques that the author has found useful in his own work and which may not be obvious. The text has been written with the new user in mind, however the more experienced person will also find it useful as an easy-to-follow reference guide. As well as dealing with the program, the book also covers layout and use of typefaces and graphics in the presentation of work. 1996. 116 pages. 130 x 198mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS47B †	Explain MS Publisher	£5.990	£5.990 NV

## A Concise Introduction to Designworks 2

by J. W. Penfold

Bernard Babani

The book describes the stages and available tools necessary to produce a drawing with Designworks 2. It covers all the stages, and methods used, from simple drawings to complex designs including text and decorative features. Some of the topics covered include:

Page sizes and layouts, lines and shapes; fill patterns; text and fonts and printing pictures.

1995. 130 pages. 198 x 130mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ59P †	Intro Designworks 2	£5.950	£5.950 NV

## Sage Instant Accounting Explained

by D. Weale

Bernard Babani Books

This book is intended to make the learning and use of Sage instant accounting a quicker, easier and more effective process.

It combines:

- An explanation of the features of the program
- Hints and tips on how to use the program to best advantage
- Explanations of the basic concepts of accounts for those who lack the background knowledge
- A step through section of practical work with specimen data for you to enter (for practice if you want to)
- Advice on setting up a computerised accounting system

This book is intended for those who are thinking of



buying the program and want to know if it is suitable for their purposes. It is also for those who have the program already and need a simple explanation to help them actually use it. 198 x 130mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN69A †	Sage Inst Acc Expl	£5.950	£5.950 NV

## Sage Explained

by D. Weale

Bernard Babani Books

This book will be useful to:

- Those contemplating buying or using Sage since it gives a comprehensive introduction to the options and facilities available within the program

- Anyone who already owns Sage and needs an explanatory text to help them make the best and most rapid use of the program

It covers up to Sage Financial Controller 5 (including the Stock option) and Sage Payroll 2. Included is a summary of all the main options within the program and step-by-step instructions on common activities. There are many examples of how the screen looks and explanations of what data you need to enter and how to do so. There are also summaries of the quick keys options and descriptions of how to carry out certain activities. If you already use Sage Bookkeeper, Accountant or Accountant Plus this book contains much useful and valuable material and will help you decide whether to upgrade your program. 198 x 130mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN70M †	Sage Explained	£5.950	£5.950 NV

## A Concise Introduction to Sage

by D. Weale

Bernard Babani

This is a practical guide for those who may not have an accounting background or much experience with a PC. It acts as an introduction to the Sage Accounting programs and allows you to learn the program while you use it. The topics covered include the Sales Ledger, the Purchase Ledger, the Nominal Ledger, Trial Balances and Stock Control. 1991. 85 pages. 198 x 130mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ55K †	Intro to Sage	£3.950	£3.950 NV



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## Java How to Program with an Introduction to Visual J++

Deitel & Deitel  
Prentice Hall

Java is revolutionising software development with platform-independent, object-oriented code for conventional, Internet- and Intranet-based applets and applications. This is the first Java textbook to include Microsoft's Visual J++ Publisher's Edition integrated development environment on CD-ROM. With hundreds of "live-code" programs with screen captures that show exact outputs, extensive exercises (many with answers) accompanying every chapter and hundreds of tips, recommended practices, and cautions, - all with marked icons. It is the centrepiece of a family of resources for teaching and learning Java and Visual J++, including a World Wide Web site. Includes source-code examples and other information for faculty, students and professional programmers; an optional interactive CD-ROM for Windows 95/Windows NT and e-mail access to the authors.



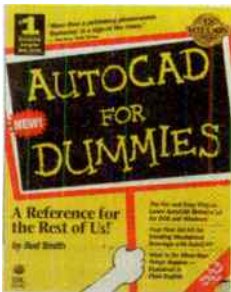
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NR15R	Java How To	£27.950	£27.950 NV

## Computer Aided Design

### AutoCAD for Dummies

by Bud Smith  
In order to learn all the intricacies, features and commands of a mammoth application like AutoCAD you need a wizard of a book - AutoCAD for Dummies is such a book! Covers hundreds of topics relating to everyday uses of AutoCAD including: setting-up so that AutoCAD works with you instead of against you; navigating the AutoCAD screen and using its different elements to best advantage; uncovering different versions of AutoCAD and determining which one is best for you and how to master the 3D features to create more attractive and useful drawings. Soon you'll be using AutoCAD at a level you never thought possible before.  
1995. 356 pages. 235 x 188mm. Illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZD13P	Autocad for Dummies	£18.990	£18.990 NV

### Inside 3D Studio MAX

Steven Elliot and Phillip Miller  
New Riders



Inside 3D Studio MAX will take you beyond the documentation to explain professional concepts, behind-the-scenes information and advanced techniques that will enable you to master this

powerful new program. Written by 3D Studio MAX insiders, this comprehensive guide illustrates all of 3D Studio MAX's new features as well as how to create expert animations and output them to all types of media.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NO68Y 1	Inside 3D Studio Max	£56.490	£56.490 NV

### The EASY-PC Handbook

by Ian Sinclair  
EASY-PC (order GL01B) is one of the best known PCB layout programs, and the most comprehensive in terms of facilities and ability to be upgraded. This book covers the software in detail, with step-by-step examples, and is aimed in particular at the small scale user of PCBs, whether the professional, student or amateur. The author explains clearly how to get the best out of a PCB layout and design system.  
1995. 192 pages. 233 x 155mm, illustrated.



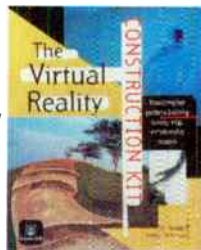
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CH01B	Easy PC Handbook	£25.000	£25.000 NV

## Virtual Reality / Multimedia

### The Virtual Reality Construction Kit

by Joe Gradecki  
This is a 'nuts-and-bolts' project book which will introduce the reader to the fascinating world of Virtual Reality (VR). VR technology allows a user to explore and manipulate objects in a virtual world, which exists only in the memory of a computer. The author gives clear, step-by-step instructions, with numerous illustrations, for building 18 inexpensive items of virtual reality equipment, including a 3-D mouse, a head-mounted display, a 3-D sound system, and an arm-based head tracker. No experience in programming or electronics is assumed, or required! The book comes complete with all of the software required to test and use any equipment that you make, as well as various virtual worlds including a virtual park, a virtual squash court game, a two-player combat game that can be played over modems, and you can even build your own (virtua) ancient Greek temple.  
All software can be run using a conventional mouse/joystick as well as any equipment built, and is supplied on an 89mm (3 1/2in.) disk.  
1994. 340 pages. 232 x 190mm, illustrated.  
American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA99H 1	VR Construct Kit	£24.950	£24.950 NV

### The Virtual Reality Programmer's Kit

by Joe Gradecki

If you have ever wanted to create your own virtual worlds, then this kit will show you how! This book is a natural sequel to The Virtual Reality Construction Kit, and provides all of the information and software necessary to design and build your own virtual worlds.

The REND386 programming environment allows novice programmers to create simple VR worlds, and the book has been packed with numerous hints and tips that allow more advanced C programmers to add 3-D sound, animation, and other advanced features to their VR worlds.  
Included in the kit are 4 complete virtual worlds, software to test and calibrate equipment, and previously unrealised utilities that make VR object drawing easier. All software is supplied on an 89mm (3 1/2in.) disk.  
1994. 544 pages. 235 x 190mm, illustrated.  
American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN00A 1	VR Program Kit	£23.950	£23.950 NV

### Multimedia & CD-ROMs for Dummies

by Andy Rathbone

For many years, computers and sound did not mix - in fact, sound often signalled an impending catastrophe! However, with today's new multimedia computers, sound has taken on a whole new meaning, adding a refreshing novelty to computing. All aspects of multimedia are discussed in an enjoyable and amusing way that has become a hallmark of the 'Dummy' series of books. From the basics to selecting a sound card; installing cards and CD players; adding sound and video to Windows; putting photographs and films on your computer; all are discussed with the usual style. Additionally, budding musicians can discover how to set up an inexpensive recording studio in their garage. Children and adults can find out how to make the ultimate games machine, and business people can learn about computerised presentations. Included with this volume is a CD-ROM, The Guided Tour of Multimedia, the first CD-ROM that uses multimedia to teach multimedia. It contains over 20 hours of interactive multimedia information for both beginners and professionals.  
1994. 352 pages, 232 x 188mm, illustrated.  
American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN26D 1	MM & CD-ROM/Dummies	£24.670	£24.670

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## Multimedia on the PC - An Introduction

by Ian R. Sinclair

Multimedia is a major growth area of PC computing, and as the variety of CD ROMs expands, so its importance will increase. This book sets out to explain what a CD ROM is, how it works, and why it is the perfect add-on for a PC, allowing you to buy programs, text, graphics and sound on a CD. The book starts with the installation of a CD ROM drive and sound card, and typical problems that are encountered, and goes on to show you how to create a complete multimedia presentation. Such presentations can include text, photos, a sound track with your own voice recorded as a commentary, and even animation and edited video. It is possible to type in text and hear it spoken by your computer. The book will change your ideas about presentations, and shows how the use of multimedia can revolutionise educational and business applications as well as the more obvious aspects of game playing and other types of leisure computing.

1994. 190 pages. 247 x 189mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN21X †	Multimedia On The PC	£11.950	£11.950 NV

## Miscellaneous

### Computing for the Terrified!

by Steve Greenwood

This handy and inexpensive book is not designed to teach you how to operate a wordprocessor or spreadsheet, but it is intended to make the reader feel more comfortable using a machine that is running such applications. The book will provide you with an insight into the many and varied uses such a machine can be put to, as well as a detailed explanation of computer jargon. This well-written book that should be of great benefit and reassurance to the computer novice.

1993. 160 pages. 217 x 151mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA52G †	Comp F/The Terrified	£6.950	£6.950 NV



## The Robot Builder's Bonanza

99 Inexpensive Robotics Projects

by Gordon McComb

This book offers you a complete and unique collection of tested and proven project modules that you can mix and match to create an almost endless variety of highly intelligent and workable robots. By using the modular approach there is plenty of leeway for your imagination. 99 different experiments are provided which, in different combinations, enable you to create robots of all shapes and sizes and abilities. There are rolling robots, walking robots, talking robots, robots which can vacuum the floor, serve drinks, teach the kids, protect the family against fire and intruders, in fact almost anything is possible using these modules and a little ingenuity, as none of the projects are very expensive. The book is aimed at both the novice and intermediate robotics enthusiast; the projects include all the necessary information you need to construct the essential building blocks that go into the typical personal robot. In addition to the abundance of illustrations, schematics, diagrams and parts lists, there is also a listing of tools and equipment required, and computer programs for supplying your creation with more than switches for control.

1987. 335 pages. 234 x 187mm, illustrated. American book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT77J †	Robot Bonanza	£17.990	£17.990 NV



## Essentials of computer security

Ian Sinclair

Babani

Security of computers and their files in these days has become more and more of a problem, and not only for the large scale commercial user of computers. Security embraces all the hazards that endanger your precious data, from power supply failure through hard drive failure to theft of computers or files, and some users are more at risk than others from particular hazards. This book deals with the problems of security for the small to medium size business or the home user of computers, and emphasises throughout that the main hazards are not the ones that provide newspaper headlines, but are the often forgotten points such as limited life of a hard drive or the risks from fire or flood. The use of Windows 95 is assumed, but descriptions of important methods applicable to Windows 3.1 are also included because of the large numbers of computer users who have not yet changed to the later version.

Retail Unit Price each (inc. VAT).

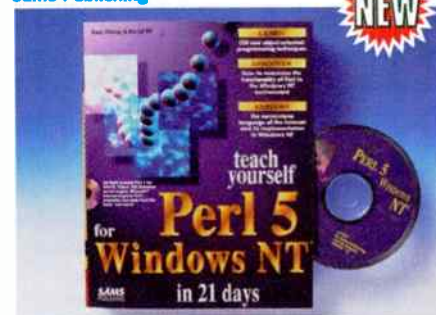
Order Code	Type	Price each exc. VAT	inc. VAT each
NP81C	Computer Security	£5.990	£5.990 NV



## Teach Yourself Perl 5 for Windows NT in 21 Days

Tony Zhang & David Till

Sams Publishing



This is the ideal book for beginning - and intermediate - level users who want to gain a basic understanding of Perl programming for Windows NT. Using step-by-step tutorials and an easy-to-follow approach, this hands-on book provides you with a solid foundation of Perl programming skills. No previous Perl programming experience is required, as each lesson contains complete instructions and definitions for every step. Each of the book's tutorials illustrate how to maximise Perl's power in the Windows NT environment. Whether you have NT experience and need to develop Perl programming skills, or need to tailor your Perl programs for Windows NT, you will master Perl functions and concepts and be developing robust NT programs in no time.

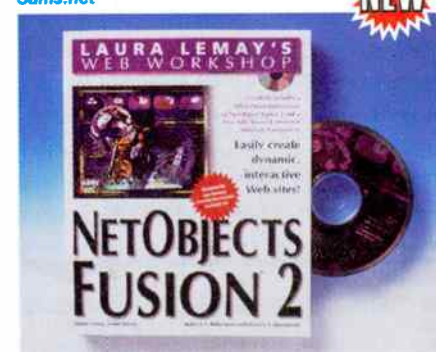
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ00A †	Perl 5 Windows NT	£37.490	£37.490 NV

## Laura Lemay's Web Workshop: NetObjects Fusion 2

Lemay

Sams.net



A compilation of individual workshops that teach you only what you need to learn. Just turn to the chapter on that subject, complete the workshop, and you're done! Each workshop is written in the popular, easy-to-understand style of best-selling author Laura Lemay. You'll learn how to create well-designed Web pages, use JavaScript to bring your pages to life, embed multimedia elements into your Web pages, incorporate a database into your site and automate site design with scripts.

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NQ01B †	Net Objects Fusion 2	£37.490	£37.490 NV



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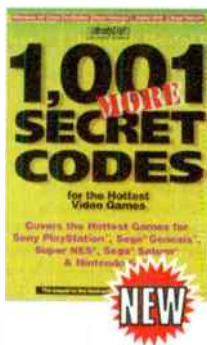


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Order Code	Type	Price each exc. VAT	inc. VAT each
NO15R 1	Win 95 MCSE Guide	£56.490	£56.490 NV

## Virtual Reality / Multimedia

### The Virtual Reality Homebrewers Handbook

Robin Hollands

#### John Wiley & Sons

This complete, do it yourself kit is a great starting point for exploring virtual worlds of your own design. Taking you through the basic principles of virtual reality (VR) technology, full of useful facts on the components you can buy, crammed with original construction projects and easy-to-use software, this all-in-one handbook is an excellent source of information and ideas for building VR systems simply and inexpensively. Whether looking for new ways to build the hardware, a quick introduction to 3D graphics, or tips for creating more sophisticated worlds, it's all here in one package.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NO36R 1	Home Brewers Handbook	£21.230	£24.950

## Miscellaneous

### Professional Developer's Guide To Domino

Jane Caiabria & Rob Kirkland

#### Que



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- User level: Accomplished to Expert.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NO69A 1	Domino	£46.990	£46.990 NV

## Data & Equivalents

### Pocket Ref

2nd Edition

by Thomas J. Glover  
Sequola Publishing

This incredible little book is an absolute mine of information, containing an incredible amount of information on just about everything you ever wanted to know, and all in a handy pocket sized format!

- Sections cover:
- Air and Gases • Automotive
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  - Chemistry and Physics • Computers • Constants - physical, chemical and mathematical
  - Electrical - wire, motors and frames
  - Electronics • General Information
  - General Science • Geology • Glue, Solvents, Paints and Finishes • Hardware • Mathematics
  - Mine, Mill and Aggregate • Money • Plumbing and Pipe • Rope, Cable and Chain • Steel and Metals • Surveying and Mapping • Tools • Weights and Properties of Materials • Welding • Conversion Tables • 12 Year Perpetual Calendar

Although this is a American data book, much of the information has international relevance. The book will prove indispensable for anyone dealing with American equipment, technical books, data sheets, instruction manuals, servicing information, installation information, etc., in ascertaining 'local' equivalents to American sizes, ratings, gauges, etc. It is a 'must have' for design engineers, installers, service engineers and hobbyists.

This book will prove particularly useful to those embarking on electronics projects based on designs published in American electronics books, such as those featured in this catalogue.

1996. 542 pages. 138 x 80mm, illustrated. American book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CR98H	Pocket Ref	£9.990	£9.390 NV

### Newnes Radio & Electronics Engineer's Pocket Book

by Keith Brindley

An invaluable compendium of facts, figures and formulae, including common transistor and diode data and pin-outs, TTL and CMOS details, radio and TV frequencies, metric conversions, wire gauges and much, much more, plus a superb index.

1989. 341 pages.  
196 x 95mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RL06G	Book NB0740	£12.990	£12.990 NV

## Electronic Circuits Pocket Book

Volume 1

by Ray Marston

This information packed book is a single-volume applications guide to the most popular and useful linear ICs, and presents a total of 625 diagrams, tables, and carefully selected practical circuits, backed up by over 50,000 words of highly informative text. It deals with many strictly linear ICs such as op-amps, audio preamplifiers, power amplifiers, signal conditioners and power supply regulators, etc., as well as various 'hybrid' configurations, which use a mixture of linear and digital devices, such as the 555 timer IC, bargraph display drivers, CCD delay lines, function and waveform generators, phase-locked-loops (PLLs), and power control ICs. Each subject is treated in an easy-to-read, concise, highly practical and non-mathematical manner. Great emphasis is placed on practical 'user' information and circuitry throughout, and most of the ICs and other devices used in the practical circuits are modestly priced and readily available, with universally recognised type numbers.

1991. 336 pages. 197 x 95mm, hard cover, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ49D	Electronic Circuits	£12.990	£12.990 NV

## Electronic Circuits Pocket Book - Volume 2

by Ray Marston

#### Newnes

This volume complements the best-selling volume one, and is produced in the same informative style. Covering passive electrical components, transducers and simple discrete semiconductor devices, this book has a total of 670 diagrams, tables and carefully selected practical circuits. The informative text explains the basic features and important details of modern passive components such as resistors, capacitors, inductors, switches etc., as well as relays, loudspeakers, phones, diodes, transistors, SCRs and TRIACs etc. These devices form the basic building blocks on which modern electronics circuits are based. The text is non-mathematical and highly practical, and is aimed at engineers, technicians, students and experimenters who can build a design directly from a circuit diagram.

1993. 375 pages. 197 x 95mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA25C	Electronic Circuits2	£12.990	£12.990 NV

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

## Transistor Data Tables

by Hans-Gunther Steldie  
Bernard Babani Books

The continually growing number and variety of semiconductor components mean ever greater problems for the user. It is difficult to gain an overall picture of the types which may be suitable for a particular application, from those currently available. However, as a starting point, the electrical parameters of a device are usually sufficient.

The tables in this book contain information about the package shape, pin connections and basic electrical data for each of the many thousands of transistors listed. The data includes maximum reverse voltage, forward current and power dissipation, current gain and forward transmittance and resistance, cut-off frequency and details of applications.

A book of this size is of necessity restricted in its scope, and the individual transistor types cannot therefore be described in the sort of detail that maybe found in some larger and considerably more expensive data books. However, the list of manufacturer's addresses will make it easier for the prospective user to obtain further information, if necessary.

This book, which is the UK edition of a work recently published in Germany, should be of considerable assistance to anyone involved in the design or repair of electronic and radio equipment, regardless of whether this may be a professional level or as a hobbyist or experimenter. 1995. 178 pages. 198 x 130mm, illustrated. British edition of German Book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN63T	Transistor Data	£5.950	£5.950 NV



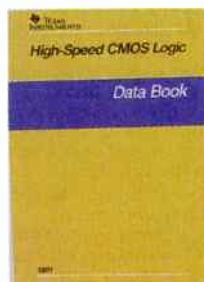
pressed; 'Bit Smasher I' and 'Bit Smasher II', extremely simple and more versatile EPROM programmers; 'Eprogrammer II', a versatile, portable, computer-based EPROM programmer; EPT-EPROM program tester, used to test and debug an EPROM's data before writing the data to the device; 'ROM Drive', and many more. 1988. 240 pages. 233 x 186mm, illustrated. American book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT13P	Exp With EPROMS	£18.950	£18.950 NV

## High Speed CMOS Logic Data Book

**Texas Instruments**  
This comprehensive volume lists all types of high-speed silicon-gate HCMOS logic family currently in common use. Information includes parameter and function tables, pin-outs, logic symbols and internal logic diagrams, and tips on device interfacing and applications for designers. 1991. 928 pages. 210 x 148mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS01B 2	HCMOS Data Book	£12.500	£12.500 NV

## AMD EPROM Databook

Advanced Micro Devices (AMD) are at the forefront of non-volatile memory technology, and manufacture a wide range of high performance memory products. This databook covers the traditional windowed EPROMs, plastic OTP EPROMs and AMD's ExpressROM devices.

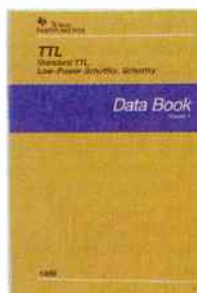


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Order Code	Type	Price each exc. VAT	inc. VAT each
AX00A †	Eprom Products Bk	£3.990	£3.990 NV

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**Texas Instruments**  
Full data sheets covering TIs very large range of TTL, Schottky and Low Power Schottky ICs. Contains internal circuits, pin-out diagrams and specifications of over 400 device types. 1989. 1184 pages. 210 x 148mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

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WA1403	TI TTL Data Vol 1	£14.950	£14.950 NV

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In the latest edition of this best-selling reference, America's master technical writer is back with the latest technical information on the most popular types of integrated circuits (IC's). Whether you're a novice or mid-level electronics technician, or even a hobbyist, you'll discover a wealth of useful IC data in this easy-to-use book. The Master IC Cook book couldn't be easier to use. You'll find all the material arranged into sections by area of application, then listed alphanumerically within each section by IC industry standard number. So it's a snap to pinpoint exactly what you're looking for. A handy directory of manufacturers' addresses rounds out this invaluable sourcebook.

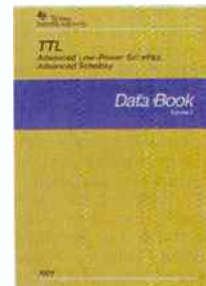


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## The TTL Data Book, Volume 2

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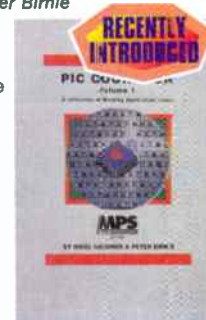
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Order Code	Type	Price each exc. VAT	inc. VAT each
WP31J 3	TI TTL Data Vol 2	£14.950	£14.950 NV

## PIC Cookbook - Volume 1

by Nigel Gardner and Peter Birnie

This collection of working application ideas is a natural progression from the Beginner's Guide to the Microchip PIC (order code AD31J), and includes a wide range of practical suggestions for using the Microchip PIC - 38 in all. Each idea includes a general description, circuit diagram and a flow chart, with all source code supplied on a 89mm (3.5mm) disk. All the applications have been graded from relatively simple (1) to more advanced (3). The authors are well versed in the use of PIC chips and this book will be a valuable addition to the PIC user and developers library. 1996. 210 x 155mm. 170 pages, illustrated.



Retail Unit Price each (inc. VAT).

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DT76H	PIC Cookbook	£19.990	£19.990 NV

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Foulsham

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Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC06J	Towers Transistor Bk	£24.950	£24.950 NV

## Experiments with EPROM's

by Dave Prochnow

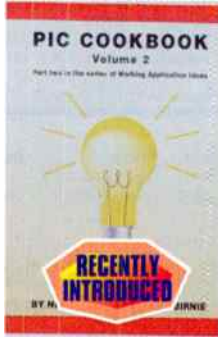
This book provides fifteen fascinating hands-on 'EPROM experiments'. Each experiment comprises building different devices to use the EPROMs. These include a 'Boole's box', used for determining the logic levels present on digital IC pins; a keyboard encoder which generates a digit and displays the character of the key



## PIC Cookbook Volume 2

by Nigel Gardner and Peter Birnie

The second book in the series of working applications, provides the reader with a general description of the application, circuit diagrams and flowcharts. The source code for all of the applications is provided on a 89mm/3.5in. disk that accompanies the book. The book covers in detail: square and pulse generator, 1200 baud modem, greenhouse watering system, electronic look using the 16C84, program conversion between the 16C5x and the 16Cxx families and interfacing to DTMF encoders and decoders. Continuing the style of Volume 1, each application is graded for complexity. 1997, 150 ringbound pages approx., illustrated.



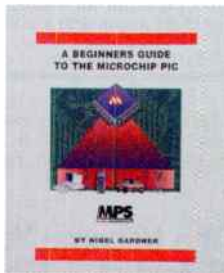
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Order Code	Type	Price each exc. VAT	inc. VAT each
VG69P	PIC Cookbook Vb2	£17.010	£19.990

## A Beginner's Guide to the Microchip PIC - Revised Edition

by Nigel Gardner

This book describes how to get to grips with PIC devices and is intended for somebody who has never used such a device before. The reader is guided through the rudiments of selecting the correct device for a job, and how to begin programming it; together with a basic knowledge of how to debug source code, and a guide to the instruction set. The use of headers, look-up tables, reset vectors, real-time clock, watchdog timer, interrupts and development practices are covered with examples and diagrams along the way. This edition provides additional information on the A/D, E<sup>2</sup> and other devices in the 16Cxx family. The book is accompanied with an IBM/compatible 89mm (3.5in.) DSHD disk (with compressed files) containing an assembler, simulator and various source code examples.



Retail Unit Price each (inc. VAT).

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AD31J	Beginners Gd To PIC	£16.970	£19.950

## The Greatest Little PIC Book

by Gordon MacNee

This informative work covers the PIC12C5xx 8-pin microcontroller family from Microchip, and centres around applications requiring limited I/O. The book has been written to guide the reader through the device architecture and software modes, to show the benefits from using this family. Additionally, development tools device options and worked examples are covered and include: timers, sound generators, water descaler project, data logger, motor controls and light controls. Written by a very experienced design engineer who has worked with Microchip for many years, this book is an ideal training aid for any design engineer just starting to use the PIC12C5xx family. 1997. Ringbound pages, illustrated.



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- ★ Packaging diagrams and parameters
- ★ Development systems user's guides
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This dual medium (PC/Mac) CD-ROM contains a wealth of information on Microchip's products, and is easy to install and use. A menu screen offers a choice of product selection guide, data sheets, programming development systems and more. The desired topic is selected and a sub-menu appears that identifies the information in that section or goes to the technical document. Once in the selected document, the Adobe™ Acrobat™ Reader Quick Reference assists in navigating through the opened technical document.

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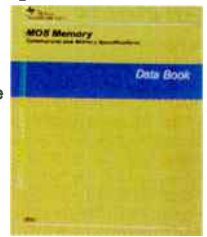
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## The MOS Memory Data Book

Full data sheets for TI's range of dynamic RAMs, EPROMs, ROMs and memory systems. An inter-changeability guide is included. 1991. 1016 pages. 235 x 190mm, illustrated. American book.

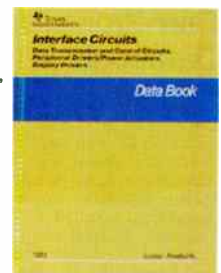


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WA06G2	TI MOS Memory Data	£12.500	£12.500 NV

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Full data sheets for TI's range of data transmission and control circuits, peripheral drivers, power actuators and display drivers. Contains internal circuits, pin-out diagrams and specifications of over 275 device types. 1990. 1376 pages. 214 x 150mm, illustrated.

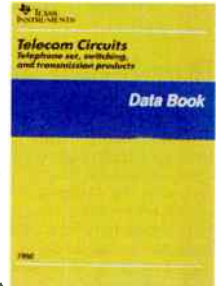


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WA13P21	TI Interface Data	£14.950	£14.950 NV

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After we have all got used to the introduction of the telephone, and the way in which it has changed our way of living, there is now a second telecommunications revolution going on - for what was once the exclusive purview of the electro-mechanical is now being pervaded by the electronic. This book contains all data and specifications for the latest integrated circuits and applications from Texas, covering the telephone set, exchange and switching, and signal transmission. The book also includes lots of information for designers. 1989. 530 pages. 211 x 149mm, illustrated.



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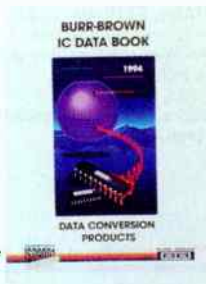
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NP62S	AD CD ROM	7.990	£7.990NV.

## AD Designer's Reference Manual - 1996

Analog Devices



This latest volume from Analog Devices provides technical data and specifications on all products that are recommended by Analog Devices for new designs. All the data sheets are two pages long and contain information on the key features and specifications on each product as well as pin-outs and block diagrams. To make it easy to use this manual, selection guides and function trees are included for rapid retrieval of information. 1996. 227 x 178mm. 1200 pages, illustrated. American.

Retail Unit Price each (inc. VAT).

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NP63T	ADS DESIGN MAN	9.990	£9.990NV

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This bright, visually stimulating book responds to the growing emphasis on scientific exploration for young children. Its appealing scientific activities are clearly designed to help children investigate the intriguing properties of water, light, mirrors and magnets. Youngsters can



find out how to make a magnet float in mid-air, how to use mirrors to see around corners, and how to produce their own rainbows. All the activities are safely and easy to do using readily available household items. 1992. 76 pages. 210 x 210mm, illustrated. Only available while stocks last

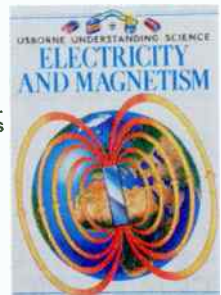
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WC03D	Science Activities	£4.950	£4.950 NV

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By using stunning illustrations and easy to follow text, this booklet investigates some of the most fascinating areas of electricity and magnetism. The mysterious properties of magnets and the wonder of electricity are unravelled and explained. By delving into the past, some amazing and sometimes accidental breakthroughs are told along with the dramatic developments that will radically affect our lives in the next century. 1993. 32 pages. 250 x 200mm, illustrated.



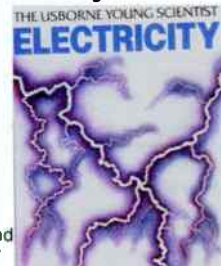
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WC04E	Electrics & Magnets	£3.990	£3.990 NV

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by Philip Chapman

Do you know why an electric light bulb shines, or how a battery works? Have you ever wondered how electricity is made in a power station, or how an electric motor works? This book explains in a clear visual style, with straightforward text, what electricity is and how we use it. A series of safe and simple experiments show you how to construct simple circuits, including working models of an electromagnet, an electric motor and a 2-way telegraph system. 1976. 32 pages. 270 x 215mm, illustrated.



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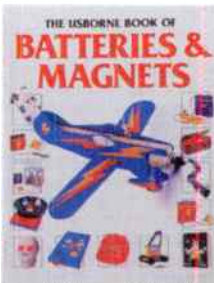
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by Paula Barton & Vicky Cave

For all budding scientists, this excellent booklet provides a fascinating insight into batteries and magnetism. With a few simple pieces of readily available equipment you can make things that glow or buzz and flash. A whizzing plane, a lighting-up T-shirt are just a few of the projects included in this book - have lots of fun with these activities and discover all the amazing things that magnets and batteries can do.

1994. 32 pages. 250 x 200mm, illustrated.



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WC06GB	Batteries & Magnets	£3.990	£3.990 NV

## 200 Illustrated Science Experiments for Children

by Robert J. Brown

This book is a fascinating collection of science experiments suitable for children of all ages. An ideal source book for parents, teachers and anyone who is fascinated with the wonders of science. The experiments cover air, sound, vibration, water, mechanics, chemistry, light, heat, biology, electricity and magnetism. The book is designed to make learning basic scientific principles exciting and fun - a good way to introduce youngsters of all ages to the world of science.

N.B. Many of the experiments MUST be performed under strict adult supervision since electricity, chemicals and heat are involved.

1987. 190 pages. 210 x 130mm, illustrated.



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BZ02C	Science Experiments	£9.950	£9.950 NV

## Basic Skills - Electronics

by Tom Duncan

This book is suitable for anyone taking an introductory course in electronics, at school, college, or by study at home, or for anyone who wants to gain a knowledge and understanding of some of the basic principles of electronics. This book will meet the needs of those working for the Associated Examining Board's Basic Test in Electronics. Theory is covered in Part 1, while Part 2 provides practical course work in the form of experiments and projects, and provides an opportunity to become familiar with some basic components.

1988. 120 pages. 245 x 188mm, illustrated.



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W554J	Basic Skills Elect	£6.990	£6.990 NV

## Introduction to Electronics

by Pam Beasant

This book is an introduction to the basic principles of electronics, and ideal for the younger beginner. The bulk of the book comprises many simple, practical experiments. Each experiment is designed to illustrate an important principle of electronics and demonstrate how each different component works. This ranges from the very basic through transistors, use of tools and soldering.

1990. 48 pages. 240 x 170mm, illustrated in colour.



Retail Unit Price each (inc. VAT).

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WPS0E	Intro Electronics	£4.990	£4.990 NV

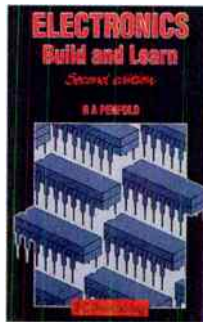
## Electronics - Build and Learn

2nd Edition

by R. A. Penfold

Electronics is a practical subject, but a certain amount of theoretical knowledge is necessary if you are to become proficient in it. This book combines theory and practice so that you can 'learn by doing'. Full constructional details of a circuit demonstrator unit are given which is used in subsequent chapters to introduce common electronic components. Later chapters describe how these components are built into useful circuits, oscillators, bistables and logic circuits. At every stage there are practical tests and experiments that you can carry out to investigate the points described and to help you understand the principles involved.

988. 110 pages. 216 x 138mm, illustrated.



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WP97F	Elec Build/Learn	£6.950	£6.950 NV

## Adventures with Electronics

by Tom Duncan

To start you don't need to know anything about electronics. But by the end of this book, you will find that you have learned quite a bit about this vital area of modern science and industry. The 'bits and pieces' needed for making all these models can be bought inexpensively as a complete kit, or you can search for them separately at radio hobby shops. Full details are given of both methods. And no soldering is required, which will be especially good news for beginners. Projects include a parking light, rain detector, fire alarm, flashing lamp, Morse buzzer, burglar alarm, electronic organ, electronic metronome, wailing siren, intercom, three types of radio, electronic timer, and a (binary) 'computer counter'.

1978. 64 pages. 246 x 190mm, illustrated.



Retail Unit Price each (inc. VAT).

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W553H	Adventures Electrics	£7.990	£7.990 NV

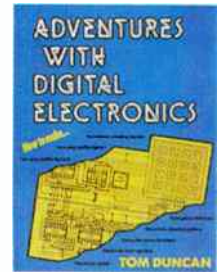
## Adventures with Digital Electronics

by Tom Duncan

This book of entertaining and instructive projects is designed for students in schools and colleges, and also for hobbyists and electronics club enthusiasts. It is a follow-up to Adventures with Microelectronics and provides a stepping-stone to the microprocessor.

A first part deals with the properties of some basic 'chips' used in digital electronics such as logic gates, multivibrators, flip-flops, counters, shift registers, memories, adders, magnitude comparators, code converters and displays. The second part gives details of how to build eight devices - an electronic shooting gallery, quiz-game switches, an electronic fruit machine, computer space invaders game, two types of two-way traffic lights, pedestrian crossing signals and an electronic adder. For each project there is an explanation of 'how it works' and also suggestions for 'things to try'. Construction is on two standard circuit boards (no soldering required), using a 9V battery as the power supply.

1982. 64 pages. 245 x 188mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS55K	Advent Dig Electrics	£7.990	£7.990 NV

## Teach Yourself Electricity and Electronics

by Stan Gibilisco

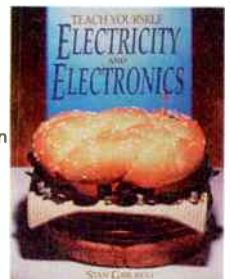
This book has primarily been written for those people who want to learn basic electricity and electronics without taking a formal course, but it can also serve as an introductory classroom text. The book is easy to follow as nothing is very advanced, starting with simple, general concepts and moves to more specialised topics.

It is not necessary to have a mathematical or scientific background to make use of the book, as secondary school level mathematics and physical science should suffice. The style of the book does require a certain amount of self-discipline on the part of the reader, but the book is easy to read and follow, and the reader can set his/her own pace.

A highly recommended book. 1993. 678 pages. 234 x 188mm, illustrated.

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AA24B	2 Electric & Electron	£23.950	£23.950 NV



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- Circuits to Build - from basic principles to circuit building, the Modern Electronics Manual describes how to assemble radios, loudspeakers, amplifiers, car projects, computer interfaces, measuring instruments, workshop equipment, security systems, etc.
- Essential Data - extensive tables on diodes, transistors, thyristors & triacs, digital & linear ICs, and microprocessors
- Safety
- Specialist Vocabulary with Abbreviations

Information is presented clearly and simply, with a comprehensive subject range, component checklists and extensive data tables. Most projects have ready-to-transfer PCB designs and detailed assembly instructions.

This is probably the most comprehensive reference work ever produced at such an affordable price! Providing you with over 1,000 A4 pages of all the essential information you will need to really get the best out of electronics.

Each Base Manual is supplied complete with an attractive and durable ring-binder. A free copy of a recent Supplement is also included.

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As if all the information in the Base Manual wasn't enough, regular Supplements continuously extend the Modern Electronics Manual with new material! Each Supplement contains a wealth of information. These Supplements are sent to you directly, on approval (UK only), from the publisher approximately four times a year. If you do not wish to keep a Supplement, simply return it within ten days. If you wish to keep the Supplement, simply remit the appropriate amount, as advised, to the publisher.

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Retail Unit Price each (inc. VAT).

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WM60Q	Mastering Electronic	£7.500	£7.500 NV

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by G. C. Loveday

This book primarily covers the required BTEC syllabus topics for electronic engineering at HNC/HND level, and in particular for BTEC units Analogue Electronics 13768B and Digital Electronics 13679B. Undergraduate students on electronic engineering degree courses will also find this book very useful as supplementary reading to their main course texts. The author has adopted an engineering approach to text presentation, providing the student with many analysis and design examples, as well as exercises and solutions to consolidate the theory discussed in the text. Emphasis is placed on the fundamental principles of electronic theory. 1993. 238 pages. 246 x 187mm, illustrated.



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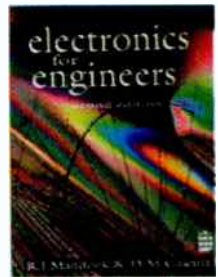
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by R. J. Maddock & D. M. Calcutt

This book provides a comprehensive course in electronics for engineering students to higher technician and first degree level. Emphasis on new technology and analytical methods mean that this book will be of most use to those wishing to bridge the gap between old and present-day integrated circuit technology. The book has summaries at the ends of chapters and features learning objectives like worked examples and problem solving exercises. In-depth discussions of circuit theory and operation help to impart exactly how a particular circuit will operate. The book covers most of the modern digital and analogue syllabus material covered in courses like ONC and HNC electronics, together with a great deal aimed at first degree level. A good source of information for students, with numerous diagrams and illustrations. 1994. 719 pages. 240 x 190mm, illustrated.



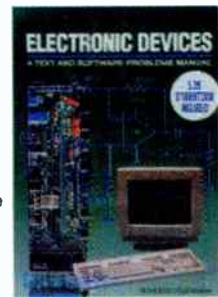
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## Electronic Devices - A Text and Software Problems Manual

by Mitchel E. Schultz

This book is intended to be used as a supplement to accompany most of the textbooks devoted to electronics devices. The student should have completed a basic course in DC and AC theory. The book includes numerous practice problems that are included on a 133mm (5.25in.) disk that is supplied with the book. These problems are designed to reinforce the understanding of the basic concepts presented in the text. An additional benefit is that students are given an immediate feedback on the problem they are solving. 1994. 290 pages. 264 x 190mm, illustrated and includes software. American book.



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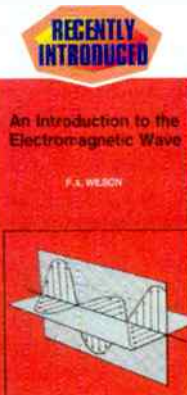
## An Introduction to the Electromagnetic Wave

by F. A. Wilson

Bernard Babani Books

The electromagnetic wave has been on and around the earth (and everywhere else) since time immemorial. We cannot expect to cover all of its antics in such a small book, but we can at least make some inroads on the subject and certainly gain an appreciation of this inexplicable wonder.

Our subject is a complicated one so the first chapters are needed to discuss its' nature and how it behaves. Then in a more practical way the



later chapters centre on radio waves in their freedom in ground, sky and satellite applications, followed by waves not so free in waveguides, optical fibres and heating.

Altogether a round-up of the better known escapades of the electromagnetic wave requiring no more than elementary mathematics, but presuming that the reader has some basic knowledge of electronics.  
1993. 120 pages, 178 x 111mm, illustrated. British book.

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AN66W	Intro Electmag Wave	£4.950	£4.950 NV

## The Illustrated Dictionary of Electronics – Sixth Edition

by Stan Gibilisco

This collection of terms is the most comprehensive dictionary available. Including all practical electronics and computer terms. Tables and data on subjects most often consulted for projects and experiments are included. Other conversion tables include English/metric and metric/English conversions for units of measure of energy, power, and volume, and Fahrenheit/Celsius temperature conversion charts.

Setting this edition apart from other electronic dictionaries is its emphasis on illustration. Featuring more than complete definitions, this sixth edition is packed with over 450 detailed drawings and diagrams. It's all here – more than 27,000 terms used in electronics today!

1994. 766 pages. 234 x 188mm, illustrated. American book.



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WS27E	Dictionary of Elec	£27.950	£27.950 NV

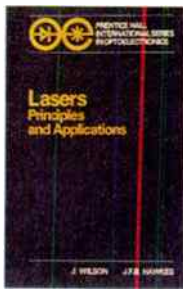
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by J. Wilson and J. F. B. Hawkes

Prentice Hall

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1987. 308 pages. 228 x 150mm, illustrated.



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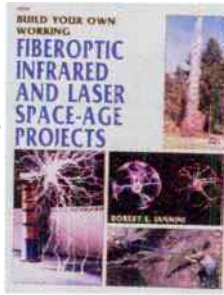
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1987. 264 pages. 233 x 187mm, illustrated.



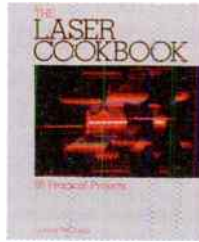
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## The Laser Cookbook

by Gordon McComb

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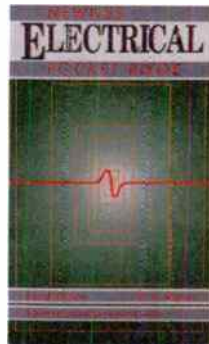
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22nd Edition

Edited by E. A. Reeves, DFH (Hons), C. Eng, MIEE

A thorough guide to electrical engineering practice, which remains an indispensable reference book for the engineer and for all who require handy, concise yet comprehensive information on a wide range of electrical subjects.

1995. 587 pages. 165 x 101mm, illustrated.



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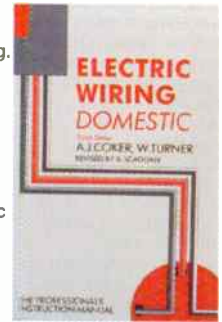
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RL27E	Newnes Elect Pkt Bk	£12.990	£12.990 NV

## Electric Wiring: Domestic

by A. J. Coker & W. Turner

A clear and reliable guide to the practical aspects of domestic wiring. Provides essential up-to-date information on modern methods and materials in a simple and concise way. Contents include wiring circuits, ratings, cable sizes and circuit protection; domestic installation practice, lighting points, socket outlets and portable appliances, fixed appliances, survey of modern wiring systems, installation of conduit systems, using PVC sheathed and MICS cable, prefabricated systems, earthing, inspection and testing.

1989. 198 pages. 234 x 155mm, illustrated.



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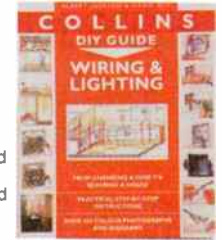
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by Albert Jackson and David Day


This book will help anyone wanting to undertake household electrical tasks. It covers things as diverse as mending fuses and changing plugs through to good advice on complete rewiring. The diagrams and instructions here are full, many are step by step, and a lot of the matters left hanging in the small book are explained. There are also a number of extended special sections which discuss the wiring of fixed appliances, the basic home electricians toolkit and how to reduce the cost of electricity – legally! A short glossary explains some of the more basic terms as well as covering such matters as PME and ELCB. This is the book for the serious home electrician.

1995. 64 pages, 258 x 212mm, full colour illustrations.




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*Regulations for Electrical Installations - 16th Edition*

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1991. 266 pages. 296 x 210mm, illustrated.

*Retail Unit Price each (inc. VAT).*

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WZ90X 1	IEE Wiring Regs	£38.000	£38.000 NV



## Guidance Notes to the 16th Edition IEE Wiring Regulations

A series of guidance notes that have been issued by the Wiring Regulations Committee of the Institute of Electrical Engineers (IEE). These booklets are designed to enlarge upon and amplify some of the requirements in the 16th Edition of the IEE Wiring Regulations (WZ90X). The principle section numbers that each guide relates to, are shown in the left hand margin, with the relevant Regulations and Appendices noted in the right hand margin. The Notes may also include material that was included in earlier editions, but may not be in the 16th Edition. Additionally, the Guidance Notes contain references to other relevant information. A very useful range of booklets that all electricians in the electrical installation and maintenance industries should find extremely useful.

## On-Site Guide

This Guide is concerned with limited application of the Regulations in accordance with '1.1 Scope'. The booklet is split into 11 sections which include: introduction, the service position, protection, bonding and earthing, isolation and switching, labelling, conventional final circuits, special locations giving rise to increased risk of electric shock, inspection and testing, guidance notes on initial testing of installations, operation of residual current operated devices. The appendices covers a variety of related topics, including: cable capacities of conduit and trunking, resistance of copper and aluminium conductors under fault conditions, current-carrying capacities and voltage drop for copper conductors, etc. This version includes Amendment 1 to BS7671: 1992 requirements for electrical installations.

1995. 150 pages. 216 x 155mm, illustrated.



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WZ97F	IEE On Site Guide	£12.000 NV	£12.000 NV

## Number 1 - Selection and Erection

Number One in the series is concerned with Part 5 - Selection and Erection. The eight sections cover the topics: selection and erection of equipment; protection against electric shock; external influences; installation of cables; the sizing of cables; other influences; installation of equipment.

A comprehensive appendix covers related topics. 1992. 122 pages. 97 x 210mm, illustrated.



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WZ98G	Selection & Erection	£14.000	£14.000 NV

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Number Two in the series is concerned with Chapter 46 - Isolation and Switching. The six sections in this booklet cover: statutory requirements; the regulations for electrical installations, definitions and principles; isolation; switching off for mechanical maintenance; emergency switching and emergency stopping; and fireman's switches. This edition includes Amendment No. 1 to BS7671.

1995. 67 pages. 297 x 210mm, illustrated.



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WZ99H	Isolation & Switch	£10.000	£10.000 NV

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1995. 92 pages. 297 x 210mm, illustrated.



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1992. 23 pages. 297 x 210mm, illustrated.



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AA01B	Protection Against Fire	£10.000	£10.000 NV

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1992. 85 pages. 297 x 210mm, illustrated.



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AA02C	Protection Against Shock	£13.000	£13.000 NV

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1992. 87 pages. 297 x 210mm, illustrated.



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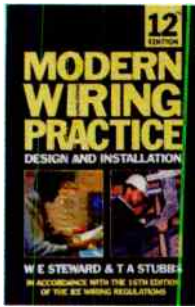
## Modern Wiring Practice

12th Edition

by W. E. Steward  
and T. A. Stubbs

A completely revised edition of Modern Wiring Practice taking into account the requirements of the 16th edition of the IEE Regulations for Electrical Installations. Includes new procedures developed since the ninth edition was published. Both the design of electrical installation systems and the practical work itself are covered, and the authors have many years' experience of electrical installation. An absolute must for all electrical engineers, apprentices, contractors and architects etc., and an invaluable reference for DIY wiring at home.

1992. 318 pages. 215 x 138mm, illustrated.



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WP64U	Mod Wiring Practice	£16.990	£16.990 NV

## Snags and Solutions – Electrical Installation Practice

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This handy little book, now in its 4th edition, has been prepared by members of the National Inspection Council for Electrical Installation Contracting (NICEIC) and is intended to provide practical advice on the application of the 16th edition of the IEE Wiring Regulations (WZ90X). The answers to the many problems that are encountered daily by electricians and electrical installation contractors are provided, also emphasises the wiring problems found by NICEIC inspecting engineers in the course of their visits to various establishments throughout the country. An invaluable aid for all electricians and electrical installations contractors.

1992. 146 pages. 208 x 145mm, illustrated.



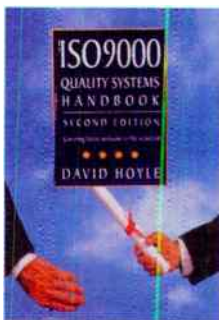
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WZ93B	Snags & Solutions	£9.950	£9.950 NV

## ISO9000 Quality Systems Handbook – Second Edition

by David Hoyle

This essential and comprehensive guide to implementing the Quality System Standard has now been updated to include the latest revisions, making it the only complete guide to ISO9000 currently available. This standard has come about as a result of harmonising the national numbering conventions, and the end of BS 5750. The UK version of ISO9000 bears the number BS EN ISO 9000. The book provides a line-by-line set of instructions for putting quality to work and becoming certified to the new international quality system standard, and includes all the requirements of the 1994 version of the standard. Each individual requirement of every clause is analysed – the purpose and scope of each requirement is explained, and practical guidance in meeting them is offered. The book is divided into two parts. The



first part provides general background information on the standard, its origin, composition, application, the strategies for registration and other preparatory aspects. The second part is divided into chapters that correspond to the subsections of section 4 of the standard, both in title and scope.

1994. 510 pages. 234 x 156mm, illustrated.

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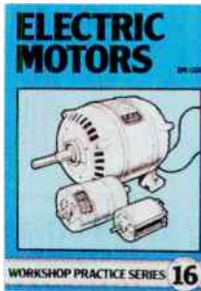
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1990. 134 pages. 209 x 148mm, illustrated.



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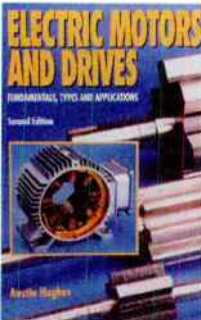
## Electric Motors and Drives

by Austin Hughes

This book explores most of the widely-used up-to-date types of motor and electronic driving methods, including conventional and brushless DC, mains and inverter fed induction motors, stepping motors, mains and converter fed synchronous motors, and reluctance motors.

Applications are deliberately spread throughout the text in order to emphasise the fact that there is no longer any automatic correlation between motor type and application.

1990. 320 pages. 203 x 135mm, illustrated.



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by Graham Dixon

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- Understanding Electricity - An essential guide to plugs and sockets, heating elements, temperature control devices and electrical circuit testing
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- Personal Equipment - Shavers and hairdriers
- Living Room Appliances - Portable heaters, video and audio equipment
- Cleaners and Power Tools - Vacuum cleaners, power tools and garden power tools
- Further Information - Using a flowchart, buying spare parts, low insulation, rechargeable batteries and glossary

Photographs and diagrams accompany the clearly presented text and the easy-to-follow fault finder charts help pinpoint the cause of a problem and the action to be taken.

The repair of commonly occurring faults is explained in detail which includes - a list of all the tools required and replacement parts and captioned step-by-step photographs to show precisely what to do.

Altogether, this book is a 'must have' for the DIYer interested in undertaking electrical maintenance/repair work.

1995. 186 pages. 270 x 210mm, illustrated. British book.



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- Introduction - Includes a safety guide with emergency procedures and a complete guide to tools and equipment
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- Installation - Plumbing instructions, venting and programme testing
- Care and Repair - The importance of regular maintenance and how to overcome the common causes of poor washing results
- Fault Finding - What to do about leaks and why the machine is not emptying. Replacing door seals, times and programmers. How to deal with motors, belts, suppressors, bearings and electrics. What can go wrong with dry only machines and how to put it right.
- Further Information - Full of useful tips on knowing your machine, buying spare parts and how to use a flow chart. There is a glossary for quick and easy reference.

Photographs and diagrams accompany the clearly presented text and all methods of prevention and repair are fully explained in a non-technical manner.

Each component part is photographed and explained in full detail, with a thorough explanation of the way it works, what can go wrong, and how to maintain, repair and replace it.

Altogether, this book is essential reading for anyone wishing to carry out washing machine maintenance or repair work.

1995. 186 pages. 270 x 210mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN39N	Wash Machines	£6.990	£8.990 NV

## Motorcycle Electrical Manual

Second Edition

by Tony Tranter

Haynes

This comprehensive manual explains how the electrical systems work, troubleshooting, and how to fix electrical gremlins quickly and effectively when faults develop, so that your motorbike retains a reliable temperament. And you do not need to have prior experience in electrics, for this book begins with a description of the basic principles before launching into the deep end of magnetos, electronic ignition, ABS brakes, traction control and three-phase alternators! These parts, and all others of a motorcycle's electrical system, are catered for by this manual, together with sections on wiring, tools, testing and theft deterrents.

1993. 204 pages. 270 x 210mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BH74R	Motorcycle Elect Man	£13.990	£13.990 NV

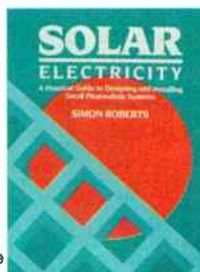
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## Solar Electricity

by Simon Roberts

A Practical Guide to Designing and Installing Small Photovoltaic System. Whether you are interested in solar power for a lamp, radio, workshop application or whatever, this guide provides you with the methods you need to design solar electric systems and components. The non-technical language makes this book suitable for the lay person, but it is also suitable for students on undergraduate courses in power systems and solar electricity. The book is divided into three parts. Part one gives an introduction to solar electricity, describes solar modules, battery storage of electricity, control units, distribution at low voltage and electrical appliances, inverters and lighting. Part two covers planning, installation, operation and maintenance. Part three describes the building of electronic units associated with solar electric power. The first chapter gives an introduction to electronic components and circuit building, and is followed by chapters dealing with the construction of expanded scale voltmeters, voltage adaptors, charge regulators for nickel-cadmium cells and control units for appliance circuits. The Maplin Catalogue contains a wide range of solar cells and panels that may be suitable for projects described in this book. 1991. 440 pages. 234 x 173mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ67X	Solar Electricity	£19.950	£19.950 NV

## Electronic Music

### Mixing & Sequencing

## Advanced MIDI User's Guide

2nd Edition

by R. A. Penfold

This book is for those who wish to go beyond the very basic slaving and sequencer set-ups, and who wish to exploit MIDI to the full.

The topics covered include: MIDI modes and codes; MIDI signal routing and patch bays; System exclusive messages and their practical uses; MIDI trouble-shooting including, using a computer as a diagnostic tool; MIDI gadgets, channelisers, filters, merge units, pedals etc.; synchronisation using MIDI time code, SMPTE etc.; the basics of MIDI programming; and MIDI hardware specification. Anything within reason can be accomplished with MIDI - this book shows you how.

1995. 192 pages. 216 x 138mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT52G	Adv Midi User Guide	£19.950	£19.950 NV



## A Beginners Guide to MIDI

by R. A. Penfold

Bernard Babani Books

After a slow start in the early 1980s, MIDI (Musical Instrument Digital Interface) has progressed to the point where it now dominates some aspects of electronic music making. It is now an area of electronic music that few can afford to ignore. Many potential users are put off by the technicalities associated with MIDI, but it is not essential to understand the precise way in which MIDI functions in order to use it effectively. In fact many everyday users of MIDI have little idea of how it does what it does.

With the aid of this book, those with no previous knowledge of MIDI will learn how to:

- Connect up a MIDI system that will suit their exact requirements
- Exploit MIDI modes and channels, for both 'live' performances and sequencing
- Use the various messages types the provide communications between units in their MIDI system
- Distinguish between MIDI messages that are worth exploiting and those which are of no real value to them
- Use the basic MIDI timing and synchronisation facilities
- Exploit MIDI filtering, transposition, and other 'extras' that are built into many instruments
- Interpret a MIDI implementation chart
- Avoid problems with MIDI 'choke', and how to troubleshoot when minor problems occur.

In fact this book covers everything you need to know in order to put together a MIDI system and use it effectively. 1993. 95 pages. 178 x 111mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN65V	Beginners Guide MIDI	£4.950	£4.950 NV



## Practical MIDI Handbook

by R. A. Penfold

Second Edition

The Musical Instrument Digital Interface (MIDI) is surrounded by a great deal of misunderstanding, and many of the user manuals that accompany MIDI equipment are quite incomprehensible to the reader. This book is aimed at musicians, technicians and enthusiasts. It explains what MIDI can do and how you can exploit it to the full, with practical advice on connecting up a MIDI system and getting it to work, as well as deciphering the technical information in those equipment manuals. It covers all the MIDI based equipment you can use: keyboards, drum machines, sequencers, effects units, mixers, drum pads and guitars. There's also a section on computer music that covers software, real and step time sequencing, notation/score writing programs, voice filters, etc. And for those of you who want to do your own MIDI programming there are details of the MIDI code numbers.

1990. 160 pages. 216 x 138mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WP96E	Pract MIDI Handbook	£8.950	£8.950 NV



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## MIDI Projects

by R. A. Penfold

MIDI interfacing enables any so equipped instruments, regardless of manufacturer, to be easily interconnected and used as a complete, sophisticated system. This book provides details of how to interface most of the popular home computers with MIDI systems, including all circuit diagrams with operational detail, plus examples of programming used to drive the interface. Machines catered for include the Amstrad CPC464 and 6128, CBM 64 and VIC-20, BBC Model B, MTX and MSX computers, and the Sinclair QL, Spectrum and ZX81.

The book also includes examples of interfacing MIDI equipment to analogue and percussion synthesizers. 1986. 112 pages. 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WP49D	MIDI Projects	£2.950	£2.950 NV



## Practical Electronic Music Projects

by R. A. Penfold

This handy book provides a number of circuits for electronic music projects of various types, including guitar effects units, and other guitar related projects, as well as general projects such as metronomes, audio mixers and preamplifiers. The final chapters describe several MIDI related projects including MIDI testers, a MIDI pedal, noise gates and a THRU box. The circuits cover a wide range of complexities but are not beyond the average electronics constructor. As with other projects books from this well-known author, the circuits are based on relatively inexpensive, and readily available components. Construction notes and parts lists are provided, and to help make construction easy, no test equipment is required in order to get any of the circuits set-up correctly. All musically orientated electronics hobbyists will find this book a must for their collection. 1994. 128 pages, 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

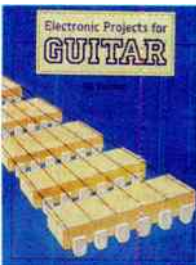
Order Code	Type	Price each exc. VAT	inc. VAT each
AN33L	Pract Elec Music Pjt	£4.950	£4.950 NV



## Electronic Projects for Guitar

by R. A. Penfold

Whether you wish to save money or simply have fun building some electronic music gadgets, the designs featured in this book should suit your needs. The projects are all easy to build and include a guitar preamplifier, headphone amplifier, soft distortion effects unit, compressor, auto-waa, waa-waa pedal, phaser, dual tracking effects unit, expander, treble booster, dynamic treble booster, dynamic injection box, improved distortion unit, thin distortion unit and a guitar tuner. Several projects are so simple that even complete beginners at electronic project construction can tackle them with ease. Each project has an introduction, an explanation of how it works, a circuit diagram and complete instructions on stripboard layout and assembly. All the designs



are suitable for any normal guitar pick-ups, both high or low output types. None of the designs requires the use of any test equipment in order to get them set up properly. Where any setting up is required, the procedures are very straightforward, and they are described in detail. 1992. 113 pages. 246 x 190mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ61R	Guitar Projects	£8.950	£8.950 NV

## Practical Electronic Musical Effects Units

by R. A. Penfold

Bernard Babani Books

While many facets of electronic project construction have waxed and waned over the years, musical effects have remained as popular as ever. This is perhaps not surprising, since many of the standard effects units can be home constructed for much less than the cost of an equivalent ready made product. Also, some of the more weird and wonderful effects units for the home constructor have no true commercial equivalents.

This book provides practical circuits for a number of electronic musical effects units. All can be built at relatively low cost, and use standard, readily available components. The projects covered include:

- Wah-Wah units
- Distortion units
- Phaser
- Guitar envelope shaper
- Compressor
- Tremolo unit
- Metal effects unit
- Bass and treble boosters
- Graphic equaliser
- Parametric equaliser

The projects cover a range of complexities, but most are well within the capabilities of the average electronics hobbyist. None of the projects require the use of test equipment in order to get them set up correctly, and several of the projects are suitable for near beginners. 1994. 98 pages. 178 x 111mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN55K	Electr Musical FX	£4.950	£4.950 NV

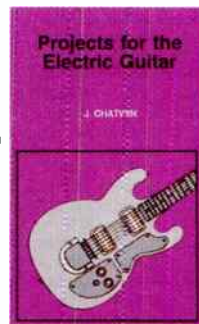
## Guitar

## Projects for the Electric Guitar

by J. Chatwin

Bernard Babani Books

This book is for anyone interested in the electric guitar. It explains how the electronic functions of the instrument work together, and includes information on the various pickups and transducers that can be fitted. There are complete circuit diagrams for the major types of instrument, as well as a selection of wiring modifications and pickup switching circuits. These can be used to help you create your own custom wiring. Along with the electric guitar, sections are also included relating to acoustic instruments. The function of specialised piezoelectric pickups is



explained and there are detailed instructions on how to make your own contact and bridge transducers.

The electronic projects in the book range from simple preamps and tone boosters to complete active controls and equaliser units. These can be used with both bass and six-string guitars. Most of the circuits can be fitted inside instruments, or could form the basis of external effects and processing units. There are sections on noise reduction and screening, as well as plans for a complete dynamic noise gate. The book also contains a step-by-step guide to setting up a guitar after customisation. 1995. 92 pages. 178 x 111mm, illustrated. British Book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN57M	Guitar Projects	£4.950	£4.950 NV

## Advanced Projects for the Electric Guitar

by J. Chatwin

Bernard Babani Books

This highly recommended book contains details on how to build a number of electronic effects that can be used with the electric guitar and other electronic musical instruments.

The book is divided into four chapters covering:

- Effects Pedals (distortion unit, tremolo, volume pedal, wah-wah, compressor and instrument selector)
- Delay Lines (analogue delay, digital delay and noise reduction circuit)
- Headphone Practice Amplification (input and amplifier stages)
- Electronic Controls (electronic pickup switching, phase reversal and bypass switch).

Each chapter starts with a general introduction to the subject area being covered.

This book should be of great interest to musicians as well as those into home recording and audio electronics.

The projects vary in complexity; ranging from simple single IC circuits to relatively complex multi-IC circuits using mixed analogue and digital technology. Some of the projects include complete PCB layouts and overlays. The projects are supported with relevant background information so the reader can understand how the circuits work and modify them for their own specific needs. 1996. 87 pages. 178 x 111mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN54J	Adv Guitar Projects	£4.990	£4.990 NV



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Enquiries

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## Projects

### Maplin Series – Music Projects

by R. A. Penfold  
The author's reputation for innovative circuit designs and well-thought out projects is firmly established. His work has been regularly featured in the popular 'Bob's Mini Circuits' section of Electronics – The Maplin Magazine. This is a collection of his best ideas from the magazine and features projects based on music applications. Components are widely available and the circuits form the basis for further experiments. Circuit diagrams are shown and include parts lists along with photographs of the main circuits. Projects include an accented metronome, a tremolo unit, a guitar compressor, a bass fuzz, a chorus unit and many more. 1994. 155 pages. 216 x 138mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA82A	Maplin Music Prjcts	£9.990	£9.990 NV

## Dance Music

### Dance Music Programming Secrets

Roger Brown  
Prentice Hall



Drum 'n' bass, techno, house, garage and ambient hip-hop are all introduced within the context of Cubase's powerful commands and features. But you don't necessarily need Cubase to learn from this amazing book: many of the sequencing tips here can be used with any sequencer. The free CD is packed with MIDI files, audio samples for drum 'n' bass, groove templates, mixer maps and demos of leading music software. *Dance Music Programming Secrets* is organised so you can simply dip into those areas of dance music you're most interested in. But because of the stylistic links between the genres, this book will lead you to explore all the possibilities and help you evolve your own original flavour.

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Order Code	Type	Price each exc. VAT	inc. VAT each
NQ10L	Dance Music Prog	£29.950	£29.950 NV

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## Electronics

### Construction

### The Art of Soldering

by R. Brewster  
**Bernard Babani**  
This book is an attempt to dissolve the mysteries that surround a subject that's increasingly becoming a part of so many hobbies. Despite its reputation for being a difficult skill to acquire, soldering can be both easy and pleasurable once the basic principles and techniques are properly understood. The author explains how to choose the correct soldering iron, solder and materials and, with the aid of diagrams, the techniques needed to achieve the best results in a range of hobbies including electronics, model railways and stained glass. 1992. 84 pages. 178 x 110mm. Illustrated.

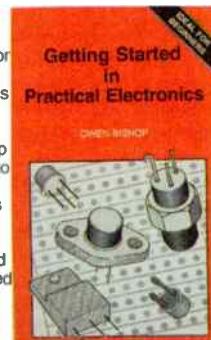


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CJ23A	The Art of Soldering	£3.950	£3.950 NV

### Getting Started in Practical Electronics

by Owen Bishop  
**Bernard Babani Books**  
Owen Bishop is the author of over 60 books, mostly about electronics, and this is his guide for the absolute beginner who wants to get a good grasp of electronics and begin to competently build their own projects. The book is in two sections: The first takes you through the theories, components and techniques that you'll need to be able to build the 30 electronics projects of increasing complexity – including such items as a moisture detector, glittering party wear, a fire alarm, night light, lie detector and mini organ – that make up the book's second section. 1994. 198 pages. 178 x 110mm. Illustrated.

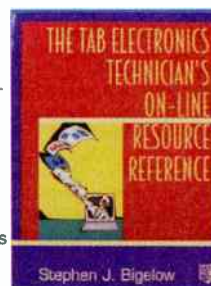


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Order Code	Type	Price each exc. VAT	inc. VAT each
FN12N	Get Start Pract Elec	£4.950	£4.950 NV

### The TAB Electronics Technician's On-line Resource Reference

Stephen J Bigelow  
**McGraw-Hill**  
The TAB Electronics Technician's On-line Resource Reference deals exclusively with on-line electronics and computer resources, and cuts through the mass of data on the Internet. Quickly and efficiently, it connects technicians, students of electronics, and enthusiasts with sites for major manufacturers and other suppliers, complete with actual access strings. Much more than a directory, this incomparable guide also surveys the types of resources available at every site. With traditional telephone-based technical support functions being phased out as more



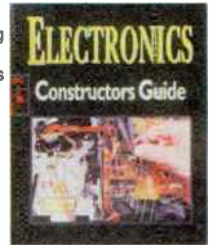
companies go on-line, this reference will be required reading for professional electronics technicians and hobbyists alike.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ06J	Tech Online	£18.990	£18.990 NV

### Electronics Constructors Guide

by Paul Cuthbertson  
Written for anyone intending to convert their ideas into products or their electronics skills into a profitable business, this book will be of interest to students, enthusiasts and professionals alike. It gives a practical introduction to common design problems, provides hints on design, presents classic circuit examples and explains how decisions are made, put into practice and checked out. Examples of good practice are given throughout to provide the reader with a feel for the methods and ideas that contribute to excellent design and construction. 1995. 278 pages. 198 x 130mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE77J	Elec Const Guide	£25.000	£25.000 NV

### Electronic Project Building for Beginners

by R. A. Penfold  
**Bernard Babani**  
This book is aimed at the complete beginner to electronic project building. It provides a complete introduction to the practical side of this fascinating hobby. Some of the topics covered include component identification, resistor colour codes, soldering, construction methods, getting 'problem' projects to work, plus simple methods of fault-finding. Here you will find everything you need to know to get started in this absorbing and creative hobby. 1996. 144 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RF09K	Electr Projects Bldg	£4.950	£4.950 NV

### A Practical Introduction to Surface Mount Devices

by Bill Mooney  
**Bernard Babani Books**  
This book takes you from the simplest possible starting point to a high level of competence in handworking with Surface Mount Devices (SMD's). The wider subjects of SM technology is also introduced, so giving a feeling for its depth and fascination. SM construction is easier, faster and cheaper for modern mass production, making it simpler to manufacture reliable electronic products at low prices.



Fortunately, the technology is also ideal for constructing small projects. therefore, hobbyists, students and anyone producing one-off circuits can use SMDs to advantage. Just a few very basic skills are all you need to get started. Subjects such as PCB design, chip control, soldering techniques and specialist tools for SM are fully explained and developed as the book progresses. Some useful constructional projects are also included. Whilst the book is mainly intended as an introduction, it is also an invaluable reference book, and the browser should find it engrossing. 1996. 113 pages. 178 x 111mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS42V	1369B Pract Intro to SMD	1+ £4.990	1+ £4.990 NV

## Maplin Series - Starting Electronics

by **Keith Brindley**  
This text provides an important introduction for the newcomer to the fascinating world of electronics. Essentially practical, all the bits and pieces that an experimenter will meet when tackling projects and building circuits are introduced and explained. Detailed and practical explanations of components are combined with clear descriptions and methods to give a thorough grounding in the basics. This is the essential primer for all electronics enthusiasts and a valuable guide for students. 1994. 234 pages. 216 x 138mm, illustrated.

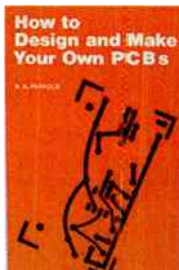


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AA93B	673B Maplin Start Elect	1+ £9.990	1+ £9.990 NV

## How to Design and Make Your Own PCBs

by **R. A. Penfold**  
**Bernard Babani Books**  
This book should enable you to familiarise yourself with both the simple and more sophisticated methods of producing PCBs. The emphasis is very much on the practical aspects of design and construction, and is highly recommended to all newcomers to electronics.



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WK63T	605D Make And Design PCBs	1+ £2.500	1+ £2.500 NV

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## Coil Design and Construction Manual

by **B. B. Babani**  
**Bernard Babani Books**  
1974. Revised Edition. 112 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

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RH53H	733 Coil Des & Const	1+ £3.950	1+ £3.950 NV

## General Theory & Practice Modern Electronics Manual

by **Wimbome Publishing**  
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This professionally written, revised edition of the Modern Electronics Manual contains practical, easy to follow information. The Manual comprises two parts. **Base Manual**  
The Base Manual contains information on the following subjects:  
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• Circuits to Build - from basic principles to circuit building, the Modern Electronics Manual describes how to assemble radios, loudspeakers, amplifiers, car projects, computer interfaces, measuring instruments, workshop equipment, security systems, etc.  
• Essential Data - extensive tables on diodes, transistors, thyristors & triacs, digital & linear ICs, and microprocessors  
• Safety  
• Specialist Vocabulary with Abbreviations  
Information is presented clearly and simply, with a comprehensive subject range, component checklists and extensive data tables. Most projects have ready-to-transfer PCB designs and detailed assembly instructions.

This is probably the most comprehensive reference work ever produced at such an affordable price! Providing you with over 1,000 A4 pages of all the essential information you will need to really get the best out of electronics. Each Base Manual is supplied complete with an attractive and durable ring-binder. A free copy of a recent Supplement is also included.

**Supplements**  
As if all the information in the Base Manual wasn't enough, regular Supplements continuously extend the Modern Electronics Manual with new material! Each Supplement contains a wealth of information. These Supplements are sent to you directly, on approval (UK only), from the publisher approximately four times a year. If you do not wish to keep a Supplement, simply return it within ten days. If you wish to keep the Supplement, simply remit the appropriate amount, as advised, to the publisher. You can cancel the Supplements at any time by

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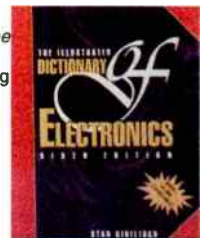
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GS46A	MEM With Supplements	£39.990	£39.990 NV

## The Illustrated Dictionary of Electronics - Sixth Edition

by **Stan Giblisco**  
This collection of terms is the most comprehensive dictionary available. Including all practical electronics and computer terms. Tables and data on subjects most often consulted for projects and experiments are included. Other conversion tables include English/metric and metric/English conversions for units of measure of energy, power, and volume, and Fahrenheit/Celsius temperature conversion charts. Setting this edition apart from other electronic dictionaries is its emphasis on illustration. Featuring more than complete definitions, this sixth edition is packed with over 450 detailed drawings and diagrams. It's all here - more than 27,000 terms used in electronics today! 1994. 766 pages. 234 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

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## Newnes Radio & Electronics Engineer's Pocket Book

by **Keith Brindley**

An invaluable compendium of facts, figures and formulae, including common transistor and diode data and pin-outs, TTL and CMOS details, radio and TV frequencies, metric conversions, wire gauges and much, much more, plus a superb index. 1989. 341 pages. 196 x 95mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RL06G	Book NB0740	£12.990	£12.990 NV

## A Beginners Guide to Modern Electronic Components

R A Penfold

**Babani**

It is easy for newcomers to electronics to become confused by the wide range of components currently available. There are now a great many different types of components on offer in shops and catalogues, often with numerous variations on each type. It can be difficult to know your carbon compositions from your metal films, and your diacs from triacs! This book covers a wide range of modern components including:-

- ★ **Resistors (Including Potentiometers)**
- ★ **Capacitors (of various types)**
- ★ **Inductors**
- ★ **Diodes (Including Zeners and Varicaps)**
- ★ **Transistors (silicon and germanium)**
- ★ **Thyristors (Including Triacs and Diacs)**
- ★ **Opto Electronic Devices**
- ★ **Operational Amplifiers**
- ★ **Logic Integrated Circuits**
- ★ **Loudspeakers and Microphones**
- ★ **Meters**

The basic functions of the components are described, but this is not a book on electronic theory, and does not assume that the reader has an in-depth knowledge of electronics. The main thrust of the book is concerned with practical aspects, such as colour codes, deciphering code numbers, and the suitability of components for given applications. Essential reading for all electronic enthusiasts.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NP79K	50 LED Circuits	£2.990	£2.990 NV

## Basic Skills – Electronics

by **Tom Duncan**

This book is suitable for anyone taking an introductory course in electronics, at school, college, or by study at home, or for anyone who wants to gain a knowledge and understanding of some of the basic principles of electronics. This book will meet the needs of those working for the Associated



Examining Board's Basic Test in Electronics. Theory is covered in Part 1, while Part 2 provides practical course work in the form of experiments and projects, and provides an opportunity to become familiar with some basic components. 1988. 120 pages. 245 x 188mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
W554J	Basic Skills Elect	£5.990	£5.990 NV

## Electronics Hobbyists Data Book

by **R. A. Penfold**

**Babani**

A cornucopia of electronics data, facts and information contained in one inexpensive volume. An essential addition to the library and workbench of anyone interested in electronics at any level. The book contains essential information about component codes, markings and details, semiconductor characteristics and pinouts, common circuits, transistors, FETs, triacs, thyristors, diodes, MIDI messages, ASCII/Baudot codes, decibel ratio, wavebands and much more. This invaluable book tells you everything you ever wanted to know about electronics, but did not know where to find it. 1996. 256 pages. 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MK67X	Elec Hobbyist Data	£5.950	£5.950 NV

## Practical Electronic Design Data

by **Owen Blishop**

**Babani**

This book is a comprehensive reference manual for electronics enthusiasts of all levels, be they hobbyists, students or professional electronic engineers. A major section of the book covers the main types of components, including surface-mounted devices. For each component, the book lists the most useful and readily available types, complete with details of their electronic characteristics, pin-outs and other useful information. A special feature of this section is the easily followed charts and tables which suggest how to select the best type of component for any particular purpose. Basic electronic units are defined, backed up by a fully explained compendium of the most often required formulae. 1992. 336 pages. 178 x 111mm, illustrated.

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## A Reference Guide to Practical Electronics Terms

by **F. A. Willson**

**Babani**

This book is in effect more than just a dictionary of practical electronics terms, it goes a stage further in also getting down to fundamentals. Accordingly the number of terms may be limited but the explanations, of the many which are included, are designed to leave the reader more competent and satisfied. Complicated mathematics has been avoided as this can be confusing on first reading. The entries are in alphabetical order, and where necessary, entries have references for further reading. The references are no more than enlightened suggestions, and the reader can choose which, if any, should be explored further. This practical reference guide is ideal for everybody concerned with electronics. 1992. 448 pages. 198 x 130mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
W159P†	Guide Electr Terms	£5.950	£5.950 NV

## A Beginners Guide to Modern Electronic Components

by **R. A. Penfold**

**Babani**

This book describes the basic functions of components but is not an electronics text book. Instead it deals with the practical aspects such as colour codes, deciphering code numbers and the suitability of components for given applications. Some of the components covered include Resistors (including Potentiometers), various types of capacitors, inductors, diodes (including Zeners and Varicaps). Transistors both silicon and germanium, opto electronic devices, operational amplifiers, logic integrated circuits, loudspeakers and microphones and meters. The book cleverly divides the components into Passive, semiconductors integrated circuits and The Rest which includes connectors, switches and multiway components. A useful index has to be used in conjunction with the contents pages, but does enable much of the detail about components to be tracked down. 1990. 176 pages. 178 x 111mm, illustrated.

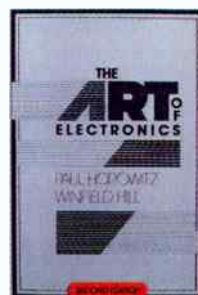
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WT61R	Guide to Elec Comps	£4.990	£4.990 NV

## The Art of Electronics

by **Paul Horowitz and Winfield Hill**

This is a text/reference book that emphasises electronic circuit design techniques and scientific measurement. Written in a down-to-earth manner it takes the reader from basic principles through to a reasonable degree of proficiency in circuit design. Included in the chapters are; transistors, feedback, operational amplifiers, active filters, regulators, digital/analogue techniques, computing and measurement, active filter designs, switched-capacitor filters, quadrature oscillators, low-dropout regulators, switching





supplies, crowbars, isolation amplifiers, SCR latchup, 'ground bounce', dynamic power dissipation, optoelectronics, RS-232 interfacing, modems, memory chips, schematic capture, AM detection, battery characteristics, sensor linearization.  
1989. 1125 pages. 254 x 176mm, illustrated.

Retail Unit Price each (inc. VAT).

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WS20W4	Art of Electronics	£35.000	£35.000 NV

## The Art of Linear Electronics

by John L. Hood

This practical handbook provides a complete working knowledge of the basics and technology of linear electronics, with application examples in such fields as audio, radio, instrumentation and television. The book assumes little prior knowledge in the subject and is both comprehensive (there are over 600 practical circuit diagrams, for example) and self-explanatory in its approach.  
1993. 400 pages. 246 x 189mm. Illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA35Q 1	Art of Linear Electr	£18.990	£18.990 NV

## Electronics

by Harry Kybett

The second edition of this self teaching guide that leads you through the basic principles of modern electronics without going into complicated mathematics. The guide shows you how to design your own working circuits.  
1986. 304 pages.  
252 x 170mm. Illustrated  
American book.



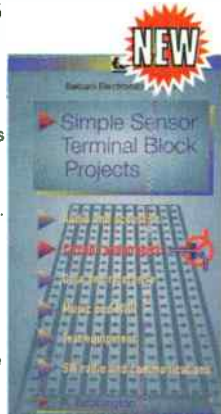
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virtually no soldering construction technique makes the projects particularly suitable for schools and young beginners.

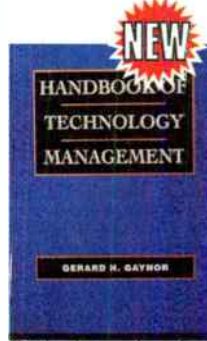
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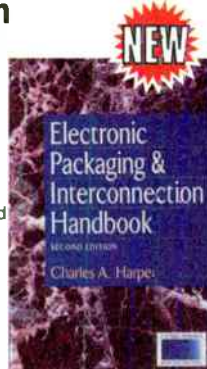
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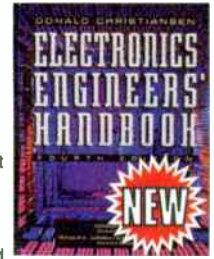
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NQ71N 1	ElectroPackages	£74.990	£74.990 NV

## Electronics Engineers' Handbook

Donald Christiansen

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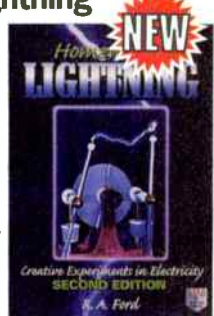
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NQ89W 1	Elec Eng Handbook	£68.990	£68.990 NV

## Homemade Lightning 2nd Edition

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McGraw-Hill

If you're searching for an electrostatics book that doesn't insult your intelligence and isn't over your head, look no further. Entertaining, instructive, and challenging, *Homemade lightning* is the only comprehensive electrostatics book filled with useful projects for serious hobbyists, students, inventors and experimentors. Updated and expanded, this edition provides you with newly discovered information on electrostatic generators and complete, step-by-step instructions for building different types of generators, including Wimshurst and Van de Graaff. Featuring beautiful illustrations from turn-of-the-century patent applications, the book also discusses Victorian era electrostatic generator design and provides hard-to-find information on electrical anomalies.



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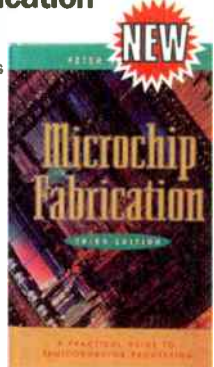
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NQ77J	Homemade Lightning	£14.990	£14.990 NV

## Microchip Fabrication

Peter Van Zant

McGraw-Hill

This one-step guide covers the entire process of microchip fabrication, from semiconductor material preparation to shipment of the finished and packaged device, using a plain English, low-math approach that avoids complex engineering theory. The new 3rd Edition details all the current issues, science, processes and materials involved. It proceeds from basic materials and process chemicals to chip packaging procedures, with more than 500 drawings and figures to make the material crystal clear. For anyone involved in semiconductor operations, marketing, quality control, training, education, or technical services, this easy-to-use guide is basic equipment.



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NQ82D 1	Chp Fabrication	£44.950	£44.950 NV

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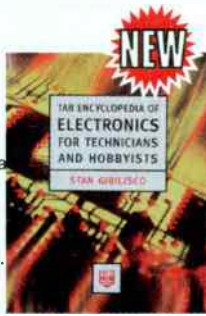
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## TAB Encyclopedia of Electronics For Technicians and Hobbyists

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McGraw-Hill

How do you set up a satellite TV system in your home? What should you know before buying a VCR or camcorder? How does a fax machine work? You'll find the answers to these and hundreds of other questions inside this information-packed volume. It covers virtually every aspect of hobby and consumer electronics in a language that is exceptionally clear, and offers just the right amount of detail while featuring an abundance of illustrations and real-world examples. It is, quite simply, the easiest-to-use and most complete popular electronics reference ever compiled.



Retail Unit Price each (inc. VAT).

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NQ66W1	Elec Encyclopedia	£52.990	£52.990 NV

## Electronics

by G. Waterworth

This book is primarily intended as a text for electrical engineering students, but is equally useful for the amateur hobbyist and is a companion volume to 'Electric Circuits', WZ07H. It describes all the common semiconductor devices, how they work and how they are used in various circuit schemes. The topics are arranged in the traditional order for semiconductor devices: diodes, BJTs, FETs and op-amps, followed by their applications in a variety of electronic subsystems such as amplifiers, oscillators, non-linear circuits, power amplifiers, regulated power supplies, power electronics systems, combinational and sequential logic circuits. The book uses up-to-date techniques and devices and includes questions on mirror, bootstrapping, the constant current source, the Miller effect, the cascade circuit, feedback amplifiers, differential amplifiers, instrumentation amplifiers, IC regulators, switch mode regulators, chopper control, programmable logic arrays, synchronous counter design, and logic hazard detection. 1991. 257 pages. 275 x 210mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ17T 1	Electronics	£10.990	£10.990 NV

## Circuit Source Book 2

R A Penfold

Babani

This book will help you to create and experiment with your own electronic designs by combining and using the various standard "building block" circuits provided. Where applicable, advice on how to alter the circuit parameters is provided. The circuits covered are mainly concerned with signal generation, power supplies, and digital electronics, please refer to CIRCUIT SOURCE BOOK



1 for details of filters, amplifiers, voltage comparators etc. The topics covered in this book include:-

- ★ 555 oscillators
- ★ Sinewave oscillators
- ★ Function generators
- ★ CMOS oscillators
- ★ Voltage controlled oscillators
- ★ Radio frequency oscillators
- ★ 555 monostables
- ★ CMOS monostables
- ★ TTL monostables
- ★ Precision long timers
- ★ Power supply and regulator circuits
- ★ Negative supply generators and voltage boosters
- ★ Digital dividers, decoders, etc.
- ★ Counters and display drivers
- ★ D/A and A/D converters
- ★ Opto-isolators, flip/flops, noise generators and tone decoders, etc.

Over 170 circuits are provided, which it is hoped will be useful to all those involved in circuit design and application, be they professionals, students or hobbyists.

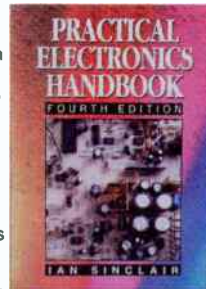
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NP68A	Circuit Source 2	£4.990	£4.990 NV

## Practical Electronics Handbook

Third Edition by Ian Sinclair

This book has been designed to include, within a reasonable space, most of the information which is useful in electronics together with brief explanations which are intended to serve as reminders rather than instructions. The book is not, of course, intended as a beginner's guide to the whole of electronics, but the beginner will find much of interest, as well as a compact reminder of electronic principles and circuits. The constructor of electronic circuits and the service engineer should find the data in this book of considerable assistance. The professional design engineer will also find items of frequent use, which are usually only available in collected form in much larger volumes. 1992. 340 pages. 216 x 138mm, illustrated.



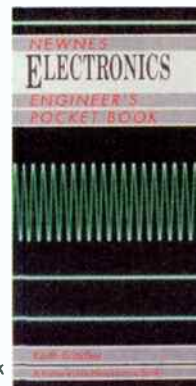
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WG01B	Book NB447	£14.990	£14.990 NV

## Newnes Electronic Engineer's Pocket Book

by Keith Brindley

This pocket book now includes the latest aspects of semiconductor technology, namely LSI integrated circuits and microprocessors and their support chips, as well as operational amplifiers and communications devices. Commencing with electron theory, semiconductors, manufacture of semiconductor devices and ICs, the book goes on to illustrate essential circuit design for amplifiers and oscillators for most applications, AF and RF. A large proportion of the book is given over to digital techniques and computer systems and their



construction, optoelectronics, servo and control mechanisms and power supplies. 1993. 315 pages. 196 x 95mm, illustrated.

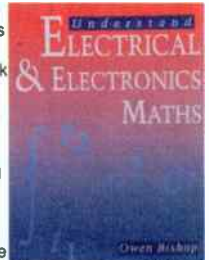
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WP67X	Elec Pocket Book	£12.990	£12.990 NV

## Understanding Electrical & Electronics Maths

Second Edition by Owen Bishop

People who find maths difficult often have problems grasping electrical and electronics theory. This book has been written for enthusiasts and students taking electronics or electrical engineering courses up to and including HNC/HND and first year degree level, and explains the mathematical principles underlying their subject. The first part of the book deals with elementary maths, filling the 'gaps' between basic school maths and more intensive study while the second part deals with more advanced topics. 'Test yourself' questions are provided at each stage to reinforce the lessons learned. 1994. 316 pages. 245 x 190mm, illustrated.



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AA32K	U/Stand Electr Maths	£14.990	£14.990 NV

## Understanding the Mathematics Of Electronics

by F. A. Wilson

Bernard Babani Books

A book for all those interested in or having a need for mathematics. It is biased slightly towards electronic engineering in the worked examples, but this need not deter those who have other interests. The text starts in a very elementary way on the assumption that many of us, equipped as we are with electronic calculators, may have forgotten how even the simplest of calculations are carried out. Progress is then through general mathematics up to a short skirmish with calculus. To some, mathematics is the most enjoyable of subjects, accordingly the text has been designed for the greatest ease and interest, and hopefully help to the reader. 1996. 160 pages. 178 x 111mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

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GS28F	Und Maths of Electr	£5.990	£5.990 NV



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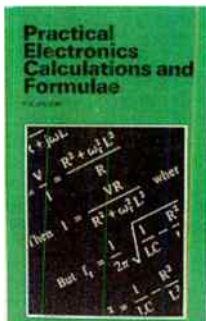
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## Practical Electronic Calculations & Formulae

by F. A. Wilson

**Bernard Babani Books**

This book aims to bridge the gap between complex technical theory and trial and error practical methods. It is in six sections: units and constants, DC circuits, passive components, AC circuits, networks and theorems, and measurements. 1979. 256 pages. 178 x 111mm.



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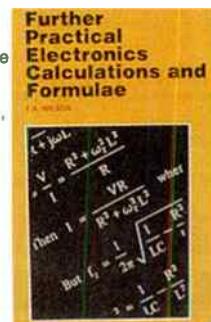
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RQ23A	Pract Elec Calcs	£3.950	£3.950 NV

## Further Practical Electronics Calculations and Formulae

by F. A. Wilson

**Bernard Babani Books**

A companion volume to the original reference book Practical Electronics Calculations and Formulae, this version continues on from where the other finishes. Where the first book deals with components, elementary circuit analysis, networks and measurements, this book encompasses many aspects of electronics where a knowledge and familiarity of the appropriate formulae is essential for a fuller understanding of the subject, in order to achieve the desired results. Written in the same style as the first volume, but which it does not replace, this is a practical workshop manual. 1986. 464 pages. 178 x 111mm, illustrated.



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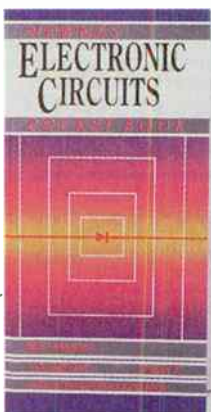
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WP68Y	Further Elec Calcs	£4.950	£4.950 NV

## Electronic Circuits Pocket Book

Volume 1

by Ray Marston

This information packed book is a single-volume applications guide to the most popular and useful linear ICs, and presents a total of 625 diagrams, tables, and carefully selected practical circuits, backed up by over 50,000 words of highly informative text. It deals with many strictly linear ICs such as op-amps, audio preamplifiers, power amplifiers, signal conditioners and power supply regulators, etc., as well as various 'hybrid' configurations, which use a mixture of linear and digital devices, such as the 555 timer IC, bargraph display drivers, CCD delay lines, function and waveform generators, phase-locked-loops (PLLs), and power control ICs. Each subject is treated in an easy-to-read, concise, highly practical and non-mathematical manner. Great emphasis is placed on practical 'user' information and circuitry throughout.



and most of the ICs and other devices used in the practical circuits are modestly priced and readily available, with universally recognised type numbers. 1991. 336 pages. 197 x 95mm, hard cover, illustrated.

Retail Unit Price each (inc. VAT).

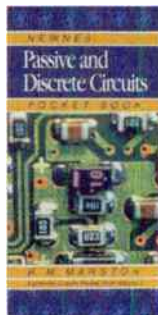
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WZ48D	Electronic Circuits	£12.990	£12.990 NV

## Electronic Circuits Pocket Book - Volume 2

by Ray Marston

**Newnes**

This volume complements the best-selling volume one, and is produced in the same informative style. Covering passive electrical components, transducers and simple discrete semiconductor devices, this book has a total of 670 diagrams, tables and carefully selected practical circuits. The informative text explains the basic features and important details of modern passive components such as resistors, capacitors, inductors, switches etc., as well as relays, loudspeakers, 'phones, diodes, transistors, SCRs and TRIACs etc. These devices form the basic building blocks on which modern electronics circuits are based. The text is non-mathematical and highly practical, and is aimed at engineers, technicians, students and experimenters who can build a design directly from a circuit diagram. 1993. 375 pages. 197 x 95mm, illustrated.



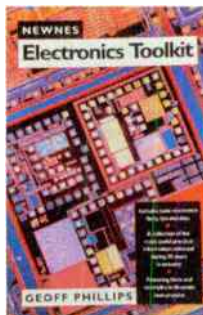
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AA25C	Electronic Circuits2	£12.990	£12.990 NV

## Newnes Electronics Toolkit

by Geoff Phillips

If you've ever wished for a concise and comprehensive guide to electronics concepts and rules of thumb, look no further. You've just found it! In this book the author makes use of his 30 years in the industry to draw together the basic information that's constantly in demand. The result is a handy 'workmate' that presents the basic facts, tips, data and examples of best practice in a practical guide that'll act as memory jogger, tutor and reference source. 1993. 158 pages. 234 x 155mm. Illustrated.



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AA49D †	Electronics Toolkit	£12.990	£12.990 NV

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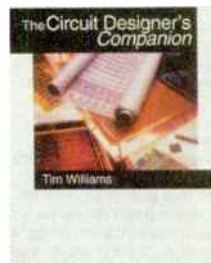
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## The Circuit Designer's Companion

Second Edition

by Tim Williams

Electronic circuit design can be divided into two areas: designing a circuit that will fulfill its specified function and designing the same circuit so that every production model will fulfill its specified function reliably over its lifetime. This book is aimed at helping those people responsible for, or with an interest in, the second area. It covers grounding, PCB design and layout, the characteristics of passive and active components, linear ICs, logic circuits, power supplies and much more, all with the stress on keeping within production and costs constraints.



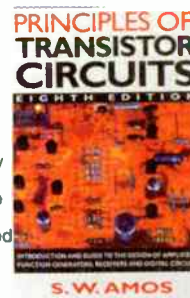
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AA50E †	Circ Design Companion	£16.990	£16.990 NV

## Principles of Transistor Circuits

by S. W. Amos

Although integrated circuits (ICs) have widespread applications, the role of the discrete transistor is undiminished whether used in building blocks or as practical solutions to design problems. This is particularly relevant when appreciable power output or high voltage is required. The book is written in a clear and detailed way, and includes the very latest devices such as laser diodes, Trapat diodes, optocouplers and GaAs transistors, as well as the latest techniques for line output stages and switch mode power supplies. This latest edition includes circuit techniques covering current-dumping amplifiers, bridge output stages, dielectric resonator oscillators, crowbar protection circuits, SHF amplifiers in satellite receivers, video clamps, picture enhancement circuits, motor drive circuits in video recorders and camcorders etc., and much more. 1994. 400 pages. 215 x 134mm, illustrated.



Retail Unit Price each (inc. VAT).

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AN16S	Principles Trans Cct	£18.990	£18.990 NV

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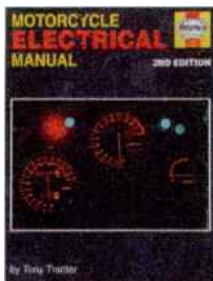
## Motorcycle Electrical Manual

Second Edition

by Tony Tranter

Haynes

This comprehensive manual explains how the electrical systems work, troubleshooting, and how to fix electrical gremlins quickly and effectively when faults develop, so that your motorbike retains a reliable temperament. And you do not need to have prior experience in electrics, for this book begins with a description of the basic principles before launching into the deep end of magnetos, electronic ignition, ABS brakes, traction control and three-phase alternators! These parts, and all others of a motorcycle's electrical system, are catered for by this manual, together with sections on wiring, tools, testing and theft deterrents. 1993. 204 pages. 270 x 210mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BH74R	Motorcycle Elect Man	£13.990	£13.990 NV

## Electronic Testing and Inspection

by Keith Brindley

This book has been produced in association with the Engineering Training Authority, and can be used as a reference for trainees and students, or as a back-up reference for more experienced staff. The book details many aspects of test engineers' everyday tasks, including sections on tools and equipment, basic tools, meters, practical use of meters, insulation test meters, bridges, signal generators, oscilloscopes, timer counters, AF power meters and power supply units. On the inspection side there are details given for inspection techniques, final inspection and component identification. In addition to all the information that is provided on testing and inspection, there are sections on CEN, ISO, IEC and CENELEC specifications and standards, in order for the test engineer to keep within the appropriate guidelines for quality, safety, and for working practices. The book is packed full of hints, tips and precautions to allow the electronic test engineer to do his job with the highest level of safety and accuracy. 1994. 289 pages. 198 x 90mm, illustrated.



Retail Unit Price each (inc. VAT).

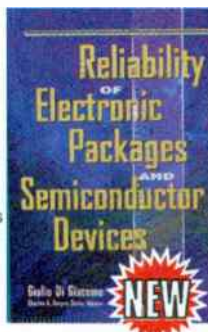
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AN09K	Elec Testing & Inspec	£12.990	£12.990 NV

## Reliability of Electronic Packages and Semiconductor Devices

Giulio Di Giacomo

McGraw-Hill

Learn the latest methods for dealing effectively with the failure mechanisms that greatly reduce the useful life of semiconductor components in microelectronic packages. This first-of-its-kind guide cuts across different technologies and materials to give you a practical and reliable model for predicting and extending component lifetimes. Written by one of the top experts in the field, this



book offers you in-depth coverage of empirical modelling for a wide range of failure mechanisms, including interconnection fatigue, solder creep, electromigration, thermomigration, current leakage, and more.

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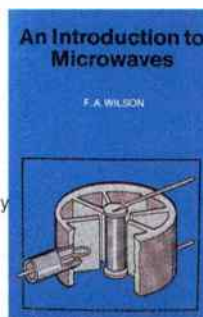
Order Code	Type	Price each exc. VAT	inc. VAT each
NQ29G 1	Reliabil Etec Pack	£48.990	£48.990 NV

## An Introduction to Microwaves

by F. A. Wilson

Bernard Babani Books

This is an introductory book and no background in microwave technology is needed, although some elementary electronics experience is assumed. The mathematics required are little more than ordinary algebra. Organisation of the book is straightforward. Brief reminders and technical explanations of those facets of electronics important for an appreciation of microwaves are followed by chapters on microwave generators and amplifiers. This leads on to the practical uses of microwaves in communications generally, mobile communication and television. The book ends with a look at radar and heating, and includes notes on the domestic microwave cooker. 1992. 160 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

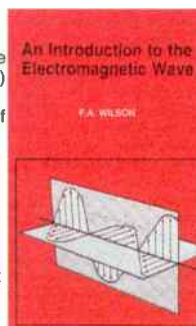
Order Code	Type	Price each exc. VAT	inc. VAT each
WZ42V	Intro Microwaves	£3.950	£3.950 NV

## An Introduction to the Electromagnetic Wave

by F. A. Wilson

Bernard Babani Books

The electromagnetic wave has been on and around the earth (and everywhere else) since time immemorial. We cannot expect to cover all of its antics in such a small book, but we can at least make some inroads on the subject and certainly gain an appreciation of this inexplicable wonder. Our subject is a complicated one so the first chapters are needed to discuss its' nature and how it behaves. Then in a more practical way the later chapters centre on radio waves in their freedom in ground, sky and satellite applications, followed by waves not so free in waveguides, optical fibres and heating. Altogether a round-up of the better known escapades of the electromagnetic wave requiring no more than elementary mathematics, but presuming that the reader has some basic knowledge of electronics. 1993. 120 pages, 178 x 111mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

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AN66W	Intro Electrmag Wave	£4.950	£4.950 NV



## Semiconductors

SIEMENS

This book introduces modern technologies of semiconductor manufacturing. It gives an impression of the large variety of products and applications and of the growing complexity of semiconductors.

Keywords:

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- ★ Optoelectronic Semiconductors
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NF00A	Semiconductors	£9.990	£9.990 NV

## Electronics

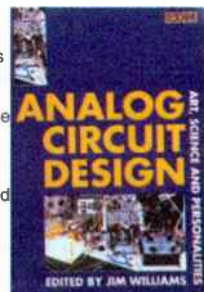
### Analogue

## Analog Circuit Design, Art, Science and Personalities

Second Edition

Edited by Jim Williams

This is a collection of essays from 24 contributors (all experts in their field in the USA), brought together to provide a tour through the world of analogue design and combining theory and applications with the philosophies behind the design process. The topics covered include the definition of analogue design, the making of an analogue designer, design intuitions and insights and a section for techniques, tips and applications. The book provides a wealth of practical working circuits together with anecdotes from each author's experience. 1993. 390 pages. 250 x 175mm. Illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA31J 1	Analog Crct Design	£22.500	£22.500 NV

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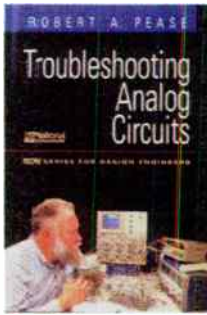
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## Troubleshooting Analog Circuits

by Robert A. Pease

This book contains a wealth of tips on the techniques and methods used to debug and troubleshoot analogue circuits. Aimed at analogue/digital engineers, students and enthusiasts, the book highlights the issues, gives advice on the range of equipment that can be used to troubleshoot and supplies step-by-step procedures to 'walk you through' analogue troubleshooting methods.

1991. 218 pages. 255 x 178mm. Illustrated. American book.



Retail Unit Price each (inc. VAT).

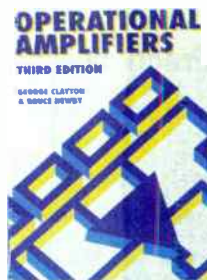
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AA30H	Title Sht Analog Cirt	£18.990	£18.990 NV

## Operational Amplifiers

3rd Edition

by George Clayton & Bruce Newby

Provides an insight into the capabilities of modern operational amplifiers, and also discusses in detail the problems encountered in practical applications. 1992. 570 pages. 214 x 138mm, illustrated, hardback.



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RR26F 1	Book NB2028	£25.000	£25.000 NV

## Oscillator Design and Computer Simulation

Randell W Rhea

McGraw-Hill

Here is an essential tool for keeping up with the rapid growth in communications technology. You'll find a clear, step-by-step approach to the design of oscillators for a variety of applications, including wireless voice and data communication, instrument, consumer, satellite, and other RF and microwave systems. Filled with real-life examples and case studies, the Second Edition of this vital resource offers you the basic skills needed to develop your own state-of-the-art designs - instead of merely modifying previous circuits.



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NQ46A 1	Oscillator Design	£18.990	£48.990 NV

## Operational Amplifier User's Handbook

by R. A. Penfold

Bernard Babani Books

This book deals with the properties and applications of modern operational amplifiers. Chapter one covers the standard operational amplifier building blocks, with the emphasis on the improvements that can be made by using modern devices. Chapter two deals with practical applications using the devices, such as very low noise, precision DC, high output current and wide bandwidth types. Many practical circuits are included such as low noise tape and RIAA preamplifiers, audio power amplifiers, DC power controllers, the audio millivolt meter, temperature monitor and many more. A useful and invaluable book for all those involved in electronics.

1994. 128 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

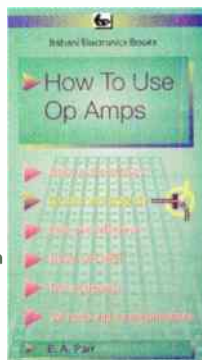
Order Code	Type	Price each exc. VAT	inc. VAT each
AA78K	OpAmp Users H/Book	£4.950	£4.950 NV

## How to Use Op-Amps

by E. A. Parr

Bernard Babani Books

This designers' guide covering many operational amps serves as a source book of circuits and a reference book for design calculations. The book covers basic circuits, oscillators, audio circuits, filters, power supplies, and a large selection of miscellaneous circuits. here is also a short section of constructional notes and fault-finding details. 1982. 160 pages. 178 x 111mm, illustrated. British book.



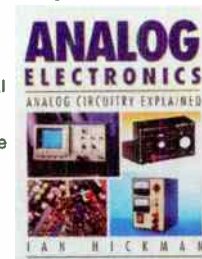
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Order Code	Type	Price each exc. VAT	inc. VAT each
WA29G	Book BP68	£3.990	£3.990 NV

## Analog Electronics Analog Circuitry Explained

by Ian Hickman

Many young designers are lured away from fundamental electronics to the more 'glamorous' digital work. Yet there are still many simple requirements for which a purely analogue realisation is cheaper and more reliable than a microprocessor based solution. The author includes many examples from his large collection of circuits built up over many years, selected for their usefulness in a wide range of applications. They are practical analogue circuits, complete with component values in many cases, representing over a quarter of a century of working experience packed into a single volume. But the book is also completely up-to-date and with the latest developments and techniques, and will enable the reader to acquire an easy familiarity with the circuitry and how it works - and also why it fails, if it should do so. The book is intended for anyone already involved in electronics, either as a hobby or professionally - amateurs, students, technicians,



graduates and even chartered engineers will all benefit from reading this book. 1993. 342 pages. 245 x 189mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT07H2	Analog Electronics	£18.990	£18.990 NV

## Practical Electronic Filters

by Owen Bishop

Bernard Babani Books

Filters play a vital part in almost all electronic circuits, this book deals with the subject in a non-mathematical way. It reviews the main types of filter, explaining in simple terms how each type works and how it is used. The book also presents a dozen filter-based, practical projects with applications in and around the home or in the constructor's workshop. These include a number of audio projects such as a rhythm sequencer and a multi-voiced electronic organ. Project descriptions include circuit diagrams, explanations of their operation, and detailed instructions for building them. The book is a practical step-by-step guide to designing simple filters for a wide range of purposes, with circuit diagrams and worked examples. 1991. 208 pages. 178 x 111mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ22Y	Pract Elec Filters	£4.950	£4.950 NV

## Digital

### Understanding Digital Technology

by F. A. Wilson

Bernard Babani Products

Initially, digital technology looks relatively simple, but there is more to it than at first might be imagined; and we have come to accept that it is here to stay, and to some extent is taking us over! This probably happened with the arrival of the computer several years ago. But at the same time, digital technology was also creeping into the telecommunications world, to such an extent that thousands of digital channels are accommodated on a single hair-width glass fibre. This book first examines what this technology has to offer, and then considers its arithmetic and how it can be arranged for making decisions in so many processes. This is followed by a look at the part played in IT, especially in modern transmission systems and television. The mathematics at all times is kept to a minimum. An interesting delve into the digital world both for the beginner and those who need some revision or updating. 1996. 150 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

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FN22Y	Understand Dig Tech	£4.950	£4.950 NV

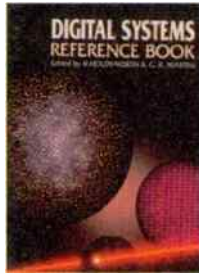
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### Digital Systems Reference Book

Edited by B. Holdsworth and G. R. Martin

The Digital Systems Reference Book has been designed to provide comprehensive coverage of digital systems for everyone working in the digital field, including engineers, academics and scientists. It has five sections - Fundamentals, Devices for Digital Systems, System Design & Techniques, System Development, and Applications - each made up of self-contained chapters written by an acknowledged expert from within industry or academia.



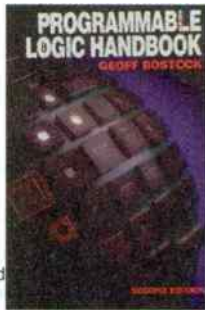
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Order Code	Type	Price each exc. VAT	inc. VAT each
AA46A †	Dig Systems Ref Book	£40.000	£40.000 NV

### Programmable Logic Handbook

Second Edition by Geoff Bostok

This book has been written to provide electronic design engineers, technicians and students with a thorough grounding in programmable logic. Contents include an introduction to logic devices, logic structures, techniques, combinational & sequential PLDs, LSI & FPGAs, design support and programmable logic applications.



1993. 256 pages. 234 x 156mm. Illustrated.

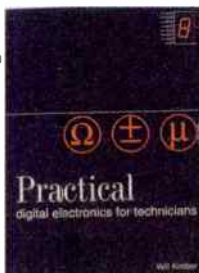
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA34M †	Prog Logic Handbook	£27.500	£27.500 NV

### Practical Digital Electronics for Technicians

by Will Kimber

For engineers, for whom 'practice' is a way of life, the current emphasis on course work seems an obvious and natural feature of effective training. With this in mind, this book gives an explanation of the basic theory of digital techniques reinforced by 40 practical exercises. These exercises can be carried out with equipment that is normally readily available in education departments running electronics courses. The book is primarily aimed at students studying for BTEC Electronics at levels NII/NIII, but it will also be applicable to those students studying the optional Electronics unit of the GNVQ in engineering at intermediate and advanced levels. The exercises are laid out in a 'cookbook' style, and are intended to provide the opportunity to become familiar with a wide range of digital integrated circuits, and to gain a thorough understanding of the way digital systems work.



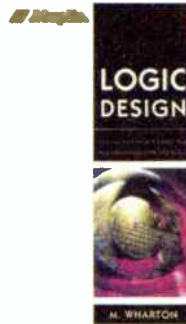
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AN30H †	Pract Dig Elec Tech	£12.990	£12.990 NV

### Maplin Series - Logic Design

by M. Wharton

This book offers a clear and concise introduction to logic circuit design and is based on a collection of feature articles that originally appeared in Electronics - The Maplin Magazine. As well as providing a first guide for the beginner, the volume includes practical information and reference material for the more experienced electronics enthusiast or student.



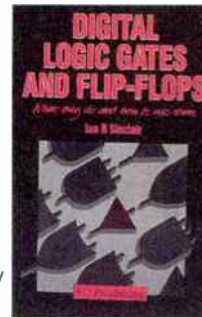
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AA90X	Maplin Logic Design	£9.990	£9.990 NV

### Digital Logic Gates and Flip-Flops

by Ian R. Sinclair

This book is intended for enthusiasts, students and technicians, and seeks to establish a firm foundation in digital electronics by treating the topics of gates and flip-flops thoroughly. This is not a constructor's book in the sense of presenting circuits to build and use, it is for the user who wants to design and troubleshoot digital circuitry with considerably more understanding of principles than the constructor, and who wants to know more than a few rules of thumb about digital circuits. Topics such as Boolean algebra and Karnaugh mapping are explained, demonstrated and used extensively, and more attention is paid to the subject of synchronous counters than to the simple but less important ripple counters. No background other than a basic knowledge of electronics is assumed, and the more theoretical topics are explained from the beginning, as also are many working practices. The book concludes with an explanation of microprocessor techniques as applied to digital logic.



1989. 198 pages. 216 x 138mm, illustrated.

Retail Unit Price each (inc. VAT).

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WS36P	Digi Logic Gates & FF	£8.950	£8.950 NV

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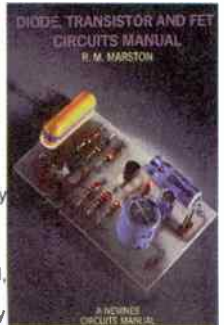
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### Circuit Source Books

#### Diode, Transistor and FET Circuits Manual

by R. M. Marston

This is primarily a manual of circuits based on 'discrete' semiconductor components such as diodes, transistors, FETs and associated devices, and as such it presents a total of over 340 carefully selected and outstandingly useful practical circuits, diagrams, graphs and tables. It deals with its subject in an easy-to-read, down-to-earth, non-mathematical but very comprehensive style. The manual is specifically aimed at the practical design engineer, technician and experimenter, but will also be of interest to the electronics student and the amateur.



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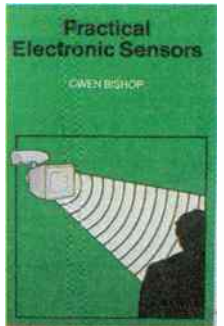
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WZ18U	Diode/Trans Manual	£13.990	£13.990 NV

#### Practical Electronic Sensors

by Owen Bishop

Bernard Babani Books

This book describes various types of sensors and the ways in which they are used to monitor almost every aspect of the environment, how each type works and how its signals are processed electronically to produce a meaningful result. A dozen constructional projects, with functions which apply to the domestic environment in and around the home, and include: sunshine duration meter; temperature alarm; passive infra-red intruder; car/bicycle alarm; wind direction indicator; inductive proximity detector; sound level meter; sound controlled switch; tachometer; gas alarm; water level controller; and model speed controller.



1991. 192 pages. 178 x 111mm, illustrated.

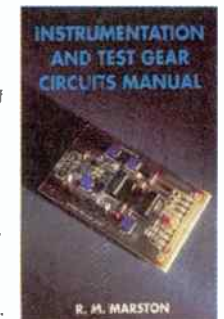
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WZ00A	Pract Elec Sensors	£4.950	£4.950 NV

#### Instrumentation and Test Gear Circuits Manual

by R. M. Marston

Primarily, this book is a manual of modern instrumentation and test gear circuits that will be of immense value to the industrial, commercial, or amateur electronics engineer or designer. This book is filled with nearly 500 varied and extremely useful, carefully selected practical circuits, diagrams, graphs and tables. The diverse range of practical circuits covers: attenuator and filter circuits; basic meter and multimeter circuits; electronic analogue meter circuits; digital panel meter circuits; waveform generator circuits; scope trace doubles; timebases; digital frequency meters; power supply circuits; and



many more. The majority of the semiconductors specified in the designs are reasonably priced and readily available.  
1993. 440 pages. 225 x 138mm, illustrated.

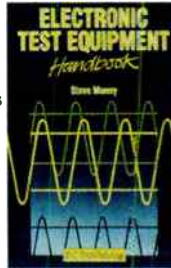
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AA375 1	Test Equip Hdbk	£16.990	£16.990 NV

## Electronic Test Equipment Handbook

by Steve Money

In this book the principles of the various types of test instrument are explained in simple terms with a minimum of mathematics. The problem is going to be what to choose given a limited budget. Here you will find described a wide selection of test instruments ranging in complexity from the humble continuity tester through analogue and digital multimeters to the next most popular item, the oscilloscope, followed by signal generators and finishing with computer controlled testing equipment.  
1990. 206 pages, 216 x 134mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT18U	Elec Test Equip Hdbk	£8.950	£8.950 NV

## Circuit Source – Book 1

by R. A. Penfold

Bernard Babani Books

This book has been written to help the reader create and experiment with their own electronic designs by combining, and using, the various standard building block circuits described in the book. To widen the possible use of some circuits, advice is given on how to alter the circuit parameters. Many simple projects can be built up from standard circuit blocks, and this book will be invaluable to those who are embarking on an electronic project design. To the more experienced circuit designer, it will be a very useful reference source, for all the circuits are tried and tested, and are not just theoretical circuits. Example values are given, together with advice on how to alter the values of components so as to alter the circuit parameters, e.g., to vary the value of a filter frequency, or amplifier gain etc. Explanation of circuit block functions and what they do, is not given in great detail, for the book is only intended for those who have some knowledge of electronics. However, no advanced mathematics is required in order to make use of this book.  
A very useful and handy book for all professionals, students and hobbyists to have in their book collection.  
1993. 192 pages. 178 x 111mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ92A 2	Circuit Source Book1	£4.990	£4.990 NV

† = While Stocks Last

## Circuit Source – Book 2

by R. A. Penfold

Bernard Babani Books

This book provides a number of electronic circuits which make useful 'building blocks' for designers of electronic projects. The book is divided into four chapters with the first chapter covering oscillators and includes 555 astables, op amp oscillators, sinewave and function generators, VCOs, CMOS oscillators and RF oscillators. Chapter two covers monostables and timers, and includes precision timers. Chapter three discusses digital circuits and covers A-to-D, and D-to-A circuits as well as many other types of digital circuits. Finally, chapter four describes power supplies. The book is really only intended for those that have some background knowledge in electronics. However, no advanced mathematics is required in order to make use of this book.

Over 170 circuits are provided which should provide a useful reference source for those involved in circuit design and applications, whether they are professional, student or a keen hobbyist.  
1993. 192 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

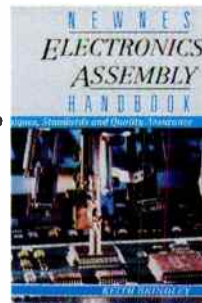
Order Code	Type	Price each exc. VAT	inc. VAT each
AA05F	Circuit Source Book2	£4.950	£4.950 NV

## Power Control Circuits Manual

by R. M. Marston

Newnes

Electronic Power Control techniques are used to control (either manually or automatically) the brilliance of lamps, the speed of electric motors, the temperature of heating elements, the loudness of audio signals and so on. This control can be achieved using electro-mechanical means via switches and relays, or by electronic components such as transistors, SCR's, TRIAC's and power IC's. This book takes an in-depth look at the whole subject of electronic power control, and presents the reader with a vast range of useful circuits and diagrams. Subjects covered include basic principles, switch and relay circuits, CMOS switches and selectors, AC power control and DC power supply methods, and including audio power amplifiers and some used for in-car systems. The manual is primarily aimed at the practical design engineer, technician and experimenter as well as the electronics amateur enthusiast.  
1990. 206 pages. 214 x 136mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT05F	Power Control Manual	£13.990	£13.990 NV

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## Power Electronics Handbook – Components, Circuits and Applications

by F. F. Mazda

The aim of this book is to provide the power electronics engineer with all the information to design power circuits for a variety of applications. It describes the characteristics of power semiconductor devices, and how they are used in power circuits.

The book sets out to give the maximum amount of information in a concise form, with the emphasis being on the practical rather than the theoretical. The book is conveniently divided into three parts. Part One, components, covers power semiconductor devices, thermal design, power semiconductor components, EMC, and power semiconductor protection. Part Two, circuits, discusses static switches, AC line control, phase-controlled rectification and inversion, direct AC frequency converters, forced commutation techniques, DC to DC converters and DC link frequency converters. Part Three describes some of the applications of power semiconductor circuits, such as power supplies, electrical machine control, heating and lighting and electromechanical applications. A list of symbols used, a glossary of terms and a bibliography are provided in the book. The book is profusely illustrated and will be of great interest to the power electronics engineer and student.  
1993. 418 pages. 231 x 154mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA07H 1	Power Electron Hdbk	£19.990	£19.990 NV

## Electronic Modules and Systems for Beginners

by Owen Bishop

Bernard Babani Books

Forget having to 'reinvent the wheel' as it were, and design electronic systems using already established and developed circuit designs. Many oscillators, bistables, monostables and amplifier stages use time honoured techniques that are known to work. This book describes over 60 electronic circuit modules; how they work, how to build them and how to use them. In the process of working with these 'building blocks' you will learn the basic fundamentals of many established designs. Many modern electronics engineers are systems, not circuit, designers. Become such a systems designer and combine the modules together to make hundreds of different electronic systems, both analogue and digital. To show you how over 25 actual electronic systems are described in detail, covering such diverse applications as timing, home security, measurement, audio, including a simple radio receiver; games and remote control. Although a book aimed at beginners, introducing the principles and practice of electronics, there are plenty of circuit ideas for the more experienced constructor too.  
1989. 208 pages. 178 x 111mm, illustrated.



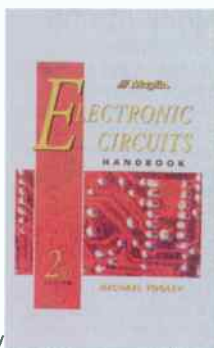
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Order Code	Type	Price each exc. VAT	inc. VAT each
WS79L	Elect Modules & Syst	£3.950	£3.950 NV

## The Maplin Electronic Circuits Handbook

by Michael Tooley

This book contains a unique collection of practical working circuits together with supporting information so that circuits can be produced in the shortest possible time and without recourse to theory. The circuits have been thoroughly tested and, wherever possible, a range of commonly available, low-cost components is used. The circuits can be readily modified and extended by the reader to meet his or her own application. Related circuits are grouped together and cross referenced within the text and an index, identifying which common types can be interconnected and produce more complex systems. As far as is possible a common range of supply voltages, signal levels and impedances have been adopted. The book assumes that the reader has an elementary understanding of electrical principles and is familiar with common units and quantities. A selection of Maplin projects is included. 1990. 288 pages. 246 x 189mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT02C 1	Maplin Elec CCTS Hbk	£14.990	£14.990 NV

## Simplified Design of Micropower and Battery Circuits

by John Lenk

This book provides a simplified, step-by-step approach to micropower and supply cell circuit design. No previous experience in design is required to use the techniques described, thus making the book well suited for the beginner, student, or experimenter as well as the design professional. The book concentrates on the use of commercial micropower ICs by discussing selections of external components that modify the IC-package characteristics. The basic approach is to start design problems with approximations for trial-value components in experimental circuits, then to vary the component values until the desired values are produced. Although theory and mathematics are kept to a minimum, operation of all circuits is described in full. 1995. 240 pages. 234 x 152mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HV10L †	MicroPower&Batt Ccts	£22.990	£22.990 NV

## Practical Oscillator Circuits

by A. Flind

Bernard Babani Books

One of the most frequently used electronic 'building blocks' is the oscillator, and the aim of this book is to provide a rich source of these for enthusiasts to experiment with and perhaps use in their own designs.

Extensive coverage is given to circuits using capacitors and resistors to control frequency. Designs using CMOS, timer ICs and Op-amps are all described in details, with a special chapter on 'waveform generator' ICs. Reliable 'white' and 'pink' noise generator circuits are also included. Various circuits using inductors and capacitors are covered, with emphasis on stable low frequency generation. Some of these are amazingly simple, but are still very useful signal sources. Crystal oscillators have their own chapter. Many of the circuits shown use readily available special ICs for simplicity and reliability, and offer several output frequencies. Finally, complete constructional details are given for an audio sinewave generator, which will prove to be a most useful piece of test equipment for any enthusiast's workshop. 1996. 133 pages. 178 x 111mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN61R	Pract Osc Circuits	£4.990	£4.990 NV

## Timer/Generator Circuits Manual

by R. M. Marston

This book is mainly concerned with waveform generator techniques and circuits. Waveform generators are used somewhere or other in most types of electronic equipment, and thus form one of the most widely used classes of circuit. They may be designed to produce outputs with sine, square, triangular, ramp, pulse, staircase, or a variety of other forms. The generators may produce modulated or unmodulated outputs, and the outputs may be of single or multiple form. The book is divided into 11 chapters presenting over 300 practical circuits, diagrams and tables. These comprise basic principles; sine wave generators; pulse generators; 'timer IC' generator circuits; triangular and sawtooth generators; multiple waveform generation; waveform synthesiser ICs; special waveform generators; phase-locked loop circuits; and miscellaneous '555' circuits. 1990. 278 pages. 215 x 138mm, illustrated.



Retail Unit Price each (inc. VAT).

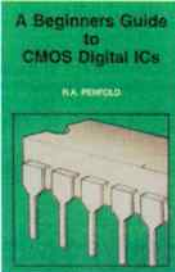
Order Code	Type	Price each exc. VAT	inc. VAT each
WT44X	Timer Generator Ccts	£13.990	£13.990 NV

## A Beginner's Guide to CMOS Digital ICs

by R. A. Penfold

Bernard Babani Books

This handy, inexpensive little book introduces the reader to the basics of simple logic circuits and then progresses to specific CMOS logic integrated circuits. No previous knowledge of logic circuits is assumed, but an understanding of general electronics is necessary. The circuits described in the book are practical applications of CMOS logic, and cover such applications as oscillators, monostables, flip/flops, binary counters, binary dividers, decade counters and display drivers. 1993. 128 pages. 178 x 111mm, illustrated.



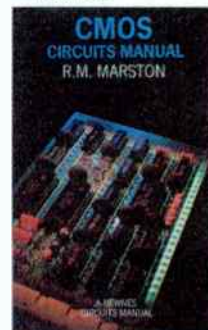
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Order Code	Type	Price each exc. VAT	inc. VAT each
AA22Y	CMOS Digital ICs	£4.950	£4.950 NV

## Modern CMOS Circuits Manual

by R. M. Marston

This manual examines operating principles and practical applications of modern medium-speed and 'fast' CMOS digital ICs. 470 carefully selected circuits, diagrams, graphs and tables are supported by the informative 'how to' text and by detailed descriptions of more than 120 modern CMOS ICs and their practical applications. Using clear and comprehensive language, each chapter begins with an explanation of the basic principles of the subject followed by the presentation of circuits and useful data. Although ideal for practical design engineers and technicians, this book will doubtless also be of great interest to hobbyists and students of electronics. 1995. 288 pages. 233 x 153mm, illustrated.



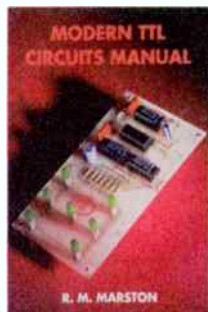
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Order Code	Type	Price each exc. VAT	inc. VAT each
AA38R	CMOS Circuits Manual	£14.990	£14.990 NV

## Modern TTL Circuits Manual

by R. M. Marston

Today, digital electronics is dominated by two basic logic technologies - TTL and CMOS - both of which are used in the most widely used range of high-speed, general-purpose digital ICs, the '74' series. This handy and unique book takes an in-depth look at the 74 series of ICs, with particular reference to the TTL range of devices, but mentioning modern CMOS types where they are more advantageous to use. Packed with over 360 useful and carefully selected circuits, diagrams, graphs and tables, this book will become an indispensable aid to all practical design engineers, technicians, and experimenters. However, the comprehensive text is easy to read and mainly non-mathematical, and so will be of great interest to all amateurs and students of electronics. 1994. 227 pages. 215 x 138mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN14Q	TTL Circuits Manual	£14.990	£14.990 NV

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## A Beginners Guide to TTL Digital ICs

by R. A. Penfold  
**Bernard Babani**

Logic circuits are now a part of everyday life with practically every household equipped with numerous gadgets that contain TTL Digital ICs. Getting to grips with logic circuits, though, can be difficult as many of the fundamental concepts can seem rather abstract. This book takes the beginner through the basic concepts of logic circuits and explains the functions, characteristics and uses of TTL Digital ICs. The emphasis is on the practical treatment of the subject and all of the circuits are based on real world TTL ICs and have been chosen to demonstrate their use in practical applications. 1993. 150 pages. 178 x 110mm. Illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CJ25C	11540	1+	1+
	Bag Guide to TTL ICs	£4.950	£4.950 NV

## 50 Simple LED Circuits

by R. N. Soar

**Bernard Babani Books**

Circuits using LEDs and displays. 50 different ones are described. 1977. 64 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

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RF12N	8151	1+	1+
	Book BP42	£1.950	£1.950 NV

## 50 Simple LED Circuits – Book 2

by R. N. Soar

**Bernard Babani Books**

A useful sourcebook of circuits using LEDs. Fifty are shown including LED test circuit, battery monitor, flasher, diode and transistor testers, magic boxes and many more. 1981. 64 pages. 180 x 108mm, illustrated.



Retail Unit Price each (inc. VAT).

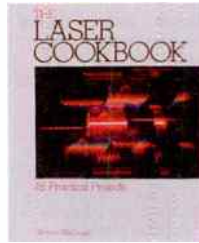
Order Code	Type	Price each exc. VAT	inc. VAT each
WG43W	8340	1+	1+
	Book BP87	£1.950	£1.950 NV

## Optoelectronics

### The Laser Cookbook

by Gordon McComb

This book gives you the opportunity to investigate, first hand, a relatively new and evolving science. With this book you can create and experiment with simple to advanced level lasers that have real, practical applications! The 88 laser based projects presented here are geared toward the workshop experimenter on a limited budget. Spanning a wide range of disciplines, the projects vary from experimenting with laser optics and constructing a laser optical bench to using lasers for light shows, gunnery practice, even beginning and advanced holography. **Warning:** This is an American book and references to mains voltages do not apply in the UK. 1988. 404 pages. 234 x 189mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

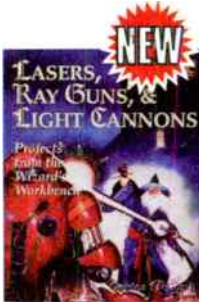
Order Code	Type	Price each exc. VAT	inc. VAT each
WS35Q1	818	1+	1+
	Laser Cook Book	£21.990	£21.990 NV

### Lasers, Ray Guns, and Light Cannons

Gordon McComb

**McGraw-Hill**

Put on a professional-level laser light show, create holograms, and perform dozens of other fascinating and fun experiments with the simple instructions in this magic-packed book. Renowned electronics writer Gordon McComb shows you how to build more than 88 exciting projects with inexpensive, easily obtained components and step-by-step instructions. Laced with fascinating scientific history, this book of field-tested projects is organised to facilitate your own creative construction! Module organisation makes it easy to invent and construct new projects galore. Full appendices give you parts sources, suggested reading, and a glossary.



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NQ33N	17518	1+	1+
	Lasers	£16.990	£16.990 NV

### 35 Opto-Display Terminal Block Projects

R Bebbington

**Babani**

Electrical and electronic projects that respond to light, or produce it, have always been popular with constructors. However, the development of multi-coloured light-emitting diodes (LEDs) with lower power consumption than bulbs, has opened up a fascinating new opto-display field, particularly suited to beginners in electronics. To encourage newcomers, and anxious parents, none of the projects require hot soldering irons or high voltages. So even young children can screw the components together on terminal blocks, apply a low-voltage battery and get things working. After an introductory chapter on opto-devices and components, the projects are graded so that even a newcomer to electronics can score successes with



a light telegraph, flashing lapel badge, magnetic detector, etc., before tackling more ambitious projects such as a dusk detector, novel games, suspenseful electronic dice, or twinkling Christmas decorations. Many of the projects serve to provide invaluable practical experience to complement the theory of the GCSE Electronics course. Finally, the projects have been designed, using discrete components and popular ICs in a variety of circuits that will hopefully widen the constructors experience.

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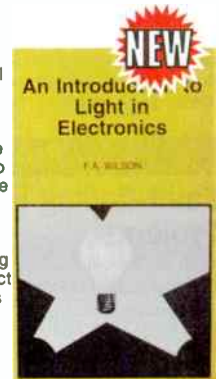
Order Code	Type	Price each exc. VAT	inc. VAT each
NQ85G	17587	1+	1+
	35 Opto Projects	£4.990	£4.990 NV

### An Introduction to Light in Electronics

F A Wilson

**Babani**

Taken for granted by us all perhaps, yet this book could not be read without it, light plays such an impressive role in daily life that we may be tempted to consider just how much we understand it. We most certainly appreciate its existence and although it has been around for a long time and now is the subject of much research, there is further to go if all the ifs and buts are to be eradicated. The book has been written with the general electronics enthusiast in mind, not the expert, although many of these dedicated people may enjoy some light refreshment.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ30H	17508	1+	1+
	Light in Electronics	£4.950	£4.950 NV

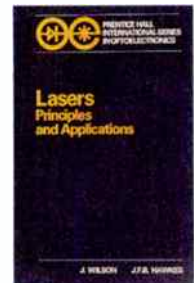
### Lasers: Principles and Applications

by J. Wilson and

J. F. B. Hawkes

**Prentice Hall**

A clearly written introduction to a rapidly developing subject, this book provides the reader with a grounding in laser physics, an analysis of laser technology and a wide survey of laser applications. Suitable for professional engineers wishing to increase their knowledge of laser applications and for students seeking an up-to-date introductory text which includes working examples and end-of-chapter problems. 1987. 308 pages. 228 x 150mm, illustrated.



Retail Unit Price each (inc. VAT).

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	Laser Principles	£17.950	£17.950 NV

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by R. M. Marston  
Optoelectronics is the study of any devices that produce an electrically-induced optical (visible or invisible light) output, or an optically-induced electrical output, and of the electronic techniques and circuitry used for controlling such devices. This manual is a useful guide to the optoelectronics device user, and is especially aimed at the practical design engineer, technician, and experimenter, as well as the electronics student and amateur.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WP93B	Opto Circuits Manual	£13.990	£13.990 NV

## Projects

### Fault-finding Electronic Projects

by R. A. Penfold  
**Bernard Babani Books**  
We have all built circuits from magazines and books only to find that they did not work correctly, or at all, when first switched on. The aim of this book is to help the reader overcome just these problems, by showing how and where to start looking for the common faults that are responsible for most project failures. Advice on 'weeding out' the more difficult faults is also provided. Chapter 1 deals with mechanical faults such as tracing 'dry' joints, short circuits, broken PCB tracks, etc. The construction and use of a tristate continuity tester is also covered. Chapter 2 deals with linear circuits, and includes a detailed look at using a multimeter to make voltage checks. Signal tracing techniques are also covered, and a practical signal tracer design is included. Chapter 3 covers the construction of a logic probe, and fault finding methods for projects that are based on CMOS or TTL logic devices. Chapter 4 covers ways of testing a wide range of electronic components, such as resistors, capacitors, operational amplifiers, diodes, transistors, SCRs and triacs, with the aid of only a limited amount of test equipment. A useful logic integrated circuit tester project is also featured. 1997. 160 pages. 178 x 111mm, illustrated. British book



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS36P	Faultfind ElecPrjts	£4.990	£4.990 NV

## Practical Opto-Electronics Projects

By R.A.Penfold  
**Bernard Babani Books**  
Opto-electronics represents one of the most fascinating aspects of modern electronics and in recent years the range of opto devices available to the electronics enthusiast has expanded and changed considerably. This book provides practical designs which use a wide range of opto-electric devices, from the old cadmium sulphide cells and torch bulbs to modern high power infra-red emitters, fibre-optic devices and pyro sensors. The designs are all within the capabilities of the average electronic project constructor, with a few designs suitable for the absolute beginner. The projects are divided into three main types - photographic; those that use infra-red devices; and those that are based on modulated light transmission. Each project includes a circuit description, parts list and construction details where applicable. 1994. 160 pages, 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN32K	Pract Opto Projects	£4.950	£4.950 NV

## Practical Fibre-Optic Projects

by R. A. Penfold  
**Bernard Babani Books**  
With fibre-optic networks springing up all over the country it seems that fibre-optic cables are about to revolutionise our lives, but despite their high-tech image and all the talk of superhighways, fibre-optic cables can be used for more mundane tasks such as simple audio and computer data links. This book takes the reader through the basics of fibre-optic technology and presents a series of practical circuits for fibre-optic audio links, data links and a few other gadgets such as an optically triggered alarm and an optical RPM sensor. 1995. 134 pages. 178 x 110mm. Illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DUB1Y	Pract Fibre Opt Proj	£4.950	£4.950 NV

## Build Your Own Working Fibre-Optic Infra-red and Laser Space-Age Projects

by Robert E. Iannini  
This American book contains many do-it-yourself projects for exploring the possibilities of the current laser technology, by building a variety of lasers including the gallium arsenide infra-red, optical helium-neon and ruby rod types, through to the carbon dioxide laser, complete with its collection of somewhat involved support equipment. Also included are designs for 'plasma tornado' special effects generators, but bear in mind that any special items mentioned may not be available in the UK and suppliers mentioned are USA only. 1987. 264 pages. 233 x 187mm, illustrated.

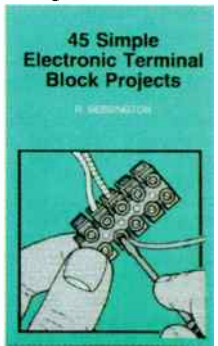


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WP77J 1	Build Fibrop/Lasr Prj	£17.950	£17.950 NV

## 45 Simple Electronic Terminal Block Projects

by R. Bebbington  
**Bernard Babani Books**  
This book offers a wonderful easy way for all newcomers to get started in the fascinating hobby of electronics, by using 45 easy-to-build electronic projects that can be constructed by an absolute beginner. The projects are build-on terminal blocks using only a screwdriver and other simple hand tools - no soldering is required. In minutes the projects can be screwed together by following the layout diagrams and then unscrewed if desired to make new circuits. A theoretical circuit diagram is also included with each project to help broaden the constructors' experience and knowledge. The projects cover a wide range of interests including sound and music, entertainment, security devices, communications, and test and measurement. 1995. 150 pages. 178 x 111mm, illustrated

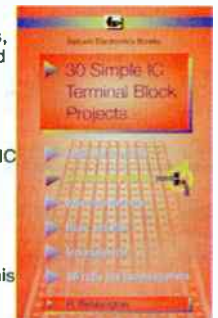


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GV24B	Simple Elec Term Prj	£4.950	£4.950 NV

## 30 Simple IC Terminal Block Projects

by R. Bebbington  
**Bernard Babani Books**  
Constructors in electronics, particularly youngsters and beginners, may think that the step from discrete components to integrated circuits is a 'bridge to far'. Here are 30 easy-to-build IC projects that will prove otherwise! Continuing the minimal soldering, screwdriver technique of 45 Simple Electronic Terminal Block Projects, this IC version forms a natural sequel. A glance through circuit and layout diagrams included with each project should convince beginners that most of the circuit complexity has been taken care of by the ICs. Requiring few additional components, this 'black-box' technique enables and encourages the constructor to progress to more advanced projects. In an attempt to cover a wide range of interests with a restricted number of ICs and components, subject titles for the chapters include:  
• Timer projects  
• Op-amp projects  
• Counter projects  
• Nand-gate projects  
• Miscellaneous projects  
Provides a safe and simple integrated circuit solutions for games, security, communications, music and other projects. 1996. 128 pages. 178 x 111mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN50E	30 IC Term Projects	£4.990	£4.990 NV

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Electrical and electronic projects that respond to light, or produce it, have always been popular with constructors. However, the development of multi-coloured light-emitting diodes (LEDs) with lower power consumption than bulbs, has opened up a fascinating new opto-display field, particularly suited to beginners in electronics.

To encourage newcomers, and anxious parents, none of the projects require hot soldering irons or high voltages. So even young children can screw the components together on terminal blocks, apply a low-voltage battery and get things working.

After an introductory chapter on opto-devices and components, the projects are graded so that even a new-comer to electronics can score successes with a light telegraph, flashing lapel badge, magnetic detector, etc., before tackling more ambitious projects such as a dusk detector, novel games, suspenseful electronic dice, or twinkling Christmas decorations.

Many of the projects serve to provide invaluable practical experience to complement the theory of the GCSE Electronics course.

Finally, the projects have been designed, using discrete components and popular ICs in a variety of circuits that will hopefully widen the constructors experience.

1997. 178 x 111mm, illustrated. British book

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Order Code	Type	Price each exc. VAT	inc. VAT each
GS41U	35 Disp Term Prjcts	£4.990	£4.990 NV



## Maplin Series – Integrated Circuit Projects

Each of the projects in this collection of data files from Electronics – The Maplin Magazine provides a building block which constructors can use to experiment with components, and use as a starting point for further development. This book will provide a toolkit for building many different types of projects and circuits based on readily available components using straightforward techniques. The book includes relevant IC pinouts and pin designations, output waveforms, parts lists, circuit diagrams and PCB layouts. Some of the projects described are intended for specific applications, but many are adaptable to other applications.

1996. 192 pages. 213 x 135mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GV25C	Maplin IC Projects	£9.990	£9.990 NV



## Maplin Power Supply Projects

by Maplin Contributors

**Newnes**

A collection of ten power supply projects, divided into the following categories:

- Laboratory PSUs
- Battery Chargers
- Inverters
- Miscellaneous PSUs

These projects are suited for a wide range of applications, making this book a useful reference of the hobbyist's bookshelf. 177 pages. 213 x 134mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN40T	Maplin PSU Prjcts	£9.990	£9.990 NV



## Electronic Projects for Experimenters

by R. A. Penfold

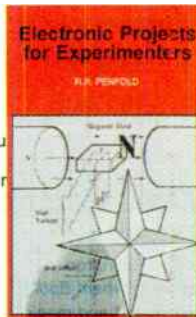
**Bernard Babani Books**

Is your enthusiasm for electronics being dampened by the feeling that 'you've seen it all before'? This book is for you if you're keen to experiment with some projects that offer an approach or a challenge that's just that little bit different. The 18 circuits provided – anything from noise cancelling, ultrasonic and voice detectors to a device to give you super hearing – may or may not have real, practical applications, but they all have two things in common: They are interesting to 'play' with and actively invite experimentation and further development.

1995. 138 pages. 178 x 110mm. Illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CJ27E	Elec Proj for Experi	£4.950	£4.950 NV



## Maplin Auto Electronics Projects

by Maplin Contributors

**Newnes**

Many car owners find the mechanics of their vehicle relatively familiar ground, but struggle when faced with the electronics. Increasingly vehicle design depends on a bewildering array of more advanced electronics. This book helps the reader to understand more about car electronics and its workings, and therefore should help with fault diagnosis. It includes the recent developments such as electronic ignition, described in a way that is accessible to anyone with a basic grasp of electricity.

In addition this book contains a collection of projects, each a practical, useful and proven design. These projects provide an array of affordable solutions from a digital tachometer, a lights-on warning indicator and some basic alarm and audio designs.

186 pages. 213 x 134mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN42V	Maplin Car Electr	£9.990	£9.990 NV



## Maplin Test Gear & Measurements

by Danny Stewart

**Newnes**

This book is a clear introduction to test gear in the field of electronics. As well as being a first guide to test gear and its use, the book includes much practical information and reference material for the more experienced electronics enthusiast or student.

Based on a collection of feature articles originally published in *Electronics - The Maplin Magazine*, this book is sure to be of great value. Details are included of all the common (and not-so-common) items of test gear, alongside information regarding its use in various measurement situations. 166 pages. 213 x 134mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN43W	Maplin Test & Meas	£9.990	£9.990 NV



## Maplin Home Security Projects

by Maplin Contributors

**Newnes**

This book contains useful design ideas for various security devices around the home. The book contains eleven projects, divided into the following categories:

- Alarms
- Locks
- Miscellaneous

This book provides a practical guide for anyone with a basic knowledge of electronic circuit construction, to put the knowledge to good use. 184 pages. 213 x 134mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN44X	Maplin Security Proj	£9.990	£9.990 NV



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## Practical Electronic Model Railway Projects

by R. A. Penfold

Bernard Babani Books

Electronic projects for use with model railways are a relatively modern development, but these fascinating circuits have now developed to such a degree that it is possible to produce layouts that have an amazing degree of realism in both appearance and sound. The aim of this book is to provide the model railway enthusiast with a number of useful but reasonable simple projects that are easily constructed from readily available components. Stripboard layouts and wiring diagrams are provided for each project. The projects covered include: Constant voltage controller; Pulsed controller; Push-button pulsed controller; Pulsed controller with simulated inertia, momentum and braking; Automatic signals; Steam-whistle sound effect; Two-tone horn sound effect; Automatic two-tone horn effect; Automatic chuffer. The final chapter covers the increasingly popular subject of using a computer to control a model railway layout, including circuits for computer based controllers and signalling systems. 1996. 192 pages. 178 x 111mm, illustrated. British book.



Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
GS29G	Model Railway Prjts	£4.990	£4.990 NV

## Simple Sensor Terminal Block Projects

R Bebbington

Babani

Sensors are like the 'eyes, ears and nose' of an electronic system. They come in many forms including contact, light, heat, sound, magnetic, motion, resistance and voltage-operated sensors, all of which are covered by projects in this book. These constructional projects cover a diverse range of topics, so whatever your interests the 'pick-and-mix' arrangement between the various types of sensor and circuits offers plenty of flexibility for the adventurous constructor. As with the other 'Terminal Block' books in this series, the easy-to-build and virtually no soldering construction technique makes the projects particularly suitable for schools and young beginners.



Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
NP67X	Simp Sensor Proj	£4.990	£4.990 NV

## Electronic Projects for the Garden

by R. Bebbington

Bernard Babani Books

Gardening books will tell you all you need to know about the care of plants but you'll find very little about the increasing role that electronics can play in your garden. This book gives easy to follow instructions (with good, clear diagrams) for the construction of a wide variety of devices - covering 19 different applications from simple moisture and temperature monitors to security systems for outhouses, automatic plant waterers and electronic scarecrows. For those with more interest in gardening than electronics, it starts with a welcome layman's guide that takes you gently through the basics. 1995. 146 pages. 178 x 110mm. Illustrated.

### Electronic Projects for the Garden



Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
FN21X	Elec Proj for Garden	£4.950	£4.950 NV

## Digital Electronics Projects for Beginners

by Owen Bishop

Contains 12 digital electronics projects suitable for the beginner to build with the minimum of equipment. The projects cover a wide range of topics from instrumentation to home security, and a few 'fun' projects as well. With just one exception, all the projects are battery powered, and so are completely safe for the beginner. The introductory chapter and the detailed explanations of the workings of each project make this not just a book of practical, useful projects, but also an Introduction of the simplest basic theory and applications of digital electronics. Each project is provided with a circuit diagram, a drawing of the stripboard layout and full construction details complete with instructions for testing the circuit at each stage. The appendix explains how to solder and how to build circuits on stripboard. 1990. 120 pages. 216 x 138mm, illustrated.



Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
WT08J	Dig Elec Projects	£6.950	£6.950 NV

## Fault Finding Electronic Projects

R A Penfold

Babani

We have all built circuits from magazines and books only to find that they did not work correctly, or at all, when first switched on. The aim of this book is to help the reader overcome just these problems, by showing how and where to start looking for the common faults that are responsible for most project failures. Advice on 'weeding out' the more difficult faults is also provided.

Chapter 1 deals with mechanical faults such as tracing 'dry' joints, short-circuits, broken p.c.b. tracks, etc. The construction and use of a tristate continuity tester is also covered. Chapter 2 deals with linear circuits, and includes a



detailed look at using a multimeter to make voltage checks. Signal tracing techniques are also covered, and a practical signal tracer design is included. Chapter 3 covers the construction of a logic probe, and fault finding methods for projects that are based on CMOS or TTL logic devices. Chapter 4 covers ways of testing a wide range of electronic components, such as resistors, capacitors, operational amplifiers, diodes, transistors, SCRs and triacs, with the aid of only a limited amount of test equipment. A useful logic integrated circuit tester project is also featured.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ31J	Fault Finding Proj	£4.990	£4.990 NV

## Electronic Board Games

by R. Bebbington

A selection of 20 of the most popular novelty electronic board games are included in this handy little book. The nature of the electronic components means anybody from young to old can enjoy constructing circuits, testing and finally using them to play games. Simple components like LEDs, resistors, transistors and integrated circuits can be linked together either on strip or breadboard to produce working circuits in just minutes. By using safe components and voltages these projects are suitable and safe for the young. Some of the games involve skill while others involve decision making and leadership. As well as home use, these projects could be adapted for use in schools and colleges, where groups or teams could work together in building and testing them. The book is easy to read, and each separate game project is in a different chapter to keep all the relevant information together. A full component listing details all the required components, their values and circuit references. A great book for introducing first-timers to electronics, and providing fun for other constructors. 1994. 144 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
AN05F	Elect Board Games	£4.950	£4.950 NV

## Magic Electronic Projects

by R. Bebbington

Bernard Babani Books

The top hat and magic wand are familiar trademarks of the magician, but throw in a few electronic components and you have the ingredients for a 'magician extraordinaire'. This book offers some simple circuits that will add an electronic flavour to some of the basic tricks up the performer's sleeve as well as adding a few more. As light and sound are obvious manifestations of electrical and electronic circuits, these feature widely under such chapter headings as 'Light Fantastic', 'LED Astronomy' and 'Sound Stunts'. Most of the circuits are easy to construct and introduce the reader to series and parallel circuits; sensors, such as reed switches and light-dependent resistors; LEDs; multivibrator and Hartley oscillators; monostables, bistables and schmitt triggers; NAND-gates and decade counters. All the circuits are idea for beginners in electronics and/or magic, and as a very practical approach has



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been adopted by the author, they may also be suitable for schools electronics courses. 1993. 84 pages. 178 x 111mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN22G	Magic Electr Projcts	£4.950	£4.950 NV

## Practical Electronic Control Projects

by O. Bishop  
**Bernard Babani Books**

Explains electronic control theory in simple, non-mathematical terms and is illustrated by many practical projects suitable for the student or hobbyist to build. Shows how to use sensors as input to the control system, and how to provide output to lamps, heaters, solenoids, relays and motors. Also shows how to use control circuits to link input to output including signal processing, control loops and feedback.

Computer based control is explained by practical examples that can be run on a PC. For stand-alone systems, the projects use microcontrollers, such as the inexpensive and easy-to-use BASIC Stamp microcontroller. These projects are chosen to introduce and demonstrate as many aspects as possible of the programming language and techniques.

Containing 30 practical projects, this book is of interest to students and lecturers in technology departments of schools colleges and universities, as well as the home constructor.

1996. 198 pages. 178 x 111mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS27E	Pract Elec Ctrl Prjs	£5.990	£5.990 NV

## Practical Electronic Timing

by Owen Bishop

This book is essentially a project book of practical electronic timing circuits, that employ several different types of specialised IC. Each group of projects has an introductory discussion highlighting the problems of timekeeping and the methods of solving such problems by using electronics.

There are projects that are suitable for beginners as well as the more experienced electronics constructor - the projects being suitably identified as either beginners, average or advanced. All the projects will operate from batteries, making them safe to build and operate - especially important for young beginners. In fact, there are several low-cost projects, that are specifically aimed at the beginner and younger enthusiast.

1993. 192 pages. 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA28F	Electronic Timing	£4.950	£4.950 NV

## 50 Circuits Using Germanium, Silicon & Zener Diodes

by R. N. Soar

**Bernard Babani Books**

This fascinating book contains 50 interesting and useful circuits, covering many different branches of electronics - using one of the simplest and inexpensive of components: the diode.

The book covers applications for germanium and silicon signal diodes, silicon rectifier diodes, and zener diodes. Ideal as a source of 'building block' circuits, around which complete designs can evolve. Where appropriate, easy-to-use formulae are provided to allow the user to calculate component values for their own application. A highly recommended addition for every engineer's and hobbyist's bookshelf. 1977. 62 pages. 178 x 111mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RH29G	50 Diode Circuits	£1.950	£1.940 NV



## 50 Projects Using Relays, SCRs and Triacs

by F. G. Rayer

Includes circuits of model train controllers, timers, auto emergency light, alarms, drill speed controller and many more. 1977. 112 pages. 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RH30H	50 Relay & Triac Prj	£2.950	£2.950 NV



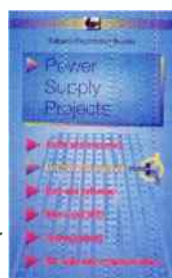
## Power Supply Projects

by R. A. Penfold

Gives details of stabilised, unswitched, fixed and variable power supplies and explains how to design your own power supplies. There are also circuits for train controller, ni-cad charger, electronic fuse, shaver inverter and others. 1980. 91 pages. 180 x 108mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XW52G	Book BP76	£3.990	£3.990 NV



## More Advanced Power Supply Projects

by R. A. Penfold

This book is the companion volume to 'Power Supply Projects' and should be of interest to anyone who has a reasonable knowledge of power supply basics and would like to learn about recent developments and more advanced designs. The practical and theoretical aspects of the circuits are covered in some detail, and the reader is not assumed to have an in-depth knowledge of electronic circuit design. However it is recommended that any one who is not familiar with the fundamentals of power supply design and operation should obtain the introductory book first. Topics covered include switched mode power supplies, precision regulators, dual tracking regulators and computer controlled supplies. 1988. 96 pages. 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WP92A	More Advanced PSUs	£2.950	£2.950 NV



## IC 555 Projects

by E. A. Parr, BSc., C.Eng., MIEE

**Bernard Babani Books**

This ever popular book describes dozens of circuits using the NE555 timer, including car wiper delay, rev counter, emergency flashers, model railway shuttle service, station stop/start, computer voice, signal generator, police siren, 'Star Trek' siren etc. 1982. 176 pages. 178 x 111mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LY04E	Book BP44	£3.990	£3.990 NV



## 50 Simple LED Circuits

R N Soar

**Babani**

Contains 50 interesting and useful circuits and applications, covering many different branches of electronics, using one of the most inexpensive and freely available components - the Light Emitting Diode (or LED). Also includes circuits for the 707 Common Anode Display.

A useful book for the library of both beginner and more advanced enthusiasts alike. Companion volume to book number BP87: 50 SIMPLE LED CIRCUITS - BOOK 2.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NP78K	50 LED Circuits	£2.990	£2.990 NV



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## 50 Simple LED Circuits Book 2

R N Soar

**Babani**

Following the tremendous success of book number BP 42, 50 SIMPLE LED CIRCUITS, the author Mr R N Soar has devised and developed a further series of useful applications and circuits, covering many different branches of electronics, using the simple Light Emitting Diode (LED) and these are now published as Book 2. Book 2 in no way supersedes or replaces the original book but complements it, offering many more ideas and circuits to the reader. A useful book for the library of both beginner and more advanced enthusiasts alike.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NP77J	50 LED Circuits 2	£2.990	£2.990 NV

## Practical Alarm Projects

R A Penfold

**Babani**

This book provides details of inexpensive but effective burglar alarms for the home constructor. Stripboard layouts and notes on construction are provided for all the circuits, so you do not have to be an electronics wizard in order to build them, in fact most of the projects are suitable for novices.

Included are:-

- ★ Switch activated alarm having exit and entry delays.
  - ★ Switch activated alarm with infra-red remote control.
  - ★ FM audio alarm generator.
  - ★ Portable alarm for protecting cases and bags.
  - ★ DC fibre-optic loop alarm.
  - ★ Ultrasonic breaking window sensor.
  - ★ Doppler shift ultrasonic sensor.
  - ★ Passive infra-red sensor.
  - ★ Twin beam infra-red broken beam detector.
  - ★ Mains power supply units.
- Contains all the information you need to build an effective alarm system to protect your home and valuables, in addition some of the projects are also suitable for use in boats and caravans.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NP76H	Alarm Projects	£4.990	£4.990 NV

## Hobby Books

### The Bike Book

by John Stevenson

With the resurgence of interest in the bicycle and, in particular, the emergence of the mountain bike, there is an increased demand for manuals explaining the best techniques to use for choosing, buying, riding and maintaining cycles. This book aims to cover every facet of all things biking, and you will quickly recoup the cover price as you learn how to



repair and upgrade your machine without having to resort to taking it to the bike shop. Having the knowledge to competently work on your cycle is a great boon, particularly if the machine suffers a mechanical malady during a cycle trip into deepest countryside, miles from anywhere! This book shows you how, and offers many useful tips to the novice and experienced cyclist alike.

1994. 240 pages. 269 x 210mm, illustrated

Retail Unit Price each (inc. VAT).

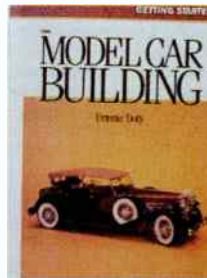
Order Code	Type	Price each exc. VAT	inc. VAT each
AN37S	The Bike Book	£10.990	£10.990 NV

## Getting Started in Model Car Building

by Dennis Doty

While this book has nothing to do with electronics directly, it would however, be very useful for anyone interested in building radio controlled models for example. While concentrating on static model cars, the chapters constitute a complete guide to the materials and tools you will need, descriptions of various painting methods, and details on realistic finishing applications for both plastic and metal components, and includes hints and tips from an author having many years experience behind him, enabling you to produce authentically detailed models.

1989. 128 pages. 233 x 188mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
W224B	Model Cars	£10.950	£10.950 NV

## Introducing Radio Control Model Boats

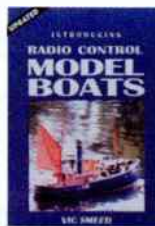
by Vic Smeed

The book covers all aspects - including radio control equipment, boats and competition classes, construction, power options, equipment installation, pre-launch checks and operation. A useful discussion of maintenance and fault finding concludes the book, which should ensure that the modeller does not have to wade out too far to deal with equipment failure. The existence of 33 classes of models for competition means that the scope for getting involved in this long-established but popular sport is vast. Certainly the experience passed on in this book should mean the transition from the modelling bench and bathtub trials, to an enjoyable afternoon boating, is a quick one.

1995. 96 pages, 210 x 145mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT68Y	Model Boats	£5.950	£5.950 NV

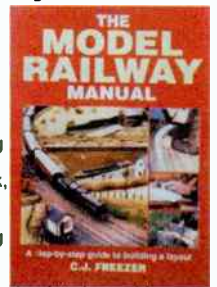


## The Model Railway Manual

by C. J. Freezer

This profusely illustrated handbook shows how to build a complete model railway from scratch. The book starts with the design and construction of a baseboard, then planning and constructing the layout including the laying of track, adding the scenery and buildings, and finally the electrical wiring and adding the finishing touches to enhance the realism of the layout. This comprehensive step-by-step guide takes the reader through all the necessary stages, pointing out potential pitfalls on the way. Highly recommended.

1994. 194 pages. 280 x 214mm, illustrated. Hardback.



Retail Unit Price each (inc. VAT).

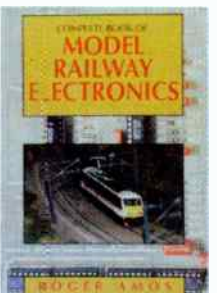
Order Code	Type	Price each exc. VAT	inc. VAT each
WC00A	Model Railway Manual	£14.990	£14.990 NV

## Complete Book of Model Railway Electronics

by Roger Amos

The author successfully introduces the novice to the subject of electronics in railways by means of simple projects which can then be followed by more advanced projects. The projects deal with basic control and detection of trains through signal systems of increasing complexity and the automatic operation of the layout, to such additional touches of realism as train lighting and sound effects. The comprehensive appendices are both practical and theoretical, and the 36 projects are supported by almost 150 diagrams.

1990. 256 pages, 240 x 160mm, illustrated. Hardback.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC02C	Model Railway Electr	£16.990	£16.990 NV

## Introducing Radio Control Model Aircraft

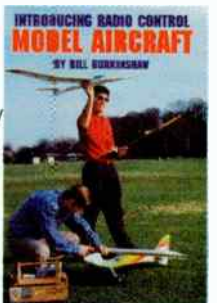
by Bill Burkinshaw

This book from the former editor of RCM&E magazine knows the areas which may bemuse or baffle the newcomer. He therefore takes us step by step through the theory of flight, how aircraft will be controlled, into radio equipment, through engines, construction finishing and installation, and finally into the flying of powered aircraft. He also describes flying helicopters and flying gliders to complete the book. Model aircraft flying can be a rewarding hobby producing superb working scale models. This book will enable the reader either to construct from scratch or buy a ready made model and get straight onto the flying field. Wherever you start, this book is an invaluable guide of hints and tips.

1989. 95 pages, 210 x 145mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT65V	Model Aircraft	£6.500	£6.500 NV



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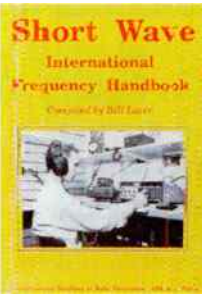
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**Radio & Communication Books**

**Short Wave International Frequency Handbook**

by Bill Laver

Intended to be of particular interest to the European short wave listener, this guide covers all the stations that are capable of being heard in the Northern hemisphere. Some stations are low powered and will need good aerials and receivers, but under favourable conditions even modest set-ups will 'pull them in'.



The guide's main objective is to quickly direct the listener to the frequency or band most likely to provide him with the kind of station that he is seeking. To many the SW band presents something of a mystery, pouring out a wide range of strange noises which at first convey no intelligible information whatsoever. Indeed, the newcomer can be excused for being somewhat overwhelmed at the wide range of signals to be heard, all apparently fighting for space. In fact the SW band is full of surprises and even the most experienced listener is frequently rewarded with a new station that he or she has never heard before. It helps to know where to start looking and so there is a real need for a guide such as this to the utility stations on the SW band, and to this end this book should more than fill the gap.

1994. 188 pages. 298 x 210mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WTT73Q1	SW Freq List	£12.990	£12.990 NV

**Scanning Secrets**

This unique book has been written to help you enjoy your scanner.

Chapters cover The Legality; Choosing a Scanner; How Radio Signals Travel; Operating a Receiver; Computer Control; Add-on Accessories; Aerials Kits; Interference Problems; Radio Telephones; Airband; Marine; PMR; Ham Radio; Trunked Systems; GSM; Data Transmissions; Short Wave Bands; Frequency 'Sniffers'; Exploring the Radio Waves; Frequency Listings; Equipment Reviews; and lots more. In all there are 280 pages and 33 chapters. The most comprehensive book on the subject ever published.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YEB4F	Scanning Secrets	£16.950	£16.950 NV

**Scanners – a VHF/UHF Listener's Guide**

by Peter Rouse GU1DKD

The first complete British guide to VHF/UHF listening. Subjects covered include the equipment, accessories and aerials, and explains basic radio theory, modes, and simplex and duplex transmission, installation and use.

A most useful feature is the inclusion of full British waveband charts from 26MHz to 1300MHz, including aviation, marine, amateur, emergency services, satellites



(amateur, military, communication, navigation, weather, including the COSMOS and NASA Space Shuttle frequencies), cordless telephones, cellular radio, beacons, pagers, message handling, private mobile radio (PMR), radio microphones, telemetry, industrial, scientific and medical etc. Also explained is how to interpret what is being said when 'RT procedure' is being used.

1994. 253 pages. 234 x 154mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WP47B	Scanners	£9.950	£9.950 NV

**An Introduction to Scanners and Scanning**

by I. D. Poole

Radio scanners are rapidly increasing in popularity, opening a whole new realm to short wave listening. This book aims to cater for the new breed of scanner listener. Scanners are specifically designed for modern listening. They can be programmed to tune or scan over a number of preset frequencies and stop when they find a signal. By using this facility the receiver can be made to monitor several frequencies of interest. Topics covered in the book include: radio wave propagation, types of transmission which can be heard, how a scanner operates, aerials, the radio frequency spectrum (including a frequency list), operating procedures, broadcast bands, amateur radio, and citizen's band.

In addition to this there is an appendix which includes a glossary of essential terminology and call-sign prefix lists. This book will provide a useful reference to scanner listeners, those who own World Band Radios and anyone with an interest in short wave listening of any description.

1996. 152 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

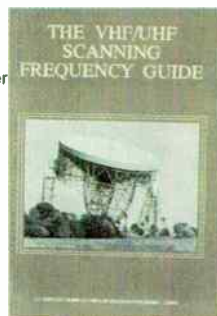
Order Code	Type	Price each exc. VAT	inc. VAT each
WZ62S	Intro To Scanners	£4.990	£4.990 NV

**The VHF/UHF Scanning Frequency Guide**

Compiled by Bill Laver

The pressure on frequency space in the VHF/UHF bands, together with technological improvements, results in almost endless changes and amendments that have recently occurred.

These include 25kHz channel stepping in both bands, requiring that many civil and RAF frequencies be reallocated. Similarly private mobile radio, due to increasing use which is now causing major overcrowding problems in the VHF band. The removal of 3 TV services in the UK has now made the area centred around 200MHz available to many PMR users, and clearly the use of UHF will also be actively promoted by the DTI who will be anxious that the pressure be taken off the frequencies below 200MHz. And newly launched public telephone and satellite services will require more airwave space. Consequently the bands have gone through a major re-shuffle making it difficult to find some transmissions again because they have moved. Covers equipment requirements including aerials, the future of VHF/UHF communications, frequency guide to 26 to 225MHz, military aeronautical band



of 225 to 399MHz, and a frequency guide from 399.9MHz to 47.2GHz.

1993. 156 pages. 296 x 210mm.

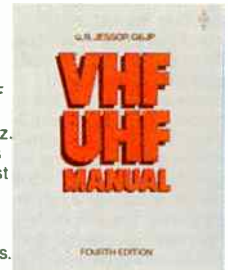
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT70M	VHF/UHF Freq Guide	£12.950	£12.950 NV

**VHF/UHF Manual**

4th Edition  
by G. R. Jessop, G6JP

A companion volume to the Radio Communication Handbook, this book is dedicated to the VHF/UHF enthusiast who uses frequencies above 30MHz. Its very detailed chapters guide the reader from first principles through to the design and testing of quality VHF and UHF transmitters and receivers. Included in the book are chapters on propagation, receivers, transmitters, filters, aerials, microwave operation, space communication and integrated equipment.

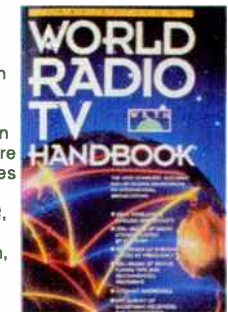


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS14Q2	VHF/UHF Manual	£10.500	£10.500 NV

**World Radio TV Handbook**

A complete directory of international radio and television with details of every broadcast station in the world, including frequencies, operating times, announcers' station identification and signature tune. Also contains articles of interest to listeners to world broadcasts. Annual, current edition supplied. 606 pages. 228 x 144mm, illustrated.



Retail Unit Price each (inc. VAT).

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XW91Y1	Book WRTV	£19.950	£19.950 NV

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## Amateur Radio for Beginners – How to Discover the Hobby

by Victor Brand G3JNB

Amateur Radio is a hobby which is enjoyed by over one and a half million people. These people are on air from their homes, clubs and schools worldwide.

Designed for the absolute beginner, this book could easily be enjoyed by another million. As well as extolling the virtues of 'Ham' radio, the book goes on to explain how to make your first receiver and progress through to the acquisition of a licence. The grades of Novice (class A or B) licence are described, as is the help provided by R.S.G.B. to obtain the licence. The support and benefits derived from being in a club are described. Hopefully, this will go some way to shattering the common fallacy that 'Ham' radio is some kind of lonely attic hobby. For many people the discovery of amateur radio has been the beginning of an entirely new and unique hobby. They have derived much from its pursuit and have gained knowledge of electronics in the process.

Whatever the age, or reason, this book will ensure the absolute beginner has all the information needed to join the worldwide amateur radio family. 1991. 65 pages, 210 x 145mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT69A	Amtr Radio Beginners	£3.500	£3.500 NV

## An Introduction to Amateur Radio

by I. D. Poole

Amateur radio is a unique and fascinating hobby which has attracted thousands of people since it began at the turn of the century.

It encompasses a wide variety of subjects from the historical to the latest technology, and from operating to construction. In fact there is always some aspect of the hobby to interest people.

This book gives the newcomer a comprehensive and easy to understand guide through the subject so that the reader can gain the most from the hobby. It then remains an essential reference volume to be used over and over. Topics include the basic aspect of the hobby, such as operating procedures, jargon and setting up a station. Technical topics covered include propagation, receivers, transmitters and aerials etc.

1989. 160 pages 176 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS50E	Intro Amateur Radio	£4.990	£4.990 NV

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## Build Your Own Intelligent Amateur Radio Transceiver

Randy L. Henderson

McGraw-Hill

With the help of this sure-fire instruction guide, you can learn how to build a sophisticated, yet low-cost microprocessor-controlled radio transceiver as well as smaller devices such as a simple frequency synthesiser and a spectrum analyser. Filled with tested, hands-on projects that really work, this great reference features single-sided circuit boards that are easy to build, and includes detailed circuit-board layouts and extensive parts lists.



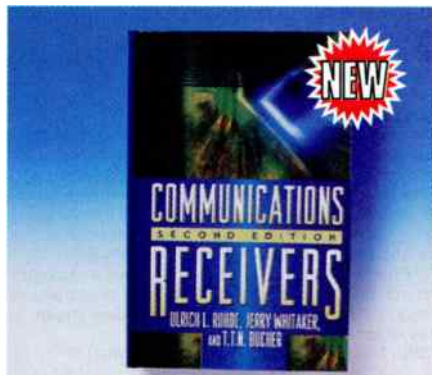
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ41U	Amateur Radio Build	£22.990	£22.990 NV

## Communications Receivers 2nd Edition

Ulrich L. Rohde, Jerry Whitaker & T T N B

McGraw-Hill



Revised and updated to cover state-of-the-art digital and cellular technology, the new edition of this classic work remains the ideal guide to the theory and design of all types of communications receivers - including shortwave, military, broadcast, and direction-finding. This sure-fire resource takes you through the leading-edge technologies being used in receiver design today... explains the basic principles of operation... and shows how to apply those basics to produce a working communications system. Supporting mathematics is provided where appropriate, and extensive technical illustrations and schematic drawings are used throughout to give you a solid grasp of fundamental principles.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ48C 1	Comms Receivers	£48.990	£48.990 NV

## Setting Up an Amateur Radio Station

by I. D. Poole

The aim of this book is to give guidance on the decisions which have to be made when setting up any amateur radio or short wave listening station. Often, the experience which is needed is learned by making mistakes, but this can be expensive. To help overcome this, the book gives advice on many aspects of setting up and running an efficient station, and then proceeds by discussing the steps that need to be taken in gaining a full



transmitting licence. The topics covered include: the equipment needed; setting up the station; which aerials to use; methods of construction; test equipment; and preparing for the licence.

1991. 96 pages. 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT74R	Set Up Radio Station	£3.950	£3.950 NV

## The Superhet Radio Handbook

by I. D. Poole

Bernard Babani Books

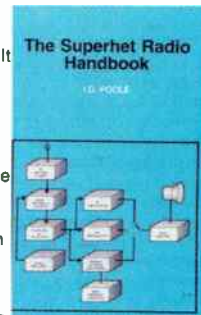
Virtually all modern radios use the superhet principle. It offers many advantages over other types of radio receiver. However, these radios can be fairly complicated, as can the specifications used to define their performance.

This book explains the operation of the superhet in understandable terms. It also explains the specifications likely to be encountered so that anyone looking to buy a radio can assess its performance, be it a shortwave communications receiver, a world band radio, or a scanner.

Topics covered in this book include:

- Introduction and historical perspective
- Basic concepts
- Sensitivity and overload
- Selectivity
- Local oscillator
- Demodulation
- Operation

1995. 101 pages. 178 x 111mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN47B	Superhet Radio HBook	£4.950	£4.950 NV

## Radio Communication Handbook

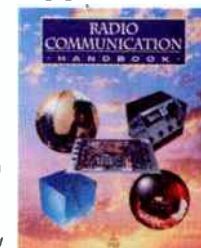
6th Edition  
Radio Society of Great Britain

The most authoritative reference manual for the radio amateur. Completely revised and up-dated, often in parts entirely re-written, its many pages cover all aspects of radio from the fundamentals of Ohm's Law to design and construction of high powered transmitters. Tending towards those who have an interest in low frequencies, i.e. under 30MHz, it also has practical information on VHF technology and equipment. Chapters include; principles, HF and VHF receivers, HF and VHF transmitters, RTTY, propagation, HF and VHF aerials, mobile and portable equipment, satellites, noise, interference and measurement.

1994. 808 pages. 248 x 182mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS12N 3	Radio Communication	£20.000	£20.000 NV



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## The Novice Radio Amateurs Examination Handbook

by I. Poole

**Bernard Babani Books**

Amateur radio has long captivated the interests of many thousands of people. The enjoyment of talking to people all over the world, together with the challenge of learning about today's technology and building your own equipment all go together to make amateur radio one of the most interesting and absorbing hobbies.

To help more people into the hobby, a novice licence has been introduced into the UK. The entry requirements for this are less than the full licence which is also available. This makes the novice licence an ideal start, but even so it is still necessary to have a basic understanding of the subject and to complete a course and pass the Novice Radio Amateurs Examination.

This book covers the basic syllabus for the examination, and is designed to supplement the associated course. It also provides a basic introduction into amateur radio and the technology behind it for anyone wanting to learn more. Topics included in the book cover basic electronics, radio receivers, transmitters, operating practices and much more.

1996. 144 pages. 178 x 111mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN600	Nov RAE Handbook	£4.950	£4.950 NV

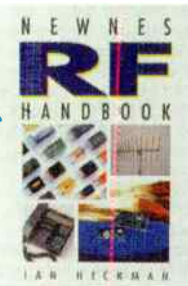
## Newnes Practical RF Handbook

by Ian Hickman

This book is primarily intended to help both the amateur and professional increase their knowledge and expertise in the field of RF engineering. The book is not intended to be a text book, and lengthy derivation of formulae have been omitted.

Text covers the portion of the RF spectrum up to 1000MHz. This is used for a wide variety of services, including sound broadcasting and television, commercial, professional, government and military communications, telemetry and telecontrol, radio telex and facsimile, and amateur radio.

1993. 280 pages. 232 x 155mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA15R	RF Handbook	£18.990	£18.990 NV

## Projects for Radio Amateurs and S.W.L.s

by R. A. Penfold

This book describes a number of electronic circuits, most of which are quite simple, which can be used to enhance the performance of most short wave radio systems.

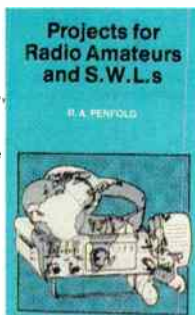
Even those who are not interested in building receivers and transmitters are often keen to experiment with home built aerials, and to construct some accessories for their ready-made equipment.

The circuits include an aerial tuning unit, audio filters (notch and a high performance bandpass type), a volume expander, add-on B.F.O., simple active aerial, a C.W./RTTY decoder and other useful projects. Where appropriate there are details of how to set up and use the equipment, plus notes on any unusual aspects of construction. No precise constructional details are provided, as some experience of electronic construction is assumed. Some of the projects are very simple, and should be within the capabilities of practically anyone who has previously built one or two simple projects, and providing the experience to progress to the more complex circuits.

1992. 96 pages. 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ68A	Proj's For Radio Hams	£3.950	£3.950 NV



## An Introduction to VHF/UHF for Radio Amateurs

by I. D. Poole

The increase in the use of the VHF and UHF bands is now one of the largest growth areas within amateur radio. In fact, most radio amateurs have equipment for use on these bands, either for local contacts or simply to exploit some of the many interesting and challenging aspects of so doing. This book covers the essentials required to gain the most from using the VHF and UHF bands. As such it will be of use to both the newcomer and the more experienced enthusiast alike.

Topics include propagation, the bands and channels, aerials, receivers, transmitters, and a special chapter on scanners. In addition, operation of repeaters and mobiles is included together with DXing and data modes, and a section on packet radio.

1990. 112 pages. 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
W593B	Intro VHF/UHF Radio	£4.990	£4.990 NV



do when they arrive. It also explains transmission systems for telephony, data and TV and gives plenty of advice on choosing and installing the most problematic part of any satellite system – the dish antenna.

1993. 230 pages. 198 x 130mm. Illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA56L	Intro Sat Comms	£5.950	£5.950 NV

## All About VHF Amateur Radio

by William Orr

This handy, inexpensive VHF handbook has been written for the non-technical and ham enthusiast who wants to work on the 6m and above bands. The text, illustrations and general information is presented in an enjoyable and easily understood style, and provides valuable information covering all aspects of VHF radio.

The book covers VHF bands and propagation; VHF repeaters; VHF moonbounce communication; amateur satellite communication; coaxial lines; VHF vertical and mobile antennas; VHF beam antennas; VHF interference. There are many suggestions for the DIYer for building vertical, mobile and beam antennas.

1988. 162 pages. 228 x 125mm, illustrated. American book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA58N	VHF Amateur Handbook	£7.500	£7.500 NV



## An Introduction to Satellite Communications

by F. A. Wilson

Satellites are here to stay and they're rapidly playing an ever increasing part in everyday life. This book, aimed at the electronics engineer or enthusiast wishing to get to grips with the basic technology (with a wealth of technical detail in the appendices for the more expert), explains what they are, how they get up there and what they



## The VHF/UHF DX Book

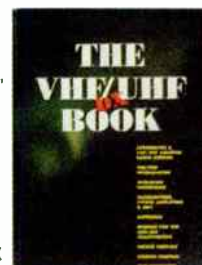
Edited by Ian White

Contacting stations in far-away places – 'working DX' – is one of amateur radio's greatest challenges, especially if you choose to do it on the VHF and UHF bands. The VHF and UHF bands can produce some truly exotic signals. These bands offer many different modes of propagation, and activity has increased so much that almost every DX opening is recognised and exploited. From the UK, amateurs have worked all over western and central Europe on 144MHz and 432MHz. Additionally 50MHz can cover the world at the height of the sunspot cycle. The aim of the book is to bring together the operating and the technical sides of VHF/UHF DX, as each needs the other. A station assembled with no technical knowledge can never be operated at full efficiency, and a technically good station is pointless if it is never used.

1993. 444 pages. 241 x 187mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA08J	The VHF/UHF DX Book	£18.000	£18.000 NV



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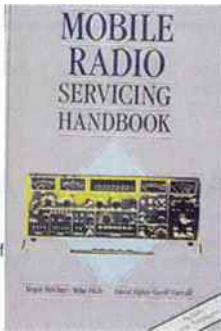
Fax: 01702 554001

e-mail: Sales@maplin.co.uk

## Mobile Radio Servicing Handbook

by Roger Belcher, Mike Fitch, David Ogley and Geoff Varrall

An authoritative and practical information source-book on the servicing and repair of VHF and UHF mobile radios and base stations, together with the maintenance and support requirements of the overall radio system, including antenna and mast installations. The book covers the impact of data over radio, cellular radio, and trunking technologies on servicing, diagnosis and repair procedures. Essential background topics covered include radio theory, amplitude (AM) and frequency (FM) modulation, radio wave propagation, reception and demodulation, fundamentals of receiver and transmitter systems, principles of transmitter and receiver design, synthesiser techniques, selective tone signalling and the digital signalling control and access protocols of cellular and trunked radio. 1989. 298 pages. 240 x 160mm hard-cover, illustrated.



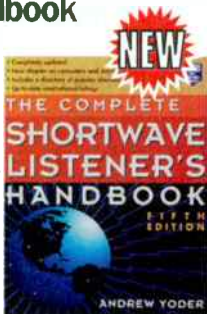
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS92A 1	Mobile Radio Servicing	£50.000	£50.000 NV

## The Complete Shortwave Listener's Handbook

Andrew Yoder  
McGraw-Hill

Shortwave radio may be the most fun you can have sitting down, and this A-to-Z guide for everyone from absolute beginners to advanced hobbyists is your all-in-one partner in listening. It gives you complete, up-to-date information on equipment, worldwide stations, clubs, satellites, computers and much more!



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ21Y	Shortwave Listeners	£16.990	£16.990 NV

## Air Band Radio Handbook

Sixth Edition  
by David J. Smith

Air band radio listening allows you to eavesdrop on the conversations between aircraft and those on the ground who control them, and is an increasingly popular and fascinating hobby. It not only assists in the recognition of aircraft flying overhead, but also provides an insight into the complex world of air-traffic control. The author, who is an air-traffic controller by profession, describes the types of air band radio available and how to use them. With the intricacies of air-traffic control and its jargon explained, you will be able to translate what you hear into what's actually going on over your head. The book also includes full appendices containing comprehensive, up-to-date lists of VHF, UHF and HF frequencies, call-signs etc. This extensively revised and updated edition



maintains the book's position as the indispensable guide to the hobby, and the essential companion for every air band radio enthusiast. 1994. 212 pages. 215 x 157mm, illustrated.

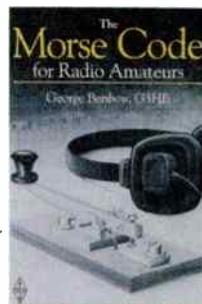
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT83E	Air Band Radio Hbook	£9.990	£9.990 NV

## The Morse Code for Radio Amateurs

Eighth Edition by George Benbow G3HB

It is an international requirement that every person holding a radio amateur licence shall have satisfied the licence-issuing authority of their country that they have a sound knowledge of the Morse Code. Slow morse practice transmissions are radiated daily on frequencies in the amateur bands. The book shows the morse alphabet, procedures and includes 9 do-it-yourself exercises. 1992. 28 pages, 244 x 183mm, illustrated.



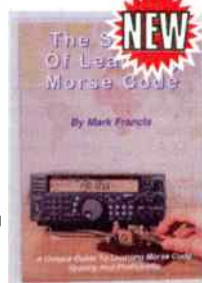
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT36P	Morse Code AM Radio	£3.990	£3.990 NV

## The Secret of Learning Morse Code

by Mark Francis

Morse code is the oldest means of radio communication and yet is also one of the most reliable. It is not until you come to study the code that you begin to realise just how effective it can be. When voice communication fails, owing to weak signals or interference, morse code invariably gets through. Yet the equipment required is the most basic of all. There are many circumstances, both at professional and amateur levels where these advantages are of paramount importance. Several amateur radio operators are still 100% morse code users. Not only do they find it ideal for long distance contacts with modest power and aerial systems, but they also enjoy the satisfaction and pleasure obtained from practising their skills as CW operators. 1989. 93 pages. 210 x 148mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT72P	Learn Morse	£4.950	£4.950 NV

## The Setmakers

by Keith Geddes in collaboration with Gordon Bussey

This very enjoyable book tells of the British involvement in the development of radio and television, the colourful characters involved, which led to the enormous growth in radio in the 30s, and television in the 50s. This rapid growth was soon followed by an equally rapid fall, with the subsequent loss of famous household names in manufacturing. This change in fortunes left many in its wake and witnessed some hugely expensive casualties. The book discusses the interdependence of setmakers and broadcasting, and in particular the very close liaison between the setmakers and the BBC. This liaison led to major technological developments in Britain, not least of all, television, which by 1937, Britain was showing to the world. The book is very much up to date, as it goes on to tell the story of the chaos surrounding the introduction of satellite TV in the UK. This profusely illustrated hardback book is highly recommended to anyone, young or old, who has an interest in radio or television, as it provides a detailed history of setmaking in the UK. 1991. 464 pages. 250 x 180mm, illustrated.



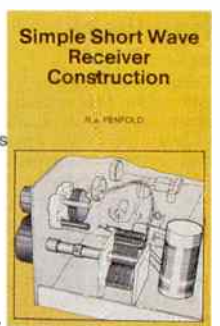
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ96E 3	The Setmakers	£25.000	£25.000 NV

## Simple Short Wave Receiver Construction

by Robert Penfold

Short Wave Radio is a fascinating hobby, and can be pursued for a minimal monetary outlay if you are prepared to undertake a bit of DIY, and the receivers described in this book can all be built at low cost. All the sets are easy to construct, full wiring diagrams, etc. are provided, and they are suitable for complete beginners. The receivers only require simple aerials, and do not need any complex alignment or other difficult setting up procedures. Topics covered include: the broadcast bands and their characteristics; the amateur bands and their characteristics; the propagation of radio signals; simple aerials; making an earth connection; short wave crystal set; simple t.r.f. receivers; single sideband reception; and a direct conversion receiver. Contains everything you need to know in order to get started in this absorbing hobby. 1990. 96 pages, 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT16S	Simpl SW Rcvr Cons	£3.950	£3.950 NV

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## Short Wave Superhet Receiver Construction

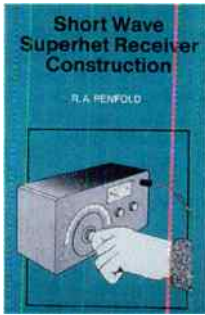
by R. A. Penfold

The basic short wave receiver described in this book is a superhet with separate mixer and oscillator stages, a ceramic filter for good selectivity and a simple audio amplifier which drives headphones. An optional BFO permits reception of CW and SSB, the main operating modes used for the amateur short wave bands. The receiver also includes AGC. The remainder of the book describes a number of 'add on' enhancements. These consist of: input filter to improve image rejection; RF amplifier to boost sensitivity and image rejection; product detector for improved CW and SSB reception; higher powered audio output amplifier for loudspeaker; signal strength ('S') meter; audio CW filter; stabilised mains power supply. The fully expanded receiver provides excellent results from the broadcast and amateur bands, but remains relatively inexpensive to build.

1991. 80 pages, 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT43W	SW Receiver Constn	£2.950	£2.950 NV



## Experimental Antenna Topics

by H. C. Wright

Although more than a century has passed since Marconi's first demonstrations of radio communication, there is still research and experiment to be carried out in the field of antenna design and behaviour. The aim of the experimenter will be to make a measurement or confirm a principle, and this can be done with relatively fragile, short-lived apparatus. Because of this, devices described in this book make liberal use of cardboard, cooking foil, plastic bottles, cat food tins, etc. These materials are, in general, cheap to obtain and easily worked with simple tools, encouraging the trial-and-error philosophy which leads to innovation and discovery. Although primarily a practical book with text closely supported by diagrams, some formulae which can be used by straightforward substitution and some simple graphs have also been included.

1990. 96 pages, 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS86T	Exp Antenna Topics	£3.500	£3.500 NV



1983. 63 pages, 178 x 111mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WK68Y	25 Simple Aerials	£1.950	£1.950 NV

## 25 Simple Indoor and Window Aerials

by E. M. Noll

For the short wave listening enthusiast who may be living in a flat or similar accommodation where the use of external aerials is impossible, this book describes how one can install aerials in or around the room, ceiling, windows, attic, etc. - twenty-five different permutations are shown in detail. The book also shows how simple variations can be improved for optimum performance. Much information is given on the short wave bands, aerial directivity, time zones, working dimensions etc.

1984. 64 pages, 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WM61C	25 Simple Ind Aerial	£1.750	£1.750 NV



## Radio Systems for Technicians

by D. C. Green

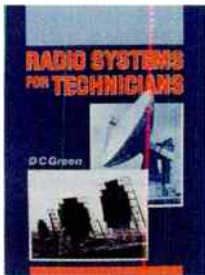
This book provides a comprehensive coverage of the circuits and techniques used in modern radio communication systems and equipment. The BTEC scheme for the education of telecommunication technicians introduces the basic principles of radio systems in a unit intended for inclusion in certificate/diploma courses. This book has been written to provide a complete coverage of this unit. All the important aspects of radio engineering are covered from amplitude and frequency modulation, r.f. transmission lines, aerials and radio wave propagation, to the circuits and techniques used in modern radio receivers and transmitters and communication systems.

A comprehensive text on radio communication systems is provided that should be eminently suitable for all non-advanced students of radio engineering.

1985. 288 pages, 246 x 190mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ84F 1	Radio Syst For Techns	£16.990	£16.990 NV



## Practical Wire Antennas

Effective H.F. Designs for the Radio Amateur

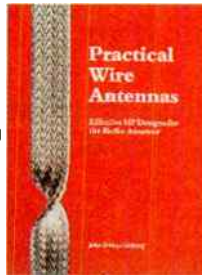
by John D. Heys G3BDQ

Wire antennas offer one of the most cost-effective ways of putting out a good signal on the HF bands, and this practical guide to their construction has something to interest every amateur on a budget. Many different types are covered, ranging from simple dipoles to ingenious multi-wire systems, even underground antennas! Full details about feeding and matching are included, making each antenna easy to set up and use successfully. Theory has been kept to a minimum - instead, the author has shared his years of experience in this field, offering down-to-earth advice that will be appreciated by beginners and enthusiasts alike. No-one who builds and uses wire antennas can afford to be without this handy guide.

1989. 100 pages, 244 x 184mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT37S	Prctcl Wire Antennas	£8.490	£8.490 NV



## HF Antennas for All Locations

2nd edition

by Les Moxon

The introduction of the 10, 18, and 24MHz bands in recent years has brought a lot of opportunities for amateur radio enthusiasts, as well as many problems. The worsening problem of interference, as well as the demand for smaller, less visible, antennas has resulted in an interest in small transmitting loops.

The aerial designer is faced with the dilemma of whether to maximise gain or minimise interference. This second edition has been revised, updated and expanded and includes more novel antenna designs, including beams which cover more bands with fewer problems, no trap losses and better rejection of interference. A chapter provides a comprehensive review of ways to make antennas smaller, with particular emphasis on small transmitting loops.

The book provides a wealth of practical information on the choice and construction of antennas to suit most locations and requirements, and will be an indispensable reference for the antenna experimenter and enthusiast.

1993. 322 pages, 245 x 186mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS16S 1	HF Antennas All Locs	£13.990	£13.990 NV



## 25 Simple Amateur Band Aerials

by E. M. Noll

Bernard Babani Books

This concise book describes how to build 25 amateur band aerials that are simple, inexpensive to construct and perform well. The designs start with the simple dipole and proceed to beam, triangle and even a mini-rhombic made from four TV masts and about 400 feet of wire.

After the aerial discussion the reader will find a complete set of dimension tables that will assist aerial frequency identification. Dimensions are given for various style aerials and other data needed for spacing and cutting phasing lengths.



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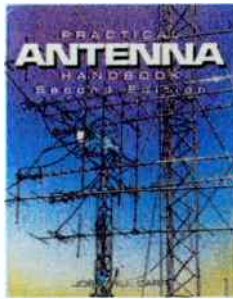
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## Practical Antennas Handbook Second Edition

by Joseph J. Carr

All the basic types of radio antenna are covered by this book including: high-frequency dipoles; multiband and tunable wires; hidden and limited space; directional phased-vertical and directional beam; VHF/UHF transmitting and receiving antennas; shortwave antennas; microwave; mobile and marine. They are all covered, in this in-depth book, with all the relevant theory necessary for the successful building of such antennas, including examples and construction diagrams. Radio wave propagation, transmission lines, Smith charts and matching theory are included and will prove useful when matching antennas, and working out delay and phasing problems. Sections on wave propagation and electromagnetic fields explain why an antenna works in the way it does. Sections on microwave and waveguide techniques will be particularly useful to those interested in frequencies between 900MHz and 300GHz. Dubbed the 'Antenna Builders' Bible', and containing many additions, this book will show you how the best results can be obtained from any antenna, whether you plan to make it, buy it or repair it. 1994. 560 pages. 230 x 190mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN03D 2	Pract Antenna H/Book	£26.990	£26.990 NV

## Beam Antenna Handbook

by William I. Orr and Stuart D. Cowan

This handbook covers all aspects of HF and VHF Yagi antenna design. Information on construction, installation, testing and operation of these aerials is included along with the effects of element taper, mounting hardware and matching systems. The twelve chapters cover topics ranging from radiation and propagation antenna, transmission lines, matching the antenna to the line through to antenna test instruments. This is in addition to the many antenna designs that are featured in this book including computer derived designs for high gain antenna for the HF and VHF bands. Dimensions are conveniently provided in both English and metric measurements, along with scaling information that permits many designs to be used on frequencies outside the amateur bands. This attractively priced book is a must for all amateur radio enthusiasts. 1990. 272 pages. 233 x 186mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA50P	Beam Antenna H/Book	£7.500	£7.500 NV

## Antennas for VHF and UHF

by I. D. Poole

Covers installing and setting up of TV and FM aerials, to multi-aerial arrays for short wave listening. This book gives all the essential information required in order to obtain the best possible results from an aerial. All the explanations are in easy to read terminology, enabling the reader to understand the technical reasons for installation practices and selection of a particular aerial without the clutter of theory. Advantages of different types of aerial are discussed to ensure you never buy the wrong aerial for the job. Users of scanning receivers and radio amateurs will also find this book useful, as there is also information covering specific aerial types designed for communications equipment. Practical and helpful hints on erecting an aerial will help you to get the most from your set-up, with the minimum of trouble. In addition to helping with the positioning, selection and optimisation of aerials, the book contains enough detail to enable the enthusiast to start building their own aerials. Information on frequency allocations, how to work out the wavelength, and how this applies to aerials in practice will allow you to make dipole, folded dipole, Yagi, and numerous vertical mobile communication antennas. 1994. 112 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

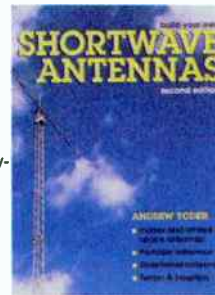
Order Code	Type	Price each exc. VAT	inc. VAT each
AN06G	Antennas For UHF/VHF	£4.950	£4.950 NV

## Build Your Own Shortwave Antennas

Second Edition

by Andrew Yoder

This practical handbook puts at your fingertips the information you need to build your own shortwave antennas and improve the reception of distant stations. The easy-to-follow instructions and clear diagrams and photographs show you how to construct a variety of inexpensive, yet powerful antennas and mast. Packed with lots of illustrations this is a must for all amateur radio enthusiasts. 1994. 221 pages. 233 x 185mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE13P	Shortwave Antennas	£16.990	£16.990 NV

## 25 Simple Shortwave Broadcast Band Aerials

by E. M. Noll

25 simple shortwave aerial project ideas are covered in this easy to understand, illustrated book. 1984. 80 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WM33L	25 Aerials Book	£1.950	£1.950 NV

## Security

### Home Security

by Vivian Capel

The purpose of this book is to provide practical, independent advice and guidance on securing the home. It shows the burglar's preferred methods of entry, the weak points he looks out for, many of the tricks he uses, and what you can do to thwart him. This book explains the pros and cons of an alarm system, discusses which features are important, and clears away the mystery surrounding those technical terms and expressions. It shows how to install a system, how to prevent faults, and what to do if any occur. Other security devices are given a critical scrutiny along with further measures to avoid becoming a victim of crime. 1994. 186 pages. 234 x 150mm, illustrated.



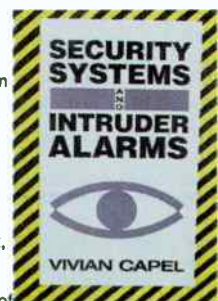
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA86T	Home Security	£14.990	£14.990 NV

### Security Systems and Intruder Alarms

by Vivian Capel

This book is divided into two sections; a general section showing how alarm systems work, what they do, how they can be planned, and how proposed systems can be checked. It also describes countermeasures against other hazards such as shoplifting, employee theft, fire, fraud, liability claims etc., examining control equipment, various types of sensors, going up to closed-circuit TV monitoring and domestic systems. The technical section is more specific dealing with installing and testing intruder and fire alarms, fault-finding and maintenance and the British Standards. Primarily written for managers and business people and installation engineers but will be of interest as a general reference to anyone planning to install a security system. 1989. 280 pages. 240 x 190mm hardcover, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS83E 1	Security Sys & Alarm	£40.000	£40.000 NV



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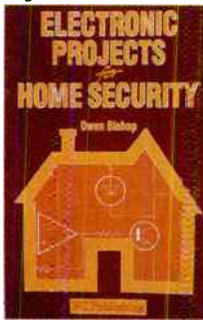
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## Electronic Projects for Home Security

by Owen Bishop

This book deals with many aspects of home security, covering intruder, fire and flood protection, with the emphasis on how to make the best use of electronic devices that you can build yourself. There are 25 constructional projects, ranging in complexity from a single-door protection circuit that can be built in an hour or two, to a sophisticated, multi-channel security system, that most intruders will find very difficult to beat. The projects can be readily undertaken by the beginner. Even the multi-channel system starts at a simple level and is expandable later as the constructor's experience grows.

1991. 141 pages. 216 x 135mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ31J	Home Security Prjts	£6.950	£8.950 NV

## Maplin Home Security Projects

by Maplin Contributors

Newnes

This book contains useful design ideas for various security devices around the home. The book contains eleven projects, divided into the following categories:

- Alarms
- Locks
- Miscellaneous

This book provides a practical guide for anyone with a basic knowledge of electronic circuit construction, to put the knowledge to good use.

184 pages. 213 x 134mm, illustrated. British book.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN44X	Maplin Security Proj	£9.990	£9.990 NV

## Electronic Alarm Circuits Manual

by R. M. Marston

Includes full circuit details of burglar alarms, car alarms, temperature-operated and light-sensitive alarms, as well as power failure alarms, over-voltage alarms etc. This book is packed with useful circuits.

1988. 132 pages. 216 x 138mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RB10L	Elec Alm Ccts Manual	£13.900	£13.900 NV

## Practical Electronic Sensors

by Owen Bishop

Bernard Babani Books

This book describes various types of sensors and the ways in which they are used to monitor almost every aspect of the environment, how each type works and how its signals are processed electronically to produce a meaningful result. A dozen constructional projects, with functions which apply to the domestic environment in and around the home, and include: sunshine duration meter; temperature alarm; passive infra-red intruder; car/bicycle alarm; wind direction indicator; inductive proximity detector; sound level meter; sound controlled switch; tachometer; gas alarm; water level controller; and model speed controller.

1991. 192 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ00A	Prctcl Elec Sensors	£4.950	£4.950 NV

## Servicing, Test & Measurement

### How to Use Oscilloscopes and Other Test Equipment

by R. A. Penfold

Advances in electronics over recent years have brought some quite advanced pieces of test equipment within the scope of many electronics hobbyists. This book explains the basic functions of an oscilloscope giving a detailed explanation of all the standard controls, with advice on choosing an oscilloscope.

A separate chapter deals with using the instrument for fault-finding both linear and logic circuits, with plenty of example waveforms. The function and use of other pieces of test gear are also covered, including signal generators, logic probes, logic pulsers, and crystal calibrators.

1989. 112 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

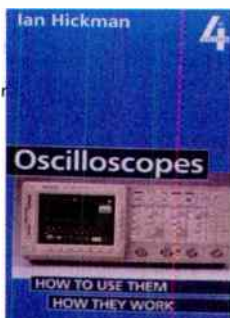
Order Code	Type	Price each exc. VAT	inc. VAT each
WS65V	How to Use Scopes	£3.500	£3.500 NV

## Oscilloscopes

How to Use Them, How They Work  
Fourth Edition

by Ian Hickman

An enormous range of different models is available, and choosing an instrument suitable for your needs has never been easy, particularly for the hobbyist beginner. Includes new material on storage CRTs, DSOs (Digital Storage Oscilloscopes), sampling oscilloscopes, oscillographs, X/Y, X/T and X/Y/T plotters, both stand-alone and as existing oscilloscope accessories; UV recorders, laser recorders, and use of dot matrix printers as output devices. In this case PCs are used with 'plug-in' oscilloscope and logic analyser cards. There is also additional material on network analysers, intrinsically safe oscilloscopes, display oscilloscopes and fibre-optic TDRs. A new appendix covers the considerations relating to achievable measurement accuracy in various types



of oscilloscope voltage, time, frequency, rise-time etc.; electronic cursors, coupled DVMS etc. 1990. 255 pages. 215 x 138mm, illustrated.

Retail Unit Price each (inc. VAT).

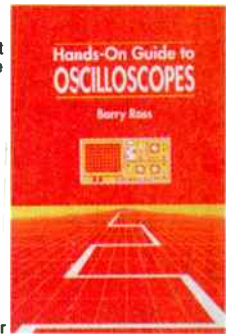
Order Code	Type	Price each exc. VAT	inc. VAT each
WT75S	How Scopes Work	£16.990	£16.990 NV

## Hands-On Guide to Oscilloscopes

by Barry Ross

This book is for anyone who wants to learn about oscilloscopes, and all the topics covered assume that the reader has no previous knowledge or experience of how an oscilloscope works. Although the chapters follow a sequence, each chapter is treated as independently as possible, and can be read separately for quick reference. The book allows the novice to become familiar with oscilloscope circuitry and the correct operation of the equipment in a wide range of applications. It then goes on to explain more complex functions such as digital storage circuitry and the correct use of digital storage oscilloscopes (DSOs). Other topics covered include probes and their use, choosing oscilloscopes and what to do when things go wrong. Practical application examples are included at the end of each chapter.

1994. 245 pages. 245 x 174mm, illustrated.



Retail Unit Price each (inc. VAT).

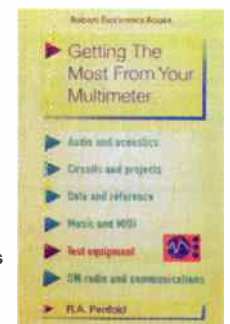
Order Code	Type	Price each exc. VAT	inc. VAT each
AN13P	Guide To Scopes	£18.990	£18.990 NV

## Getting the Most From Your Multimeter

by R. A. Penfold

The first piece of test equipment that most electronics hobbyists normally buy is a multimeter. The basics of analogue and digital multimeters are covered, discussing their relative merits and limitations. Various methods of component checking are described, including tests for transistors, thyristors, resistors, capacitors and diodes. Circuit testing is also covered with subjects such as voltage, current and continuity checks. Using these simple techniques the reader should be able to confidently tackle servicing of most equipment.

1988. 112 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WP94C	Get Most Multimeter	£2.950	£2.950 NV

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See Stock Code Index For More Price Breaks

## More Advanced Uses of the Multimeter

by R. A. Penfold

This book is primarily intended as a follow-up to "Getting The Most From Your Multimeter" and also anyone who already understands the basics of voltage testing and simple component testing. Thoroughly testing some components requires specialised and expensive equipment. In some cases there would not seem to be equipment of the right type available at any price. By using the techniques described, you can test and analyse the performance of a range of components. Designs for simple add-ons are given to make the multimeter even more useful:

An active RF probe, a high resistance probe, an AC sensitivity booster and a current tracer.  
1989. 96 pages, 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS63T	Adv Use Of MMeter	£2.950	£2.950 NV

## Electronic Testing and Fault Diagnosis

Third Edition

by George Loveday

The ability to rapidly diagnose the causes of faults in electronic equipment and circuits is one of the important skills that can be acquired by the electronics technician. The exercises throughout this book are designed to assist the student in acquiring this ability. The text mainly concentrates on component failure occurring in particular types of circuit. Techniques for localising faults in complete electronic instruments or systems, is covered briefly. This edition includes programmable logic devices (PLDs) and CAD software tools.  
1995. 295 pages. 245 x 185mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WP06J	Elec Fault/Test Diag	£15.990	£15.990 NV

## Electronic Fault Diagnosis

Third Edition

by G. C. Loveday

The ability to rapidly diagnose the causes of faults in electronic equipment and circuits is one of the important skills that can be acquired by the electronic technician or mechanic, including the hobbyist. The text concentrates mainly on component faults occurring in particular types of circuit rather than the fault-finding techniques used for localising faults in complete electronic equipment or systems. However, there is a section that deals briefly with system fault-finding methods. A basic introduction to fault-finding microprocessor based systems is included, showing an example designed around an 8-bit microprocessor using readily available chips. The book also reflects other important trends in the field of electronics, and includes notes and



exercises on optoisolators, timer ICs, SMPU designs and power FETs.  
1988. 131 pages. 245 x 189mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ02C	Elec Fault Diagnos	£12.990	£12.990 NV

## Electronics Service Manual

Wimbome Publishing



This authoritatively written and clearly presented Electronics Service Manual is highly readable and contains down to earth advice and vital information on how to service, maintain and repair a wide range of electronic and computer equipment. Step by step, the Electronics Service Manual explains how equipment works, how to test it, how to take it apart, how to find faults and how to fix it. The manual comprises two parts:

### Base Manual

The Base Manual contains information on the following subjects:

- Safety - safety practices, life-saving techniques, legal requirements
- Underpinning Knowledge - electronics theory, component theory & functions, circuit techniques, fault diagnosis, detailed equipment principles
- Practical Skills - component identification, avoiding static, soldering & component replacement techniques
- Tools & Equipment - choosing tools & test gear, workshop practice, optimising test gear
- Technical Notes - detailed examination of how specific types of electronic equipment work
- Reference Data - detailed tables of specifications for semiconductors, including pinouts

This is probably the most comprehensive guide to electronics servicing ever produced at such an affordable price! Providing you with over 850 A4 pages of the essential information you will need to find faults and fix them.

Each Base Manual is supplied complete with an attractive and durable ring-binder. A free copy of a recent Supplement is also included.

### Supplements

As if all the information in the Base Manual wasn't enough, regular Supplements continuously extend the Electronics Service Manual with equipment-specific technical servicing notes and other valuable information!

These Supplements are sent to you directly, on approval (UK only), from the publisher approximately four times a year. If you do not wish to keep a Supplement, simply return it within ten days. If you wish to keep the Supplement, simply remit the appropriate amount, as advised, to the publisher. Supplements are priced at £23.50 plus postage and packing.

You can cancel the Supplements at any time by writing to the publisher.

You are under no obligation to purchase any of the Supplements. Neither are you obliged to accept the offer of the Supplements being sent on approval - see **Important Ordering Information** below.

If you want to receive the Supplements, we have to provided your name and address to the publisher (no other information will be passed onto the publisher in connection with the Electronics Service Manual).

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please order AN45Y ESM No Supplements - we will not provide your name and address to the publisher. You will, however, still receive a free recent Supplement with the Electronics Service Manual. You can of course contact the publisher at a later date if you decide that you want to be sent the Supplements after all.

If you do want to be sent the Supplements, please order GS45Y ESM + Supplements - we will provided your name and address to the publisher. You will receive a free recent Supplement with the Electronics Service Manual. You will be sent further Supplements, on approval, from the publisher. **Please note:** customers outside the UK will only be sent details of the Supplements and a pro forma invoice, not the actual Supplements.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN45Y	ESM No Supplements	£39.990	£39.990 NV
GS45Y	ESM With Supplements	£39.990	£39.990 NV

## Maplin Test Gear & Measurements

by Danny Stewart

Newnes

This book is a clear introduction to test gear in the field of electronics. As well as being a first guide to test gear and its use, the book includes much practical information and reference material for the more experienced electronics enthusiast or student.

Based on a collection of feature articles originally published in *Electronics* - *The Maplin Magazine*, this book is sure to be of great value. Details are included of all the common (and not-so-common) items of test gear, alongside information regarding its use in various measurement situations. 166 pages. 213 x 134mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN43W	Maplin Test & Meas	£9.990	£9.990 NV

## Troubleshooting & Repairing Consumer Electronics without a Schematic

Homer L Davidson

McGraw-Hill

In this thoroughly updated new edition of his best-selling guide, Homer Davidson, one of the most respected and prolific authors in the field of consumer electronics, provides experienced, hands-on information and advice on how to troubleshoot and repair a wide range of electronic units - when you don't have the benefit of schematic diagrams. Davidson, who actually ran his own successful radio and TV repair business for more than 40 years, shows you how to diagnose and solve the circuit problems that commonly occur in audio amps, auto receivers, TV chassis, cassette decks, CD players, AM/FM receivers, VCRs, car radios, stereos, boom-boxes and more. Included are more than 400 detailed drawings and photographs that illustrate the most efficient methods for locating, testing, and repairing defective components.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ62S	Troubleshooting	£18.990	£18.990 NV

## Bigelow's Computer Repair Toolkit

Stephen J Bigelow  
McGraw-Hill



There are many freeware and shareware programs that can help you pinpoint PC problems more quickly and reliably, but they're not always easy to find - and many of them include minimal documentation, or presume a level of expertise that you may not have. This unique book/CD-ROM set gives you instant access to more than 100 freeware and shareware programs on the companion CD-ROM and explains exactly why, when, and how to use them. These programs do essentially the same job as commercially available applications costing many hundreds of pounds more, but are provided here for you far more conveniently, economically, and, above all, usefully. With its terrific set of ready-to-use-tools, expert guidance regarding the purpose and use of each, time-saving tips and practical "symptom-oriented" approach, *Bigelow's Computer Repair Toolkit* is an essential addition to any PC repair technician's troubleshooting "bag of tricks".

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
N096E	Comp Repair Toolkit	£29.990	£29.990 NV

## Instrumentation and Test Gear Circuits Manual

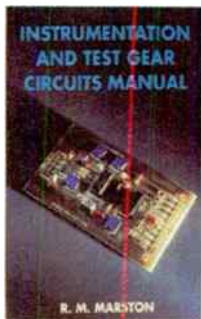
by R. M. Marston

Primarily, this book is a manual of modern instrumentation and test gear circuits that will be of immense value to the industrial, commercial, or amateur electronics engineer or designer. This book is filled with nearly 500 varied and extremely useful, carefully selected practical circuits, diagrams, graphs and tables. The diverse range of practical circuits covers: attenuator and filter circuits; basic meter and multimeter circuits; electronic analogue meter circuits; digital panel meter circuits; waveform generator circuits; scope trace doubles; timebases; digital frequency meters; power supply circuits; and many more. The majority of the semiconductors specified in the designs are reasonably priced and readily available.

1993. 440 pages. 225 x 138mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AA375 1	Test Gear Crct Man	£16.990	£16.990 NV



## Troubleshooting and Repairing Computer Monitors

Stephen J Bigelow  
McGraw-Hill

This immensely popular, best-selling manual has been completely updated and improved to make sure it stays at the top of the chart - the best selling, best available book on computer monitor diagnosis and repair. Now featuring flowcharts and detailed schematics, block diagrams, and exploded-view illustrations throughout, it offers comprehensive coverage of the latest trends and newest technologies in this lucrative area of electronics service.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
N095D	Troubleshooting	£18.990	£18.990 NV



## Test Equipment Construction

by R. A. Penfold

This book describes in detail how to construct some simple and inexpensive, but extremely useful, pieces of test equipment. Stripboard layouts are provided for all designs, together with wiring diagrams where appropriate, plus notes on their construction and use. The following designs are included:

AF Generator, Test Bench Amplifier, Audio Millivoltmeter, High Resistance Voltmeter, Transistor Tester, Capacitance Meter, AF Frequency Meter, Analogue Probe, CMOS Probe, TTL Probe. Apart from providing the home constructor with a useful range of test gear, building these projects should also be an interesting and rewarding exercise in its own right. The designs are suitable for both newcomers and more experienced hobbyists alike.

1989. 112 pages. 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS40T	Test Equip Construct	£3.990	£3.990 NV



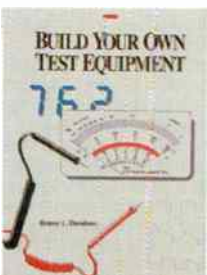
## Build Your Own Test Equipment

by Homer L. Davidson

Learn how to build and use instruments for troubleshooting TVs, stereos, computers, CD players, 'ham' radios, microwave ovens, camcorders, electric motors, power supplies, cables and more. The book tells you all you need to know about constructing inexpensive, high-capacity, troubleshooting equipment for almost any purpose, leading you step-by-step through the entire process of finding and buying components, designing PCBs, substituting components, building and testing projects and finally putting your completed instruments to work. There are projects for everyone, from the beginner to the seasoned professional, all accompanied by simple, easy to follow instructions, photographs and diagrams. American book. Warning: references may be made to the American standard 110V AC mains supply. You should translate these into the English 240V AC mains standard and take

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS92A 1	Mobile Radio Svcing	£50.000	£50.000 NV



the appropriate precautions with the higher voltage level.  
1991. 300 pages. 234 x 187mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ28F 1	Build Own Test Equip	£16.990	£16.990 NV

## More Advanced Test Equipment Construction

by R. A. Penfold

Describing some slightly more advanced test equipment projects for readers who have some amount of experience at project building. Full circuit diagrams plus notes on construction are provided. Detailed notes on any necessary setting up are also provided, together with information on using the projects to best effect. Projects included are:

digital voltmeter, digital capacitance meter, digital transistor tester, digital heatsink thermometer, bench power supply, dynamic transistor tester, A.F. digital frequency meter, digital resistance meter, digital current tracer, crystal calibrator and pulse generator. When finished the projects provide a very useful range of test gear for future project development and servicing, and the building of them should prove an interesting and rewarding pastime in its own right. The projects are not strictly suitable for complete beginners, but anyone possessing a modicum of hands-on construction experience should have little difficulty.

1989. 112 pages. 178 x 111mm, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS78K	More Adv Test Equip	£3.500	£3.500 NV



## Mobile Radio Servicing Handbook

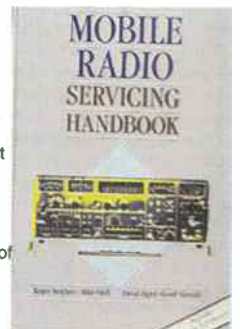
by Roger Belcher, Mike Fitch, David Ogley and Geoff Varrall

An authoritative and practical information source-book on the servicing and repair of VHF and UHF mobile radios and base stations, together with the maintenance and support requirements of the overall radio system, including antenna and mast installations. The book covers the impact of data over radio, cellular radio, and trunking technologies on servicing, diagnosis and repair procedures. Essential background topics covered include radio theory, amplitude (AM) and frequency (FM) modulation, radio wave propagation, reception and demodulation, fundamentals of receiver and transmitter systems, principles of transmitter and receiver design, synthesiser techniques, selective tone signalling and the digital signalling control and access protocols of cellular and trunked radio.

1989. 298 pages. 240 x 160mm hard-cover, illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS92A 1	Mobile Radio Svcing	£50.000	£50.000 NV



## How to Expand, Modify and Repair PCs and Compatibles

by R. A. Penfold  
Bernard Babani

Not only are PCs and compatibles very expandable, but before long many users actually wish to take advantage of that expandability and upgrade their PC systems. Some aspects of this can be a bit confusing, but this book provides advice and guidance on the popular forms of internal PC expansion, and should help to make things reasonably straightforward and painless, and little knowledge of computing or computer hardware is assumed. All you need is to have and be able to operate a PC of some description. Topics include a PC overview, memory upgrades, how to add a hard drive, how to add an extra floppy drive, display adaptors and monitors, fitting a maths co-processor, keyboards, ports, mice and digitisers. All are covered in detail with emphasis on practical advice rather than theory. The final two chapters deal with maintenance (including the preventive kind) and repairs, and the increasingly popular subject of DIY PCs. 1994, Revised Edition. 176 pages. 198 x 130mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS95D	Mod & Repair PCs	£5.990	£5.990 NV

## Electrical Appliances

by Graham Dixon  
Haynes

This Haynes Home DIY book deals comprehensively with all aspects of the use, maintenance and repair of electrical appliances around the home. It is divided into seven main sections:

- Introduction - Includes a detailed safety guide and the tools & equipment needed for the job
- Understanding Electricity - An essential guide to plugs and sockets, heating elements, temperature control devices and electrical circuit testing
- Kitchen Appliances - How to repair and maintain refrigerators & freezers, hobs & ovens and most other kitchen appliances
- Personal Equipment - Shavers and hairdriers
- Living Room Appliances - Portable heaters, video and audio equipment
- Cleaners and Power Tools - Vacuum cleaners, power tools and garden power tools
- Further Information - Using a flowchart, buying spare parts, low insulation, rechargeable batteries and glossary



Photographs and diagrams accompany the clearly presented text and the easy-to-follow fault finder charts help pinpoint the cause of a problem and the action to be taken.

The repair of commonly occurring faults is explained in detail which includes - a list of all the tools required and replacement parts and captioned step-by-step photographs to show precisely what to do.

Altogether, this book is a 'must have' for the DIYer interested in undertaking electrical maintenance/repair work. 1995. 186 pages. 270 x 210mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN38R	Electr Appliances	£6.990	£6.990 NV

## Washing Machines, Washer Driers and Tumble Driers

by Graham Dixon  
Haynes

This Haynes Home DIY book deals comprehensively with all aspects of care, maintenance and repair of washing machines, washer driers and tumble driers in a clear accessible manner. It is divided into six sections:

- Introduction - Includes a safety guide with emergency procedures and a complete guide to tools and equipment
- Understanding Electricity - All the basics, plugs & sockets and using a test meter
- Installation - Plumbing instructions, venting and programme testing
- Care and Repair - The importance of regular maintenance and how to overcome the common causes of poor washing results
- Fault Finding - What to do about leaks and why the machine is not emptying. Replacing door seals, times and programmers. How to deal with motors, belts, suppressors, bearings and electrics. What can go wrong with dry only machines and how to put it right.
- Further Information - Full of useful tips on knowing your machine, buying spare parts and how to use a flow chart. There is a glossary for quick and easy reference.

Photographs and diagrams accompany the clearly presented text and all methods of prevention and repair are fully explained in a non-technical manner.

Each component part is photographed and explained in full detail, with a thorough explanation of the way it works, what can go wrong, and how to maintain, repair and replace it.

Altogether, this book is essential reading for anyone wishing to carry out washing machine maintenance or repair work. 1995. 186 pages. 270 x 210mm, illustrated. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN39N	Wash Machines	£6.990	£6.990 NV

## Troubleshooting and Repairing Audio Equipment

Third Edition 1996

Homer L Davidson

This book is written in an easy-to-understand style with clear illustrations and test readings. It is packed with more than 500 practical how-to photos, circuit schematics, and illustrations. It is a must, not only for the professional, but for the aspiring trainee. The book has 13 chapters dealing with repairs on pocket-size cassette stereo players, compact stereo tape decks, boom-box players, deluxe AM/FM/MPX tuners, deluxe amplifiers, car stereo cassette players, turntables, CD players, car cassette/disc players, telephone answering machines, stereo speakers and high-power car radios. 1993. 482 pages. 187 x 234mm, illustrated. American book.



1993. 482 pages. 187 x 234mm, illustrated. American book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LA11M	Audio Equip Repair	£17.950	£17.950 NV

See Stock Code Index For More Price Breaks

## Servicing Audio and Hi-Fi Equipment - Second Edition

by Nick Beer

Written specially for service technicians and engineers, this book is designed as a bench-side companion and guide. Its purpose is to ease and speed up the process of fault-diagnosis, repair and testing of all classes of home audio equipment.

This latest edition has been expanded to include Mini Disc and DCC, ICE systems, RDS, Photo-CD, MASH and single-bit DACS. Fully illustrated with photographs, diagrams, fault-finding charts and circuits, the book also includes a comprehensive guide to manufacturers and suppliers, and a 'symptom index' for quick access to specific advice and suggestions in particular areas. The book is especially notable for offering some advice, as part of the section on repair techniques, about handling SMDs (Surface Mounted Devices), and how to remove and replace these tiny components and what to watch out for. 1994. 263 pages. 252 x 194mm, hard cover, illustrated.



Retail Unit Price each (inc. VAT).

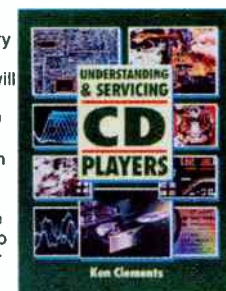
Order Code	Type	Price each exc. VAT	inc. VAT each
WT87U 1	Service Audio & HiFi	£25.000	£25.000 NV

## Understanding and Servicing CD Players

by Ken Clements

The book provides a very readable understanding of CD technology, and will supplement the relevant service manual for a CD that requires servicing.

The text takes a problem solving approach with numerous examples, circuit diagrams and line drawings. Engineers who need to achieve a better understanding of CD technology will find this book an essential tool for fault diagnosis, adjustment and repair. The profusely illustrated text covers both the mechanical design and the ICs used within a CD player, and gives a thorough grounding in the basic principles of CD technology. All the various servo systems are discussed as are the decoder, system control and power supplies. Written specifically with service technicians and engineers in mind, the book will also be invaluable to the audio enthusiast, as it is designed to be a bench-side companion and guide to the principles involved, in repairing and adjusting CD players. 1994. 210 pages. 253 x 193mm, illustrated. Hardback.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN12N 1	U/Std & Service CDs	£25.000	£25.000 NV

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## Servicing TV & Video Equipment

by Eugene Trundle

This 'hands-on' servicing book is specifically aimed at repair and service technicians and engineers, but students and laypeople should also find it useful. It guides its readers in test and diagnostic procedures for quick fault-finding in domestic video products, namely TVs, VCRs, cameras and camcorders. Based on many years of practical bench and field experience, the book has a minimum of regard to theoretical principles and circuit explanations, which are well covered elsewhere. Here the emphasis is on the practical nuts-and-bolts business of fault diagnosis and repair. Seventeen chapters are individually targeted on separate aspects of the equipment, dwelling longest on the most troublesome sections: TV power supplies, line timebases, intermittent faults and repair techniques. Of the 225 illustrations, fifty-four are off-screen photographs, and thirteen are fault-finding charts. A symptom index is included for easy reference to this storehouse of practical advice straight from the repair bench. 1989. 209 pages. 253 x 194mm, illustrated.



Retail Unit Price each (inc. VAT).

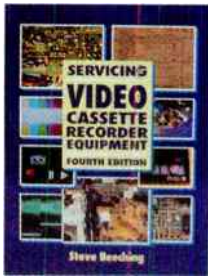
Order Code	Type	Price each exc. VAT	inc. VAT each
WS76H1	Servicing TV & Video	£25.000	£25.000 NV

## Servicing Video Cassette Recorder Equipment

Fourth edition

by Steve Beeching

The book covers VHS and Betamax machines as well as the Philips N1500/N1700 and V2000 systems. Long play machines and hi-fi sound systems are included as well as the digital techniques applying to servos and signal processing circuits. Common faults on many machines are discussed with possible solutions. A very comprehensive book which will prove invaluable to all owners of modern video recorders. The latest edition includes details of Video 8, VHS HQ, S-VHS, VHS-C, Camcorders etc. 1993. 245 pages. 252 x 198mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WP56L	Service Vid Recorders	£25.000	£25.000 NV

## Home VCR Repair Illustrated

by Richard Wilkins & Cheryl A. Hubbard

This book was based on an accumulation of ideas and the experience of the author gained in VCR repair. The methods described are simple and safe to use on any VCR, if you follow the instructions carefully. The book is designed to teach you how to do-it-yourself in your own home, using household items and basic tools and step-by-step instructions. No test equipment is involved. The book is broken down into sections that correspond to each particular section of a VCR, so you can



easily proceed to the relevant section. Most chapters contain a review section, providing step-by-step instructions to assist in diagnosis and repair. This also acts as a checklist so you don't miss any important steps when carrying out repairs. The examples discussed and shown in the photographs try to cover every commercial possibility and at no time is any example a specific make or model of VCR. **Warning:** references may be made to the American standard 110V AC mains supply. You should translate these into the English 240V AC mains standard and take the appropriate precautions with the higher voltage level. 1991. 398 pages. 234 x 188mm, illustrated. American book.

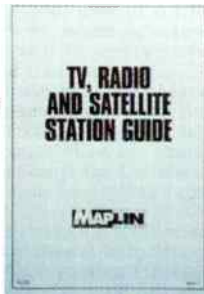
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Order Code	Type	Price each exc. VAT	inc. VAT each
WZ32K1	Home VCR Repairs	£14.990	£14.990 NV

## TV, Video & Photography

### TV, Radio and Satellite Station Guide

A comprehensive guide to TV and FM radio stations in the UK and Ireland plus the most popular satellite stations. There is useful information and addresses to help solve any reception problems you may experience, plus interesting facts on satellite television and RDS. 1996. 14 pages. A4 size, illustrated.



Retail Unit Price each (inc. VAT).

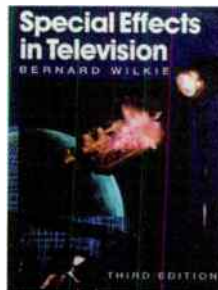
Order Code	Type	Price each exc. VAT	inc. VAT each
EL03D	TV/Radio Guide	£1.990	£1.990 NV

### Special Effects in Television

Third Edition

by Bernard Wilkie

Special effects are an essential part of programme making, and this authoritative book is the most comprehensive work on practical television special effects written - from the most simple to the most sophisticated electronic equipment installed in modern studios. There is guidance on the correct procedure and safety considerations for those engaged in dangerous sequences. The author has endeavoured to strike a balance between the new and old effects, retaining ideas that would be helpful to small production units, freelance workers and amateur video makers, but includes processes that are available to those working in major studios. Special Effects in Television covers every aspect and craft involved in this area of television production. 1995. 295 pages. 244 x 189mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LA10L	Spec Effects in TV	£25.000	£25.000 NV

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## Newnes Guide to TV and Video Technology

by Eugene Trundle

This book represents a breakthrough in terms of value-for-money technical information. Based on two of the most popular Technical Guides, this new edition brings together in depth accounts of television and VCR technology. In twenty one chapters, over 250 illustrations and 400 odd pages, the technicalities of television, video and allied equipment are lucidly and concisely explained for the benefit of technicians, students, laymen and others. Coverage is wide and deep, extending from the camera lens via videotape signal processing and deck management to the very latest TV screen technology. Along the way we look at space satellites, microcomputers and such practical matters as videorecorder servicing and maintenance. Eugene Trundle, a practising video and TV engineer, has a knack of conveying highly technical information in the form of a 'good read'. It is well demonstrated here. 1988. 432 pages. 185 x 128mm, illustrated.



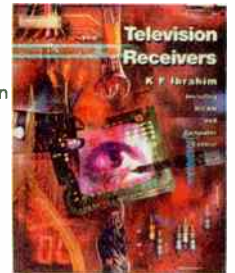
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WS34M	Guide TV-Vid Tech	£14.990	£14.990 NV

## Television Receivers

by K. F. Ibrahim

This book sets out to comprehensively explain the use of discrete and IC components in modern TV receivers. The text is profusely illustrated with diagrams, many of which are practical circuits currently used by TV receiver manufacturers. The book provides a thorough coverage of TV receiver theory and practice, starting from basic principles of monochrome and colour reception through to digital processing of TV signals. A full explanation of NICAM digital stereo and computer controlled TV receivers is included, as well as comprehensive coverage of digital techniques, that are used in modern TV receivers. The book will be particularly useful for students studying BTEC level II, III, IV, City and Guilds courses and anyone involved in courses with television reception as a subsidiary topic. The TV servicing engineer will find this book a useful source of reference reading. 1992. 230 pages. 245 x 189mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WZ91Y	Television Receivers	£13.500	£13.500 NV

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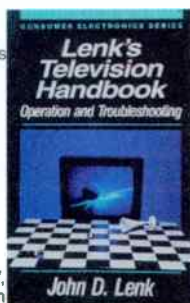
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## Lenk's Television Handbook – Operation and Troubleshooting

by John D. Lenk

From basic TV circuits to advanced digital systems, this essential handbook is the authoritative volume on how it works and how to fix it for all types of television equipment. The author offers proven troubleshooting tips and techniques for every TV set and monitor in common use. Also included is an in-depth coverage of emerging technologies such as surround sound, digital TV, RGB interface, and on-screen display (OSD). 1995. 332 pages. 236 x 155mm, illustrated. Hardback.



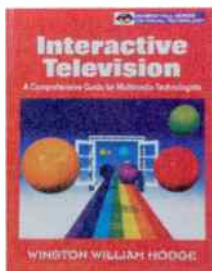
Retail Unit Price each (inc. VAT).

Order Code	Type 6903	Price each exc. VAT	inc. VAT each
BS10L	Lenk's TV Handbook	£23.990	£23.990 NV

## Interactive Television

by Winston William Hodge

TV and computing are becoming one, and with this comprehensive reference, the reader will soon be knowledgeable in the fast developing fields of video-on-demand (VOD), pay-per-view TV, interactive TV and advanced multimedia. In the highly evolved global telecommunications networks that are being developed we will soon have access to an unlimited number of channels of video, telephony, switched data, wide area networks, business data links and much more. This book gives an excellent insight into these interconnected high performance networks that are often referred to as the Information Superhighway. 1995. 235 pages. 241 x 190mm, illustrated. American hardback book.



Price each shown, but sold only in multiples of 1.

Order Code	Type 6905	Price each exc. VAT	inc. VAT each
BS13P 1	Interact Television	£34.950	£34.950 NV

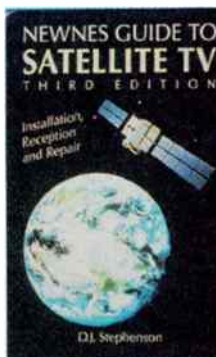
## Guide to Satellite TV

Installation, Reception and Repair

Third Edition

by D.J. Stephenson

A practical guide, without excessive theory mathematics, to the installation and servicing of satellite TV receiving equipment, primarily for those involved in the aerial installation and TV trades. The book includes computer programs, written in the simplest Microsoft dialect of BASIC to run on any PC or 8-bit micro, for the calculation of elevation, azimuth, polar and declination angles from any point in Europe for any current or future satellite. Among the many practical matters covered are the problems of 'sparklies', rain, trees, and vandals (the latter solved by the 'two-drunks high' dish-mounting rule!). Contents include an overview of satellite TV, antennæ, head units, cables, line amplifiers and connectors, satellite receivers, the 'linked budget' calculation; installation and alignment of antennæ and



cabling, indoor wiring up, repairs and appendices and glossary. 1991. 381 pages. 240 x 160mm hard cover, illustrated.

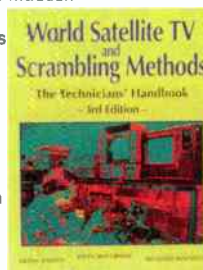
Retail Unit Price each (inc. VAT).

Order Code	Type 6902	Price each exc. VAT	inc. VAT each
WT06G 1	Guide To Sat TV	£18.990	£18.990 NV

## World Satellite TV and Scrambling Methods

The Technicians' Handbook – 3rd Edition from Frank Baylin, Richard Maddox and John McCormac

The purpose of this book is two-fold; to provide a technical training and reference source on home satellite systems, and to provide a troubleshooting manual that can be used on almost any satellite receiving system. Although satellite systems have become a commonplace consumer product, their installation and service are certainly more complex than, for example, stereo or other video entertainment components. This profusely illustrated book assumes that the reader already has an understanding of basic electronics, as well as some knowledge of TV and FM broadcasting. It is indispensable for satellite television system installers, technician engineers or anyone who is interested in acquiring detailed knowledge of satellite systems. 1993. 371 pages. 277 x 214mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type 6901	Price each exc. VAT	inc. VAT each
WZ75S 2	World Satellite TV	£29.000	£29.000 NV

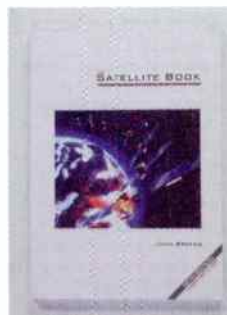
## The Satellite Book

A Complete Guide to Satellite TV Theory and Practice

Third Edition

John Breeds

This book provides a broad yet fairly in-depth introduction to satellite related subjects for both technicians and enthusiasts. The chapters are organised into two broad sections; practical, and theoretical. The topic for each chapter was carefully chosen, and the text written by a recognised expert in this particular field. The result is a handbook that is both comprehensive and authoritative. Contains lots of really interesting information about the satellites, signal protocols, scrambling, signal distribution and much more. 1994. 297 pages. 295 x 210mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type 6903	Price each exc. VAT	inc. VAT each
WT46A 2	The Satellite Book	£32.000	£32.000 NV

## Satellite Television Installation Guide

Fifth Edition

by John Breeds

The purpose of this booklet is to help newcomers to correctly align both azimuth/elevation and polar mount dish types. If a polar mount assembly is accurately set up then the dish will be able to automatically track the satellites available now, and those launched in the future. The usual knowledge and skills normally associated with installing terrestrial UHF aerials are assumed. The booklet provides detailed guidelines on how to install a dish and receive satellite pictures. There are no mathematical explanations or complex formulae involved. The notes and procedures given are based on practical experience. They provide readers with hints and tips, tricks of the trade and other quick but accurate methods of aligning a dish. The challenge of the changing technology must be continually met by all of the support services, and this guide is designed to help installation technicians achieve this, and so is equally useful to the competent home DIY enthusiast. 1994. 80 pages. 297 x 210mm, illustrated.



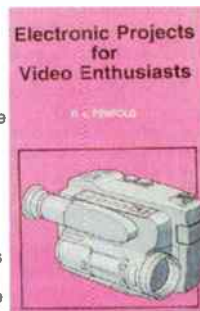
Retail Unit Price each (inc. VAT).

Order Code	Type 6904	Price each exc. VAT	inc. VAT each
WT45Y	Sat TV Instal Guide	£15.000	£15.000 NV

## Electronic Projects for Video Enthusiasts

by R. A. Penfold

At some stage most video enthusiasts try their hand at producing a tape of recorded highlights, and there are many ready made accessories which enable the enthusiast to undertake more professional editing. Many of these accessories can be constructed for a fraction of the cost and this book provides ten designs for video accessories – five circuits for audio processing including mixers, faders and dynamic noise limiters, and five for video processing which include faders, sideways wiper and video crispener. All the projects can be either battery powered or powered from a suitable mains power supply – a suggested circuit is included. All the projects use cheap and readily available components, and full construction details are provided, including stripboard layouts and wiring diagrams. No elaborate test equipment is required, and where appropriate, simple setting up procedures are included. 1994. 128 pages. 178 x 111mm, illustrated.



Retail Unit Price each (inc. VAT).

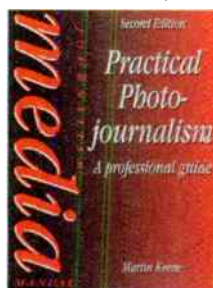
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AN15R	Prjts For Video Enth	£4.950	£4.950 NV

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## Practical Photojournalism – A Professional Guide



**Second Edition**  
by **Martin Keene**  
Written by a very competent and experienced photojournalist, this manual opens up the way for those who want to understand more about the subject, or even contemplate entering the profession. Not only will it enable the reader to improve their photographic skills, but will also help develop their journalistic

talent.

The author takes the reader through the subject of camera lenses, cameras and camera accessories. Film types and film processing together with printing are also covered. He spends three chapters on 'The Working Photographer' dealing with the practical aspects of the type of incidents required to be covered, the technical aspects of actual picture composition and studio work. One chapter deals with the *LAW* and how it affects the photojournalist and his response to delicate situations. Other subjects covered include the picture desk, using pictures, electronic picture transmission and digital cameras, and careers.

1995. 255 pages, 244 x 190mm. Illustrated.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LA12N †	Photo Journalism	£17.990	£17.990 NV

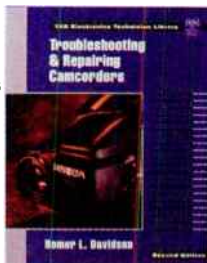
## Troubleshooting and Repairing Camcorders

Homer L Davidson

**McGraw-Hill**

Aimed at technicians who need up-to-the-minute information on new camcorder technology, this best-selling manual puts practical, hands-on troubleshooting and repair techniques and advice at your fingertips. Now thoroughly updated to cover new makes and models, it also provides you with vital information about technological

advances, including fuzzy logic circuits, image stabilisation, the new mini-camcorders, and much more. Another important new feature of this extensively illustrated guide is the addition of numerous flowcharts throughout the book. And if you're a novice at camcorder repair, you'll appreciate the helpful chapter on electronic components and test equipment and techniques.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ0NK	Camcorder	£17.990	£17.990 NV

## Troubleshooting and Repairing Solid-State TVs

Homer L Davidson

**McGraw-Hill**

If you need accurate, thorough information on solid-state television repair, this unparalleled field guide from trusted electronics author Homer L Davidson is the most comprehensive and useful book you can buy. Now even better than its predecessors, this extensively revised edition is completely up-to-date. You'll also find exclusive new features - including flowcharts throughout - to



make finding answers even easier and faster. If you're new to TV repair or need to refresh your skills, Davidson gives you a handy overview of the basics of maintenance and repair. You will find detailed troubleshooting guidance on low-voltage power supplies; vertical, colour, sound, and picture tube circuits; practical convergence circuits; and more.

Retail Unit Price each (inc. VAT).

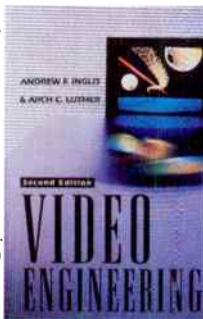
Order Code	Type	Price each exc. VAT	inc. VAT each
NQ7BK	TV Troubleshooting	£17.990	£17.990 NV

## Video Engineering

Andrew F Inglis and Arch C Luther

**McGraw-Hill**

Vastly expanded to provide full coverage of the many growing nonbroadcast applications of video such as computer display systems and multimedia applications, this Second Edition is an invaluable all-in-one reference for video professionals and a useful textbook for anyone studying video engineering. Particular attention is given to pathbreaking HDTV technology that will revolutionise television broadcasting, as well as uses of digital video technology in the generation and display of computer images. Other key sections address fundamentals of both analog and digital video systems...basic criteria for specifying image quality...and application of colorimetric theory to video systems.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NQ4SY †	Video Engineering	£39.990	£39.990 NV

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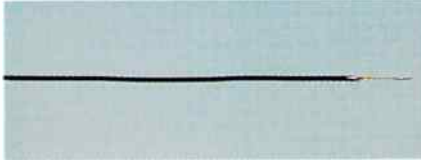


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## Equipment Wire

### Wire-Wrapping Wire (1/0.25)



A solid-core single silver-plated copper conductor designed especially for wire-wrapping. Insulation resists shrinkage when soldering

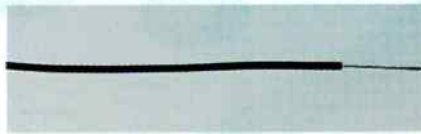
#### Specification

Single core: 1/0.25mm silver plated 30AWG. (33SWG)  
Sheath: 0.125mm Kynar  
Overall diameter: 0.5mm  
Nom. conductor area: 0.5mm<sup>2</sup>  
Max. working voltage: 300V RMS  
Max. current: 0.4A  
Colours: Black, red and white  
On 25m reels only

Retail Unit Price each (inc. VAT).

Order Code	Type <sup>218</sup>	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
BL77J	Wire-Wrap Black	£2.540	£2.360	£2.240	£2.990
BL82D	Wire-Wrap Red	£2.540	£2.360	£2.240	£2.990
BL83E	Wire-Wrap White	£2.540	£2.360	£2.240	£2.990

### Light-Duty Connection Wire (10/0-1)



A flexible wire, which is ideal for signal interconnections within apparatus where it is necessary to pack a large number of wires into a small space.

Stranded core, single: 10/0-1mm copper  
Sheath: 0.3mm PVC  
Overall diameter: 0.9mm  
Nom. conductor area: 0.0785mm<sup>2</sup>  
Max. working voltage: 1000V RMS  
Max. current: 0.5A  
Colours available: Black, Blue, Green, Orange, Red, White, Yellow.  
On 25m reels only.

Retail Unit Price each (inc. VAT).

Order Code	Type <sup>219</sup>	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
BL46A	L/C Wire Black	£1.650	£1.410	£1.330	£1.950
BL47B	L/C Wire Blue	£1.650	£1.410	£1.330	£1.950
BL49D	L/C Wire Green	£1.650	£1.410	£1.330	£1.950
BL51F	L/C Wire Orange	£1.650	£1.410	£1.330	£1.950
BL53H	L/C Wire Red	£1.650	£1.410	£1.330	£1.950
BL55K	L/C Wire White	£1.650	£1.410	£1.330	£1.950
BL56L	L/C Wire Yellow	£1.650	£1.410	£1.330	£1.950

### Solid Core Wire (1/0-6)



A wire having a single solid core ideal for plate-wiring (running wires across a chassis with all wires straight or at right-angles to one another) because wire stays exactly in formed shape without ties.

Single core: 1/0-6mm copper 22AWG (23SWG)  
Sheath: 0.3mm PVC - conforms to DEF61-12 (part 6) Type 2  
Overall diameter: 1.2mm  
Nom. conductor area: 0.28mm<sup>2</sup>  
Max. working voltage: 1000V rms

Colours: Black, Blue, Green, Orange, Red, White, Yellow.  
In 10m approx packs and on 100m drums.

Retail Unit Price each (inc. VAT).

Order Code	Type <sup>217</sup>	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
BL85G	Bell Wire Black	£0.502			£0.590
PA56L	100m Bell Wire Bk	£3.480	£3.220	£3.040	£4.100
BL86T	Bell Wire Blue	£0.502			£0.590
PA57M	100m Bell Wire Blu	£3.480	£3.220	£3.040	£4.100
BL88V	Bell Wire Green	£0.502			£0.590
PA59P	100m Bell Wire Grn	£3.480	£3.220	£3.040	£4.100
BL90X	Bell Wire Orange	£0.502			£0.590
PA60Q	100m Bell Wire Orm	£3.480	£3.220	£3.040	£4.100
BL92A	Bell Wire Red	£0.502			£0.590
PA61R	100m Bell Wire Red	£3.480	£3.220	£3.040	£4.100
BL94C	Bell Wire White	£0.502			£0.590
PA62S	100m Bell Wire Wht	£3.480	£3.220	£3.040	£4.100
BL95D	Bell Wire Yellow	£0.502			£0.590
PA63T	100m Bell Wire Yel	£3.480	£3.220	£3.040	£4.100

### Hook-Up Wire (7/0-2)



A flexible wire for general interconnections within apparatus.

Stranded core, single: 7/0-2mm copper  
Sheath: 0.3mm PVC - conforms to DEF61-12 (part 6) Type 2

Overall diameter: 1.2mm  
Nom. conductor area: 0.22mm<sup>2</sup>  
Max. working voltage: 1000V rms  
Max. current: 1.4A

Colours: Black, Blue, Brown, Green, Grey, Orange, Pink, Red, Violet, White, Yellow.  
In 10m approx packs, 100m and 500m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type <sup>2192</sup>	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
BL00A	7/0.2 Wire 10M Bk	£0.502			£0.590
PA45Y	100m 7/0.2 Wire Bk	£3.480	£3.220	£3.040	£4.100
VK67X	7/0.2mm Wire 500m Bl	£14.450	£13.520	£12.820	£16.990
BL01B	7/0.2 Wire 10M Blu	£0.502			£0.590
PA46A	100m 7/0.2 Wire Blu	£3.480	£3.220	£3.040	£4.100
VK68Y	7/0.2mm Wire 500 Blu	£14.450	£13.520	£12.820	£16.990
BL02C	7/0.2 Wire 10M Brn	£0.502			£0.590
PA47B	100m 7/0.2 Wire Brn	£3.480	£3.220	£3.040	£4.100
VK69A	7/0.2mm Wire 500m Br	£14.450	£13.520	£12.820	£16.990
BL03D	7/0.2 Wire 10M Grn	£0.502			£0.590
PA48C	100m 7/0.2 Wire Grn	£3.480	£3.220	£3.040	£4.100
VK70M	7/0.2mm Wire 500 Grm	£14.450	£13.520	£12.820	£16.990
BL04E	7/0.2 Wire 10M Gry	£0.502			£0.590
PA49D	100m 7/0.2 Wire Gry	£3.480	£3.220	£3.040	£4.100
VK71N	7/0.2mm Wire 500m Gy	£14.450	£13.520	£12.820	£16.990
BL06F	7/0.2 Wire 10M Orm	£0.502			£0.590
PA50E	100m 7/0.2 Wire Orm	£3.480	£3.220	£3.040	£4.100
VK72P	7/0.2mm Wire 500m Or	£14.450	£13.520	£12.820	£16.990
BL06G	7/0.2 Wire 10M Prk	£0.502			£0.590
PA51F	100m 7/0.2 Wire Prk	£3.480	£3.220	£3.040	£4.100
VK73Q	7/0.2mm Wire 500 Prk	£14.450	£13.520	£12.820	£16.990
BL07H	7/0.2 Wire 10M Red	£0.502			£0.590
PA52G	100m 7/0.2 Wire Red	£3.480	£3.220	£3.040	£4.100
VK74R	7/0.2mm Wire 500 Red	£14.450	£13.520	£12.820	£16.990
BL08G	7/0.2mm Wire 10M Vio	£0.502			£0.590
PA53H	100m 7/0.2 Wire Vio	£3.480	£3.220	£3.040	£4.100
VK75S	7/0.2mm Wire 500 Vio	£14.450	£13.520	£12.820	£16.990
BL09K	7/0.2 Wire 10M Wht	£0.502			£0.590
PA54J	100m 7/0.2 Wire Wht	£3.480	£3.220	£3.040	£4.100
VK76H	7/0.2mm Wire 500 Wht	£14.450	£13.520	£12.820	£16.990
BL10L	7/0.2 Wire 10M Yel	£0.502			£0.590
PA55K	100m 7/0.2 Wire Yel	£3.480	£3.220	£3.040	£4.100
VK77J	7/0.2mm Wire 500 Yel	£14.450	£13.520	£12.820	£16.990

**MAPLIN Discoveries**  
THE WORLD OF ELECTRONICS AND BEYOND

### Hook-Up Wire (16/0-2)



A flexible wire for general purpose and heavy duty interconnections within apparatus.  
Stranded core, single: 16/0-2mm copper  
Sheath: 0.3mm PVC - conforms to DEF61-12 (part 6) Type 2

Overall diameter: 1.6mm  
Nom. conductor area: 0.5mm<sup>2</sup>  
Max. working voltage: 1000V rms  
Max. current: 3A  
Colours: Black, Blue, Brown, Green, Orange, Red, White, Yellow.

In 10m approx packs, 100m and 500m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type <sup>2193</sup>	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
FA26D	16/0.2 Wire 10M Bk	£0.842			£0.990
PA64U	100m 16/0.2 Wire Bk	£6.040	£5.460	£5.100	£7.100
VK78K	16/0.2 Wire 500m Bk	£22.970	£21.470	£20.360	£26.990
FA27E	16/0.2 Wire 10M Blu	£0.842			£0.990
PA65V	100m 16/0.2 Wire Blu	£6.040	£5.460	£5.100	£7.100
VK79L	16/0.2 Wire 500m Blu	£22.970	£21.470	£20.360	£26.990
FA28F	16/0.2 Wire 10M Brn	£0.842			£0.990
PA66W	100m 16/0.2 Wire Brn	£6.040	£5.460	£5.100	£7.100
VK80B	16/0.2 Wire 500m Brn	£22.970	£21.470	£20.360	£26.990
FA29G	16/0.2 Wire 10M Grn	£0.842			£0.990
PA67X	100m 16/0.2 Wire Grn	£6.040	£5.460	£5.100	£7.100
VK81C	16/0.2 Wire 500m Grm	£22.970	£21.470	£20.360	£26.990
FA31J	16/0.2 Wire 10M Orm	£0.842			£0.990
PA69A	100m 16/0.2 Wire Orm	£6.040	£5.460	£5.100	£7.100
VK82D	16/0.2 Wire 500m Orm	£22.970	£21.470	£20.360	£26.990
FA33L	16/0.2 Wire 10M Red	£0.842			£0.990
PA71N	100m 16/0.2 Wire Red	£6.040	£5.460	£5.100	£7.100
VK83E	16/0.2 Wire 500m Red	£22.970	£21.470	£20.360	£26.990
FA35Q	16/0.2 Wire 10M Wht	£0.842			£0.990
PA73Q	100m 16/0.2 Wire Wht	£6.040	£5.460	£5.100	£7.100
VK84F	16/0.2 Wire 500m Wht	£22.970	£21.470	£20.360	£26.990
FA36P	16/0.2 Wire 10M Yel	£0.842			£0.990
PA74R	100m 16/0.2 Wire Yel	£6.040	£5.460	£5.100	£7.100
VK85G	16/0.2 Wire 500m Yel	£22.970	£21.470	£20.360	£26.990

### Hook-Up Wire (24/0-2)



A flexible wire for general purpose extra heavy duty interconnections within apparatus.

Stranded core, single: 24/0-2mm copper  
Sheath: 0.45mm PVC conforms to DEF61-12 (part 6) Type 2

Overall diameter: 2.05mm  
Maximum working voltage: 1000V rms  
Maximum current: 6A  
Colours: Black, Blue, Brown, Green, Orange, Red, White, Yellow

In 10m approx. packs and 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type <sup>2195</sup>	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
KR31J	24/0.2 Wire 10M Bk	£1.090			£1.290
CK73Q	200m 24/0.2 Wire Bk	£8.170	£7.540	£6.990	£9.600
BA36P	24/0.2 Wire 10M Blu	£1.090			£1.290
CK74R	200m 24/0.2 Wire Blu	£8.170	£7.540	£6.990	£9.600
BA37S	24/0.2 Wire 10M Brn	£1.090			£1.290
CK75S	200m 24/0.2 Wire Brn	£8.170	£7.540	£6.990	£9.600
BA38R	24/0.2 Wire 10M Grn	£1.090			£1.290
CK76H	200m 24/0.2 Wire Grn	£8.170	£7.540	£6.990	£9.600
BA39N	24/0.2 Wire 10M Orm	£1.090			£1.290
CK77J	200m 24/0.2 Wire Orm	£8.170	£7.540	£6.990	£9.600
BA40T	24/0.2 Wire 10M Red	£1.090			£1.290
CK78K	200m 24/0.2 Wire Red	£8.170	£7.540	£6.990	£9.600
BA41U	24/0.2 Wire 10M Wht	£1.090			£1.290
CK79L	200m 24/0.2 Wire Wht	£8.170	£7.540	£6.990	£9.600
BA42V	24/0.2 Wire 10M Yel	£1.090			£1.290
CK80B	200m 24/0.2 Wire Yel	£8.170	£7.540	£6.990	£9.600

**Power Connection Wire (32/0-2)**



A flexible wire, for earth and power interconnections within apparatus.

Stranded core, single: 32/0-2mm copper  
Sheath: 0-6mm PVC - conforms to DEF61-12 (Part 6) Type 3 2-5mm  
Overall diameter: 2-5mm  
Nom. conductor area: 1-0mm<sup>2</sup>  
Max. working voltage: 1500V rms  
Max. current: 6A (commercial rating 10A)  
Colours: Black, Blue, Brown, Green, Red, White, Green/Yellow.

Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 6139	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR32K	Wire 3202 Black	£0.204			£0.240
PA00A 3	100m Wire 3202 Bk	£9.780	£9.260	£8.690	£11.500
XR33L	Wire 3202 Blue	£0.204			£0.240
PA01B 3	100m Wire 3202 Blu	£9.780	£9.260	£8.690	£11.500
XR34M	Wire 3202 Brown	£0.204			£0.240
PA02C 3	100m Wire 3202 Brn	£9.780	£9.260	£8.690	£11.500
XR35Q	Wire 3202 Green	£0.204			£0.240
PA03D 3	100m Wire 3202 Grn	£9.780	£9.260	£8.690	£11.500
XR36P	Wire 3202 Red	£0.204			£0.240
PA04E 3	100m Wire 3202 Red	£9.780	£9.260	£8.690	£11.500
XR37S	Wire 3202 White	£0.204			£0.240
PA05F 3	100m Wire 3202 Wht	£9.780	£9.260	£8.690	£11.500
XR38R	Wire 3202 Grn/Ylw	£0.204			£0.240
PA06G 3	100m Wire 3202 Grn/Yl	£9.780	£9.260	£8.690	£11.500

**Switchgear Cable to BS6231**

**Heat Resisting PVC Equipment Wire to BS7646**



A range of equipment wire to BS7646 that is suitable for operating temperatures beyond the normal PVC range of -5°C to +70°C. The special grade of high temperature PVC, used for the insulation, meets the demands of operating temperatures up to 105°C and is resistant to a wide range of oils, impregnating varnishes and chemical solutions. Ideal for connections on motor-windings, transformers and other components that undergo encapsulation, or other finishing and drying operations. The insulation is to BS7646 Type 4 and the wire is suitable for continuous operation at conductor temperatures not exceeding 105°C for periods up to five years, without embrittlement. The insulation material will withstand temperatures up to 150°C for periods up to 6 hours after immersion in a variety of finishing and encapsulation varnishes. The conductor is tinned annealed high conductivity copper wire to BS 6360. Available in two sizes and two colours, red and black, on 25m reels only.

Conductor	Radial thickness mm (nom.)	Overall diameter mm (nom.)	Current Rating Amps @20°C
7/0-2mm	0-45	1-5	1-5
16/0-2mm	0-45	1-8	3

Retail Unit Price each (inc. VAT).

Order Code	Type 38	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
KR32K	HR Wire 7/0.2 Red	£1.650	£1.560	£1.480	£1.950
BA43W	HR Wire 7/0.2 Black	£1.650	£1.560	£1.480	£1.950
KR33L	HR Wire 16/0.2 Red	£2.540	£2.390	£2.260	£2.990
BA44X	HR Wire 16/0.2 Black	£2.540	£2.390	£2.260	£2.990

See Stock Code Index For More Price Breaks

**High Current Wire (50/0-25)**



A flexible wire for high current applications.  
Stranded core, single: 50/0-25mm copper  
Sheath: 0-8mm PVC - conforms to BS6231 (Table 6) Type B 3-81mm  
Overall diameter: 2-5mm  
Nom. conductor area: 2-5mm<sup>2</sup>  
Max. working voltage: 600V  
Max. current: 30A  
Colours: Black, Green, Red  
Sold per metre (max. length in one piece 50m) and on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 6200	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR57M	HC Wire Black	£0.382			£0.450
PA94C 3	50m HC Wire Black	£12.340	£11.200	£10.500	£14.500
XR58N	HC Wire Green	£0.382			£0.450
PA95D 3	50m HC Wire Green	£12.340	£11.200	£10.500	£14.500
XR59P	HC Wire Red	£0.382			£0.450
PA96E 3	50m HC Wire Red	£12.340	£11.200	£10.500	£14.500

**Miniature Extra-Flexible Wire**

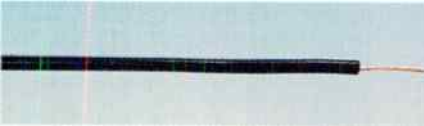


A smaller diameter flexible wire, for use with miniature probes or as test leads.  
Stranded core: 30/0-1mm copper  
Sheath: 1mm very flexible PVC  
Overall diameter: 2-0mm  
Max. working voltage: 650V DC, 500V AC  
Max. current: 1-5A  
Colours available: Black, Red.  
Sold per metre (max. length in one piece 25m) and on 25m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 6202	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR68Y	Min Extra Flex Black	£0.187			£0.220
PB01B	25m Min Ext Flex Bk	£2.540	£2.370	£2.240	£2.990
XR69A	Min Extra Flex Red	£0.187			£0.220
PB02C	25m Min Ext Flex Red	£2.540	£2.370	£2.240	£2.990

**Extra-Flexible Wire**



A very flexible wire ideal for test leads, and as inter-connection wires which are frequently being moved.  
Stranded core, single: 55/0-1mm copper  
Sheath: 1mm very flexible PVC  
Overall diameter: 2-8mm  
Nom. conductor area: 0-43mm<sup>2</sup>  
Max. working voltage: 650V DC, 500V AC  
Max current: 2-5A  
Colours: Black, Blue, Green, Red  
Sold per metre (max. length in one piece 25m) and on 25m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 6203	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR40T	Extra Flex Black	£0.212			£0.250
PA97F	25m Extra Flex Black	£3.270	£3.010	£2.830	£3.650
XR41U	Extra Flex Blue	£0.212			£0.250
PA98G	25m Extra Flex Blue	£3.270	£3.010	£2.830	£3.650
XR43W	Extra Flex Green	£0.212			£0.250
PA99H	25m Extra Flex Green	£3.270	£3.010	£2.830	£3.650
XR44X	Extra Flex Red	£0.212			£0.250
PB00A	25m Extra Flex Red	£3.270	£3.010	£2.830	£3.650

**Silicone Extra Flexible Wire**



A high quality silicone-insulated wire that has outstanding electrical and mechanical properties, with a very small bend radius. The wire will operate over the temperature range -50° to +180°C and will withstand temperatures up to 300°C for 10 seconds. The wire is ideal for high current, low voltage applications such as battery powered models and test leads.

**Specification**

Cross-section: 2.5mm<sup>2</sup> (13AWG)  
Number of wires: 462 x 0.08mm (dia.)  
Thickness of insulation: 0.75mm  
Lead diameter: 3.5mm  
Rated voltage: 500V  
Rated current: 32A  
Test voltage: 2000V  
Sold per metre and on 25m reels. Available in red and black.

Retail Unit Price each (inc. VAT).

Order Code	Type 9910	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
BJ40T	32A Sil ExFlex Red	£3.480	£3.150	£2.950	£4.100
BJ42V 7	25m 32A Sil ExFlex Rd	£78.280	£72.000	£66.000	£91.990
BJ41U	32A Sil ExFlex Black	£3.480	£3.150	£2.950	£4.100
BJ43W 7	25m 32A Sil ExFlex Bk	£78.280	£72.000	£66.000	£91.990

**PTFE Equipment Wire 7/0.2mm Type A**



Silver plated stranded copper conductors insulated in PTFE provides excellent reliability over a wide temperature range.

Resistant to Oils, Chemicals and Ultra Violet Radiation.  
Conforms to BS2G210 / MIL-W16878D Type E.  
Current Rating: 6A  
Stranded Core: 7/0.2mm  
Overall Diameter: 0.84mm  
Voltage Rating: 250RMS  
Colours: Black, Pink, Red, White.

Sold per metre (max. length in one piece 100m)

Retail Unit Price each (inc. VAT).

Order Code	Type 13218	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VU00A	PTFE 7/0.2 T/A Bk	£0.417			£0.490
VU01B	PTFE 7/0.2 T/A Pink	£0.417			£0.490
VU02C	PTFE 7/0.2 T/A Red	£0.417			£0.490
VU03D	PTFE 7/0.2 T/A White	£0.417			£0.490



**BEFORE 5PM**

**FOR SAME DAY DESPATCH**

Tel: 01702 554000

Fax: 01702 554001

e-mail: Sales@maplin.co.uk

## PTFE Equipment Wire 7/0.2mm Type B



Silver plated stranded copper conductors insulated in PTFE provides excellent reliability over a wide temperature range.

Resistant to Oils, Chemicals and Ultra Violet Radiation.

Conforms to BS2G210 / MIL-W16878D Type E.

Current rating: 6A  
Stranded core: 7/0.2mm  
Overall diameter: 1mm  
Voltage rating: 250RMS  
Colours: Black, Pink, Red, White

Sold per metre (max. length in one piece 100m)

Retail Unit Price each (inc. VAT).

Order Code	Type 13019	Price each exc. VAT 1+	inc. VAT each 1+
VU04E	PTFE 7/0.2 T/B Black	£0.502	£0.590
VU05F	PTFE 7/0.2 T/B Pink	£0.502	£0.590
VU06G	PTFE 7/0.2 T/B Red	£0.502	£0.590
VU07H	PTFE 7/0.2 T/B WH	£0.502	£0.590

## PTFE Equipment Wire 19/0.15mm Type B



Silver plated stranded copper conductors insulated in PTFE provides excellent reliability over a wide temperature range (-55°C to +200°C)

Resistant to Oils, Chemicals and Ultra Violet Radiation.

Conforms to BS2G210 / MIL-W16878D

Current rating: 9A  
Stranded core: 19/0.15mm  
Overall diameter: 1.3mm  
Voltage rating: 250RMS  
Colours: Black, Pink, Red, White.

Sold per metre (max. length in one piece 100m)

Retail Unit Price each (inc. VAT).

Order Code	Type 13022	Price each exc. VAT 1+	inc. VAT each 1+
VU08J	PTFE 19/0.15 B Blk	£0.672	£0.790
VU09K	PTFE 19/0.15 B Pink	£0.672	£0.790
VU10L	PTFE 19/0.15 B Red	£0.672	£0.790
VU11M	PTFE 19/0.15 B WH	£0.672	£0.790

## E.H.T. Wire



A heavily insulated wire for very high voltage use. Ideal for use with our laser tube.

Stranded core, single: 16/0.2mm tinned copper  
Sheath: 1.5mm flame-retardant white polythene sheathed with 0.55mm red PVC

Overall diameter: 4.5mm  
Nom. conductor area: 0.5mm<sup>2</sup>  
Max. working voltage: 25kV  
Sold per metre (max. length in one piece 100m)

Retail Unit Price each (inc. VAT).

Order Code	Type 43	Price each exc. VAT 1+	25+	100+	inc. VAT each 1+
XR22Y	EHT Wire	£0.842	£0.670	£0.600	£0.990

## Winding Wires

### Tinned Copper Wire

A 50g roll of tinned copper wire. Available in the following sizes: mm (approx. swg) 1-6 (16), 1-25 (18), 0-9 (20), 0-71 (22), 0-56 (24), and 0.25 (33)



Retail Unit Price each (inc. VAT).

Order Code	Type 45	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
BL11M	TC Wire 1.6mm 16swg	£0.842	£0.785	£0.750	£0.990
BL12N	TC Wire 1.25mm 18swg	£0.842	£0.785	£0.750	£0.990
BL13P	TC Wire 0.9mm 20swg	£0.936	£0.860	£0.820	£1.100
BL14C	TC Wire 0.71mm 22swg	£0.936	£0.860	£0.820	£1.100
BL15R	TC Wire 0.56mm 24swg	£0.978	£0.920	£0.870	£1.150
GF37S	TC Wire 0.25mm 33swg	£1.260	£1.110	£1.070	£1.490

### Enamelled Copper Wire

A 50g roll of Grade 1 enamelled copper wire. Available in the following diameter sizes mm (approx. swg):

2-0 (14), 1-6 (16), 1-25 (18), 0-9 (20), 0-71 (22), 0-56 (24), 0-45 (26), 0-375 (28), 0-315 (30), 0-28 (32), 0-236 (34), 0-19 (36), 0-15 (38), 0-125 (40), 0-1 (42), and 0-08 (44). All sizes up to 1-125mm (40swg) also available on 250g reels.

Breakdown 7KVA Tested to IEC 851/5/4

Approx. length of wire per reel.

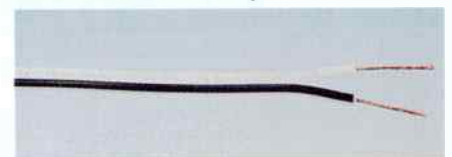
Gauge (mm)	Reel size 50g		Reel size 250g	
	50g	250g	50g	250g
2-0	1-75m	8-75m	0-315	70m 350m
1-6	2-7m	13-5m	0-28	95m 475m
1-25	4-8m	24m	0-236	130m 650m
0-9	8-5m	42-5m	0-19	190m 950m
0-71	14m	70m	0-15	300m 1500m
0-56	22-5m	112m	0-125	440m 2200m
0-45	34m	170m	0-1	680m -
0-375	50m	250m	0-08	1050m -

Retail Unit Price each (inc. VAT).

Order Code	Type 44	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
BL16S	EC Wire 2.0mm 14swg	£0.842	£0.785	£0.755	£0.990
YN79L	250 ECW 2.0mm 14swg	£2.680	£2.490	£2.380	£3.150
BL24B	EC Wire 1.6mm 16swg	£0.842	£0.785	£0.755	£0.990
YN80B	250 ECW 1.6mm 16swg	£2.680	£2.490	£2.380	£3.150
BL25C	EC Wire 1.25mm 18swg	£0.842	£0.785	£0.755	£0.990
YN81C	250 ECW 1.25mm 18swg	£2.760	£2.550	£2.440	£3.250
BL26D	EC Wire 0.9mm 20swg	£0.842	£0.785	£0.755	£0.990
YN82D	250 ECW 0.9mm 20swg	£2.760	£2.550	£2.440	£3.250
BL27E	EC Wire 0.71mm 22swg	£0.893	£0.825	£0.790	£1.050
YN83E	250 ECW 0.71mm 22swg	£2.850	£2.650	£2.520	£3.350
BL28F	EC Wire 0.56mm 24swg	£0.893	£0.825	£0.790	£1.050
YN84F	250 ECW 0.56mm 24swg	£2.850	£2.650	£2.520	£3.350
BL29G	EC Wire 0.45mm 26swg	£0.936	£0.860	£0.820	£1.100
YN85G	250 ECW 0.45mm 26swg	£2.970	£2.650	£2.550	£3.500
BL39N	EC Wire 0.375mm 28swg	£0.936	£0.860	£0.820	£1.100
YN86T	250 ECW 0.375mm 28swg	£2.970	£2.650	£2.550	£3.500
BL40T	EC Wire 0.315mm 30swg	£0.936	£0.860	£0.820	£1.100
YN87U	250 ECW 0.315mm 30swg	£3.060	£2.650	£2.700	£3.600
BL41U	EC Wire 0.28mm 32swg	£0.936	£0.860	£0.820	£1.100
YN88V	250 ECW 0.28mm 32swg	£3.060	£2.650	£2.700	£3.600
BL42V	EC Wire 0.236mm 34swg	£0.978	£0.920	£0.870	£1.150
YN89W	250 ECW 0.236mm 34swg	£3.190	£2.950	£2.800	£3.750
BL43W	EC Wire 0.19mm 42swg	£0.978	£0.920	£0.870	£1.150
YN90X	250 ECW 0.19mm 42swg	£3.360	£3.100	£2.950	£3.950
BL44X	EC Wire 0.15mm 48swg	£0.978	£0.920	£0.870	£1.150
YN91Y	250 ECW 0.15mm 48swg	£3.700	£3.400	£3.250	£4.350
BL60Q	EC Wire 0.125mm 40swg	£1.060	£1.000	£0.960	£1.250
YN92A	250 ECW 0.125mm 40swg	£3.870	£3.560	£3.400	£4.550
BL61R	EC Wire 0.1mm 42swg	£1.360	£1.240	£1.180	£1.600
BL62S	EC Wire 0.08mm 44swg	£2.000	£1.840	£1.760	£2.350

## Loudspeaker Cables

### Miniature Loudspeaker Cable



A flexible twin cable having a 'figure 8' shape. Ideal for loudspeaker connections etc.

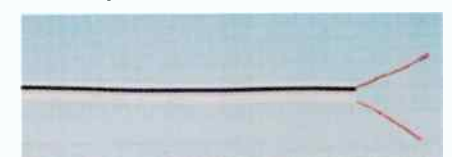
Stranded core, twin: 7/0.2mm copper  
Sheath: White PVC with one side ribbed or traced for identification of polarity

Overall size: 4-0 x 2-0mm  
Nom. conductor area: 0.22mm<sup>2</sup>  
Max. working voltage: 60V RMS  
Max. current: 1A  
Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 46	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR39N	Zip Wire	£0.161			£0.190
PA75S 3	100m Zip Wire	£8.070	£6.690	£6.120	£9.490

### Loudspeaker Cable



Flexible figure-8 section twin cable for loudspeaker connections.

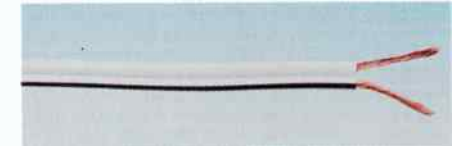
Stranded core, twin: 13/0.2mm copper  
Sheath: White PVC with one side marked with black stripe for identification of polarity

Overall size: 4-0 x 2-0mm  
Max. current: 2-5A  
Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 47	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XS47B	Loudspeaker Cable	£0.221			£0.260
PB60Q 3	Loudspeaker Reel	£9.770	£8.180	£7.520	£11.490

### Heavy Duty Loudspeaker Cable



A flexible twin cable having a 'figure 8' shape. The cable will carry up to 15A, suitable for amplifiers up to 500W output.

Stranded core, twin: 42/0.2mm copper  
Sheath: White PVC with one side marked with black line for identification of polarity

Overall size: 6 x 3mm  
Nom. conductor area: 1-32mm<sup>2</sup>  
Max. working voltage: 60V RMS  
Max. current: 15A

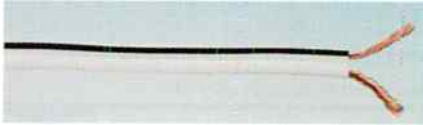
Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 48	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR60Q	HD Loudspeaker Cable	£0.408			£0.480
PA08J 8	100m HD L/Spr Cable	£22.970	£20.590	£18.800	£26.990



**Hi-Fi Loudspeaker Cable**



A flexible twin cable having a 'figure 8' shape. The cable will carry up to 18A. Recommended by hi-fi experts. Stranded core, twin: 79/0.2mm copper Sheath: White PVC with one side marked with a black stripe for polarity identification.

Overall size: 6 x 3mm  
Nom. conductor area: 2.48mm<sup>2</sup>  
Max. working voltage: 100V RMS  
Max. current: 18A  
Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 50	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XR72P	HIFI Loudsprk Cable	£0.544			£0.640
PA09K 13	100m HIFI Spkr Cable	£35.730	£32.500	£29.500	£41.990

**High Quality OFC Loudspeaker Connection Cable**



An exceptionally high quality speaker connection wire. Each cable contains hundreds of extremely thin, single strands to improve electron flow at high frequencies. Each cable has a larger than normal overall diameter for absolute minimum impedance, thus ensuring good response at bass frequencies. The strands are made from 100% Oxygen Free Copper (OFC), a process which completely removes any trace of oxygen from the wire surface during manufacture and so preventing subsequent oxidation of same, will interfere with the efficiency of the surface electron flow. The extra-flexible, transparent, figure-8 sheathing has one side marked with '+' symbols for polarity identification.

**Specification**

**Type S12**

Strands: 413 strands x 0.1mm dia.  
Nominal conductor area: 3.24mm<sup>2</sup>  
Sheath outer diameter: 4.4mm  
Total sheath width: 9.2mm  
Max. working voltage: 300V peak  
Working temperature range: -10°C to 105°C

**Type S10**

Strands: 1,050 strands x 0.08mm dia.  
Nominal conductor area: 5.28mm<sup>2</sup>  
Sheath outer diameter: 5.5mm  
Total sheath width: 11.5mm  
Max. working voltage: 300V peak  
Working temperature range: -10°C to 105°C  
Sold per metre. Maximum length in one piece, 50m. Also available on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 51	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XS37S	Ox Free S12	£1.940			£2.290
PB61R 8	50m Ox Free S12	£68.070	£52.950	£48.000	£79.990
XS36P	Ox Free S10	£3.050			£3.590
PB58N 14	50m Ox Free S10	£102.110	£85.950	£75.000	£119.990

**High Quality Audio Speaker Cable**



A high quality cable ideal for use with speaker systems where sound quality is of the utmost importance. Colour coded cable insulation ensures

polarity sensitive connections are easy to implement. Supporting filaments provide a method of stripping back the outer insulation, and guarantee uniform surface contour. Sold per metre and 50m reels.

**Specification**

Conductor type: 100 x 0.1mm x 2 cables  
Insulation type: Polyethylene  
Overall diameter: 10mm  
Capacitance: 63pF/m

Retail Unit Price each (inc. VAT).

Order Code	Type 9513	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
EL14Q 1	Circular Speaker Cab	£5.940			£6.990
CN55K 1	50m Circ Spk Cable	£255.310	£225.000	£210.000	£299.990

**Silver-Plated OFC Speaker Cable**

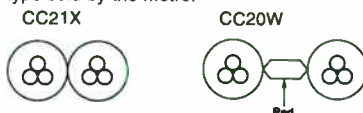


Flat 2-core loudspeaker cable featuring silver-plated, OFC (Oxygen Free Copper) conductors. Silver plating is to a thickness of 100µ (microns, or 40µin.). Two different gauges of cable are available as medium capacity (0.70mm<sup>2</sup> total cross section), and high capacity (1.45mm<sup>2</sup>), and in each case, each core is organised as three bundles of twisted strands, the three bundles are again twisted together and insulated in a 3-channel sleeve. For the medium capacity cable, the sleeve forms a figure of eight cross section with its opposite partner, and can be easily separated.



The high capacity type encloses the inner sleeve with a clear flexible outer sheath. The outer sheath is joined to its opposite partner by a narrow flat strip which has reduced thickness at its join with each sheath, making it easy to 'unzip', or pull apart, the individual wires for connection to speaker terminals. (The centre strip can then be trimmed back with wire cutters.) The centre strip has a red stripe on one side for polarity identification purposes. Note: Silver Solder DP52G must be used to solder silver wires.

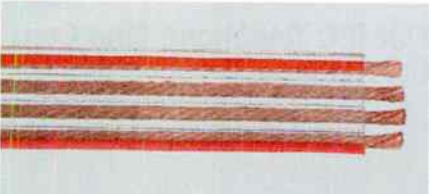
Each type sold by the metre.



Retail Unit Price each (inc. VAT).

Order Code	Type 50	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CC21X	Medium Speaker Cable	£4.240	£3.400	£2.950	£4.990
CC20W	HC Speaker Cable	£6.800	£5.950	£5.450	£7.990

**Flat High Quality Speaker Cable**



A flat 4-core high quality speaker cable made from high purity OFC bare copper conductor, stranded tightly into a rectangular cross-section for perfect sound transmission. Each core is made from 620 strands of 0.07mm copper and covered in a very high quality anti-oxidation clear PVC. The cores can easily be separated and the outer cores are colour

coded for identification of positive, and left and right. Maximum working voltage 300V. Sold by the metre (max. length in one piece 50m) and on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 55	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BZ94C	4W Flat Speaker	£3.390			£3.990
CK98G 15	4W Flat Speaker 50m	£134.450	£115.000	£105.000	£157.990

**ICE Cables**

**Car Battery Power Cable**



High quality OFC 4AWG copper cable made from 1050 strands of 0.16mm diameter copper. Intended for use in cars, with high power in-car entertainment systems, especially CD players (see entertainment section), to ensure the very best sound quality output. A range of gold-plated accessories, i.e. battery clamp, connector block etc., will also be found in the entertainment section. The cable is intended to be used with the distribution block and fuse holders, it is NOT intended to supply starter motors or other car electrical accessories. Available in red and black and sold by the 1/2m and on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 6208	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BZ91Y	4AWG Cable Red	£1.600			£1.890
CK94C 27	4AWG Cable Red 50m	£119.140	£102.000	£91.000	£139.990
CK17T	4AWG Cable Black	£1.600			£1.890
CK95D 26	4AWG Cable Black 50m	£119.140	£102.000	£91.000	£139.990

**Power Cable for In-Car Entertainment Systems**



High quality 8AWG flexible copper cable made from 700 strands of 0.12mm diameter copper, intended for connecting power to high quality in-car entertainment systems. A gold-plated 4 into 1 cable connector, fuse blocks and fuses are also available (see entertainment section). This cable is for use with car audio equipment and is NOT intended for connecting to other car electrical accessories. Available in red and black and sold by the metre (max length in one piece 50m) and on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 6216	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BZ92A	8AWG Cable Red	£1.600			£1.890
CK96E 12	8AWG Cable Red 50m	£59.560	£53.000	£48.000	£69.990
BZ93B	8AWG Cable Black	£1.600			£1.890
CK97F 11	8AWG Cable Black 50m	£59.560	£53.000	£48.000	£69.990

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## Signal/Alarm Cables

### Signal/Burglar Alarm Cable to BS6360/BS6746



General purpose 4-core, 6-core and 8-core signal cables to BS6360 and BS6746 ideal for use with security alarms and other applications where low voltages and low currents are being used. The cable contains flexible wires each having seven strands of 0.2mm tinned annealed copper insulated wire.

#### Specification

Max. working voltage: 60V RMS  
 Max. current per core: 1A  
 Max. conductor resistance: 92.4Ω/km 20°C  
 Max. operating temperature: 70°C  
 Conductors: 7/0.2mm strands of annealed copper wire conforming to BS6360

#### Insulation:

PVC to radial thickness of 0.2mm nominal conforming to BS6746

#### Sheath:

PVC nominal wall thickness 0.5mm

#### Nominal overall diameter

4-core: 3.5mm  
 6-core: 4.1mm  
 8-core: 4.5mm

#### Wire insulation colours

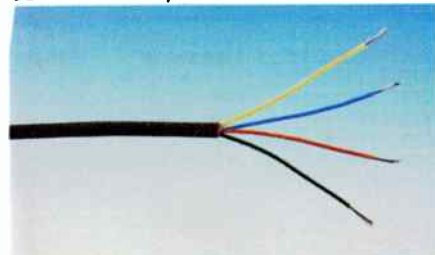
4-core: Red, blue, yellow, black  
 6-core: Red, blue, yellow, black, white, green  
 8-core: Red, blue, yellow, black, white, green, orange, brown

Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 45	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR89W	4-Wire Burglar Cable	£0.212			£0.250
PA77J 5	100m 4-Wire Burglar	£12.750	£11.490	£10.750	£14.990
XS54J	6-Wire Burglar Cable	£0.289			£0.340
PB71N 5	100m 6-Wire Burglar	£17.010	£15.500	£14.500	£19.990
CW70M	8-Wire Burglar Cable	£0.357			£0.420
PB80B 7	100m 8-Wire Burglar	£22.370	£19.950	£18.500	£26.290

### Signal/Burglar Alarm Cable to BS6360/BS6746



General purpose 4-core, 6-core and 8-core signal cables to BS6360 and BS6746 ideal for use with security alarms and other applications where low voltages and low currents are being used. The cable contains flexible wires each having seven strands of 0.2mm tinned annealed copper insulated wire.

#### Specification

Max. working voltage: 60V RMS  
 Max. current per core: 1A  
 Max. conductor resistance: 92.4Ω/km @ 20°C  
 Max. operating temperature: 70°C  
 Conductors: 7/0.2mm strands of annealed copper wire conforming to BS6360

#### Insulation:

PVC to radial thickness of 0.2mm nominal conforming to BS6746

#### Sheath:

PVC nominal wall thickness 0.5mm

#### Nominal overall diameter

4-core: 3.5mm  
 6-core: 4.1mm  
 8-core: 4.5mm

#### Wire insulation colours

4-core: Red, blue, yellow, black  
 6-core: Red, blue, yellow, black, white, green  
 8-core: Red, blue, yellow, black, white, green, orange, brown

#### Overall sheath - Brown.

Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 1325	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VK86T	Alarm Cable Brown 4C	£0.212			£0.250
VK87U	Alarm Cable Brn 100m	£12.750	£11.490	£10.750	£14.990
VK88V	Alarm Cable Brown 6C	£0.289			£0.340
VK89W	Alarm Cab/Brn 100m	£17.010	£15.500	£14.500	£19.990
VK90X	Alarm Cable Brown 8c	£0.357			£0.420
VK91Y	Alarm Cab/Brn 100m	£22.370	£19.950	£18.500	£26.290

## Telephone Cables

### Telephone Cable Type CW1308



A high quality cable complying with British Telecom specification CW1308 for use in wiring telephones in customers' premises. It is also ideal for use in other low voltage, low current applications. The cable contains four solid tinned annealed copper conductors each 0.5mm diameter insulated with PVC. Insulation colours are blue-white, white-blue, orange-white and white-orange.

Also available in 6-way, with extra green-white and white-green conductors.

Overall insulation is in white PVC. 6-way is also available with black PVC insulation.

Nom. conductor area: 0.2mm<sup>2</sup>

Max. working voltage: 80V

Max. current per core: 0.25A

Overall diameter: 4-wire 3.6mm

6-wire 4.5mm

Sold per metre (max. length in one piece 100m) and on 100m reels.

Note: 'British Telecommunications requires of any person who connects subscribers' apparatus directly or indirectly to any telecommunication system, that it runs to comply with the terms and conditions relating to the attachment of subscribers' apparatus under which service is provided by B.T.

Retail Unit Price each (inc. VAT).

Order Code	Type 46	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XP66W	4W Phone Cable White	£0.331			£0.390
PA76H 4	100m 4W Phone White	£11.050	£9.990	£9.250	£12.990
XS04E	6W Phone Cable White	£0.306			£0.360
PA87U 4	100m 6W Phone White	£15.310	£13.550	£12.550	£17.990
CW68Y	6W Phone Cable Black	£0.306			£0.360
PB78K 5	100m 6W Phone Black	£15.310	£13.550	£12.550	£17.990

### Flat IPC Telephone Line Cord CW1311



Four-way flat D section telephone line cord specifically designed for use with the latest style 4 and 6-way IPC (Insulation Piercing Connector) jack plugs, see Telecommunications Section.

The stranded wires are 7 x 0.15mm, and colour

coded Red, Blue, Green, White, Black and Orange, and are sheathed overall in a light grey PVC sheath.

Sold per metre (max. length in one piece 100m).

Retail Unit Price each (inc. VAT).

Order Code	Type 4222	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
XR86T	4-Way Flat BT Cable	£0.289	£0.256	£0.229	£0.340
XS03D	6 Way Flat Phone Cord	£0.340	£0.301	£0.266	£0.400

### Flat IPC Telephone Cord for FCC68 Style Plugs



Three types of multi-strand telephone cord with an extra flat cross section for use with USA style FCC68 telephone connectors. Available colour coded Yellow, Green, Red, Black (4-way), Yellow, Green, Red, Black, Blue, White (6-way).

The third type has a total of eight ways and can have many other applications where a multi-way cable is needed. It is colour coded Grey, Orange, Black, Red, Green, Yellow, Blue and Brown. All three types are sheathed in light grey PVC.

Sold per metre (max. length in one piece 100m), and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 48	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XS27E	FCC68 Cable 4 Core	£0.238			£0.280
PB53H 3	FCC68 Cbl 4 Core 100m	£13.780	£11.020	£9.950	£16.200
XS28F	FCC68 Cable 6 Core	£0.306			£0.360
PB54J 4	FCC68 Cbl 6 Core 100m	£18.510	£15.750	£13.500	£21.750
XS29G	FCC68 Cable 8 Core	£0.357			£0.420
PB55K 6	FCC68 Cbl 8 Core 100m	£22.340	£17.950	£16.000	£26.250

## Trailer Cables

### 7-Core Trailer Cables

A range of 7-core cables primarily intended for low-voltage (max. 50V DC) trailer connections.

The cables have six cores coloured coded brown, blue, yellow, green, red and black with the same nominal conductor area, and a white core with a larger conductor area.

Each core is made from stranded copper with a PVC sheath. Standard 12N (XR55K) cable is suitable for obligatory lighting circuits supplied through 12N series connectors (coloured black). Heavy duty 12S (WE15R) cable is suitable for supplementary circuits supplied through 12S series connectors (coloured grey). Sold per metre and by the reel (see table).

Specification

Standard 12N (XR55K) HD 12S (WE15R)

Strands  
 white: 14 x 0.3mm  
 others: 14 x 0.25mm  
 28 x 0.29mm  
 21 x 0.29mm

Nom. conductor area  
 white: 1mm<sup>2</sup>  
 others: 0.7mm<sup>2</sup>  
 1.85mm<sup>2</sup>  
 1.39mm<sup>2</sup>

Max. current  
 white: 8.75A  
 others: 5.5A  
 16A  
 12A

Outer sheath: black PVC  
 Reel size available: 50m  
 grey PVC  
 30m

Retail Unit Price each (inc. VAT).

Order Code	Type 70	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR55K	7-Core Trailer Cable	£0.842			£0.990
PA20W 13	50m 7-Core Trailer	£34.370	£31.100	£29.050	£40.390
WE15R	7-Core HD S Cable	£1.520			£1.790
MJ17T 1	30m 7-Core HD S Cable	£39.050			£45.890

**Cable Storage Reel**



A tough free-standing cable storage reel with winding handle to reel in those long cables.

Retail Unit Price each (inc. VAT).

Order Code	Type 7519	Price each exc. VAT 1+	inc. VAT each 1+
WD4#A	Cable Storage Reel	£14.370	£16.890

**Towing Connectors**  
See Connectors Section for our range of Towing Connectors and Accessories

**Ribbon Cables**

**Ribbon Cables**



A flat ribbon-type cable which facilitates wiring in confined spaces. Stranded core 7 x 0.2mm tinned copper conductors sheathed in PVC, colour coded in like manner to the standard resistor colour code, and bonded together to form a flat 'ribbon'.

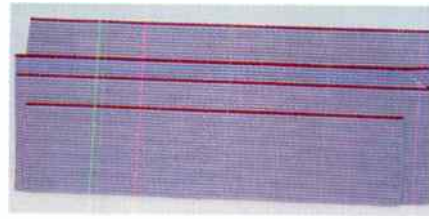
Nom. conductor area: 0.25mm<sup>2</sup>  
Max. working voltage: 900V DC,  
Max. current per core: 1.4A  
Core colours: 1 Brown, 2 Red, 3 Orange, 4 Yellow, 5 Green, 6 Blue, 7 Violet, 8 Grey, 9 White, 10 Black, then repeated.

Three types available:  
10-way (overall size 13 x 1.3mm)  
20-way (overall size 26 x 1.3mm)  
30-way (overall size 39 x 1.3mm)  
Sold per metre (max. length in one piece 30m) and on 30m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 71	Price each exc. VAT 1+	5+	10+	inc. VAT each 1+
XR06G	Ribbon Cable 10Way	£1.260			£1.490
PB03D 1	30m Ribbon Cable 10W	£30.200	£27.900	£28.250	£35.490
XR07H	Ribbon Cable 20 Way	£2.540			£2.990
PB04E 3	30m Ribbon Cable 20W	£55.900	£51.250	£48.170	£65.690
XR07X	Ribbon Cable 30 Way	£3.220			£3.790
PB05F 5	30m Ribbon Cable 30W	£81.690	£74.950	£69.250	£95.990

**Insulation Displacement Cable 1.27mm (0.05in.) Spacing**



Flat Cable for the 1.27mm (0.05in.) spacing IDC connectors in the Connectors Section of this catalogue, available in 16, 20, 26, 34, 40 and 50-way. The grey insulation has a red identifying strip along one edge. Sold per 30cm (approx 12in.). Max. length in one piece 30m. Also available on 30m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 72	Price each exc. VAT 1+	5+	10+	inc. VAT each 1+
XR73Q	Flat IDC Cable 16way	£0.255			£0.300
PA22Y 2	30m Flat IDC 16way	£14.710	£12.950	£11.950	£17.290
XR74R	Flat IDC Cable 20way	£0.297			£0.350
PA23A 2	30m Flat IDC 20way	£18.110	£16.500	£15.250	£21.290
XR75S	Flat IDC Cable 26way	£0.357			£0.420
PA24B 3	30m Flat IDC 26way	£23.220	£21.100	£19.400	£27.290
XR76H	Flat IDC Cable 34way	£0.425			£0.500
PA25C 4	30m Flat IDC 34way	£30.110	£27.200	£24.950	£35.390
XR77J	Flat IDC Cable 40way	£0.527			£0.620
PA26D 5	30m Flat IDC 40way	£35.310	£31.500	£28.600	£41.490
XR79L	Flat IDC Cable 50Way	£0.672			£0.790
PA27E 6	30m Flat IDC 50way	£42.970	£38.500	£34.950	£50.490

**Colour Coded IDC Cable**



Flat IDC Cable, colour coded as our Ribbon Cable. Available in 16-way, 20-way, 26-way, 34-way, 40-way and 50-way. Each wire has a coloured sheath and is spaced on a 1.27mm (0.05in.) pitch. Stranded cores are 7 x 0.127mm. The cable is manufactured to UL2697. Sold per 30cm (approx. 12in.). Max. length in one piece 30m. Also available on 30m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 73	Price each exc. VAT 1+	5+	10+	inc. VAT each 1+
XR80B	Cir Cd IDC Cable 16W	£0.340			£0.400
PA39N 2	30m Cir Cd IDC 16W	£27.650	£25.000	£22.950	£32.490
XR81C	Cir Cd IDC Cable 20W	£0.425			£0.500
PA40T 2	30m Cir Cd IDC 20W	£38.710	£35.000	£32.250	£45.490
XR82D	Cir Cd IDC Cable 26W	£0.578			£0.680
PA41U 3	30m Cir Cd IDC 26W	£42.970	£38.750	£35.500	£50.490
XR83E	Cir Cd IDC Cable 34W	£0.680			£0.800
PA42V 4	30m Cir Cd IDC 34W	£62.710	£56.000	£51.000	£73.690
XR84F	Cir Cd IDC Cable 40W	£0.834			£0.980
PA43W 5	30m Cir Cd IDC 40W	£71.390	£66.000	£59.000	£83.890
XR85G	Cir Cd IDC Cable 50W	£1.050			£1.240
PA44X 5	30m Cir Cd IDC 50W	£85.940	£79.000	£72.000	£100.990

**Flat Cable Cutter**

Xcelite



A handy cutting tool for flat cables, that gives an even, undistorted cut across all conductors (up to 64 conductors). A built-in guide guarantees a square cut, reefered to the edge of the cable. The cutter has a one-piece solid blade for increased durability and accuracy. The cutter is capable of cutting under-carpet electrical cable (up to 4 conductors).

Retail Unit Price each (inc. VAT).

Order Code	Type 74	Price each exc. VAT 1+	5+	10+	inc. VAT each 1+
DF91Y	Flat Cable Cutter	£64.500	£56.620	£53.050	£75.790

**Networking Cables**

**4-Pair LAN Data Cable Category 4 (20Mbits/s)**



This 4-pair cable is intended for use on high-speed LAN applications up to 16Mbits/s. The cable complies with the electrical characteristics of EIA/TIA TSB 36 Category 4, Nov. 1991. Each solid 0.51mm conductor has a polyolefin insulation, with all the pairs housed in a PVC jacket (4.8mm OD). There is no screening.

Manufacturer's Code 700508

Electrical Properties @ 20°C

MHz	Attenuation dB/100m	Near end crosstalk dB
1	2-1	56
4	4-3	47
10	7-2	41
16	8-8	38
20	10-2	36

Characteristic impedance: 100Ω ±15

Mutual capacitance: 46pF/m

Available per metre or on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 75	Price each exc. VAT 1+	5+	10+	inc. VAT each 1+
CW44X	20Mb LAN Cable Metre	£0.425			£0.500
PB74R 81	20Mb LAN Cab 100m	£34.710	£29.250	£25.500	£40.790



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## 4-Pair LAN Data Cable Category 5 (100Mbps/s)



This 4-pair cable is intended for use on high-speed LAN applications up to 100Mbps/s. The cable complies with the electrical characteristics of EIA/TIA TSB 36 Category 5, Nov. 1991. Each solid 0.51mm conductor has a polyolefin insulation, with all the pairs housed in a PVC jacket (4.8mm OD). There is no screening.

**Manufacturer's Code 703108**

Electrical Properties @ 20°C		
MHz	Attenuation dB/100m	Near end crosstalk dB
1	2-1	62
4	4-3	53
10	6-6	47
16	8-2	44
20	9-2	42
31-25	11-8	40
62-5	17-1	35
100	22-0	32

Characteristic impedance: 100Ω ± 15  
Mutual capacitance: 46pF/m  
Available per metre or on 100m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 75	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CW45Y	100Mb LAN Cabl Metre	£0.451			£0.530
PB75S 5	100Mb LAN Cabl 100m	£37.310	£32.000	£28.750	£43.650

## RS232 Multi-Pair Network Cable



A range of flexible (stranded), multi-pair cables that are suitable for the interconnection of peripheral equipment and host computers, where local area networks are not in use, e.g., low-speed data transfer.

**Electrical Properties at 20°C**

Pair conductance: 98pF/m @ 1kHz  
Capacitance @ 1kHz: 164pF/m (between 1 cond. and other cond. connected to screen)

Attenuation 100kHz: 1.3dB/100m  
Attenuation 1MHz: 7.3dB/100m

**Mechanical Properties**

Conductors stranded: 0.22mm<sup>2</sup> TC  
Insulation type: SR-PVC  
Overall screening: Foil  
Drainwire stranded: 0.22mm<sup>2</sup> TC  
Jacket type: PVC  
Temperature range: -20°C to +80°C  
Minimum bending radius: 8 x ODmm

Maplin Code	No. of pairs	OD (mm)	Length
CW41U	2	5.5	Metre
PB82D	2	5.5	Reel
CW42V	3	5.8	Metre
PB72P	3	5.8	Reel
CW43W	4	6.5	Metre
PB73Q	4	6.5	Reel

Available per metre or on 100m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 8222	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CW41U	2 Pair RS232 Metre	£0.774	£0.600	£0.559	£0.910
PB82D	15 2 Pair RS232 100m	£51.050	£46.000	£41.200	£59.990
CW42V	3 Pair RS232 Metre	£1.200	£0.895	£0.821	£1.420
PB72P	8 3 Pair RS232 100m	£76.380	£69.000	£62.000	£89.750
CW43W	4 Pair RS232 Metre	£1.290	£0.983	£0.910	£1.520
PB73Q	15 4 Pair RS232 100m	£85.090	£79.000	£72.000	£99.990

## Thin Ethernet



A thin Ethernet cable that conforms to IEEE 802.3, and is equivalent to Belden 9907.

® Ethernet is a registered trade mark of Xerox Corp.

**Specification**

Conductor: Copper stranded tinned AWG 21/19  
Core insulation: Foamed polyethylene  
Taping: Polyesterfoil on both sides laminated with silver  
Braiding: 36AWG tinned copper wires, optical cover 93%  
Impedance: 50Ω  
Attenuation (maximum): 3-3dB/100m @ 5MHz  
4-6dB/100m @ 10MHz  
Capacity: 81pF/m @ 1kHz  
Resistance: 36Ω/km @ 20°C maximum  
Operating temperature: -10°C to +70°C  
Sold on 100m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 75	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AP16S 7	Thin Ethernet	£39.050	£36.750	£34.500	£45.890

## Sheath Stripper

**TTI (Thurby-Thander)**

A self-adjusting sheath stripper that is designed for removing the outer insulation from data/signal cables up to 11mm diameter, e.g., twisted pairs (UTP and STP), 'Belden' cables, multicore cables (screened and unscreened), instrumentation and telephone cables. The device is easy to use and has no open blades. It adjusts automatically to sever PVC or low smoke (plenum) insulation without damaging the braid, foil or conductors.

**Manufacturer's Code 20020**



*Retail Unit Price each (inc. VAT).*

Order Code	Type 75	Price each exc. VAT			inc. VAT each
		1+	4+	20+	1+
CW34M	Sheath Stripper	£8.670	£8.170	£7.600	£10.190

## Mains Cable

### 2-Core 3A Mains Cable 2192Y



A 2-core mains cable with double insulation suitable for low power use, lighting etc. Stranded core, two 16/0.2mm copper conductors.

Sheath: Brown and blue PVC in an oval PVC overall sheath — conforms to BS6500 1990 Table 15.

Overall size: 5.4 x 3.4mm  
Nom. conductor area: 0.5mm<sup>2</sup>  
Max. current: 3A  
Colours: Black or White.

Sold per metre (max. length in one piece 100m). Also available on 100m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 80	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XP47B	Twn Mains DS Black	£0.246			£0.290
PA10L 8	100m Twn Mains Black	£13.820	£12.500	£11.700	£16.250
XP00A	Twn Mains DS White	£0.246			£0.290
PA11M 5	100m Twn Mains White	£13.820	£12.500	£11.700	£16.250

### 2-Core 6A Mains Cable 3182Y



A 2-core mains cable with double insulation suitable for use with medium power double insulated appliances. Stranded core, two 24/0.2mm copper conductors.

Sheath: Brown and blue PVC in a round PVC overall sheath — conforms to BS6500 1990 Table 16.

Overall diameter: 6.5mm  
Nom. conductor area: 0.75mm<sup>2</sup>  
Max. current: 6A  
Colours: Orange, White or Black

Sold per metre (max. length in one piece 100m). Also available on 50m and 100m reels

*Retail Unit Price each (inc. VAT).*

Order Code	Type 83	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XP61R	Twin 6A Mains Orange	£0.417			£0.490
VK92A	2C-6A Mains Blk 50m	£12.750	£11.990	£11.390	£14.990
PB06G 9	100m Twin 6A Main Or	£22.340	£19.800	£18.350	£26.250
XP62S	Twin 6A Mains White	£0.417			£0.490
VK93B	2C-6A Mains Wht 50m	£12.750	£11.990	£11.390	£14.990
PB07H 12	100m Twin 6A Main Wh	£22.340	£19.800	£18.350	£26.250
CW69A	Twin 6A Mains Black	£0.417			£0.490
VK94C	2C-6A Mains Orn 50m	£12.750	£11.990	£11.390	£14.990
PB79L 11	100m Twin 6A Main Blk	£22.340	£19.800	£18.350	£26.250

### 3-Core 3A Mains Cable 2183Y



A 3-core mains cable ideal for equipment having power ratings up to 750W. Stranded core, three 16/0.2mm copper conductors.

Sheath: Brown, Blue and Green/Yellow PVC in overall PVC sheath — conforms to BS6500 1990 Table 15.

Overall dia.: 5.6mm  
Nom. conductor area: 0.5mm<sup>2</sup>  
Max. current: 3A  
Colours: Black or White  
Sold per metre (max. length in one piece 100m). Also available on 100m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 86	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XP01B	Min Mains Black	£0.331			£0.390
PB08U 9	100m Min Mains Black	£19.780	£17.950	£16.600	£23.250
XP02C	Min Mains White	£0.331			£0.390
PB09K 9	100m Min Mains White	£19.780	£17.950	£16.600	£23.250

### 3-Core 6A Mains Cable 3183Y



A three-core mains cable with a thick outer sheath available also in orange for added safety when used as a trailing lead, e.g. on power tools. Stranded core, three 24/0.2mm copper conductors.

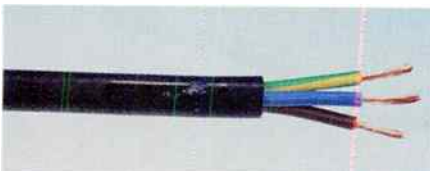
Sheath: Brown, Blue and Green/Yellow PVC in a substantial overall

PVC sheath – Conforms to BS6500 1990 Table 16.  
6.9mm  
Overall dia.: 0.75mm<sup>2</sup>  
Nom. conductor area: 6A  
Max. current: Black, White or Orange  
Colours:  
Sold per metre (max. length one piece 100m).  
Also available on 50m and 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 203	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR03D	C6A Mains Black	£0.502			£0.590
VK95D	3C-6A Mains Blk 50m	£14.450	£13.600	£12.950	£16.390
PB10L 13	100m C6A Mains Black	£27.530	£24.950	£23.200	£32.350
XR04E	C6A Mains White	£0.502			£0.590
VK96E	3C-6A Mains Wht 50m	£14.450	£13.600	£12.950	£16.390
PB11M 12	100m C6A Mains White	£27.530	£24.950	£23.200	£32.350
XR05F	C6A Mains Orange	£0.502			£0.590
VK97F	3C-6A Mains Or. 50m	£14.450	£13.600	£12.950	£16.390
PB12N 12	100m C6A Mains Ornge	£27.530	£24.950	£23.200	£32.350

### 3-Core 13A Mains Cable 3183Y



A 3-core mains cable with a thick outer sheath available also in orange for added safety when used as a trailing lead, e.g. on power tools. Stranded core, three 40/0.2mm copper conductors.

Sheath: Brown, Blue and Green/Yellow PVC in a substantial overall PVC sheath – conforms to BS6500 1990 Table 16.

Overall diameter: 7.5mm  
Nom. conductor area: 1.25mm<sup>2</sup>  
Max. current: 13A  
Colours: Black, White or Orange.

Sold per metre (max. length in one piece 100m).  
Also available on 50m and 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 98	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR09K	HD Mains Black	£0.638			£0.750
VK98G	3C-13A Mains Blk 50m	£22.970	£21.350	£20.200	£26.990
PA12N 21	100m HD Mains Black	£41.230	£37.250	£34.500	£48.450
XR10L	HD Mains White	£0.638			£0.750
VK99H	3C-13A Mains Wht 50m	£22.970	£21.350	£20.200	£26.990
PA13P 20	100m HD Mains White	£41.230	£37.250	£34.500	£48.450
XR11M	HD Mains Orange	£0.638			£0.750
VD49D	3c-13A Mains Orm 50m	£22.970	£21.350	£20.200	£26.990
PA14Q 23	100m HD Mains Orange	£41.230	£37.250	£34.500	£48.450

### Cotton Covered Mains Cable 2213Y



A 3-core heat resistant mains cable for use on irons, toasters, small electric fires etc. Available in 3 current ratings.

Sheath: Brown, Blue and Green/Yellow rubber in an overall sheath covered by grey/white cellulose braid conforms to BS6500.

XR24	Overall diameter:	6.2mm
	Nom. conductor area:	0.75mm <sup>2</sup>
	Max. current:	6A
GF69	Overall diameter:	7.6mm
	Nom. conductor area:	1.0mm <sup>2</sup>
	Max. current:	10A
GF70	Overall diameter:	12.5mm

Nom. conductor area: 1.5mm<sup>2</sup>  
Max. current: 16A  
Sold per metre (max. length in one piece 50m).

Retail Unit Price each (inc. VAT).

Order Code	Type 99	Price each exc. VAT			inc. VAT each 1+
		1+	50+	500+	
XR24B	Cotton Mains	£1.520			£1.790
GF69A	1mm Cotton Mains	£1.940			£2.290
GF70M	1.5mm Cotton Mains	£2.370			£2.790

### Coiled Mains Cables



3-core extendible mains cable for use with tools, instruments etc. Two types are available; 1A type and 6A type.

#### 1A Type

Stranded core: Three 17/0.122mm copper conductors

Sheath: Brown, Blue and Green/Yellow PVC in a coiled black PVC sheath.

Max. current: 1A

Extended length: 1.8m max.

#### 6A Type

Stranded core: Three 42/0.2mm copper conductors

Sheath: Brown, Blue and Green/Yellow PVC in a coiled black PVC sheath.

Max. current: 6A

Extended length: 2.9m max.

Retail Unit Price each (inc. VAT).

Order Code	Type 101	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
BL71N	Stretchflex 1A	£3.820	£3.550	£3.350	£4.490
BL72P	Stretchflex 6A	£6.370	£5.850	£5.450	£7.490

### 4-Core 6A Mains Cable 3184



A 4-core flexible mains cable for use in mains controlled applications. Available in 6 and 13 amp types available:

Sheath: Brown, Blue, Black and Green/Yellow rubber in a hard-wearing overall black rubber sheath to BS6500 1990 Table 6.

XR48 Overall diameter: 8.35mm  
Nom. conductor area: 0.75mm<sup>2</sup>  
Max. current: 6A

GF71 Overall diameter: 12.5mm  
Nom. conductor area: 1.5mm<sup>2</sup>  
Max. current: 13A

Sold per metre (max. length in one piece 50m).

Retail Unit Price each (inc. VAT).

Order Code	Type 102	Price each exc. VAT		inc. VAT each 1+
		1+	1+	
XR48C	4-Core Mains	£1.060		£1.250
GF71N	1.5mm 4-Core Mains	£1.690		£1.990

### Flex and Wire Stripper

TTI (Thurby-Thandar)

A unique, compact, self-adjusting cable stripper capable of preparing both the inner and outer insulations of round cables, up to 8.5mm diameter.



Retail Unit Price each (inc. VAT).

Order Code	Type 104	Price each exc. VAT			inc. VAT each 1+
		1+	4+	20+	
CW33L	Flex & Wire Stripper	£6.060	£5.670	£5.150	£7.130

### House Wiring Cables

#### 1mm<sup>2</sup> Twin and Earth 6242Y



BASEC APPROVED / BS6004

A twin core and earth flat domestic wiring cable for use on lighting circuits. Three 1/1.13mm copper conductors, 300/500V.

Sheath: Red and Black PVC plus unsheathed earth-continuity conductor, in an overall white PVC sheath.

Overall size: 7.5 x 4mm  
Nom. conductor area: 1mm<sup>2</sup>  
Max current surface: 15A  
Max current enclosed: 11A  
Sold per metre (max. length in one piece 100m).  
Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 105	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR49D	1.0mm TE Cable	£0.331			£0.390
PA82D 13	100m TE Cable 1mm	£22.970	£21.400	£19.900	£26.990

#### 1.5mm<sup>2</sup> Twin and Earth 6242Y



BASEC APPROVED / BS6004

A twin core and earth flat domestic wiring cable for use on separately fused spurs from ring main circuits. Two 1/1.38mm copper conductors, 300/500V and earth.

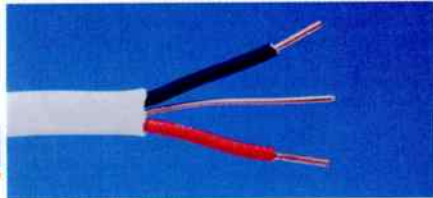
Sheath: Red and Black PVC plus unsheathed earth-continuity conductor, in an overall white PVC sheath.

Overall size: 8.5 x 4.75mm  
Nom. conductor area: 1.5mm<sup>2</sup>  
Max. current surface: 20A  
Max. current enclosed: 14.5A  
Sold per metre (max. length in one piece 100m).  
Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 106	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR50E	1.5mm TE Cable	£0.417			£0.490
PA83E 14	100m TE Cable 1.5mm	£30.620	£28.600	£26.600	£35.990

## 2.5mm<sup>2</sup> Twin and Earth 6242Y



### BASEC Approved / BS6004

A twin core and earth flat domestic wiring cable for use on ring mains and unfused spurs. Two 1/1.78mm copper conductors and earth 300/500V.

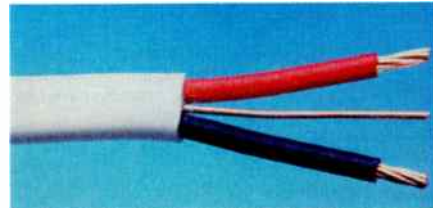
Sheath: Red and Black PVC plus unsheathed earth-continuity conductor, in an overall white PVC sheath.

Overall size: 9.5 x 5.25mm  
 Nom. conductor area: 2.5mm<sup>2</sup>  
 Max. current surface: 27A  
 Max. current enclosed: 19.5A  
 Sold per metre (max. length in one piece 100m).  
 Also available on 100m reels.

#### Retail Unit Price each (inc. VAT).

Order Code	Type 109	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XR51F	2.5mm TE Cable	£0.587			£0.690
PA84F	100m TE Cable 2.5mm	£36.280	£36.500	£34.500	£44.990

## 4mm<sup>2</sup> Twin and Earth 6242Y



### BASEC Approved / BS6004

A twin core and earth flat wiring cable for domestic use on ring mains. Two 7/0.85mm copper conductors and earth, 300/500V.

Sheath: Red and Black PVC plus unsheathed earth continuity conductor in an overall white PVC sheath.

Overall size: 11.8 x 6.1mm  
 Nom. Conductor area: 4mm<sup>2</sup>  
 Max. current surface: 36A  
 Max. current enclosed: 25A  
 Sold per metre (max. length in one piece 100m)  
 Also available on 100m reels

#### Retail Unit Price each (inc. VAT).

Order Code	Type 13121	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VK33L	4mm T & E White 1m	£1.180			£1.390
VK61R	4mm T & E White 100m	£92.760	£89.750	£85.600	£109.000

## 6mm<sup>2</sup> Twin and Earth 6242Y



### BASEC Approved / BS6004

A twin core and earth flat wiring cable for use on cooker points. Two 7/1.04mm copper conductors and earth 300/500V.

Sheath: Red and Black PVC plus unsheathed earth-continuity conductor, in an overall white PVC sheath.

Overall size: 14 x 7.5mm  
 Nom. conductor area: 6mm<sup>2</sup>

Max. current surface: 47A  
 Max. current enclosed: 34A  
 Sold per metre (max. length in one piece 100m).  
 Also available on 100m reels.

#### Retail Unit Price each (inc. VAT).

Order Code	Type 110	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XR52G	6mm TE Cable	£1.530			£1.800
PA85G	100m TE Cable 6mm	£107.220	£98.000	£91.000	£125.990

## 1mm<sup>2</sup> Three Core and Earth 6243Y



### BASEC Approved / BS6004

A three-core and earth flat domestic wiring cable for use on lighting circuits requiring double switching. Three 1/1.13mm copper conductors and earth 300/500V.

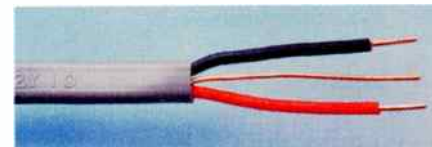
Sheath: Blue, Red and Yellow PVC plus unsheathed earth-continuity conductor in an overall white PVC sheath.

Overall size: 10.5 x 4.6mm  
 Nom. conductor area: 1mm<sup>2</sup>  
 Max. current surface: 14A  
 Max. current enclosed: 10.5A  
 Sold per metre (max. length in one piece 100m).  
 Also available on 100m reels.

#### Retail Unit Price each (inc. VAT).

Order Code	Type 111	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XR53H	1mm Tripl & ECC Cbl	£0.544			£0.640
PA86T	100m Tripl & E Cbl 1mm	£38.280	£35.750	£33.500	£44.990

## 1mm<sup>2</sup> Twin and Earth 6242Y



### BASEC Approved / BS6004

A twin core and earth flat domestic wiring cable for use on lighting circuits. Two 1/1.13mm copper conductors and earth, 300/500V.

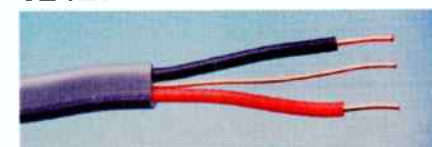
Sheath: Red and Black PVC plus unsheathed earth continuity conductor in an overall grey PVC sheath.

Overall size: 7.5 x 4mm  
 Nom. conductor area: 1mm<sup>2</sup>  
 Max. current surface: 15A  
 Max. current enclosed: 11A  
 Sold per metre (max. length in one piece 50m)  
 Also available on 50m reels.

#### Retail Unit Price each (inc. VAT).

Order Code	Type 13153	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VK44X	1mm T & E Grey 1m	£0.246			£0.290
VK53H	1mm T & E Grey 50m	£11.310	£10.970	£10.320	£13.290

## 1.5mm<sup>2</sup> Twin and Earth 6242Y



### BASEC Approved / BS6004

A twin core and earth flat domestic wiring cable for

use on separately fused spurs from ring main circuits. Two 1/1.38mm copper conductors and earth, 300/500V

Sheath: Red and Black PVC plus unsheathed earth continuity conductor in an overall grey PVC sheath.

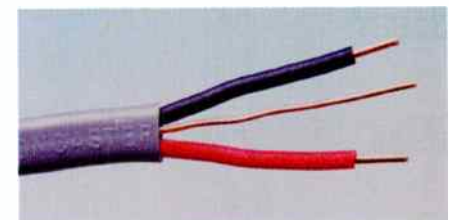
Overall Size: 8.5 x 4.75mm  
 Nom. conductor area: 1.5mm<sup>2</sup>  
 Max. current surface: 20A  
 Max. Current enclosed: 14.5A

Sold per metre (max. length in one piece 50m)  
 Also available on 50m reels.

#### Retail Unit Price each (inc. VAT).

Order Code	Type 13147	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VK46A	1.5mm T & E Grey 1m	£0.331			£0.390
VK54J	1.5mm T & E Grey 50m	£13.600	£13.160	£12.450	£15.990

## 2.5mm<sup>2</sup> Twin and Earth 6242Y



### BASEC Approved / BS6004

A twin core and earth flat domestic wiring cable for use on ring mains and unfused spurs.

Two 1/1.75mm copper conductors and earth, 300/500V.

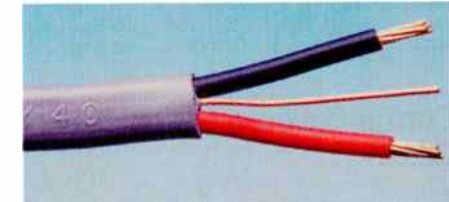
Sheath: Red and Black PVC plus unsheathed earth continuity conductor in an overall grey PVC sheath.

Overall size: 9.5 x 5.25mm  
 Nom. conductor area: 2.5mm<sup>2</sup>  
 Max. current surface: 27A  
 Max. current enclosed: 19.5A  
 Sold per metre (max. length in one piece 50m)  
 Also available on 50m reels.

#### Retail Unit Price each (inc. VAT).

Order Code	Type 13150	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VK45Y	2.5mm T & E Grey 1m	£0.417			£0.490
VK55K	2.5mm T & E Grey 50m	£18.710	£17.390	£16.450	£21.990

## 4mm<sup>2</sup> Twin and Earth 6242Y



### BASEC Approved / BS6004

A twin core and earth flat wiring cable for domestic use on ring mains. Two 7/0.85mm copper conductors and earth, 300/500V

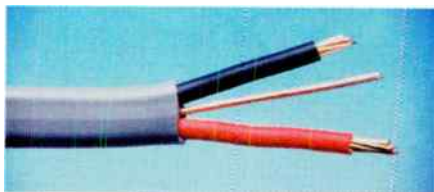
Sheath: Red and Black PVC plus unsheathed earth continuity conductor in an overall grey PVC sheath.

Overall size: 11.8 x 6.1mm  
 Nom. conductor area: 4mm<sup>2</sup>  
 Max. current surface: 36A  
 Max. current enclosed: 25A  
 Sold per metre (max. length in one piece 50m)  
 Also available on 50m reels

#### Retail Unit Price each (inc. VAT).

Order Code	Type 13118	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VK47B	4mm T & E Grey 1m	£1.180			£1.390
VK56L	4mm T & E Grey 50m	£53.600	£49.350	£45.750	£62.990

## 6mm<sup>2</sup> Twin and Earth 6242Y



### BASEC Approved / BS6004

A twin core and earth flat wiring cable for use on cooker points and showers where 6mm cable is specified. Two 7/1.04mm copper conductors and earth, 300/500V.

**Sheath:** Red and Black PVC plus an unsheathed earth continuity conductor in an overall grey PVC sheath.

**Overall size:** 14 x 7.5mm

**Nom. conductor area:** 6mm<sup>2</sup>

**Max. current surface:** 47A

**Max. current enclosed:** 34A

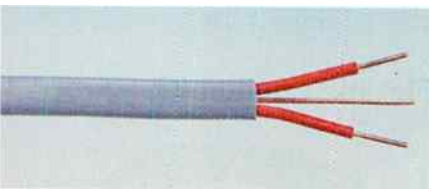
**Sold per metre (max length in one piece 50m)**

Also available on 50m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13132	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VK48C	6mm T & E Grey 1m	£1.180			£1.390
VK57M	6mm T & E Grey 50m	£53.600	£49.350	£45.750	£62.990

## 1mm<sup>2</sup> Twin Red and Earth 6242Y



### BASEC APPROVED / BS6004

A twin core and earth flat domestic wiring cable for use on lighting circuits. Three 1/1.13mm copper conductors. Rated at 300/500V.

**Sheath:** Two red PVC plus unsheathed earth-continuity conductor, in an overall grey PVC sheath.

**Overall size:** 7.5 x 4mm

**Nom. conductor area:** 1mm<sup>2</sup>

**Max current surface:** 15A

**Max current enclosed:** 11A

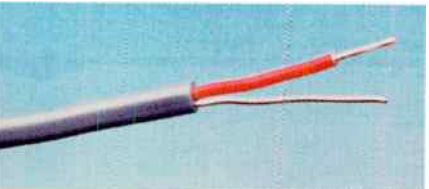
**Sold per metre (max. length in one piece 100m).**

Also available on 100m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4522	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CK91Y	1mm Twin Red & E 1m	£0.331			£0.390
BU67X	1mm Twin Red & E 100m	£25.520	£23.750	£22.500	£29.990

## 1mm<sup>2</sup> Red and Earth 6241Y



### BASEC Approved / BS6004

A single red core and earth flat domestic wiring cable for use on lighting circuits. One 1.13mm copper conductor and earth, 300/500V.

**Sheath:** Red PVC plus unsheathed earth continuity conductor in an overall grey PVC sheath.

**Overall size:** 5 x 4mm

**Max. current surface:** 15A

**Max. current enclosed:** 11A

Sold per metre (max. length in one piece 50m)  
Also available on 50m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13130	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VK49D	1mm Red & Earth 1m	£0.502			£0.590
VK58N	1mm Red & Earth 1m	£21.260	£19.500	£18.100	£24.990

## 1mm<sup>2</sup> Single Black 6181Y



### BASEC Approved / BS6004

A single core black round domestic wiring cable for use on lighting circuits. One 1.13mm copper conductor, 300/500V.

**Sheath:** Black PVC in an overall grey PVC sheath.

**Diameter:** 4mm

**Nom. conductor area:** 1mm<sup>2</sup>

**Max. current surface:** 15A

**Max. current enclosed:** 11A

**Sold per metre (max. length in one piece 50m)**

Also available on 50m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13125	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VK32K	1mm Single Black 1m	£0.246			£0.290
VK59P	1mm Single Black 50m	£9.350	£8.700	£8.250	£10.990

## Meter Cable



### BASEC Approved / BS6004

A double-insulated plain annealed copper conductor with a PVC insulation and PVC sheath, for connecting the meter to the consumer unit. Two sizes available 16mm<sup>2</sup> and 25mm<sup>2</sup>. Rated at 300/500V.

**Specification**

	16mm <sup>2</sup>	25mm <sup>2</sup>
Stranding:	7/1-7	7/2-14
Diameter over conductor:	5-10mm	6-42mm
Nominal overall diameter:	9-1mm	11-2mm
Max. current surface:	87A	114A
Max. current enclosed:	61A	80A

Available in red and black.  
Sold per metre (max. length in one piece is 50m).

*Retail Unit Price each (inc. VAT).*

Order Code	Type 112	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CK93B	Meter Tail 16mm Red	£2.540	£2.150	£1.950	£2.990
KC88V	Meter Tail 16mm Blk	£2.540	£2.150	£1.950	£2.990
KC87U	Meter Tail 25mm Red	£3.390	£2.850	£2.600	£3.990
CK92A	Meter Tail 25mm Blk	£3.390	£2.850	£2.600	£3.990

## Earth Sleeving

A green/yellow PVC insulating sleeve for sleeving the earth continuity conductor on all the surface Wiring Cables (except 6mm<sup>2</sup>). Sleeve has an inside diameter of 2-24mm and an outside diameter of 3-3mm.  
Supplied per metre.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 113	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
XS12N	Earth Sleeve	£0.161	£0.120	£0.105	£0.190

## Earth Bonding Wire to BS6004



A rigid stranded wire for earth bonding applications. Available in 6mm<sup>2</sup>, 10mm<sup>2</sup> and 16mm<sup>2</sup>. Conforms to BS6004.

**Specification**

	6mm <sup>2</sup>	10mm <sup>2</sup>	16mm <sup>2</sup>
Stranding:	7/1.04	7/1.35mm	7/1.7mm
Overall dia.:	5.4mm	6.1mm	7.1mm

**Nom. conductor area:** 6mm<sup>2</sup> 10mm<sup>2</sup> 16mm<sup>2</sup>

**Maximum current**

	6mm <sup>2</sup>	10mm <sup>2</sup>	16mm <sup>2</sup>
surface:	47A	65A	85A
enclosed:	31A	43A	57A

**Voltage rating:** 450/750V

**Sheath:** 1-0mm PVC

**Colour:** Green/Yellow

Sold per metre (max. length in one piece 50m).

*Retail Unit Price each (inc. VAT).*

Order Code	Type 115	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
VK60Q	Earthing Wire 6mm	£0.502			£0.590
XS13P	Earthing Wire 10mm	£1.090	£0.938	£0.856	£1.290
CW71N	Earthing Wire 16mm	£1.690	£1.400	£1.280	£1.990

## Conduit & Trunking

### Conduit



High impact light gauge uPVC conduit manufactured to comply with BS 4607 and BS 6099. Available in 20mm and 25mm diameter, sold in 2m lengths. 20mm and 25mm couplings allow simple joining to create longer lengths. A range of fittings are also available.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 1738E	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MS36P	20mm PVC Conduit	£1.180	£1.120	£1.060	£1.390
MS60Q	25mm PVC Conduit	£2.110	£2.010	£1.910	£2.490
MS63T	20mm Coupling	£0.417	£0.396	£0.376	£0.490
MS41U	25mm Coupling	£0.672	£0.639	£0.607	£0.790

### Spacer Bar Saddles

Spacer Bar Saddles for fixing 20mm and 25mm conduit to walls, etc. Allows fixing position to be set before putting conduit in place.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 1740Z	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MS44X	20mm Saddle	£0.672	£0.639	£0.607	£0.790
MS45Y	25mm Saddle	£0.842	£0.800	£0.760	£0.990

### Inspection Elbows & Bends

A range of elbows and bends for turning conduit through 90. Inspection elbow only available for 20mm conduit. Insetion bends available to fit 20mm and 25mm conduit. Bend allows a greater thickness of cable to be passed through the conduit.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 1740Z	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MS46A	20mm Elbow	£1.520	£1.440	£1.370	£1.790
MS47B	20mm Bend	£2.110	£2.010	£1.910	£2.490
MS48C	25mm Bend	£4.240	£4.030	£3.830	£4.990

## Conduit Adaptors

Male and female conduit adaptors designed for fixing conduit to pattresses, etc. Come complete with locking, spares available.



Retail Unit Price each (inc. VAT).

Order Code	Type 17308	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MS61R	20mm Male Adaptor	£0.672	£0.639	£0.607	£0.790
MS62S	25mm Male Adaptor	£1.000	£0.960	£0.912	£1.180
MS69D	20mm Female Adaptor	£0.757	£0.720	£0.684	£0.890
MS50E	25mm Female Adaptor	£1.000	£0.960	£0.912	£1.180
MS42V	20mm Locking	£0.417	£0.396	£0.376	£0.490
MS43W	25mm Locking	£0.502	£0.477	£0.453	£0.590

## Conduit Boxes

The following range of boxes are available for use with 20mm and 25mm conduit. Terminal Box, Through Box, Angle Box and Tee Box. Create a neat, flush junction. All boxes require circular lids, MS51.



Retail Unit Price each (inc. VAT).

Order Code	Type 17404	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MS52G	20mm Terminal Box	£1.860	£1.770	£1.680	£2.190
MS53H	25mm Terminal Box	£2.710	£2.570	£2.450	£3.190
MS54J	20mm Through Box	£2.110	£2.010	£1.910	£2.490
MS55K	25mm Through Box	£3.050	£2.900	£2.750	£3.590
MS56L	20mm Angle Box	£2.110	£2.010	£1.910	£2.490
MS57M	25mm Angle Box	£2.970	£2.820	£2.680	£3.490
MS58N	20mm Tee Box	£2.200	£2.090	£1.980	£2.590
MS59P	25mm Tee Box	£3.310	£3.140	£2.980	£3.890
MS51F	Circular Lid	£0.502	£0.477	£0.453	£0.590

## TRS Glands



Non-ferrous metal gland used for making water-tight cable entry through the knock-outs in metal light switches, sockets, etc.

Type	Fixing Size	Cable Aperture
20TRS	20mm	10mm
25TRS	25mm	11mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17326	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GF48C	20TRS Gland	£0.672	£0.615	£0.564	£0.790
GF49D	25TRS Gland	£1.090	£1.000	£0.921	£1.290



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Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

## Conduit Bushes



Threaded male brass bushes used to provide a smooth entry for cables being pulled through conduit boxes. Help reduce insulation losses.

Male short pattern

Type	Size
20MBS	20mm
25MBS	25mm

Male long pattern

Type	Size
20MBL	20mm
25MBL	25mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17333	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GF50E	20MBS Short	£0.204	£0.187	£0.171	£0.240
GF53H	25MBS Short	£0.246	£0.226	£0.207	£0.290
GF51F	20MBL Long	£0.246	£0.226	£0.207	£0.290
GF55K	25MBL Long	£0.331	£0.307	£0.278	£0.390

## Weatherproof Gland Kit



Indoor / Outdoor cable gland for steel wire armour cable that are plastic or rubber sheathed. Seal rated to IP66. Four part gland incorporating separate armour locking ring, approved to BS6121.

Type	Size
20SCW	20mm small
20CW	20mm standard
25CW	25mm standard

Retail Unit Price each (inc. VAT).

Order Code	Type 17335	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GF57M	20SCW Gland Kit	£5.060	£4.630	£4.240	£5.950
GF59P	20CW Gland Kit	£5.910	£5.410	£4.960	£6.950
GF60Q	25CW Gland Kit	£8.460	£7.750	£7.100	£9.950

## Nylon Compression Glands



Nylon glands used for making secure cable entry through the knock-outs in plastic pattresses, sockets, etc. Available in black and white and in the following sizes:

Type	To accommodate cable diameters
20mm (Small)	7.0mm-10.5mm
20mm (Large)	8.0mm-13.0
25mm	12.0mm-18.0mm

Retail Unit Price each (inc. VAT).

Order Code	Type 13854	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GF61R	20mm Comp Gland Wht	£0.587	£0.538	£0.493	£0.690
GF63T	20mm Comp Gland Blk	£0.587	£0.538	£0.493	£0.690
GF64U	20mm Comp Gland Wht	£0.672	£0.616	£0.564	£0.790
GF66W	20mm Comp Gland Blk	£0.672	£0.616	£0.564	£0.790
GF67X	25mm Comp Gland Wht	£1.910	£1.000	£0.921	£1.290
GF68Y	25mm Comp Gland Blk	£1.920	£1.000	£0.921	£1.290

## Waterproof Plastic Conduit and End Fittings



A flexible, ribbed plastic conduit for carrying cable looms and protecting them against physical damage and ingress of water or other fluids. Ideal for outdoor wiring, the conduit can be routed over walls, in walls, beneath floors or below ground. Two sizes are available with inner bores of 13.8 or 17.2mm. Matching plastic end fittings for terminating conduit at junction boxes, etc. are also available; each comprises a main inner portion with threaded boss and securing ring for mounting in a panel hole, while the conduit is pressed into the other end. It is retained in position by sprung, hooked outer jaws which locate over the ribs and are clamped by a threaded outer ring. The fitting can be installed in panels up to 2.5mm thick. Conduit is sold per metre.

Bore	Minimum recommended radius bend	Panel hole clearance for end fitting
13.8mm	25mm	17.2mm
17.2mm	35mm	20.6mm

Retail Unit Price each (inc. VAT).

Order Code	Type 1386	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
CC26D	Plastic Conduit 13.8	£1.090	£0.918	£0.760	£1.290
CC27E	Plastic Conduit 17.2	£1.350	£1.000	£0.851	£1.590
CC28F	End Fitting 13.8	£1.430	£1.210	£1.050	£1.690
CC29G	End Fitting 17.2	£1.600	£1.440	£1.270	£1.890

## Flexible Conduit Kit



- ★ Made from Flexible PVC
- ★ Rigid PVC Re-inforced spiral
- ★ Smooth inner bore
- ★ Crush resistant
- ★ Excellent flexibility

This flexible PVC conduit kit comes complete with a pack of 10 glands and locknuts.

It has a temperature range of -10°C to +75°C intermittent to 85°C with a protection rating of IEC529 / IP55.

The PVC has a flammability rating to CEI23-14/V (1971) with 10 seconds flame resistance and meets the requirements of BS4607 and BS6099 part 1. It is resistant to most oils, mild acids and saline atmospheres.

Supplied on 10m coils with 10 glands. Available in : 20mm and 25mm

Retail Unit Price each (inc. VAT).

Order Code	Type 13145	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VK26D	20mm Conduit Kit	£17.010	£16.150	£15.050	£19.990
VK27E	25mm Conduit Kit	£21.260	£20.250	£18.950	£24.990

TO SCHEDULE YOUR DELIVERIES  
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**Mini-Trunking**

Grawater



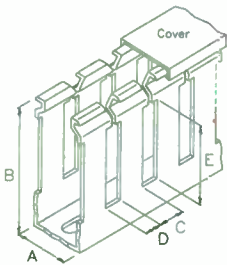
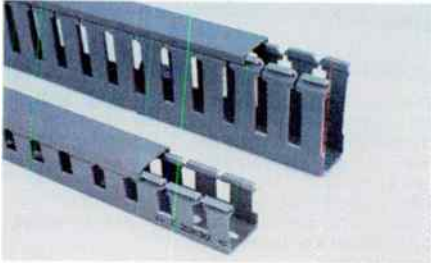
Manufactured in high-impact white PVC, the double-locking dip provides a secure enclosure, ideal for most types of electrical installations, including lighting, power, and security systems. Supplied flat packed and coiled, three sizes are available. 10mm x 16mm, 16mm x 16mm and 25mm x 16mm, supplied in 3m blister packs.

Manufacturer's Code	Size	Stock Code
100163	10 X 16mm	VK31J
44710A	16 X 16mm	AP05F
74750A	16 X 25mm	AP07H

Retail Unit Price each (inc. VAT).

Order Code	Type 1302	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AP05F	3m 16mm Trunking	£4.240	£3.450	£3.200	£4.990
AP07H †	3m 25mm Trunking	£6.800	£5.150	£4.750	£7.990
VK31J	Mini Trunking 10mm	£5.940	£5.450	£5.050	£6.990

**Conduit Racking**



Plastic slotted conduit which is useful for forming wiring around rack type applications quickly and easily

without the prolific use of cable ties. Each cable slot is approximately 8mm wide and 36mm deep (60mm depth conduit). As supplied the conduit can be used with cables up to 8mm in diameter. Larger cables may be accommodated by snapping out sections of the conduit. The conduit has additional slots in the base of the channel for fixing purposes. Fixing slots are two sizes: Large slots – 6mm x 14mm; Small slots – 4mm x 8mm approx. Available in two sizes: 25 x 60mm and 25 x 30mm. Sold in 2m lengths.

Dimensions in mm:

Size	A	B	C	D	E
25 x 60	25	60	12	8	36
25 x 30	25	30	12	8	13.5

Retail Unit Price each (inc. VAT).

Order Code	Type 1303	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CJ44X	Conduit Racking 25x60	£4.240	£4.030	£3.630	£4.990
CW57M	Conduit Racking 25x30	£2.540	£2.190	£1.990	£2.990

**Armoured Cables**

**Insulated Steel Wire Armoured Cable to BS6346**



A PVC insulated steel wire armoured cable that is manufactured to BS6346 and is available with either two or three, single stranded, 1.5mm<sup>2</sup>, cores. Outer sheath is black. A cable termination gland is available for use with this cable.

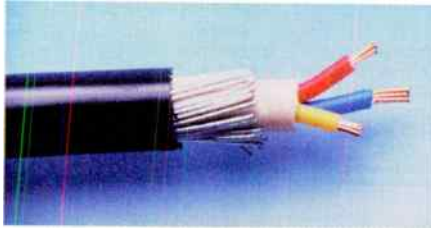
Specification	2-core	3-core
Voltage rating:	600V/1000V	
Maximum sustained voltage:	1100V AC	
Maximum current (clip fixing):	18A	21A
Core diameter:	1.5mm	
Insulation thickness:	0.6mm	
Bedding thickness:	0.8mm	
Nominal wire armour diameter:	0.9mm	
Oversheath thickness:	1.3mm	1.4mm
Approximate overall diameter:	11.7mm	12.3mm
Core colours:	Red, black	Red, yellow, blue

Sold by the metre (max. length in one piece 100m), and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 116	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DM09K	2C Armour Cable Metr	£1.180			£1.390
PB76H 58	100m 2C Armour Cable	£85.090	£78.500	£72.950	£99.990
CW67X	3C Armour Cable Metr	£1.520			£1.790
PB77J 58	100m 3C Armour Cable	£107.220	£99.000	£92.500	£125.990

**Insulated Steel Wire Armoured Cable to BS6346**



A PVC insulated steel wire armoured cable that is manufactured to BS6346 and is available in either Two or Three stranded 2.5mm cores with an overall black PVC sheath

Voltage rating	600/1000V
Core diameter	2.5mm
Insulation thickness	0.7mm
Bedding thickness	0.8mm
Nom. wire armour diameter	0.9mm
Overall diameter	2-core 13.1mm
	3-core 13.6mm
Max. current (clip fix)	2-core 28A
	3-core 25A

Sold by the metre (max. length in one piece 50m) and on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 13109	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VK62S	2.5mm 2-Core Arm/Cab	£1.260			£1.490
VK63T	2-Core Arm/Cable 50m	£51.050	£47.500	£44.500	£59.990
VK34M	2.5mm 3-Core Arm/Cab	£1.690			£1.990
VK64U	3-Core Arm/Cab 50m	£62.110	£56.950	£52.500	£72.990

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**Cable Glands for Armoured Cable to BS6121**



A kit of brass cable glands sufficient to terminate both ends of an armoured cable. The quality brass glands have a body thread of M20 with a thread length of 10mm and internal bore diameter of 11.8mm. They are manufactured to the requirements of BS6121 – Part 1. The kit comprises two brass glands, two galvanised locknuts, two brass earth tags and two shrouds. Suitable for use with our armoured cables DM09K and CW67X.

Retail Unit Price each (inc. VAT).

Order Code	Type 117	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AP00A	Armoured Cable Gland	£4.040	£3.700	£3.450	£4.750

**Heatshrinkable Armoured Cable Jointing Kit**



This kit contains all the necessary components to make a successful waterproof joint for Steel Wired Armoured Cable.

Each kit contains:-

- 4 x Heatshrink Butt Connectors.
- 4 x 65mm Internal Insulating Heatshrink Tubes.
- 1 x Strip of Tinned Copper Braid.
- 1 x Sterile Surface Wipe.
- 2 x Spring Clips.
- 1 x Abrasive Strip.
- 1 x 350mm External Heatshrink Tube.
- 1 x 1m Strip of Insulating Tape.

Full fitting instructions supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type 13254	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VU16S †	SWA Jointing Kit	£16.160	£14.400	£13.300	£18.990

To easily arrange a schedule of deliveries

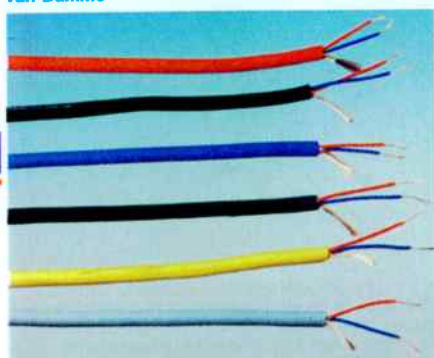
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## Professional Microphone Cable

Van Damme



A range of high spec. multi purpose heavy duty Oxygen Free Copper microphone cables. The jacket is a special matt non reflective anti-kink PVC composite which remains flexible even in sub zero use the tightly lapped OFC screen coupled with the natural cotton filler prevents capacitance changes and provides constant shielding under the roughest of handling thus eliminating internally generated noise.

The construction consists of twin conductors of plain (non tinned) OFC with cross linked polyethylene (XLPE) insulation twisted together with natural cotton fillers underneath a tightly lapped spiral OFC screen. Oversheathed with a very flexible matt PVC Neoprene anti-kink outer.

### Specification:

**Pair conductor:** 28 x 0.10mm (0.22mm sq) 24AWG high purity OFC.  
**Pair Insulation:** Cross linked polyethylene. (XLPE)  
**Pair colours:** 1xRed/1xBlue-1.0mm Dia.  
**Screen:** 80 x 0.10mm close lap spiral high purity OFC.  
**Overall jacket:** Abrasion resistant anti-kink PVC/Neoprene composite.  
**D.C. Resistance:** <84 ohms per km.  
**Capacitance:** <100pF per metre Core to core <165pF per metre cores to screen.  
**Overall diameter:** 6.35mm +/- 0.15mm.  
**Colours:** Black,Blue,Red,Green Grey, Yellow.  
 Sold per metre(max. length in one piece 100m) Also available on 100m reels.

### Retail Unit Price each (inc. VAT).

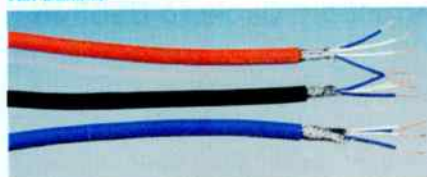
Order Code	Type 13256	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VU17T	Microphone Cable Blk	£1.090			£1.290
VU18U	Micro/Cab Blk 100m	£95.090	£76.950	£72.100	£99.990
VU19V	Microphone Cable Blu	£1.090			£1.290
VU20W	Micro/Cable 100m Blu	£95.090	£76.950	£72.100	£99.990
VU21X	Microphone Cable Red	£1.090			£1.290
VU22Y	Micro/Cable 100m Red	£95.090	£76.950	£72.100	£99.990
VU23A	Microphone Cable Grm	£1.090			£1.290
VU24B	Micro/Cable 100m Grm	£95.090	£76.950	£72.100	£99.990
VU25C	Microphone Cable Gry	£1.090			£1.290
VU26D	Micro/Cable 100m Gry	£95.090	£76.950	£72.100	£99.990
VU27E	Microphone Cable Yel	£1.090			£1.290
VU28F	Micro/Cable 100m Yel	£95.090	£76.950	£72.100	£99.990

## Van Damme Professional Audio Cable

Van Damme cable is a high quality professional audio cable designed and manufactured to the highest specifications, made evident by the look, feel and performance of the cable range. Van Damme cable is used mainly by professional recording studios and touring companies. Also name any successful UK band and they will have either recorded or played live through Van Damme OFC professional cable. The Van Damme range consists of Microphone, Instrument, Patch, Speaker, Installation and Multicore cable.

## Starquad Professional Microphone Cable

Van Damme



Starquad cable is usually used when necessary as a replacement for standard microphone cable. It is most commonly found in broadcast applications where it was originally employed because of its excellent signal to noise ratio capabilities, especially over longer cable runs.

The noise reduction is achieved by minimising the loop area between twists of conductors thus reducing the susceptibility to electromagnetic interference. Tests have shown the interference can be as little as 1/10th the level found in standard two core microphone cable.

Construction is of four conductors of plain (non tinned) OFC with cross linked polyethylene (XLPE) insulation cabled together as a 4-core starquad. Laid up with natural cotton fillers and a paper separator to reduce electrostatic build up. Screened with a dense tinned OFC braid giving 98% optical coverage. Oversheathed with a very flexible matt PVC/Neoprene anti-kink outer jacket.

### Specification

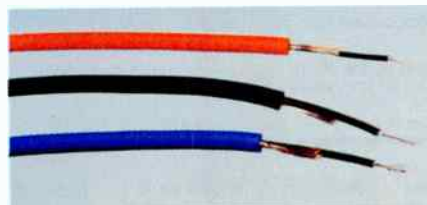
**Quad conductor:** 40/0.10mm (0.21mmsq) 24AWG high purity tinned OFC  
**Pair insulation:** Cross linked polyethylene (XLPE)  
**Pair colours:** 2xBlue/2xWhite-1.0mm Dia.  
**Braid screen:** 128/0.1mm-98% coverage high purity tinned OFC  
**Overall sheath:** Abrasion resistant anti-kink PVC/Neoprene composite.  
**D.C. resistance:** <95 ohms/km per core.  
**Capacitance:** <90pF per metre core to core <195pF per metre cores to screen.  
**Voltage rating:** 250V.  
**Overall Diameter:** 6.0mm +/- 0.2mm.  
**Colours:** Black,Blue,Red.  
 Sold per metre (max. length in one piece 100m) Also available in 100m reels.

### Retail Unit Price each (inc. VAT).

Order Code	Type 13252	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VU29G	Quad Mic/Cable Blk	£1.260			£1.490
VU30H	Quad Mic/Cab. 100m Blk	£97.860	£89.000	£81.000	£114.990
VU31J	Quad Mic/Cable Blue	£1.260			£1.490
VU32K	Quad Mic/Cab 100m Bl	£97.860	£89.000	£81.000	£114.990
VU33L	Quad Mic/Cable Red	£1.260			£1.490
VU34M	Quad Mic/Cab 100m Rd	£97.860	£89.000	£81.000	£114.990

## Instrument/Guitar Cable

Van Damme



This cable has been developed as a high grade unbalanced signal cable for use with 2-pole connectors such as mono jacks and phonos. It achieves excellent RF rejection and a very low capacitance by using an overall close lap OFC spiral screen combined with a conductive carbon thermoplastic layer. This provides exceptional screening and very low noise when in use.

Construction is of a single conductor of plain (non-tinned) OFC with foamed polyethylene insulation and tubed thermoplastic conductive carbon inner screen. The outer screen consists of a close lap spiral OFC. The overall jacket is a special soft matt PVC composite for reduced reflection, excellent flexibility and anti-kink characteristics even at low

temperatures.

### Specifications

**Centre Conductor:** 7/0.2mm (0.22mm sq) 24AWG high purity OFC  
**Insulation:** Foamed polyethylene 1.2mm diameter  
**Screen 1:** Tubed thermoplastic conductive carbon  
**Screen 2:** 80/0.1mm close lap spiral high purity OFC  
**Overall sheath:** Abrasion resistant anti-kink PVC/Neoprene composite.  
**Temp. range:** -25°C - +70°C  
**D.C. resistance:** <78 ohms per km  
**Screen resistance:** <33ohms per km  
**Capacitance:** <110pF per metre.  
**Voltage rating:** 250V  
**Overall Diameter:** 6.0mm +/- 0.15mm  
**Colours:** Black,Blue,Red  
 Sold per metre (max. length in one piece 100m) Also available in 100m reels.

### Retail Unit Price each (inc. VAT).

Order Code	Type 13258	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VU35Q	Instrum/Cable Blk	£0.842			£0.990
VU36P	Inst/Cable 100m Blk	£68.070	£62.950	£58.250	£79.990
VU37S	Instrum/Cable Blue	£0.842			£0.990
VU38R	Inst/Cable 100m Blue	£68.070	£62.950	£58.250	£79.990
VU39N	Instrum/Cable Red	£0.842			£0.990
VU40T	Inst/Cable 100m Red	£68.070	£62.950	£58.250	£79.990

## Unbalanced Phono Patch Cable

Van Damme



This cable is specifically designed to cater for 2-pole connectors which cannot accommodate Van Damme Instrument cable with a diameter of 6mm or more. This cable is typically used with phono, mono jack or mono mini jack connectors which have a back shell entry of no more than 4.8mm. It is usually terminated in the form of short unbalanced patch cables commonly found in home studios.

Construction is of a plain (non tinned) single OFC conductor with foamed polyethylene insulation and tubed thermoplastic conductive carbon inner screen. The outer screen consists of close lap spiral OFC. The overall sheath is a special soft matt PVC composite for reduced reflection, excellent flexibility and anti-kink characteristics even at low temperatures.

### Specification

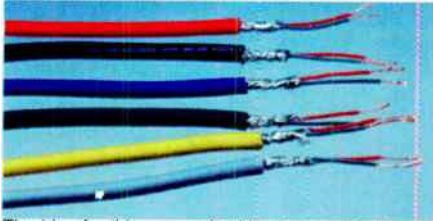
**Centre Conductor:** 7/0.2mm(0.22mm sq) 24AWG high purity OFC  
**Insulation:** Foamed polyethylene 1.2mm diameter.  
**Screen 1:** Tubed thermoplastic conductive carbon.  
**Screen 2:** 80/0.1mm close lap spiral high purity OFC.  
**Overall sheath:** Abrasion resistant anti-kink PVC/Neoprene composite.  
**Temp. range:** -25°C - +70°C  
**D.C. resistance:** <78ohms per km.  
**Screen resistance:** <33 ohms per km.  
**Capacitance:** <110pF per metre.  
**Voltage rating:** 250V.  
**Overall Diameter:** 4.8mm +/-0.1mm  
**Colours:** Black,Blue,Red  
 Sold per metre (max.length in one piece 100m) Also available in 100m reels.

### Retail Unit Price each (inc. VAT).

Order Code	Type 13275	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VU41U	Unbal/Phono Cable Blk	£0.757			£0.890
VU42V	Unb/Phon/Cab 100m Blk	£63.820	£58.500	£53.750	£74.990
VU43W	Unbal/Phono Cable Bl	£0.757			£0.890
VU44X	Unb/Pho/Cab 100m Blu	£63.820	£58.500	£53.750	£74.990
VU45Y	Unbal/Phono Cable Rd	£0.757			£0.890
VU46A	Unb/Pho/Cab 100m Red	£63.820	£58.500	£53.750	£74.990

## Balanced Patch Cable

Van Damme



The idea for this range of cables is to use in the application of patch leads using bantam plugs. In order to be terminated correctly an O.D. of exactly 4.85mm is needed to anchor the cable into the back of the bantam plug by either crimping on a ferrule (Neutrik type) or screwing into the threaded back part of the body (switchcraft or ADC type). This cable is ideal for use with midi/DIN plugs such as Preh or Deltron as these connector types will only accept cables with diameters of 5.0mm or smaller.

### Specifications

Pair Conductor: 28/0.1mm(0.22mm sq)  
24AWG high purity OFC.  
Pair Insulation: Cross linked polyethylene (XLPE)

Pair colours: Red/Green - 1mm diameter  
Braid screen: 96/0.12mm - 95% coverage  
high purity tinned OFC.

Temp. range: -25°C - +70°C

D.C. resistance: <84 ohms per km

Capacitance: <100pF per metre core to core.  
<165pF per metre cores to screen

Voltage rating: 250v  
Overall diameter: 4.85mm +/- 0.1mm  
Colours: Black, Blue, Red, Green, Grey, Yellow.

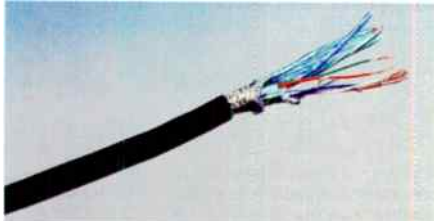
Sold per metre (max length in one piece 100m)  
Also available in 100m reels.

### Retail Unit Price each (inc. VAT).

Order Code	Type 13289	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VU79L	Bal/Patch Cable Blk	£0.842			£0.990
VU80B	Bal/Pat/Cab 100m Blk	£74.030	£68.000	£63.000	£86.990
VU81C	Bal/Patch Cable Blue	£0.842			£0.990
VU82D	Bal/Pat/Cab 100m Blu	£74.030	£68.000	£63.000	£86.990
VU83E	Bal/Patch Cable Red	£0.842			£0.990
VU84F	Bal/Pat/Cab 100m Red	£74.030	£68.000	£63.000	£86.990
VU85G	Bal/Patch Cable Grn	£0.842			£0.990
VU86T	Bal/Pat/Cab 100m Grn	£74.030	£68.000	£63.000	£86.990
VU87U	Bal/Patch Cable Grey	£0.842			£0.990
VU88V	Bal/Pat/Cab 100m Gry	£74.030	£68.000	£63.000	£86.990
VU89W	Bal/Patch Cable Yel	£0.842			£0.990
VU90X	Bal/Pat/Cab 100m Yel	£74.030	£68.000	£63.000	£86.990

## Overall Braided Multicore

Van Damme



The Black Series Multicore is specifically designed as a tour grade multicore to handle very tough and demanding applications. The conductors are not individually jacketed but have a mylar aluminium / polyester Z fold screen which is then laid up beneath a tinned copper overall braid, the Z fold screen is designed to overlap on each conductor to give 150% complete protection for each pair. This also prevents the screen from unravelling thus avoiding any shorting between adjacent earths. Construction consists of twin plain (non tinned) OFC conductors with cross linked polyethylene (XLPE) insulation twisted together with a tinned OFC drain wire. Individually shielded with aluminium/polyester Z-fold tape. Pairs cabled with flexible fillers and cloth holding tape. Over screened with tinned copper braid. Oversheathed with highly

flexible abrasion resistant PVC composite jacket.

### Specification

Pair Conductor: 28/0.01mm(0.22mm sq)  
24AWG high purity tinned OFC.

Pair insulation: Cross linked polyethylene (XLPE) - 1.2mm Diameter.  
Screen: Aluminium polyester foil tape - Z fold 150% coverage.

Overall screen: Tinned copper braid 90% optical coverage.

Drain wire: 19/0.12mm(0.22mm sq)  
24AWG high purity tinned OFC.

Overall Jacket: Abrasion resistant special PVC composite.

Temp. range: -25°C - +70°C

D.C. resistance: <85 ohms per km

Capacitance: <70pF per metre core to core + screen  
<125pF per metre core to core + screen

Inductance: 0.45uH per metre.

Voltage rating: 250V

Colour: Matt black - RAL 9005

Sold per metre (max. length in one piece 50m)

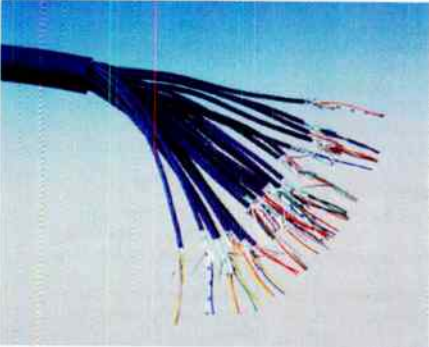
Also available in 50m reels.

### Retail Unit Price each (inc. VAT).

Order Code	Type 13279	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VU59P	Brd/Multicore 3pr Bk	£5.940			£6.990
VU60Q	Brd/Multi 8pr 50m Bk	£246.800	£215.000	£198.000	£289.990
VU61R	Brd/Multicore 16pr Bk	£9.350			£10.990
VU62S	Brd/Multi 16pr 50m Bk	£417.010	£375.000	£352.000	£489.990
VU63T	Brd/Multicore 24pr Bk	£12.750			£14.990
VU64U	Brd/Multi 24pr 50m Bk	£570.200	£529.000	£492.000	£669.990

## Pre-Jacketed Multicore

Van Damme



This Blue Series OFC Multicore has each individual core pre-jacketed, colour coded and pre-numbered. This eliminates the need to heatshrink, number & continuity test each conductor. Construction consists of twin plain (non tinned) OFC conductors with cross linked polyethylene (XLPE) insulation twisted together with a tinned OFC drain wire. Individually shielded with aluminium/polyester free edge foil tape. Each individual pair oversheathed in flexible PVC and numbered. Pairs cabled with flexible fillers and talc lubricant. All cores oversheathed with highly flexible PVC abrasion resistant outer jacket.

### Specifications

Pair Conductor: 28/0.1mm(0.22mm sq)  
24AWG high purity plain OFC.

Pair insulation: Cross linked polyethylene (XLPE) - 1mm Dia.  
Screen: Aluminium polyester foil tape - free edge foil (FEF)

Drain wire: 19/0.12mm(0.22mm sq)  
24AWG high purity tinned OFC.

Pair jacket: Highly flexible PVC numbered cores - 2.7mm diameter (RAL 5001)

Overall Jacket: Abrasion resistant special PVC Composite.

Temp. range: -25°C - +70°C

D.C. resistance: <85 ohms/km

Capacitance: <100pF per metre core to core.  
<200pF per metre core to core + screen.

Inductance: 0.5uH per metre.

Voltage rating: 250V

Colour: Matt petrol blue (RAL 5001)

Sold per metre (max. length in one piece 50m)

Also available in 50m reels.

### Retail Unit Price each (inc. VAT).

Order Code	Type 13283	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VU65V	Pre/Jkt Multi 4pr Bl	£4.240			£4.990
VU66W	Pre/Jkt/Mlt 4pr 50m	£170.200	£156.000	£148.000	£199.990
VU67X	Pre/Jkt/Mltic 8pr Bl	£5.940			£6.990
VU68Y	Pre/Jkt/Mlt 8pr 50m	£255.310	£232.000	£217.000	£299.990
VU69A	Pre/Jkt/Mlt 12pr Bl	£8.500			£9.990
VU70M	Pre/Jkt/Mlt 12pr 50m	£374.450	£342.000	£315.000	£439.990
VU71N	Pre/Jkt/Mlt 16pr Bl	£11.900			£13.990
VU72P	Pre/Jkt/Mlt 16pr 50m	£493.600	£465.000	£431.000	£579.990
VU73Q	Pre/Jkt/Mlt 24pr Bl	£16.160			£18.990
VU74R	Pre/Jkt/Mlt 24pr 50m	£680.840	£654.000	£624.000	£799.990

## Pre-Jacketed Monocore

Van Damme



The Van Damme monocore range is so called because it is designed for unbalanced applications.

These are normally found in home studio situations where mono jack and phono connectors are commonly used to interface equipment.

Construction consists of a single tinned OFC conductor with cross linked polyethylene (XLPE) insulation and lap spiral screen. Each line pre-jacketed with flexible fillers and black PVC numbered sub jacket. All cores are oversheathed with highly flexible PVC abrasion resistant outer jacket.

### Specification

Centre conductor: 14/0.15mm(0.25mm sq)  
23AWG high purity tinned OFC.

Insulation: Cross linked polyethylene (XLPE) 1.45mm Diameter  
Screen: 48/0.1mm (0.38mm sq)  
22AWG high purity tinned OFC.

Core jacket: Black flexible PVC numbered in white 2.35mm diameter.

Overall Jacket: Abrasion resistant special PVC composite.

Temp. range: -25°C - +70°C

D.C. resistance: <90 ohms per km

Capacitance: <300pF per metre.

Voltage rating: 250v

Colour: Matt grey (RAL 7031)

Sold per metre (max. length in one piece 50m)

Also available in 50m reels.

### Retail Unit Price each (inc. VAT).

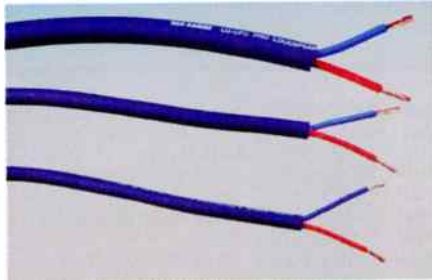
Order Code	Type 13287	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VU75S	Pre/Jkt/Mono 8c Gry	£5.090			£5.990
VU76H	Pre/Jkt/Mono 8c 50m	£195.730	£181.000	£168.000	£229.990
VU77J	Pre/Jkt/Mono 16c Gry	£8.500			£9.990
VU78K	Pre/Jkt/Mono 16c 50m	£357.430	£329.000	£302.000	£419.990

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your nearest store

## Professional Loudspeaker Cable

Van Damme



This range of durable and heavy duty speaker cable is remarkably flexible and easy to handle in spite of its toughness. They have been intelligently designed to suit the various connectors used for different speaker applications.

### Specification

**Conductor:** 1.5mm 30/0.25mm (1.5mm sq) high purity non tinned OFC.  
2.5mm 50/0.25mm (2.5mm sq) high purity non tinned OFC.  
4mm 56/0.3mm (4mm sq) high purity non tinned OFC.

**D.C. Resistance:** 1.5mm 11.2 ohms per km  
2.5mm 6.8 ohms per km  
4mm 4.3ohms per km

**Conductor insulation:** PVC

**Overall Sheath:** Abrasion resistant soft matt anti-kink PVC/Neoprene composite.

**Conductor colour:** Twin-ax - Red/Blue

**Jacket colour:** Matt petrol blue (RAL 5001)

**Working Voltage:** 250v

**Temp. range:** -30°C - +80°C

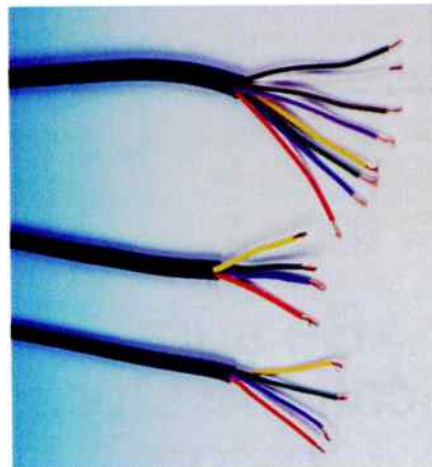
Sold per metre (max. length in one piece 1.5/2.5 100m, 4mm/50m)  
Also available on 100m reels (1.5mm + 2.5mm) 50m reel (4mm).

Retail Unit Price each (inc. VAT).

Order Code	Type 13296	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VU91Y	1.5mm Speaker Cable	£1.010			£1.190
VU92A	1.5mm Spkr/Cabl 100m	£85.090	£77.500	£71.950	£99.990
VU93B	2.5mm Speaker Cable	£1.520			£1.790
VU94C	2.5mm Spkr/Cabl 100m	£127.650	£116.000	£108.000	£149.990
VU95D	4mm Speaker Cable	£2.450			£2.890
VU96E	4mm Spkr/Cable 50m	£204.240	£92.000	£84.000	£239.990

## Professional Loudspeaker Cable 4/8 Core

Van Damme



This range of professional speaker cable is identical in specification to the 2-core range above (VU91Y-VU96E) but in 4-core and 8-core.

Two sizes of 4-core are available ( 2.5mm and 4mm.)

**Conductor Colours:** Red,Blue,Green,Yellow.  
8-Core available in 2.5mm only.

Conductor colours: Red,Blue,Green,Yellow,  
Brown,Violet,Black,White.

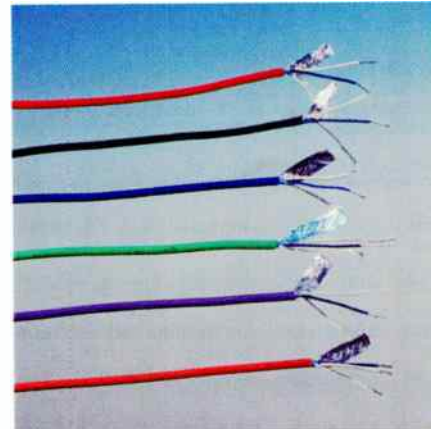
Sold per metre (max. length in one piece 50m)  
Also available in 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 13299	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VU97F	Quad Spkr/Cabl 2.5mm	£2.800			£3.290
VU98G	Quad Spkr/Cabl 2.5 50m	£119.140	£108.000	£99.500	£139.990
VU99H	Quad Spkr/Cable 4mm	£4.670			£5.490
PE00A	Qd Spkr/Cab 50m 4mm	£191.480	£179.000	£166.000	£224.990
PE01B	8-Core Spk/Cab 2.5mm	£4.840			£5.690
PE02C	8C/Spk/Cab 50m 2.5mm	£199.990	£186.000	£170.500	£234.990

## Installation Cable 1 Pair

Van Damme



The function of this cable is to carry a balanced line in a small overall diameter cable with very efficient shielding and since this cable is most commonly used in the wiring of patchfields or patchpanels the flexibility for forming and handling the cable is also of the utmost importance.

The construction consists of twin plain(non tinned) OFC conductors with cross linked polyethylene insulation twisted together with a tinned OFC drain wire. Shielded with an aluminium/polyester foil tape.

### Specification

**Pair conductor:** 7/0.2mm(0.22mm sq)  
24AWG high purity OFC.

**Pair insulation:** Cross linked polyethylene (XLPE)

**Pair colours:** White/Blue 1.0mm Dia.

**Screen:** Aluminium/polyester foil tape

**Drain wire:** 7/0.2mm(0.22mm sq)  
24AWG high purity OFC.

**Overall sheath:** Abrasion resistant anti-kink PVC/Neoprene composite.

**Temp. range:** -25°C - +70°C

**D.C. resistance:** <78 ohms per km

**Capacitance:** <90pF per metre core to core.  
<189pF per metre cores to screen.

**Voltage rating:** 250V

**Overall diameter:** 3.5mm +/-0.1mm

**Colours:** Black,Blue,Red,Green,  
Violet,Orange.

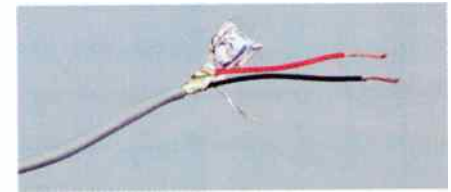
Sold per metre (max. length in one piece 100m)  
Also available in 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 13277	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VU47B	Inst/Cable 1pr Bk	£0.417			£0.490
VU48C	Inst/Cab 1pr 100m Bk	£29.770	£27.750	£26.000	£34.990
VU49D	Instal/Cable 1pr Blu	£0.417			£0.490
VU50E	Ins/Cab 1pr 100m Blu	£29.770	£27.750	£26.000	£34.990
VU51F	Instal/Cable 1pr Red	£0.417			£0.490
VU52G	Ins/Cab 1pr 100m Red	£29.770	£27.750	£26.000	£34.990
VU53H	Instal/Cable 1pr Grn	£0.417			£0.490
VU54J	Ins/Cab 1pr 100m Grn	£29.770	£27.750	£26.000	£34.990
VU55K	Instal/Cable 1pr Vio	£0.417			£0.490
VU56L	Ins/Cab 1pr 100m Vio	£29.770	£27.750	£26.000	£34.990
VU57M	Instal/Cable 1pr Orm	£0.417			£0.490
VU58N	Ins/Cab 1pr 100m Orm	£29.770	£27.750	£26.000	£34.990

## Digital Audio Installation Cable 1 Pair

Van Damme



This stranded small diameter cable was designed specifically for patchpanel and rackwiring for digital audio signals. Special insulation materials and tight tolerances have been applied to the design and construction of the cable to achieve very low capacitance figures and the required 110 ohm characteristic impedance. It can also be used for MIDI and timecode purposes where cable capacitance can be a problem.

Construction is of twin plain copper conductors with foamed polyolefin insulation twisted together with a short lay length with tinned copper drain wire. Shielded with bonded aluminium/polyester foil. Oversheathed with PVC outer jacket.

### Specification

**Pair conductor:** 7/0.2mm (0.22mm sq)  
24AWG plain copper

**Pair Insulation:** Low capacitance foamed polyolefin.

**Screen:** Aluminium/polyester bonded tape.

**Drain Wire:** 7/0.2mm (0.22mm sq)  
24AWG tinned copper.

**Temp. range:** -20°C - +70°C

**Capacitance:** <38pF per metre core to core.  
<78pF per metre core to core + screen.

**Impedance:** 110 +/- 10 ohm

**Attenuation:** 2.156dB/100m@1MHz  
4.347dB/100m@4MHz  
7.241dB/100m@10MHz  
8.838dB/100m@16MHz  
10.236dB/100m@20MHz

**Voltage rating:** 250V

**Overall diameter:** 3.9mm

**Jacket colour:** Light grey PVC

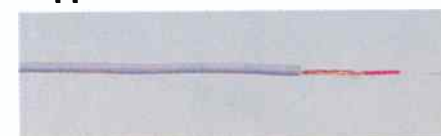
Sold per metre (max. length in one piece 100m)  
Also available in 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 13307	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
PE03D	Dig/Aud/Inst/Cab 1pr	£0.417			£0.490
PE04E	Dig/Aud/Inst/Cab 100m	£34.030	£31.500	£29.600	£39.990

## Single Audio Cables

### Miniature Single-Core Lapped Screen



A single screened cable ideal for general audio connections especially in equipment where a large number of cables have to be packed into a small area. Stranded core, 7/0.1mm copper conductor with PVC insulation, lap screened and sheathed overall in grey PVC.

**Overall diameter:** 2mm

**Nom. conductor area:** 0.055m<sup>2</sup>

**Capacitance (core to screen):** 320pF/m

Sold per metre (max. length in one piece 100m).  
Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 1119	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR15R	Min Screened	£0.246			£0.290
PB13P 1	100m Min Screened	£13.600	£10.750	£9.600	£15.990

**Single-Core Lapped Screen**



A single screened cable ideal for general audio connections. Stranded core, 7/0-12mm copper conductor with PVC insulation, lap screened and sheathed overall in PVC.

Overall diameter: 3.0mm  
Nom. conductor area: 0.22mm<sup>2</sup>  
Capacitance (core to screen): 320pF/m  
Available sheathed overall in Black, Grey or White.  
Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 120	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR12N	Cable Single Black	£0.204			£0.240
PA79L 3	100m Cable Singl Blk	£12.750	£10.250	£9.150	£14.990
XR13P	Cable Single Grey	£0.204			£0.240
PA80B 3	100m Cable Singl Gry	£12.750	£10.350	£9.350	£14.990
XR14Q	Cable Single White	£0.204			£0.240
PA81C 4	100m Cable Singl Wht	£12.750	£10.350	£9.350	£14.990

**Single-Core Braided Screen**



A single screened cable ideal for connections to microphones. Stranded core, 16/0-2mm copper conductor with PVC insulation, braided screen and sheathed overall in black PVC.

Overall dia: 3.75mm  
Nom. conductor area: 0.5mm<sup>2</sup>  
Capacitance (core to screen): 360pF/m  
Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 124	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR16S	Single Mic Cable	£0.382			£0.450
PA16S 6	100m Singl Mic Cable	£23.820	£19.500	£17.250	£27.990

**Low Noise Screened Cable**



A very low noise single screened cable ideal for use with low-level signals. Stranded core, 10/0-1mm copper conductor with polythene insulation over which there is a layer of semi-conducting polythene. This is covered with a braided screen and sheathed overall in black PVC.

Overall dia.: 3.0mm  
Nom. conductor area: 0.0785mm<sup>2</sup>  
Capacitance (core to screen): 102pF/m  
Nominal impedance: 50Ω

**IMPORTANT NOTE**

It is most important when connected that the semi-conducting sheath should not be able to come into contact with the centre conductor or anything connected to the centre conductor, but that it should be stripped back to the braiding. The cable is only suitable for use at audio frequencies. Sold per metre (max. length in one piece 25m). Also available on 25m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 128	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR18U	Low Noise Snd	£0.502			£0.590
PB14Q	25m Low Noise Snd	£10.300	£9.030	£8.510	£12.110

**Single Screened Cable with Semiconducting Sheath and Double Layer Insulation**



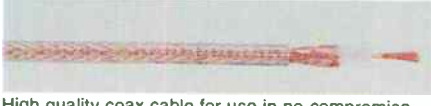
A single screened cable which has 20 x 0.12mm copper conductors with PVC insulation, a semiconducting layer, lapped screen and two layers of PVC outer insulation (outer black).

Overall diameter: 6mm  
Nom. conductor area: 0.23mm<sup>2</sup>  
Capacitance (core to screen): 135pF/m  
Sold per metre (Max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 123	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XS24B	Single Scrn Dble Lyr	£0.672			£0.790
PB50E 8	Sgl Scr Dbl Lyr 100m	£42.970	£38.500	£35.250	£50.490

**High Grade Shielded Audio Cable**



High quality coax cable for use in no-compromise audio applications. It features high purity, Oxygen Free Copper (OFC) conductors where each strand is bound tightly for maximum contact area and best electron flow. OFC conductors are completely oxygen free in order to eliminate surface oxidation, which will interfere with the efficiency of the conductor especially at high frequencies, where electron flow tends to be more concentrated at the surface.

The centre conductors are multi-strand bare OFC sheathed in a coax insulator sleeve made of high density polyethylene, which is very resistant to deformation and therefore maintains the optimum distance required between the inner and screen throughout the length of the cable. The single bare OFC braided screen is sheathed in transparent extra flexible PVC, overall diameter 5mm. Strands of inner, 156/0-0.6mm. Max. working voltage, 200V peak. Working temperature, -10°C to 105°C. Suitable connectors are JZ07H or JZ08J. Sold per metre (max. length in one piece 50m) and on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 125	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XS38R	Audio Cable	£0.859	£1.010	£1.190	£1.010
PB62S 4	Audio Cable 50m	£38.280	£33.950	£31.200	£44.990

**High Quality AV Signal Cable**



A very high quality signal cable for use with audio/visual equipment ideal for conveying audio and/or video signal information. Constructed with OFC cable, this high performance cable offers very good electrical characteristics while remaining economical. Suitable for use with RCA P185A and T185A connectors.

**Specification**

Conductor construction: 80 x 0.1mm OFC  
Insulation: Foamed polyethylene  
Shielded: Mylar foil + bare OFC braid

Overall diameter: 8mm  
Capacitance: 62pF/m  
Impedance: 75Ω nominal

Sold per metre (max. length in one piece 75m)  
Also available in 75m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 9812	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
FN74R	Audio/Vid Cable 1 M	£1.690		£1.990
CN53H 1	Aud/Vid Cable 75m	£85.090		£99.990

**Silver-Plated Screened Cable**



High quality screened cable having a single 0.8mm centre conductor, silver-plated to a thickness of 100μ (microns, or 40μin.), in a polyethylene inner insulator. This is surrounded by a copper braid over foil screen, and sleeved overall in a brown sheath. Overall diameter is 8mm, and capacitance between conductor and screen is 53pF/m. Note: Silver Solder DP52G should be used to solder silver wires. This solder requires a separate flux. Sold by the metre.

Retail Unit Price each (inc. VAT).

Order Code	Type 121	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CC22Y	Silver Plated SC	£3.730	£3.050	£2.750	£4.390

**Pure Silver Screened Cable**



High quality screened audio cable having 5/0-28mm extruded, pure silver strands as the centre conductor in a red polyethylene inner insulator, surrounded by a silverplated copper braid over foil screening, and covered overall in a translucent sheath.

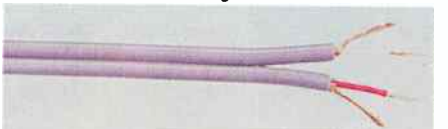
Overall diameter is 8mm, and capacitance between conductor and screen is 64pF/m. Note that Silver Solder DP52G must be used to solder silver wires. Sold per quarter metre.

Retail Unit Price each (inc. VAT).

Order Code	Type 6227	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
XS56L	1/4m Silver Scr Cable	£4.240		£4.990

**Twin Audio Cables**

**Twin Individually Screened**



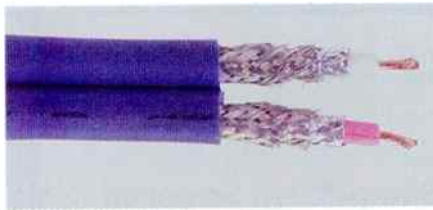
A twin screened cable having each core individually screened and laid side by side in a figure '8' outer sheath thus keeping crosstalk problems to a minimum, but maintaining the advantages of a single cable. Stranded cores, 10/0-12mm copper conductor with PVC insulation, lap screened and sheathed overall in grey PVC.

Overall size: 2.8 x 5.6mm  
Nom. conductor area: 0.0785mm<sup>2</sup>  
Capacitance (core to screen): 350pF/m  
Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 130	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR21X	Cable Twin	£0.331			£0.390
PA17T 5	100m Cable Twin	£21.260	£17.500	£15.950	£24.990

## High Grade Shielded Audio Pair



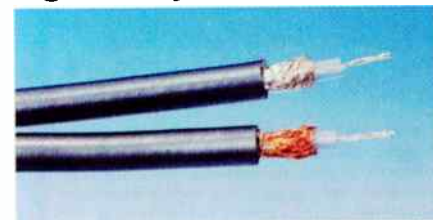
A dual figure '8', individually screened pair, where the entire screen of each cable is composed from a layer of metallised mylar film under two layers of OFC (Oxygen Free Copper) braid, providing the most complete prevention against interference, and having a blue outer sleeve, diameter 6mm. The centre conductors are multi-strand bare OFC sheathed in a coax insulator sleeve made of high density polyethylene. Strands are 91/0-08mm. Max. working voltage, 200V peak. Working temperature, -10°C to 105°C. Suitable connectors are JZ11M or JZ12N.

Sold per 1/4 metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 131	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XS39N	Audio Pair	£2.970			£3.490
PB63T 13	Audio Pair 50m	£121.690	£109.000	£102.000	£142.990

## High Quality Silver Car Cable



Ideal for use with in-car entertainment systems for audio linkages between items of hardware. Double screened silver cable ensures that interference and noise are kept to a minimum. Siamese design ensures simple installation for stereo signal sources. Sold per 25cm and 50m reels.

### Specification

Cable construction: 5 x 0.28mm x 2 cables  
 Insulation type: Polyethylene  
 Shield type: Mylar foil OFC inner, Silver plated OFC outer  
 Overall diameter: 6 x 12.5mm  
 Capacitance: 90pF/m  
 Impedance: 53Ω nominal

Retail Unit Price each (inc. VAT).

Order Code	Type 1010	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
EL13P †	1/4m Silv Audio Cab.	£6.370			£7.490
CN54J 1	50m Silv Audio Cable	£1,105.530			£1,299.000

## Twin Overall Lapped Screen



A twin screened cable ideal for general audio connections where crosstalk is not a problem. Stranded cores, 7/0-1mm copper conductors with red and blue PVC insulation, lap screened and sheathed overall in grey PVC. Cores are laid side by side in the cable such that the cable is oval in shape.

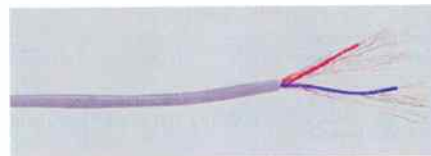
Overall size: 2 x 2.8mm  
 Nom. conductor area: 0.055mm<sup>2</sup>  
 Capacitance (core to screen): 305pF/m  
 (core to core): 170pF/m

Sold per metre (max. length in one piece 100m). Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 127	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR20W	Lapped Pair	£0.246			£0.290
PB18U 2	100m Lapped Pair	£15.480	£12.750	£11.500	£18.200

## Two-Core Lap-Screened Cable 7/0-2mm



Two 7/0-2mm copper conductors with a blue and a red PVC insulation laid side by side and lap-screened and sheathed overall in grey PVC.

Overall size: 3.1 x 4.7mm oval  
 Capacitance: 272pF core to screen  
 148pF core to core

Sold per metre (max. length in one piece 100m). Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 129	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XS23A	Lapped Pair 7/0.2mm	£0.331			£0.390
PB49D 4	100m Lap Pair 0.2mm	£25.520	£21.700	£18.950	£29.990

## Twin Individually Screened Microphone Cable



A very flexible, high quality twin screened microphone cable. Stranded cores 14/0-18mm copper conductors with red and white PVC insulation, individually lap-screened and sheathed overall in grey PVC. Overall diameter: 6.2mm. Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 134	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR90X	HD Fleximic	£0.459			£0.540
PB39N 11	100m HD Fleximic	£33.180	£28.000	£25.000	£38.990

## Twin Overall Braided Screen



A twin screened cable ideal for use in low level balanced circuits, e.g. low impedance balanced microphones. The cores are twisted together to assist in hum reduction. Stranded cores, 16/0-2mm copper conductors with red and black PVC insulation, braided screen and sheathed overall in black PVC.

Overall dia.: 6.3mm  
 Nom. conductor area: 0.5mm<sup>2</sup>  
 Capacitance (core to screen): 171pF/m  
 (core to core): 120pF/m  
 Sold per metre (max. length in one piece 100m). Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 128	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR08J	Twin Mic Cable	£0.757			£0.890
PB17T 13	100m Twin Mic Cable	£42.970	£36.500	£32.950	£50.490

## Twin Overall Braided Screen Microphone Cable

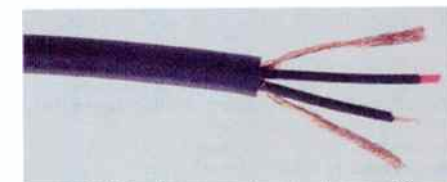


A very flexible, high quality twin screened microphone cable available with five different colour outer sheaths. Stranded cores, 12/0-18mm copper conductors with red and white PVC insulation, braided screen and sheathed overall in black, blue, green, red or yellow PVC. Overall diameter: 6.2mm. Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 133	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR98G	Fleximic Black	£0.757			£0.890
PA89W 10	100m Fleximic Black	£63.820	£58.500	£54.250	£74.990
XR97F	Fleximic Blue	£0.757			£0.890
PA88V 10	100m Fleximic Blue	£63.820	£58.500	£54.250	£74.990
XR99H	Fleximic Green	£0.757			£0.890
PA90X 14	100m Fleximic Green	£63.820	£58.500	£54.250	£74.990
XS01B	Fleximic Red	£0.757			£0.890
PA92A 14	100m Fleximic Red	£63.820	£58.500	£54.250	£74.990
XS02C	Fleximic Yellow	£0.757			£0.890
PA93B 14	100m Fleximic Yellow	£63.820	£58.500	£54.250	£74.990

## Twin Individually Screened Cable with Semiconducting Sheaths



A twin individually screened cable which has 20 x 0.12mm copper conductors in each core, with colour coded PVC insulation, individual semiconducting layers, individual lapped screen and black PVC outer insulation.

Overall Diameter: 6.5mm  
 Nominal Conductor Area: 0.23mm<sup>2</sup>  
 Capacitance (core to screen): 135pF/m  
 Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 135	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XS26D	Twin Single Scm SS	£0.842			£0.990
PB62G 8	Twin Sgl Scm SS 100m	£58.710	£52.000	£48.000	£68.990

## High Grade Overall Screened Pair



An overall screened pair of conductors within one round screen. The two inners are identified as red and white and are also screened with metallised mylar film under one braided OFC layer. The centre conductors are stranded 41/0-12mm bare OFC sheathed in a coax insulator sleeve made of high density polyethylene. The outer sleeve is blue, overall diameter 7.3mm. Max. working voltage, 200V peak. Working temperature: -10°C to 105°C. Sold per metre (max. length in one piece 50m) and on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 132	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XS40T	Common Pair	£1.230			£1.450
PB66W7	Common Pair 50m	£45.090	£39.500	£35.500	£52.990

**High Grade Audio Cable**



A very high quality screened audio OFC cable with excellent electrical characteristics. Ideal for balanced line feeds in noise environments and professional studio equipment. Braid and silver shield ensure that interference and cross-talk are kept to a bare minimum. Sold per metre and 50m reels.

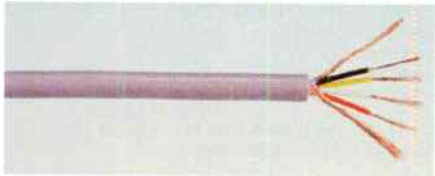
**Specification**  
 Conductors: 130 x 0.07mm x 2 cables  
 Insulation colour: Red/White  
 Core construction: 2 cables + 2 supporting strands  
 Shielding: Mylar foil + bare OFC braid (coverage 85% min.)  
 Overall diameter: 8mm  
 Capacitance: 58.2pF/m  
 Impedance: 81Ω at 1MHz

Retail Unit Price each (inc. VAT).

Order Code	Type 9516	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
EL12N	Hi Grade Audio Cable	£2.970			£3.490
CNS2G 1	Hi Grade Audio Cable	£127.650	£115.000	£105.000	£149.990

**Multi-Core Cables**

**Four-Core Overall Lapped Screen**



A four-core cable with an overall lapped screen available with two different colour outer sheaths. Stranded cores 7/0.12mm copper conductor with red, white, black and yellow PVC insulation, lap screened and sheathed overall in grey or black PVC. Overall diameter: 4.5mm. Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 117	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XR92A	Lapped 4-Core Grey	£0.340			£0.400
PB41U 6	100m Lap 4-Core Grey	£25.520	£21.500	£18.950	£29.990
XR91Y	Lapped 4-Core Black	£0.340			£0.400
PB40T 6	100m LAP 4-Core Black	£25.520	£22.750	£20.950	£29.990

**Four-Core Individually Screened**



A four-core screened cable having each core individually screened, thus keeping crosstalk to a minimum. Stranded cores, 7/0.1mm copper conductor with yellow, black, red and white polythene insulation, lap screened and sheathed overall in grey PVC.

Overall size: 5mm  
 Nom. conductor area: 0.055mm<sup>2</sup>  
 Capacitance (core to screen): 95pF/m  
 Sold per metre (max. length in one piece 50m) and on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 136	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XR23A	Cable Quad	£0.502			£0.590
PA18U 4	50m Cable Quad	£16.580	£15.000	£13.750	£19.490

**Four-Core Overall Braided Screen**



A four-core screened cable with particular application in quadraphonic equipment where crosstalk is not a problem. Stranded cores, 7/0.1mm tinned copper conductor with PVC insulation (red, blue, green and yellow), wrapped overall in Melinex tape then covered with a braided screen and sheathed in grey PVC.

Overall diameter: 3.15mm  
 Nominal conductor area: 0.055mm<sup>2</sup>  
 Maximum working voltage: 250V RMS  
 Maximum current per core: 0.25A  
 Capacitance (core to screen): 190pF/m  
 Sold per metre (max. length in one piece 100m).

Retail Unit Price each (inc. VAT).

Order Code	Type 228	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
XR25C	Multi-Core 4-Way	£0.510	£0.420	£0.380	£0.600

**Multi-Core Screened Cable**



A range of multi-core cables having overall screens. Stranded cores 7/0.1mm tinned copper conductors with PVC insulation wrapped overall in Melinex tape then covered with a braided screen and sheathed in grey PVC.

Cables conform to DEF STAN 61-12 parts 4 and 5.  
 Nominal conductor area: 0.055mm<sup>2</sup>  
 Maximum working voltage: 250V RMS  
 Maximum current per core: 0.25A  
 Capacitance (core to screen): 190pF/m

**Core colours:**  
 1 Red  
 2 Blue  
 3 Green  
 4 Yellow  
 5 White  
 6 Black  
 7 Brown  
 8 Violet  
 9 Orange  
 10 Pink  
 11 Turquoise  
 12 Grey  
 19 Yellow/Blue  
 20 White/Blue  
 21 Blue/Black  
 22 Orange/Blue  
 23 Yellow/Green  
 24 White/Green  
 25 Orange/Green  
 26 Green/Blue  
 27 Grey/Blue  
 28 Green/Black  
 29 Grey/Green  
 30 Yellow/Brown

- 13 Red/Blue
- 14 Green/Red
- 15 Yellow/Red
- 16 White/Red
- 17 Red/Black
- 18 Red/Brown
- 31 White/Brown
- 32 Brown/Black
- 33 Grey/Brown
- 34 Yellow/Violet
- 35 Violet/Black
- 36 White/Violet

The following sizes are available:

- 6-core (overall diameter 3.55mm)
  - 9-core (overall diameter 4.25mm)
  - 15-core (overall diameter 5.35mm)
  - 25-core (overall diameter 6.3mm)
  - 36-core (overall diameter 6.9mm)
- Sold per metre (max. length in one piece 100m).

Retail Unit Price each (inc. VAT).

Order Code	Type 230	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
XR26D	Multi-Core 6-Way	£0.595	£0.480	£0.420	£0.700
XR27E	Multi-Core 9-Way	£0.765	£0.620	£0.560	£0.900
XR28F	Multi-Core 15-Way	£1.020	£0.890	£0.780	£1.200
XR46A	Multi-Core 25-Way	£1.530	£1.250	£1.110	£1.800
XR54J	Multi-Core 36-Way	£1.870	£1.560	£1.370	£2.200

**Screened Multi-Core Cable 1A Type**



High quality multi-core cables having stranded 7/0.2mm tinned copper conductors with PVC insulation, wrapped overall in Melinex tape and screened with a tinned copper wire braid, and sheathed in black PVC. Current carrying capacity of each core is 1A and the cable is ideal for low power applications with a noise suppression screen. All cables except MJ79L, MJ82D, MJ83E, MJ85G and MJ87U conform to DEF STAN 61-12 parts 4 and 5. These cables are, however, manufactured in accordance with the parameters listed within this specification.

**Specification**

Nominal conductor area: 0.22mm<sup>2</sup>  
 Maximum working voltage: 440V AC rms  
 Maximum current per core: 1A  
 Capacitance, core to screen: 130pF/m

**Core colours:**

1 Red, 2 Blue, 3 Green, 4 Yellow, 5 White, 6 Black.

Available sizes and overall diameters:

- 2-core 4.1mm
  - 3-core 4.3mm
  - 4-core 4.6mm
  - 6-core 5.9mm
- Sold per 100m reel.

Retail Unit Price each (inc. VAT).

Order Code	Type 245	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MJ78K 5	Cable 7-2-2C 100m	£29.780	£27.500	£25.950	£35.000
MJ79L 6	Cable 7-2-3C 100m	£35.310	£32.300	£30.350	£41.500
MJ80B 8	Cable 7-2-4C 100m	£37.870	£35.000	£32.500	£44.500
MJ81C 12	Cable 7-2-6C 100m	£55.310	£48.500	£45.300	£65.000

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 e-mail: Sales@maplin.co.uk

## Overall Foil and Braided Screen Multi-Core Cable



A range of double screened (foil and braid) multi-core cables; which are ideal as computer data cables, e.g. RS232 & Centronics interface standards. Each core is 7/0.2mm tinned copper, covered with colour coded PVC insulation. The cores are double screened in overlapping metal foil (inner screen) and braided wire screen (outer screen). Outer insulation is grey PVC. Available in 4, 8, 12, 20 and 36-way.

### Core colours:

- |                 |                      |
|-----------------|----------------------|
| 1 White         | 19 Blue/Black        |
| 2 Yellow        | 20 Purple/Black      |
| 3 Orange        | 21 Brown/Black       |
| 4 Green         | 22 Grey/Black        |
| 5 Red           | 23 Light Green/Black |
| 6 Blue          | 24 Pink/Black        |
| 7 Purple        | 25 Light Blue/Black  |
| 8 Brown         | 26 Black/White       |
| 9 Grey          | 27 Yellow/White      |
| 10 Light Green  | 28 Orange/White      |
| 11 Pink         | 29 Green/White       |
| 12 Light Blue   | 30 Red/White         |
| 13 Black        | 31 Blue/White        |
| 14 White/Black  | 32 Purple/White      |
| 15 Yellow/Black | 33 Brown/White       |
| 16 Orange/Black | 34 Grey/White        |
| 17 Green/Black  | 35 Light Green/White |
| 18 Red/Black    | 36 Pink/White        |

Note: where two colours are shown; the first is the main colour and the second is the stripe colour.

### Specification

Voltage rating: 440V RMS  
 Maximum current per core: 1A  
 Nominal conductor area: 0.22mm<sup>2</sup>  
 Operating temperature: 70°C max.  
 Overall diameter:  
 4-core: 4.3mm  
 8-core: 6.3mm  
 12-core: 6.9mm  
 20-core: 8.6mm  
 36-core: 10.8mm  
 Sold per metre (max. length in one piece 100m).  
 Also available on 100m reels.

### Retail Unit Price each (inc. VAT).

Order Code	Type 233	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XS18U	4 Core Scnd 7/0.2mm	£0.714			£0.840
XS18V	8 Core Scnd 7/0.2mm	£0.893			£1.050
XS20W	12 Core Scnd 7/0.2mm	£1.090			£1.290
XS21X	20 Core Scnd 7/0.2mm	£1.430			£1.690
XS22Y	36 Core Scnd 7/0.2mm	£2.110			£2.490
PB44X	7 100m 4 Core Scnd	£42.540	£37.500	£34.200	£49.990
PB45Y	13 100m 8 Core Scnd	£62.110	£56.000	£52.000	£72.990
PB46A	18 100m 12 Core Scnd	£77.430	£72.000	£66.000	£90.990
PB47B	25 100m 20 Core Scnd	£110.620	£102.000	£94.000	£129.990
PB48C	44 100m 36 Core Scnd	£146.370	£135.000	£127.000	£171.990

## Non-Screened Multi-Core Cable 1A Type



A range of non-screened multi-core cables having stranded cores of 7/0.2mm tinned copper wire in 2 to 36-way. The conductors have colour coded PVC insulation, wrapped overall in Melinex tape and sheathed in black PVC. The cable is suitable for low power applications where the current does not exceed 1A.

All cables except MJ73Q conform to DEF STAN 61-12 parts 4 and 5. Cable MJ73Q is, however, manufactured in accordance with the parameters listed with this specification.

### Specification

Nominal conductor area: 0.22mm<sup>2</sup>  
 Maximum working voltage: 440V AC r.m.s.  
 Maximum current per core: 1A  
 Capacitance, core to core: 75pF/m

### Core colours:

- 1 Red, 2 Blue, 3 Green, 4 Yellow, 5 White, 6 Black,

7 Brown, 8 Violet.  
 Available sizes and overall diameters:  
 2-core 3.6mm  
 3-core 3.8mm  
 4-core 4.1mm  
 6-core 4.8mm  
 8-core 5.8mm  
 Sold per 100m reel.

### Retail Unit Price each (inc. VAT).

Order Code	Type 237	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MJ69A	4 Cable 7-2-2A 100m	£18.710	£17.350	£16.100	£21.990
MJ70M	4 Cable 7-2-3A 100m	£17.010	£16.050	£15.500	£19.990
MJ71N	5 Cable 7-2-4A 100m	£21.690	£20.250	£19.150	£25.490
MJ72P	7 Cable 7-2-6A 100m	£37.010	£33.500	£29.500	£43.490
MJ73Q	10 Cable 7-2-8A 100m	£34.030	£32.000	£30.000	£39.990

## Non-Screened Multi-Core Cable 2.5A Type



Higher current multi-core cable having 16/0.2mm stranded tinned copper cores with PVC insulation wrapped overall in Melinex tape, then sheathed in black PVC. Current carrying capacity is 2.5A. All cables except MJ90X conform to DEF STAN 61-12 parts 4 and 5. Cable MJ90X is, however, manufactured in accordance with the parameters listed within this specification.

### Specifications

Nominal conductor area: 0.5mm<sup>2</sup>  
 Maximum working voltage: 440V AC r.m.s.  
 Maximum current per core: 2.5A  
 Capacitance, core to core: 95pF

### Core colours:

- 1 Red, 2 Blue, 3 Green, 4 Yellow, 5 White, 6 Black, 7 Brown, 8 Violet.

### Available sizes and overall diameters:

- 2-core 5.9mm  
 3-core 6.2mm  
 4-core 6.7mm  
 6-core 7.7mm  
 8-core 8.9mm  
 Sold per 100m reel.

### Retail Unit Price each (inc. VAT).

Order Code	Type 241	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MJ90X	7 Cable 16-2-2A 100m	£31.480	£28.250	£25.950	£36.990
MJ91Y	9 Cable 16-2-3A 100m	£28.070	£26.350	£25.400	£32.990
MJ92A	12 Cable 16-2-4A 100m	£34.030	£32.600	£31.250	£39.990
MJ93B	16 Cable 16-2-6A 100m	£39.560	£36.850	£34.250	£46.490
MJ94C	21 Cable 16-2-8A 100m	£51.480	£47.250	£44.500	£60.490

## Coiled Screened Cables

### Coiled Screened Cable



A single screened extendible cable with tinned prepared ends. Length 6m. Sheath available in Red and Black.

### Retail Unit Price each (inc. VAT).

Order Code	Type 248	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
BH30H	Scr Stretchflex Blk	£5.310	£4.850	£4.550	£5.250
BH34M	Scr Stretchflex Red	£5.290	£4.850	£4.550	£5.150

## Twin Screened Coiled Cable



A coiled extendible cable with two overall screened conductors in a black PVC sheath. Length 6m.

### Retail Unit Price each (inc. VAT).

Order Code	Type 251	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
HQ49D	Twin Stretchflex	£6.170	£5.550	£5.200	£7.250

## RF Cables

### 50Ω Screened Cable RG58



A screened RF cable having a stranded core 17/0.19mm tinned copper conductor with a solid polyethylene insulator and a braided copper screen. Sheathed overall in black PVC.

Overall diameter: 5mm  
 Centre conductor: 17/0.19mm  
 Nominal impedance: 50Ω  
 Attenuation per 10m: 2dB at 100MHz  
 7.6dB at 1000MHz

Sold per metre (max. length in one piece 100m).  
 Also available on 100m reels.

### Retail Unit Price each (inc. VAT).

Order Code	Type 256	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XS51F	50 Ohm Cable	£0.357			£0.420
PB64U	5 100m 50 Ohm Cable	£21.690	£17.750	£15.950	£25.490

## Low Capacitance Screened Cable/URM76



A high quality screened cable for high performance audio connections. Stranded core, 7/0.32mm plain copper conductor with polythene insulation, braided screen and sheathed overall in black PVC.

Overall diameter: 5mm  
 Capacitance (core to screen): 100pF/m  
 Maximum voltage: 2.0kV  
 Nominal impedance: 50Ω  
 This cable is also suitable for use at RF and has characteristics superior to UniRadio UR76/RG58C.  
 Attenuation per 10m: 2.0dB at 100 MHz  
 7.6dB at 1000 MHz

Sold per metre (max. length in one piece 100m).  
 Also available on 100m reels.

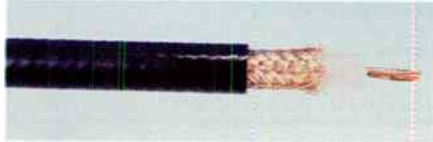
### Retail Unit Price each (inc. VAT).

Order Code	Type 254	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XR19V	Low C Cable URM76	£0.417			£0.490
PB15R	8 100m Low C Cable	£31.480	£29.750	£28.250	£36.990





## Heavy Duty RF Cable/URM67



A high quality co-axial cable ideal for use as a transmitter up-lead. Stranded core, 7/0.77mm copper conductor with solid polythene insulation, braided screen and sheathed overall in black PVC.

Overall diameter: 10.3mm  
Capacitance (core to screen): 100pF/m  
Max. voltage: 6.5kV  
Nominal impedance: 50Ω  
Attenuation per 10m: 0.68dB at 100MHz  
2.52dB at 1000MHz

Sold per metre (max. length in one piece 50m). Also available on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XR63T	URM67 RF Cable	£1.350			£1.590
PB16S	16.50m URM67 RF Cable	£52.750	£47.250	£43.500	£61.990

## 75Ω Screened Cable RG59B/U



A screened cable having an impedance of 75Ω, single solid centre conductor, high density polyethylene insulator and braided copper screen. Sheathed overall in black PVC.

Overall dia.: 6mm  
Centre conductor: 1/0.65mm  
Nominal impedance: 75Ω  
Attenuation per 10m: 1.3dB at 100MHz  
4.6dB at 1000MHz

Sold per metre (max. length in one piece, 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XSS2G	75 Ohm Cable	£0.382			£0.450
PB65V	75 Ohm Cable 100m	£24.240	£19.250	£17.000	£28.490

## Low Loss RF Cable URM70



High quality coaxial cable suitable for general VHF and UHF use. Stranded core, 7/0.19mm plain copper conductor with high density polyethylene insulation. Screen is braided plain copper sheathed overall in black PVC.

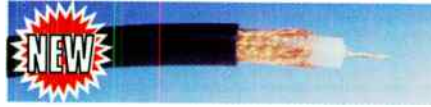
Overall diameter: 5.8mm  
Impedance: 75Ω  
Capacitance (core to screen): 67pF/metre  
Max. voltage: 14kV DC, 1.8kV peak RF  
Attenuation per 10m: 1.5dB at 100MHz  
5.2dB at 1000MHz

Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XSS2K	URM70 Cable	£0.417			£0.490
PB57M	URM70 Cable 100m	£24.670	£20.100	£18.500	£28.990

## RG-11A/U Coaxial Cable



High quality co-ax cable to industry standard MIL-C-17/6B

Overall dia: 7.2mm  
Inner Conductor: 7/0.404mm  
Nominal impedance: 75Ω  
Attenuation: 21 dB/Km at 10MHz

Sold per metre (max. length in one piece 100m)  
Also available on 100m reels

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	1+
GG26F	49056 RG11A/U Black	£1.260		£1.490
GG29G	RG11A/U 100m Black	£84.250		£99.000

## RG62A/U Coaxial Cable



High quality coax cable to industry standard MIL-C-17/30D.

Overall dia: 3.71mm  
Inner conductor: 1/0.65mm  
Nominal impedance: 90Ω  
Attenuation: 33db/Km at 10MHz

Sold per metre (max. length in one piece 100m)  
Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	1+
GG32K	49060 RG62A/U Black	£0.502		£0.590
GG33L	RG62A/U 100m Black	£32.330		£37.990

## Radio, TV & Satellite

### Miniature Co-ax



A very high quality miniature co-ax cable suitable for short interconnections between, for example, computer and monitor or TV, video recorders and similar applications. The cable has a 1/0.4mm tinned copper conductor with expanded foam insulation, a good quality braided screen and a thin outer grey sheath.

Overall dia. 2.8mm  
Nominal impedance: 75Ω  
Sold per metre (max. length in one piece 100m).  
Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XR88V	Miniature Coax	£0.357			£0.420
PB19V	100m Miniature Coax	£23.820	£19.750	£17.950	£27.990

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Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

## Low-Loss Co-ax



A low-loss co-axial cable intended for use as aerial downleads for UHF television sets. Solid core, 1/1.0mm copper conductor with cellular polythene insulation, braided screen and sheathed overall in brown and white PVC.

Overall dia: 6.6mm  
Nom. conductor area: 0.786mm<sup>2</sup>

Capacitance (core to screen): 56pF/m  
Nominal impedance: 75Ω  
Attenuation per 10m: 0.75dB at 100MHz  
2.6dB at 900MHz

Sold per metre (max. length in one piece 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XR29G	Brown Low-Loss Coax	£0.289			£0.340
PA21X	100m Low Loss Coax	£18.710	£17.250	£15.990	£21.990
XR67U	White Low-Loss Coax	£0.289			£0.340
PA78K	100m L.Loss Coax Wht	£18.710	£17.250	£15.990	£21.990

## Satellite TV Cable FT100



Superior quality double-screened, ultra low loss coaxial cable where screening comprises a continuous copper-mylar foil beneath a conventional braided copper screen. 5-celled polyethylene insulator. Sheathed overall in black, or white PVC. Compatible with CT100 cable and connectors

Overall dia.: 6.6mm  
Nom. conductor area: 1mm<sup>2</sup>  
Nominal impedance: 75Ω  
Attenuation per 100m: 6.4dB at 100MHz  
21dB at 1000MHz

Sold per metre (max. length in one piece, 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XS16S	Sat Coax Cable Black	£0.680			£0.800
PB42V	12 100m Sat Coax Black	£35.730	£31.500	£28.250	£41.990
XS17T	Sat Coax Cable White	£0.680			£0.800
PB43W	12 100m Sat Coax White	£35.730	£31.750	£28.750	£41.990

## Low Loss Satellite Cable FT125



Upated version of XS16S. 5-celled polyethylene insulator. Sheathed overall in black PVC. Compatible with CT125 cable and connectors.

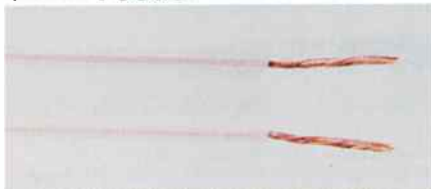
Overall dia.: 7.8mm  
Nom. conductor area: 1.25mm<sup>2</sup>  
Nominal impedance: 75Ω  
Attenuation per 100m: 4.9dB at 100MHz  
18.74dB at 1000MHz

Sold per metre (max. length in one piece, 100m) and on 100m reels. A 6mm F plug fits this cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XS46A	LL Sat Cable	£0.800			£0.940
PB59P	10 LL Sat Cable 100m	£51.050	£46.750	£41.950	£59.990

## 300Ω Feeder



A balanced feeder cable intended for use as aerial downloads on European, Japanese and American tuners having no 75Ω input. Stranded cores, 7/0.23mm copper conductors with clear polythene insulation.

Overall size: 9.8 x 2mm

Nom. conductor area: 0.34mm<sup>2</sup>

Capacitance

(core to core): 13.2pF/m

Nominal impedance: 300Ω

Attenuation per 10m: 0.12dB at 100MHz

1.68dB at 1000MHz

Sold per metre (max. length in one piece 100m). Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 295	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XR31J	Bal Feeder	£0.289	£0.250	£0.230	£0.340
PB20W	100m Bal Feeder	£17.010	£14.550	£12.800	£19.990

## Video Cables

### 9-Way Overall Screened

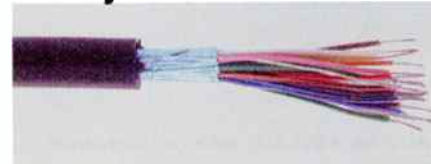


Contains a bundle of 9 wires colour coded Black, Brown, Red, Orange, Green, Yellow, Blue, Purple and Grey. Each conductor has 7/0.12mm tinned strands. The whole group is wrapped with a metallised mylar film acting as the screen, which is in contact with a single uninsulated tinned stranded earth conductor with 7/0.155mm strands. Ideal for multi-way audio signals where crosstalk is not a problem. Outer sheath is soft matt black PVC to an overall diameter of 6mm. A cable suitable for making up 'Composite Video and Audio' Peritel cables. This cable should be used for short runs only, otherwise crosstalk between conductors may become a problem. Sold per metre (max. length in one piece, 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 297	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XS42V	9 Way Cable	£0.587			£0.690
PB66Y	10 9 Way Cable 100m	£29.770	£25.750	£23.500	£34.990

### 20-Way Overall Screened



Comprising a bundle of 20 insulated wires colour coded Black, Brown, Red, Orange, Yellow, Green, Blue, Violet, Grey, White, Brown/Black, Red/Black, Orange/Black, Yellow/Black, Grey/Black, Blue/Black, Violet/Black, Pink, Sky Blue and Cyan. Each wire has 7/0.12mm tinned strands. The whole group is wrapped with a metallised mylar film acting as the screen, which is in contact with a single uninsulated tinned stranded earth conductor of 7/0.155mm strands. Outer sheath is soft matt black PVC to an overall diameter of 9mm.

A cable suitable for making up 'Universal' Peritel cables, where all 21 pins are to be connected. This cable should be used for short runs only, otherwise

crosstalk between conductors may become a problem. Sold per metre (max. length in one piece, 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 299	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XS44X	20 Way Cable	£0.800			£0.940
PB70M	21 20 Way Cable 100m	£42.540	£38.250	£34.500	£49.990

### 2 Screened Cables, One 4-Way Screened, One Single Wire



Contains one red and one blue individually lap-screened, stranded conductor, with high density polyethylene insulators which resist deformation, suitable for two-way video signal traffic. Centre cores are 10/0.115mm strands, and are untinned bare copper as are the screens. Another separate bundle comprises single Red, Blue, Yellow and White insulated, bare copper 10/0.11mm stranded wires, sheathed overall with a metallised film screen in contact with an uninsulated stranded conductor which is soldered together into a solid core, and then in grey PVC. The whole cable is completed by one other isolated, single white 10/0.115mm stranded bare copper wire. The whole group is then wrapped in metallised mylar film, which again includes an uninsulated and soldered, stranded conductor as an earth wire. Outer sheath is soft matt black PVC to an overall diameter of 8mm. A cable suitable for making up 'Composite Video and Audio' Peritel cables, where composite Video, Audio and Function Switching connections are to be provided. Individually screened conductors should be used for video in and out signals. 4-way screened conductors should be used for L+R Audio in and out signals. The remaining single conductor should be used for function switching.

Sold per metre (max. length in one piece, 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 298	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XS41U	2 x Screen Cable	£0.842			£0.990
PB67X	14 2 x Screen Cable 100m	£45.090	£39.750	£36.250	£52.990

### 6 Screened Cables, One 4-Way Screened, Four Single Wires



An expanded version of XS41U having Black, Red, Yellow, Green, Blue and White individually lap-screened, stranded cores. Two of the cores with high density polyethylene insulators, also suitable for video signals, the rest with PVC. Centre cores are 10/0.115mm strands, and are untinned bare copper as are the screens. Similarly a separate bundle is also provided comprising single Red, Black, Yellow and White insulated, bare copper 7/0.12mm stranded wires, sheathed overall with a metallised film screen in contact with an uninsulated stranded conductor soldered into a solid core, and then in grey PVC. Four independent insulated Blue, Red, Yellow and White 10/0.115mm stranded bare copper wires are also provided. The whole bundle is then wrapped in metallised mylar film, which again contacts an uninsulated and soldered, stranded conductor. Outer sheath is soft matt black PVC to an overall diameter of 10.5mm. A cable suitable for making up 'Universal' Peritel cables, where all inputs and outputs are to be connected. The additional individually screened conductors should be used for

R, G, B and blanking signals, whilst the additional individual single conductors should be used for data communication signals. Other conductors should be connected as type 3 above. Sold per metre (max. length in one piece, 100m) and on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 293	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XS43W	6 x Screen Cable	£1.560			£1.840
PB69A	28 6 x Screen Cable 100m	£102.110	£85.500	£79.600	£119.990

## Sleeving

### Binding Sleeves

Hellermann



Helsyn binding sleeves for uses including insulating wire joints, pin connections soldered to wires and insulating the screen on coaxial cables. In order to fix the sleeves to the wire, the Sleeve Fitting Tool and Hellerine Oil are required. The sleeves are available in four different colours: black, white, pink and green and in four sizes. Sold in packs of 100. Int.

Dia mm.	Length mm.
1.5	20
2.0	20
3.0	25
5.0	25

Retail Unit Price each (inc. VAT).

Order Code	Type 294	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CC97F	Sleeving Black.15	£1.230	£1.150	£1.110	£1.450
CC98G	Sleeving Black.20	£1.360	£1.280	£1.230	£1.600
CC99H	Sleeving Black.30	£1.480	£1.390	£1.330	£1.750
CJ00A	Sleeving Black.50	£2.510	£2.320	£2.220	£2.950
CJ45Y	White.15 Sleeving	£1.230	£1.150	£1.110	£1.450
CJ46A	White.20 Sleeving	£1.360	£1.280	£1.230	£1.600
CJ47B	White.30 Sleeving	£1.480	£1.390	£1.330	£1.750
CJ48C	White.50 Sleeving	£2.510	£2.320	£2.220	£2.950
CJ76H	Pink.15 Sleeving	£1.230	£1.150	£1.110	£1.450
CJ93B	Pink.20 Sleeving	£1.360	£1.280	£1.230	£1.600
CR50E	Pink.30 Sleeving	£1.480	£1.390	£1.330	£1.750
CW06G	Pink.50 Sleeving	£2.510	£2.320	£2.220	£2.950
CW46A	Green.15 Sleeving	£1.230	£1.150	£1.110	£1.450
CW47B	Green.20 Sleeving	£1.360	£1.280	£1.230	£1.600
CW48C	Green.30 Sleeving	£1.480	£1.390	£1.330	£1.750
CW49D	Green.50 Sleeving	£2.510	£2.320	£2.220	£2.950

### Sleeve Fitting Tool

Hellermann



The tool for applying sleeving to cable ends. It uses three fixed prongs to open the sleeve. It is used in conjunction with the sleeve oil. The tool is available

in two sizes, type SS (CC80B) for sleeving up to 2.0mm and type S(CJ02C) for sleeving up to 5.0mm diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type 295	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CC80B	Sleeve Fit Tool 2mm	£17.650	£16.500	£15.750	£20.750
CJ02C	Sleeve Fit Tool 5mm	£17.650	£16.500	£15.750	£20.750

**Hellerine Sleeve Oil**

Hellermann

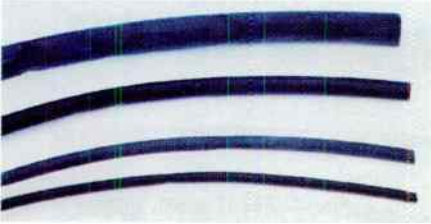
This oil is used with the Sleeve Fitting Tool (CJ02) and the Binding Sleeves. It is supplied in 10 ounce bottles.



Retail Unit Price each (inc. VAT).

Order Code	Type 296	Price each exc. VAT			inc. VAT each
		1+	4+	8+	
CJ01B	Sleeve Oil	£2.460	£2.390	£2.330	£2.900

**Heat-Shrinkable Sleeving**



A heat-shrinkable crosslinked polyolefin material which will shrink to 50% of its original diameter when heated over 121°C. Sleeving has high tensile strength (12MPa). It is resistant to solvents, acids, alkalis, fuel and oil. The continuous operating temperature should be between -55°C and +125°C. Self-extinguishing. Breakdown voltage >7kV. Colour is black.

Type	Size as supplied (bore)	Size after shrinkage (min)	Wall thickness (mm)	Break-down voltage
CP16	1.6mm	0.8mm	0.46mm	7kV
CP24	2.4mm	1.2mm	0.51mm	8.6kV
CP32	3.2mm	1.6mm	0.51mm	8.6kV
CP48	4.8mm	2.4mm	0.51mm	8.6kV
CP64	6.4mm	3.2mm	0.64mm	11kV
CP95	9.5mm	4.8mm	0.64mm	11kV
CP127	12.7mm	6.4mm	0.64mm	11kV

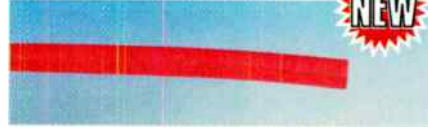
Supplied in 1m lengths and in 5m hanks.

Retail Unit Price each (inc. VAT).

Order Code	Type 301	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BF86T	Heat Shrink CP 16	£0.842			£0.990
PB21X	5m Heat Shrink CP16	£3.530	£2.800	£2.550	£4.150
BF87U	Heat Shrink CP 24	£0.893			£1.050
PB22Y	5m Heat Shrink CP24	£3.870	£3.100	£2.800	£4.550
BF88V	Heat Shrink CP 32	£0.936			£1.100
PB23A	5m Heat Shrink CP32	£3.950	£3.150	£2.850	£4.650
BF89W	Heat Shrink CP 48	£1.020			£1.200
PB24B	5m Heat Shrink CP48	£4.380	£3.450	£3.150	£5.150
BF90X	Heat Shrink CP 64	£1.140			£1.360
PB25C	5m Heat Shrink CP64	£4.970	£3.950	£3.600	£5.850
YR17T	Heat Shrink CP 95	£1.260			£1.490
PB26D	5m Heat Shrink CP95	£5.570	£4.650	£4.020	£6.550
YR18U	Heat Shrink CP 127	£1.520			£1.790
PB27E	5m Heat Shrink CP127	£6.620	£5.450	£4.900	£7.790

**Coloured Heat Shrink**

Canusa



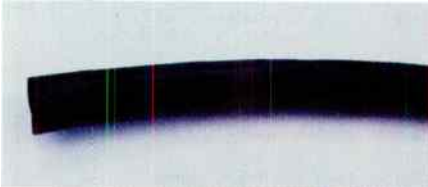
Commercial grade, general purpose heat-shrinkable polyolefin tubing. Ideal for lightweight cable harnessing, insulating, identification and colour coding. This flame retardant tubing offers good physical, chemical and electrical properties. Continuous operating temperature range -55°C to 125°C

- ★ Standard shrink ratio 2:1
- ★ Flame retardant
- ★ Diameter range 1.6mm to 12.7mm
- ★ 5 Standard colours
- ★ Approved to Standard: UL 224

Retail Unit Price each (inc. VAT).

Order Code	Type 17383	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GD50E	H/Shrink 1.6 Red	£0.842			£0.990
GD51F	H/Shrink 2.4 Red	£0.893			£1.050
GD52G	H/Shrink 3.2 Red	£0.936			£1.100
GD55K	H/Shrink 4.8 Red	£1.020			£1.200
GD57M	H/Shrink 6.4 Red	£1.140			£1.390
GD58N	H/Shrink 9.5 Red	£1.260			£1.490
GD64U	H/Shrink 12.7 Red	£1.520			£1.790
GD65V	H/Shrink 1.6 White	£0.842			£0.990
GD64E	H/Shrink 2.4 White	£0.893			£1.050
GE14Q	H/Shrink 3.2 White	£0.936			£1.100
GE65V	H/Shrink 4.8 White	£1.020			£1.200
GE76H	H/Shrink 6.4 White	£1.140			£1.390
GE97F	H/Shrink 9.5 White	£1.260			£1.490
GF00A	H/Shrink 12.7 White	£1.520			£1.790
GF03D	H/Shrink 1.6 Blue	£0.842			£0.990
GF06G	H/Shrink 2.4 Blue	£0.893			£1.050
GF08J	H/Shrink 3.2 Blue	£0.936			£1.100
GF09K	H/Shrink 4.8 Blue	£1.020			£1.200
GF12N	H/Shrink 6.4 Blue	£1.140			£1.390
GF14Q	H/Shrink 9.5 Blue	£1.260			£1.490
GF15R	H/Shrink 12.7 Blue	£1.520			£1.790
GF16S	H/Shrink 1.6 yellow	£0.842			£0.990
GF18U	H/Shrink 2.4 yellow	£0.893			£1.050
GF19V	H/Shrink 3.2 yellow	£0.936			£1.100
GF21X	H/Shrink 4.8 yellow	£1.020			£1.200
GF22Y	H/Shrink 6.4 yellow	£1.140			£1.390
GF25C	H/Shrink 9.5 yellow	£1.260			£1.490
GF26D	H/Shrink 12.7 yellow	£1.520			£1.790
GF28F	H/Shrink 1.6 Green	£0.842			£0.990
GF29G	H/Shrink 2.4 Green	£0.893			£1.050
GF30H	H/Shrink 3.2 Green	£0.936			£1.100
GF32K	H/Shrink 4.8 Green	£1.020			£1.200
GF33L	H/Shrink 6.4 Green	£1.140			£1.390
GF34M	H/Shrink 9.5 Green	£1.260			£1.490
GF36P	H/Shrink 12.7 Green	£1.520			£1.790

**Low Temperature Heatshrink Tubing**



A range of flexible low temperature shrink polyolefin tubing that is easy to use and is suitable for both electrical and mechanical protection. Ideal for high volume production lines in automotive, domestic appliance and all cable harness manufacture. When heated above 80°C the tubing will shrink, unrestricted, to a minimum of 50% of its supplied diameter. The tubing is resistant to common fluids and solvents. Colour black.

- Specification**  
 Operating temperature: -55°C to +125°C  
 Minimum shrink temperature: 80°C  
 Dielectric strength: 20kV/mm  
 Flammability: non-flame retardant

**Dimensions**

Stock Code	Expanded (after heating above 80°C)	Recovered	Recovered wall thickness
	internal	internal	internal

	dia. mm	max. dia. mm	nominal mm
RZ58N	2.4	1.2	0.51
RZ59P	3.2	1.6	0.51
RZ60Q	4.8	2.4	0.51
RZ61R	6.4	3.2	0.64
RZ65V	9.5	4.8	0.64

Supplied in 1m or 5m lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 4377	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
RZ58N	Low H/Shrink 2.4 1m	£1.180			£1.390
RZ91Y	Low H/Shrink 2.4 5m	£4.890	£4.100	£3.700	£5.750
RZ59P	Low H/Shrink 3.2 1m	£1.260			£1.490
RZ92A	Low H/Shrink 3.2 5m	£5.090	£4.120	£3.720	£5.990
RZ60Q	Low H/Shrink 4.8 1m	£1.400			£1.650
XS45Y	Low H/Shrink 4.8 5m	£5.940	£4.750	£4.200	£6.990
RZ61R	Low H/Shrink 6.4 1m	£1.430			£1.690
XS48C	Low H/Shrink 6.4 5m	£6.540	£5.250	£4.600	£7.690
RZ65V	Low H/Shrink 9.5 1m	£1.690			£1.990
XS49D	Low H/Shrink 9.5 5m	£7.440	£5.990	£5.320	£8.750

**'Earthing' Heatshrink Tubing**



A high performance, flexible multi-purpose, yellow/green, striped heat-shrinkable tubing that is made from a specially formulated polyolefin material, offering excellent electrical, chemical and physical properties. Particularly recommended where the international electrical ground designation is intended. When heated above 120°C the tubing will shrink, unrestricted, to a minimum of 50% of its supplied diameter. The tubing is resistant to common fluids and solvents.

- Specification**  
 Operating temperature: -55°C to +135°C  
 Minimum shrink temperature: 120°C  
 Dielectric strength: 20kV/mm  
 Flammability: highly flame retardant

**Dimensions**

Stock Code	Expanded		Recovered *	
	internal dia. mm	max dia. mm	internal	wall thickness nominal mm
RZ66W	3-2	1-6	1-6	0-51
RZ67X	4-8	2-4	2-4	0-51
RZ68Y	6-4	3-2	3-2	0-64
RZ69A	9-5	4-8	4-8	0-64
RZ70M	12-7	6-4	6-4	0-64

\*After heating to above 120°C  
 Supplied in 1m or 5m lengths

Retail Unit Price each (inc. VAT).

Order Code	Type 4481	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
RZ66W	Earth Shrink 3.2 1m	£1.180			£1.390
XS50E	Earth Shrink 3.2 5m	£5.190	£4.900	£4.590	£6.100
RZ67X	Earth Shrink 4.8 1m	£1.260			£1.490
XS63H	Earth Shrink 4.8 5m	£6.040	£5.750	£5.450	£7.100

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## High Shrink Ratio Tubing



A flexible, flame retardant, heat-shrinkable polyolefin tubing with a 3:1 shrink ratio. The tubing has a thin wall and good resistance to common fluids and solvents. When heated above 120°C the tubing will shrink unrestricted to a minimum of 33% of its supplied diameter. The tubing has an operating temperature range of -55°C to +135°C and a dielectric strength of 20kV/mm minimum. Colour is black. Sold per metre and in 5m lengths.

Type	Internal diameter	Internal diameter maximum	Internal diameter nominal	Wall thickness after shrinkage
CPX300/30	3mm	1mm	0.55mm	
CPX300/60	6mm	2mm	0.65mm	
CPX300/90	9mm	3mm	0.75mm	
CPX300/120	12mm	4mm	0.75mm	

Retail Unit Price each (inc. VAT).

Order Code	Type 300	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
KC41U	CPX300/30	£1.140			£1.350
CK81C	CPX300/30 5m	£5.190	£4.450	£4.100	£6.100
KC42V	CPX300/60	£1.400			£1.650
CK82D	CPX300/60 5m	£6.250	£5.350	£4.950	£7.350
KC44X	CPX300/90	£1.520			£1.790
CK83E	CPX300/90 5m	£7.310	£6.200	£5.700	£8.590
KC43W	CPX300/120	£1.780			£2.100
CK84F	CPX300/120 5m	£8.160	£6.950	£6.350	£9.590

## Heat-Shrinkable Tubing with Adhesive Inner Liner



A semi-flexible tubing with a meltable adhesive inner liner which flows when heated. After shrinkage and upon cooling this provides a moisture proof seal over the product covered. Suitable for a wide range of applications, such as encapsulation of cables, wires, splices, breakouts and components. The tubing has a continuous operating temperature range of -55°C to +110°C and when heated above 120°C will shrink unrestricted to 33% of its supplied diameter. The tubing is flame retardant and has a dielectric strength of 20kV/mm minimum. Supplied in lengths of 1.2m only and colour is black.

Type	Internal diameter as supplied	Internal diameter maximum	Total wall thickness nominal	Meltable wall only thickness
CPA100/30	3mm	1mm	1mm	0.5mm
CPA100/60	6mm	2mm	1mm	0.5mm
CPA100/90	9mm	3mm	1.4mm	0.6mm
CPA100/120	12mm	4mm	1.75mm	0.7mm

Retail Unit Price each (inc. VAT).

Order Code	Type 300	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KC45Y	CPA100/30	£2.380	£1.900	£1.720	£2.800
KC46A	CPA100/60	£3.100	£2.650	£2.400	£3.650
KC47B	CPA100/90	£3.360	£2.950	£2.700	£3.950
KC48C	CPA100/120	£4.210	£3.650	£3.300	£4.950

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## Heatshrinkable Tubing With Adhesive Inner Lining



A semi-flexible tubing with a meltable adhesive inner liner which flows when heated. After shrinkage and upon cooling this provides a moisture proof seal over the product covered. Suitable for a wide range of applications, such as encapsulation of cables, wires, splices, breakouts and components. The tubing has a continuous operating temperature range of -55°C to +110°C and when heated above 120°C will shrink unrestricted to 33% of its supplied diameter. The tubing is flame retardant and has a dielectric strength of 20kV/mm minimum. Supplied in lengths of 1.2m only. Colour - Clear.

Type	Internal diameter as supplied	Internal diameter maximum	Total wall thickness nominal	Meltable wall only thickness
CPA100/30	3mm	1mm	1mm	0.5mm
CPA100/60	6mm	2mm	1mm	0.5mm
CPA100/90	9mm	3mm	1.4mm	0.6mm
CPA100/120	12mm	4mm	1.75mm	0.7mm

Retail Unit Price each (inc. VAT).

Order Code	Type 1253	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VU12N	CPA100/30 HT/Shrink	£2.340	£1.900	£1.720	£2.750
VU13P	CPA100/60 HT/Shrink	£2.930	£2.650	£2.400	£3.450
VU14Q	CPA100/90 HT/Shrink	£3.270	£2.950	£2.700	£3.850
VU15R	CPA100/120 HT/Shrink	£4.040	£3.650	£3.300	£4.750

## Lay Flat Heat-Shrinkable Tubing



A multi-purpose polyvinylchloride heat-shrinkable tubing supplied in lay flat form. The tubing has an ultra thin wall, is semi-rigid and is ideal for covering batteries, capacitors and other components. When heated above 80°C the tubing will shrink unrestricted to a minimum of 45% of its supplied diameter. The tubing has a continuous operating temperature range of -20°C to +85°C, and a dielectric strength of 20kV/mm.

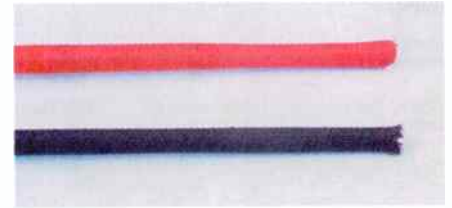
Type	Lay flat width	Wall thickness
CHT16.5	16.5mm	0.07mm
CHT24	24mm	0.1mm
CHT37	37mm	0.1mm
CHT43	43mm	0.1mm
CHT57	57mm	0.15mm
CHT67	67mm	0.15mm

Sold per metre and in 5m lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 310	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BA01B	CHT16.5	£0.272			£0.320
CK85G	CHT16.5 x 5m	£1.190	£1.050	£0.960	£1.400
BA02C	CHT24	£0.340			£0.400
CK86T	CHT24 x 5m	£1.530	£1.320	£1.230	£1.800
BA03D	CHT37	£0.468			£0.550
CK87U	CHT37 x 5m	£1.910	£1.680	£1.560	£2.250
BA04E	CHT43	£0.553			£0.650
CK88V	CHT43 x 5m	£2.510	£2.180	£1.990	£2.950
BA05F	CHT57	£0.808			£0.950
CK89W	CHT57 x 5m	£3.360	£2.950	£2.760	£3.950
BA06G	CHT67	£0.936			£1.100
CK90X	CHT67 x 5m	£3.950	£3.420	£3.180	£4.650

## Heat Resistant Sleevling



An impregnated glass fibre sleeving resistant up to class 'F' (155°C). Bore: 2mm available in Black and Red. Fibreglass based products may cause some skin irritation. It is recommended that gloves are worn when handling this product. Sold only in one metre lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 311	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BL66W	Ht-Resist Sleeve Bk	£0.272	£0.230	£0.200	£0.320
BL70M	Ht-Resist Sleeve Red	£0.272	£0.230	£0.200	£0.320

## Insulating Sleeve



A PVC insulating sleeve suitable for use up to 85°C. Available in the following sizes and colours:

- 1mm bore: Black, Green and Red
  - 2mm bore: Black, Green and Red
  - 4mm bore: Black, Green and Red
  - 6mm bore: Black
  - 10mm bore: Black
- Available in one metre lengths and on 25m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 314	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BH00A	Systoflex 1mm Black	£0.127			£0.150
PB28F	25m Systoflex 1mm Bk	£1.650	£1.450	£1.360	£1.950
BH02C	Systoflex 1mm Green	£0.127			£0.150
PB29G	25m Systoflex 1mm Grn	£1.650	£1.450	£1.360	£1.950
BH03D	Systoflex 1mm Red	£0.127			£0.150
PB30H	25m Systoflex 1mm Red	£1.650	£1.450	£1.360	£1.950
BH06G	Systoflex 2mm Black	£0.170			£0.200
PB31J	25m Systoflex 2mm Bk	£2.420	£2.150	£1.980	£2.850
BH08J	Systoflex 2mm Green	£0.170			£0.200
PB32K	25m Systoflex 2mm Grn	£2.420	£2.150	£1.980	£2.850
BH09K	Systoflex 2mm Red	£0.170			£0.200
PB33L	25m Systoflex 2mm Red	£2.420	£2.150	£1.980	£2.850
BH12N	Systoflex 4mm Black	£0.238			£0.280
PB34M	25m Systoflex 4mm Bk	£3.870	£3.380	£3.120	£4.550
BH14Q	Systoflex 4mm Green	£0.238			£0.280
PB35Q	25m Systoflex 4mm Grn	£3.870	£3.380	£3.120	£4.550
BH15R	Systoflex 4mm Red	£0.238			£0.280
PB36P	25m Systoflex 4mm Red	£3.870	£3.380	£3.120	£4.550
BH42V	Systoflex 6mm Black	£0.306			£0.360
PB37S	25m Systoflex 6mm Bk	£5.060	£4.450	£4.090	£5.950
BH43W	Systoflex 10mm Black	£0.374			£0.440
PB38R 1	25m Systoflex 10mm Bk	£6.510	£5.650	£5.280	£7.650

**Braided Sleeving**



A modified heat stabilised, self-extinguishing, braided sleeving made from nylon 66. The sleeving has a working temperature up to 105°C and a melting point at 256°C. Available in four sizes. Colour grey.

Sold per metre (max. length in one piece 25m).

Type	Nominal diameter (mm)
6TS/3N	3
6TS/4-6N	4
6TS/6-10N	6
6TS/10-14N	10

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
KC97F	Braid 6TS/3N	£0.289	£0.235	£0.205	£0.340
KC98G	Braid 6TS/4-6N	£0.417	£0.360	£0.300	£0.490
KC99H	Braid 6TS/6-10N	£0.587	£0.465	£0.410	£0.690
BA00A	Braid 6TS/10-14N	£0.800	£0.640	£0.565	£0.940

**Flat Copper Braid**



Tinned flat copper braid in current ratings of 10A and 30A suitable for earth bonding straps.

**10AMP**

Width:	2.5mm
Thickness:	0.4mm
CSAmm <sup>2</sup>	0.5
Braid construction:	16/4/0.1mm

**30AMP**

Width:	6.4mm
Thickness:	0.9mm
CSAmm <sup>2</sup>	1.5
Braid construction:	16/6/0.15mm

Sold per meter (max. length in one piece 25m)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YK65V	Copper Braid 10A	£0.417	£0.375	£0.335	£0.490
YK66W	Copper Braid 30A	£0.502	£0.420	£0.370	£0.590

**Cable Splicers**



A range of heat shrinkable cable splicers for use on cables up to 6mm in diameter. Place the cable in the metallic barrel and crimp firmly, then shrink the plastic cover by heating in the usual way. An adhesive on the inside of the plastic cover bonds to the cable, securing and splash proofing the connection. Three different sized crimp connectors are available to suit a wide range of cables. Sold in packs of 10 pieces.

Heat Shrink Colour	Dimensions (mm)	Wire Size (mm <sup>2</sup> )	Max. Cable Diameter (mm)	Order Code
Red	5.3 x 34.5	0.5 to 1.5	4.5	AR60Q
Blue	6 x 36	1.5 to 2.5	5	AR61R
Yellow	7.5 x 41	1.7 to 7	6	AR62S

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AR60Q	Cable Splicer Red	£1.940	£1.880	£1.780	£2.290
AR61R	Cable Splicer Blue	£1.940	£1.880	£1.780	£2.290
AR62S	Cable Splicer Yellow	£1.940	£1.900	£1.830	£2.290

**Cable Blanking Caps**

Canusa

Insulating end caps for covering the exposed ends of multi-way cables and wiring looms which have been cut or where installation of equipment is not yet complete, but in the meantime power needs to be restored. The cap is a plastic tube closed at one end, and having a shallow constriction near the open end to help grip wires or sleeving. On fitting the cap is shrunk onto the cables by heating it to 120°C, and has the capacity to shrink down to less than half its original diameter.



Three sizes are available as follows:

Code	Expanded diameter (as supplied)	Fully shrunken diameter	For cable diameter
MK00A	10mm	4mm	4 to 8mm
MK01B	20mm	7.5mm	8 to 16mm
MK02C	40mm	15mm	14 to 32mm

**Specification**

Tensile strength: 11MPa minimum  
 Ultimate elongation: 300% minimum  
 Continuous operating temperature: -55°C to +100°C  
 Minimum shrink temperature: 120°C  
 Dielectric strength: 8kV/mm minimum  
 Volume resistivity: 1013Ω/cm minimum  
 Low temperature flexibility: Does not crack at -50°C  
 High temperature resistance: Does not crack or soften  
 Water absorption: 2% maximum  
 The caps are resistant to fungus formation, do not contain elements that are corrosive to copper and are self-extinguishing.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MK00A	End Cap 10/4	£0.553	£0.520	£0.500	£0.660
MK01B	End Cap 20/8	£0.595	£0.550	£0.530	£0.700
MK02C	End Cap 40/15	£1.870	£1.720	£1.620	£2.200

**Cable Markers**

**Wire Markers**



A range of wire markers used for identifying cables, in the form of a 'C' shaped ring which is simply pushed onto the wire required. Fast and easy to fit. The chevron shaped marker is flexible and the tongue arrangement adjusts itself to fit cable insulation between 1.3 to 3mm diameter without sliding. The material is finest, soft grade, durable PVC that will resist oil, grease, acid abrasion and other chemicals. The maximum in-service temperature is 85°C. Bold, black print on a yellow background shows your codes plainly, and any combination of numbers can be composed,

including letters if desired, in any sequence by using several markers together side-by-side. 10 different legends are available: all numbers '0' to '9'. Sold in strips of 20 of each legend. If ordering a quantity of 1,000, supplied in one length on a reel.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
UM36Q	20 Cable Markers-0	£0.204	£0.175	£0.155	£0.240
UM36P	20 Cable Markers-1	£0.204	£0.175	£0.155	£0.240
UM37S	20 Cable Markers-2	£0.204	£0.175	£0.155	£0.240
UM38R	20 Cable Markers-3	£0.204	£0.175	£0.155	£0.240
UM39N	20 Cable Markers-4	£0.204	£0.175	£0.155	£0.240
UM40T	20 Cable Markers-5	£0.204	£0.175	£0.155	£0.240
UM41U	20 Cable Markers-6	£0.204	£0.175	£0.155	£0.240
UM42V	20 Cable Markers-7	£0.204	£0.175	£0.155	£0.240
UM43W	20 Cable Markers-8	£0.204	£0.175	£0.155	£0.240
UM44X	20 Cable Markers-9	£0.204	£0.175	£0.155	£0.240

**Self Laminating Write-On Markers**

Brady



These booklets contain labels that provide protected identification for cables. Part of each label may be written on, the label is then affixed to the cable and the transparent remainder is wound over the legend. The self-laminating film provides a protected marking with good solvent and abrasion resistance.

Part No	Label Size (mm)	Write-On Area (mm)	Labels Per Book	Order Code
PWS-PK-14	38 x 12	19 x 12	180	BN62S
PWC-PK-3	76 x 25	25 x 19	60	BN63T
PWC-PK-6	152 x 25	25 x 25	30	BN64U

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BN62S	Cable Marker 38x12	£11.050	£10.550	£10.100	£12.990
BN63T	Cable Marker 76x25	£11.050	£10.550	£10.100	£12.990
BN64U	Cable Marker 152x25	£11.050	£10.550	£10.100	£12.990

## Vinyl Cloth Wire Marker Books

Brady



These booklets contain pre-cut strips of wire markers and terminal markers printed on the popular vinyl cloth material which provides very durable marking resistance to moderate amounts of oil and solvents.

Part No	Legend	Labels Per Book	Order Code
PWM-PK-1	0 to 9	45	BN65V
PWM-PK-3	1 to 45	10	BN66W

Retail Unit Price each (inc. VAT).

Order Code	Type 8372	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BN65V	Wire Markers 0 To 9	£10.200	£9.700	£9.280	£11.990
BN66W	Wire Markers 1 To 45	£10.200	£9.700	£9.280	£11.990

## Cable Ties

### Re-usable Cable Tie



A locking re-usable cable tie. Length: 100mm (4in.).

Retail Unit Price each (inc. VAT).

Order Code	Type 333	Price each exc. VAT			inc. VAT each
		1+	50+	250+	1+
RK59P	Re-Usable Cable Tie	£0.076	£0.049	£0.034	£0.090

### Releasable Cable Ties



Tie-wraps which can be quickly and easily undone for access to wiring and then re-used. The operating principle is identical to ordinary cable ties except that a lever is included which if depressed releases the catch.

Length(mm) Max dia. (mm)  
 125 33  
 150 38  
 200 51  
 300 84  
 All types are 8mm wide.

Retail Unit Price each (inc. VAT).

Order Code	Type 333	Price each exc. VAT			inc. VAT each
		1+	50+	250+	
JY74R	Rel Tie 125	£0.093	£0.054	£0.045	£0.110
JY75S	Rel Tie 150	£0.110	£0.070	£0.055	£0.130
JY76H	Rel Tie 200	£0.127	£0.090	£0.065	£0.150
JY77J	Rel Tie 300	£0.144	£0.107	£0.080	£0.170

## Self-Locking Cable Ties

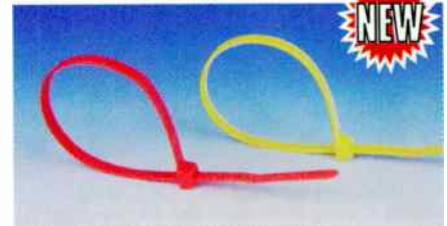


Self-locking cable ties for simple and quick binding of cables or components. Moulded in natural colour nylon, they are extremely strong and flame resistant to UL94 V2. Simply slip a tie-wrap around the bundle, thread up through head, pull tight and cut off. Available in six sizes in packs of 100 or individually. Dimensions in mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 8239	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BF91Y	Tie-Wrap 100	£0.068			£0.080
BF92A	Tie-Wrap 142	£0.076			£0.090
BF93B	Tie-Wrap 203/2.5	£0.102			£0.120
FD99H	Tie-Wrap 203/4.6	£0.127			£0.150
FE00A	Tie-Wrap 385	£0.153			£0.180
FP16S	100pk Tie-Wrap 100	£2.540	£1.490	£1.280	£2.990
FP17T	100pk Tie-Wrap 142	£2.970	£1.980	£1.690	£3.490
FP18U	100pk TieWrp 203/2.5	£3.390	£2.380	£2.020	£3.990
FP19V	100pk TieWrp 203/4.6	£4.240	£3.020	£2.550	£4.990
RY13P	100Pk Tie-Wrap 300	£3.820	£3.020	£2.670	£4.490
FP20W	100pk Tie-Wrap 385	£6.450	£4.650	£3.900	£7.590

## Coloured Cable Ties



A range of weather resistant self locking cable ties. Moulded in either Red, Green, Blue or Yellow nylon 66 and flame retarded to UL94V-2. High degree of UV stability ensures suitability for external use. Temperature Range -40° to +85°  
 3 sizes available in packs of 100  
 140mm x 3.6mm  
 200mm x 4.8mm  
 295mm x 4.8mm

Retail Unit Price each (inc. VAT).

Order Code	Type 1726K	Price each exc. VAT		inc. VAT each
		1+	1+	
GC91Y	30l Red Cable Tie	£2.110		£2.490
GC93B	30l Green Cable Tie	£2.110		£2.490
GC94C	30l Blue Cable Tie	£2.110		£2.490
GC96E	30l Yellow Cable Tie	£2.110		£2.490
GC97F	50S Red Cable Tie	£3.390		£3.990
GC99H	50S Green Cable Tie	£3.390		£3.990
GD09K	50S Blue Cable Tie	£3.390		£3.990
GD12N	50S Yellow Cable Tie	£3.390		£3.990
GD32K	75S Red Cable Tie	£4.240		£4.990
GD33L	75S Green Cable Tie	£4.240		£4.990
GD36R	75S Blue Cable Tie	£4.240		£4.990
GD39N	75S Yellow Cable Tie	£4.240		£4.990

## Wheel Trim Retaining Ties



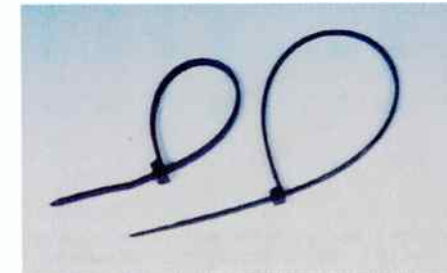
Self-locking ties specifically designed in silver-coloured nylon to discreetly retain those expensive wheel trims. Size: 295mm x 4.8mm

Available in handy packs of 20 and in packs of 100

Retail Unit Price each (inc. VAT).

Order Code	Type 1726I	Price each exc. VAT		inc. VAT each
		1+	1+	
GD43W	Silver CableTie 20Pk	£1.520		£1.790
GD46A	Silver CabTie 100Pk	£4.670		£5.490

## Weather Resistant Cable Ties



A range of weather resistant self locking cable ties..Moulded in black nylon 66 and flame retarded to UL94V-2 these ties are recommended for external use offering a higher degree of uv stability. Temperature Range -40°C to +85°C  
 Six sizes available in packs of 100.



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Sizes and performance are the same as the self locking cable ties.

Retail Unit Price each (inc. VAT).

Order Code	Type 10204	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RY07H	100Pk Black-Tie 100	£2.540	£1.650	£1.410	£2.990
RY08J	100Pk Black-Tie 140	£2.970	£2.150	£1.830	£3.490
RY09K	100Pk Blk-Tie2002.5	£3.390	£2.500	£2.120	£3.990
RY10L	100Pk Blk-Tie2004.8	£4.240	£3.090	£2.610	£4.990
RY11M	100Pk Black-Tie 300	£3.820	£3.020	£2.670	£4.490
RY12N	100Pk Black-Tie 370	£6.450	£4.870	£4.200	£7.590

### Marker Cable Ties

Cable ties having a flat rectangular area which can be labelled or written on with an indelible marker to identify particular bundles of wires, looms or various other items which need to be marked. CC24B has a rectangular extension at one end, at right angles to the strap direction and beyond the securing clip end, which will protrude beyond the loom and be easily noticeable.



Tie CC25C has a similar right-angled area across the strap direction, but located inside the securing clip, so will lie flush with the loom.

Ties RT82D/83E/84F have a flat area incorporated into and inline with the strap portion near the securing clip, and which will also wrap around the loom out of the way.

Code	Length mm	Maximum diameter mm	Width mm	Minimum tensile strength kg
CC24B	110	25	2.5	8
CC25C	100	18	2.5	8.1
RT82D	188	43	4.8	22.7
RT83E	270	68	4.8	22.17
RT84F	340	85	4.8	22.17

All types available singly or in packs of 100.

Retail Unit Price each (inc. VAT).

Order Code	Type 8230	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CC24B	Marker Cable Tie 110	£0.068			£0.080
CC25C	Marker Cable Tie 100	£0.076			£0.090
RT82D	Marker Cable Tie 188	£0.085			£0.100
RT83E	Marker Cable Tie 270	£0.102			£0.120
RT84F	Marker Cable Tie 340	£0.119			£0.140
AY25C	100 Pack Tie 110	£1.860	£1.520	£1.370	£2.190
RT86T	100 Pack Tie 100	£1.690	£1.390	£1.250	£1.990
RT86V	100 Pack Tie 188	£2.710	£2.490	£2.410	£3.190
RT89W	100 Pack Tie 270	£4.750	£4.300	£3.970	£5.590

### Push Mounted Cable Tie



A cable tie which can be press fitted into a panel hole at one end and support a loom or bundle of wires tidily against the panel or chassis wall. Available singly or in a pack of 100.

Retail Unit Price each (inc. VAT).

Order Code	Type 8233	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RT79L	Push Mount Tie Wrap	£0.085			£0.100
RT85G	100 Pack Push Tie	£5.090	£4.620	£4.220	£5.990

### Twist Cable Ties



Ideal for temporarily fastening bunches of narrow diameter cables. Twist Cable Ties fasten and release with a fingertip twist. Rounded edges prevent abrasion. Manufactured from natural nylon they are available in two sizes:

Small 30.5mm  
Large 31.8mm

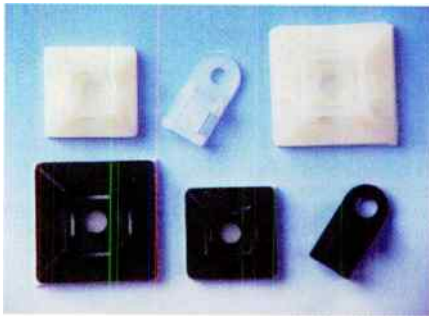
Sold in packs of 10 only

Retail Unit Price each (inc. VAT).

Order Code	Type 33317	Price each exc. VAT		inc. VAT each
		10+	1+	
MU37S	10pk Small Twist Tie	£0.757		£0.890
GF43W	10pk Large Twist Tie	£0.842		£0.990



### Cable Tie Bases



A range of black and natural cable tie fixings including two self adhesive bases and one screw down.

Type	Size (mm)	Max cable tie width (mm)
Small self-adhesive	21 x 21	4
Large self-adhesive	28 x 28	5
Screw fix	19 x 9.7	5

Sold individually or in packs of 50.

Retail Unit Price each (inc. VAT).

Order Code	Type 8205	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FE01B	Small Cable Tie Base	£0.153			£0.180
VK35Q	Cab/Tie Base SmI Blk	£0.153			£0.180
BF94C	Large Cable Tie Base	£0.170			£0.200
VK37S	Cab/Tie Base Lg Blk	£0.170			£0.200
FE02C	Cable Tie Screw Base	£0.085			£0.100
VK39N	Cab/Tie Scr/Base Blk	£0.085			£0.100
FP21X	50 Pk Small Base	£3.820	£2.990	£2.640	£4.490
VK36P	50 Pk Small Base Blk	£3.820	£2.980	£2.620	£4.490
FP22Y	50 Pk Large Base	£5.090	£3.900	£3.390	£5.990
VK38R	50 Pk Large Base Blk	£5.090	£3.880	£3.370	£5.990
FP23A	50 Pk Screw Base	£1.690	£1.360	£1.220	£1.990
VK40T	50 Pk Screw Base Blk	£1.690	£1.360	£1.210	£1.990

### Cable Tie Pack



A packet of 75 self-locking cable ties for tidying wire and cable forms. The pack consists of 25 pieces of each of 3 different sizes. These are:

Large: 188mm(L) x 5mm(W) x 45mm(Max Dia)  
Medium: 120mm(L) x 5mm(W) x 25mm(Max Dia)  
Small: 91mm(L) x 2.5mm(W) x 20mm(Max Dia)

Retail Unit Price each (inc. VAT).

Order Code	Type 4165	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DK27E	75pc Cable Tie Pack	£2.540	£2.060	£1.850	£2.990

### Professional Cable Tie Gun



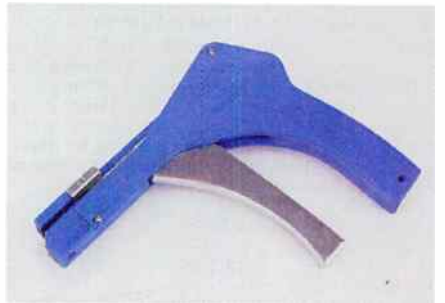
This tie-wrap gun will tension and cut plastic cable ties. To use the tool the cable tie should be placed in position and the tail of the cable tie inserted into the mouth of the tool. The tool is operated by squeezing the lever; this tensions and removes any excess cable tie. The tension at which the cutting edge operates can be adjusted using a rotary control on the handle of the tool.

The cutting edge is 7mm wide and is suitable for cable tie sizes from 2.2mm to 4.8mm. A hard-wearing and long-lasting tool suitable for production environments where quick, accurate assembly is essential.

Retail Unit Price each (inc. VAT).

Order Code	Type 336	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AP99H	Metal Tie Gun	£32.630	£26.500	£23.250	£38.350

### Economy Cable Tie Gun



A cable tie-wrap gun that tensions and cuts cable ties. The cable tie is simply placed around the cables in the normal way and the 'tail' is inserted into the cable tie gun. Operating the trigger tensions the cable tie and automatically cuts the tail off, all in one fast, simple, action. Ideal for production environments where quick, accurate assembly is important.

Retail Unit Price each (inc. VAT).

Order Code	Type 338	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JU29G	Cable Tie Gun	£5.890	£5.100	£4.710	£6.930

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## Lacing Cord



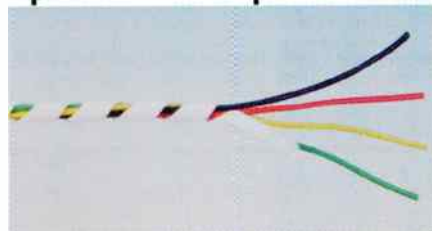
A high grade tubular nylon-cored cord covered with a flexible PVC coating. Suitable for lacing wire and cable forms. Conforming to DEF5020.

Outside diameter: 1-1mm  
Working load: 4-54kg  
Breaking strain: 7-71kg  
Sold on 25m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 347	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BL65V	Lacing Cord	£2.200	£2.000	£1.920	£2.590

## Spiral Cable Wrap



An expandable polythene spiral binding which simply wraps around the cable-form gripping it tightly. It will follow any route taken by the cableform and wires can be easily led out from the form. Resistant to chemical attack and has a high electrical resistance. Available in three sizes.

Type	Unexpanded outside dia.	Wall thickness
3-18mm (1/8in.)	3-18mm	0-79mm
6-35mm (1/4in.)	6-35mm	1-15mm
12-7mm (1/2in.)	12-7mm	1-58mm

Type	Pitch between lead out points	Suitable for cable forms of diameter
3-18mm (1/8in.)	5-56mm	1-59 to 12-7mm
6-35mm (1/4in.)	9-53mm	4-76 to 50-8mm
12-7mm (1/2in.)	12-7mm	9-53 to 101-6mm

Supplied per metre (max. length in one piece 30m).

Retail Unit Price each (inc. VAT).

Order Code	Type 348	Price each exc. VAT			inc. VAT each
		1+	30+	90+	
BL57M	Spirawrap 1/8in.	£0.289	£0.235	£0.215	£0.340
BL58N	Spirawrap 1/4in.	£0.417	£0.305	£0.275	£0.490
BL59P	Spirawrap 1/2in.	£0.502	£0.455	£0.420	£0.590

## Cable Clips

### Cable 'P' Clips

A range of nylon cable clamps moulded in natural colour nylon to UL94V-2. Nylon thickness 1-4mm. The following sizes are available to suit cables diameter:



3-2 to 4-8mm  
4-8 to 6-4mm  
6-4 to 7-9mm  
7-9 to 9-5mm  
9-5mm to 12-7mm  
12-7 to 15-8mm

Cable P Clip 1/8in.  
Cable P Clip 3/16in.  
Cable P Clip 1/4in.  
Cable P Clip 5/16in.  
Cable P Clip 3/8in.  
Cable P Clip 1/2in.

Type	Fixing hole		
	dia. (mm)	Width (mm)	Length (mm)
1/8in.	5-0	9-6	19-8
3/16in.	4-6	9-6	19-8
1/4in.	5-0	10-0	22-0
5/16in.	4-6	10-0	22-0
3/8in.	4-6	12-0	24-0
1/2in.	4-6	12-0	31-0

Sold individually and in packs of 10.

Retail Unit Price each (inc. VAT).

Order Code	Type 8236	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JH21X	Cable P Clip 1/8in.	£0.059			£0.070
LR44X	Cable P Clip 3/16in.	£0.059			£0.070
LR45Y	Cable P Clip 1/4in.	£0.068			£0.080
LR46A	Cable P Clip 5/16in.	£0.068			£0.080
LR04E	Cable P Clip 3/8in.	£0.085			£0.100
JH22Y	Cable P Clip 1/2in.	£0.085			£0.100
JK95D	Pk 10 P Clip 1/8in.	£0.553	£0.475	£0.435	£0.650
JK96E	Pk 10 P Clip 3/16in.	£0.553	£0.475	£0.435	£0.650
JK97F	Pk 10 P Clip 1/4	£0.638	£0.545	£0.500	£0.750
JK98G	Pk 10 P Clip 5/16in.	£0.638	£0.545	£0.500	£0.750
JK99H	Pk 10 P Clip 3/8in.	£0.680	£0.580	£0.530	£0.800
JL00A	Pk 10 P Clip 1/2in.	£0.680	£0.580	£0.530	£0.800

## Self Adhesive Cable Clips



This range of nylon self adhesive cable clips is designed for heavy duty harnessing applications. It provides a fast, strong mounting system for securing cables where fixing holes would be impractical or unsightly.

The range covers cable diameter from 4.5mm to 18mm.

VK Code	Cable Diameter	Width	Height
VK41U	4.5mm	16mm	4.5mm
VK42V	11mm	25mm	7.5mm
VK43W	18mm	25mm	14.5mm

Supplied in packs of 20.

Retail Unit Price each (inc. VAT).

Order Code	Type 13158	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VK41U	SmI Cable Clip 20pk	£0.842	£0.560	£0.515	£0.990
VK42V	Med. Cable Clip 20pk	£1.600	£1.050	£0.960	£1.890
VK43W	Lge Cable Clip 20pk	£1.940	£1.270	£1.150	£2.290



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## Self-Adhesive Cable Fixings



Makes cabling simplicity itself. No more hammering nails into concrete, plaster etc. Just wipe the fixing surface to ensure that it is free from moisture, dust, oil or grease, peel off the clip's protective backing and press firmly into place on the surface. An average workman can fix 20 per minute - an enormous saving in labour time over conventional fixings. Also there is no noise - a further valuable advantage if cabling in occupied premises, hospitals etc.

The fixings are manufactured in 26swg zinc-finished electro-galvanised mild steel with cross-linked, acrylic adhesive coating on a cushion of closed cell polyethylene foam. The fixings will adhere to any clean flat surface; the foam cushion taking up any slight unevenness in the fixing surface giving maximum adhesion area.

Four types are available to suit different cable weights and sizes:

Type	Width (mm)	Size Height (mm)	Maximum Cable Diameter (mm)
Mini 4	15	20	4
4	20	30	4
8	25	38	8
12	38	42	12

Sold individually and in packs of 20.

Retail Unit Price each (inc. VAT).

Order Code	Type 8237	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
FS58N	Safix Mini 4	£0.153			£0.180
FS59P	20 Pk Safix Mini 4	£2.080	£1.760	£1.630	£2.450
BH26D	Safix 4	£0.170			£0.200
FS60Q	20 Pk Safix 4	£2.410	£2.040	£1.880	£2.840
BH27E	Safix 8	£0.187			£0.220
FS61R	20 Pk Safix 8	£3.020	£2.480	£2.280	£3.550
BH28F	Safix 12	£0.204			£0.240
FS62S	20 Pk Safix 12	£3.090	£2.600	£2.400	£3.640

## Plastic Cable Clips

A range of plastic cable clips manufactured from high impact white polystyrene which is weatherproof and shatterproof. All of the round clips push fit onto the cable and grip it firmly leaving both hands free for positioning and fixing. Plated long life masonry nails are supplied with all clips except Round 2-75mm and Flat 4mm and 5mm which have carbon steel nails, blued for extra resilience.

The following sizes are available:



2.75mm 3-5mm 4mm 5mm 6mm



7mm 8mm 9mm Flat 4mm Flat 5mm



Flat 9mm Flat 10mm Flat 14mm

Type (mm)	Pin Length (mm)	Pin diameter (mm)	Suits Cable of overall size (mm)
Round 2.75	15	1	2 to 3
Round 3.5	15	1.5	3 to 3.75



Round 4	15	1.5	3.75 to 4.5
Round 5	20	1.5	4.5 to 5.5
Round 6	22	1.5	5.5 to 6.5
Round 7	22	1.5	6.5 to 7.5
Round 8	25	2	7.5 to 8.5
Round 9	25	2	8.5 to 9.5
Flat 4	15	1	Zip Wire
Flat 5	15	1	Twin Mains DS
Flat 9	25	2	1.5mm <sup>2</sup> TE
Flat 10	25	2	2.5mm <sup>2</sup> TE and 1mm <sup>2</sup> Triple ECC
Flat 14	25	2	6mm <sup>2</sup> TE

The following sizes are also available in black:  
Round 5mm, 6mm and 7mm.

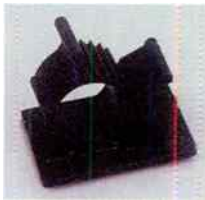
Sold in packs of 20 and boxes of 100.

Retail Unit Price each (inc. VAT).

Order Code	Type 1210	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
BH18U	Clip Rd 2.75mm 20pk	£0.417			£0.490
BH19V	Clip Rd 3.5mm 20pk	£0.417			£0.490
BH20W	Clip Rd 4mm 20pk	£0.417			£0.490
BH21X	Clip Rd 5mm 20pk	£0.417			£0.490
RT63T	Clip Rd 5mm Blk 20pk	£0.417			£0.490
BH22Y	Clip Rd 6mm 20pk	£0.417			£0.490
MU35Q	Clip Rd 6mm Blk 20pk	£0.417			£0.490
BH23A	Clip Rd 7mm 20pk	£0.417			£0.490
MU36P	Clip Rd 7mm Blk 20pk	£0.417			£0.490
BH24B	Clip Rd 8mm 20pk	£0.502			£0.590
BH36P	Clip Rd 9mm 20pk	£0.502			£0.590
BH25C	Clip Flat 4mm 20pk	£0.417			£0.490
BH37S	Clip Flat 5mm 20pk	£0.417			£0.490
BH39N	Clip Flat 9mm 20pk	£0.502			£0.590
BH40T	Clip Flat 10mm 20pk	£0.502			£0.590
BH41U	Clip Flat 14mm 20pk	£0.587			£0.690
YM00A	Clip Rd 2.75mm 100pk	£1.400	£1.360	£1.300	£1.650
YM01B	Clip Rd 3.5mm 100pk	£1.430	£1.360	£1.300	£1.690
YM02C	Clip rd 4mm 100pk	£1.430	£1.360	£1.300	£1.690
YM03D	Clip Rd 5mm 100pk	£1.480	£1.360	£1.300	£1.750
CW40T	Clip Rd 5mm Blk 100	£1.480	£1.360	£1.300	£1.750
YM04E	Clip Rd 6mm 100pk	£1.520	£1.440	£1.370	£1.790
CC78K	Clip Rd 6mm Blk 100	£1.520	£1.440	£0.370	£1.790
YM05F	Clip Rd 7mm 100pk	£1.600	£1.530	£1.450	£1.890
CC79L	Clip Rd 7mm Blk 100	£1.600	£1.530	£1.450	£1.890
YM06G	Clip Rd 8mm 100pk	£1.650	£1.560	£1.490	£1.950
YM07H	Clip Rd 9mm 100pk	£1.690	£1.590	£1.530	£1.990
YM08J	Clip Flat 4mm 100pk	£1.430	£1.330	£1.260	£1.690
YM09K	Clip Flat 5mm 100pk	£1.520	£1.410	£1.340	£1.790
YM11M	Clip Flat 9mm 100pk	£1.600	£1.480	£1.410	£1.890
YM12N	Clip Flat 10mm 100pk	£1.690	£1.580	£1.510	£1.990
YM13P	Clip Flat 14mm 100pk	£2.280	£2.110	£2.010	£2.690

### Releasable Self-Adhesive Cable Clip

Black plastic cable clip with a 25 x 18mm base with self-adhesive pad. The clip can accommodate a cable or wire bundle up to 8mm diameter, and is unlocked by simply pressing down the lower finger tab which releases the teeth of the upper movable part.



Retail Unit Price each (inc. VAT).

Order Code	Type 301	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JY73Q	Releasable Clip	£0.280	£0.210	£0.180	£0.330

### Cable Protector



A simple, effective and economical way to protect loose cables around the skirting, across the floor and up and around the workstation. The Snap Top Range is ideal for carrying small diameter cables safely. Simply "snap" open - push in the cables - apply the foam fixing tape to the rebate in the base - fit into position for a neat flush finish. Use Type P - for vertical or horizontal applications to carry cables up or along a desk or work station. Type K will carry cables across the office floor, for an island site or electrical wall socket. Type L has a micro profile designed to run parallel to a wall or skirting surface.

In the event of fire all these cable protectors have a low smoke, non toxic and a low fume emission level and will not release harmful chlorine gases. Produced from a fire retardant compound conforming to BS 476 Part 7 Class 3, and its European equivalent DIN 4102 Part 1 Class B1, they have been UV stabilised for an extended life.

Sold per meter (max. length in 1 piece 9m)

Retail Unit Price each (inc. VAT).

Order Code	Type 17251	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GC87U	K Cable Guard Gry	£5.940			£6.990
GC88V	L Cable Guard Gry	£5.520			£6.490
GC90X	P Cable Guard Gry	£5.090			£5.990

### Cable Protector



The Snap Fit Range is ideal for carrying one or more cables in many combinations depending on application, allowing the user total flexibility to locate and fix any loose cable regardless of direction. Simply "snap" open - push in the cables and lay the protector on the floor. Gently sloped edges allow feet, chairs or trolleys to pass over in complete safety. 3 different profiles are available depending on application.



In the event of fire all these cable protectors have a low smoke, non toxic and a low fume emission level and will not release harmful chlorine gases. Produced from a fire retardant compound

conforming to BS 476 Part 7 Class 3, and its European equivalent DIN 4102 Part 1 Class B1, they have been UV stabilised for an extended life.

Sold per meter (max. length in 1 piece 9m)

Retail Unit Price each (inc. VAT).

Order Code	Type 17254	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GC80B	Cable Guard Blk	£5.940			£6.990
GC83E	B Cable Guard Blk	£8.500			£9.990
GC86T	D Cable Guard Blk	£10.200			£11.990

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## Conductor Gauge Comparison Table

AWG	SWG	CSA (mm <sup>2</sup> )
32		0.032
	35	0.036
31	34	0.040
	33	0.049
30		0.051
	32	0.057
29	31	0.065
	30	0.078
28		0.081
	29	0.086
27		0.103
	28	0.124
26		0.128
	27	0.132
25	26	0.162
	25	0.193
24		0.210
	24	0.245
23		0.259
	23	0.295
22		0.324
	22	0.410
21		0.412
	21	0.511
20		0.556
19		0.636
	20	0.660
	19	0.813
18		0.826
17		1.040
	18	1.170
16		1.340
	17	1.630
15		1.680
14	16	2.080
13		2.630
	15	2.640
	14	3.250
11		4.130
	13	4.470
10		5.260
	12	5.390
9	11	6.600
8		8.400
	10	10.00
7	9	10.60
6		13.00
5		16.80
4		21.00
3		26.20
2		33.60



## Section Contents

Audio Grade	259	Dilecon	260	Mylar Film	251
Axial Electrolytic	256	Disc Ceramic	247	Polyester	249
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nF	nF	nF	Voltage (V)	Tolerance (%)	Type	Order Code	MPS Page	nF	nF	nF	Voltage (V)	Tolerance (%)	Type	Order Code	MPS Page	nF	nF	nF	Voltage (V)	Tolerance (%)	Type	Order Code	MPS Page
1.8			100	±0.25pF	Ceramic	WX35Q	246	270	0.27		100	±5%	Ceramic	WX61R	246	3300	3.9	0.0033	400	±10%	Poly Layer	WW25C	249
2.2			100	±0.25pF	Ceramic	WX36P	246	270	0.27		500	±1%	1% Polysty	BX50E	248	3900	3.9	0.0039	100	±10%	Ceramic	WX75S	246
2.7			100	±0.25pF	Ceramic	WX37S	246	330	0.33		100	±5%	Ceramic	WX62S	246	3900	3.9	0.0039	125	±1%	1% Polysty	BX63T	248
3.3			100	±0.25pF	Ceramic	WX38R	246	330	0.33		500	±1%	1% Polysty	BX51F	248	4700	4.7	0.0047	63	±10%	Poly Film	DT94C	249
3.9			100	±0.25pF	Ceramic	WX39N	246	390	0.39		100	±10%	Ceramic	WX63T	246	4700	4.7	0.0047	63	±20%	SubminEster	CW98E	249
4.7			100	±0.25pF	Ceramic	WX40T	246	390	0.39		500	±1%	1% Polysty	BX52G	248	4700	4.7	0.0047	100	±10%	Ceramic	WX76H	246
5			350	±0.5pF	Mica	WX02C	247	470	0.47		100	±10%	Ceramic	WX64U	246	4700	4.7	0.0047	100	±10%	MiniCarb	CX08J	248
5.6			100	±0.25pF	Ceramic	WX41U	246	470	0.47		100	±10%	MiniCarb	CX05F	248	4700	4.7	0.0047	100	±10%	Monores	RA42V	247
6.8			100	±0.25pF	Ceramic	WX42V	246	470	0.47		100	±10%	Monores	RA38R	247	4700	4.7	0.0047	100	±10%	Mylar	WW17T	251
8.2			100	±0.25pF	Ceramic	WX43W	246	470	0.47		100	±10%	SMD Ceramic	DH83B	246	4700	4.7	0.0047	100	±10%	SMD Ceramic	DH86E	246
10			100	±10%	SMD Ceramic	DH85T	246	470	0.47		160	±5%	Polystyrene	BX32K	248	4700	4.7	0.0047	100	±20%	MiniFoil	CX50E	250
10			100	±5%	Ceramic	WX44X	246	470	0.47		350	±1%	Mica	WX21X	247	4700	4.7	0.0047	125	±1%	1% Polysty	BX64U	248
10			100	±5%	Monores	RA33L	247	470	0.47		500	±1%	1% Polysty	BX53H	248	4700	4.7	0.0047	275V AC±20%	HV Polyprop	JA95D	252	
10			350	±0.5pF	Mica	WX03D	247	470	0.47		500	±10%	High Voltage Disc	BX10L	247	4700	4.7	0.0047	400	±10%	Poly Layer	WW26D	249
10			500	±10%	High Voltage Disc	BX05F	247	560	0.56		100	±10%	Ceramic	WX65V	246	4700	4.7	0.0047	500	-20+80%	High Voltage Disc	BX14Q	247
12			100	±5%	Ceramic	WW45Y	249	560	0.56		125	±1%	1% Polysty	BX54J	248	4700	4.7	0.0047	1000	-20+80%	High Voltage Disc	HY18U	247
12			100	±5%	Ceramic	WX45Y	246	560	0.56		160	±5%	Polystyrene	BX33L	248	5600	5.6	0.0056	125	±1%	1% Polysty	BX65V	248
15			100	±5%	Ceramic	WX46A	246	680	0.68		63	±10%	Ceramic	WX69W	246	6800	6.8	0.0068	100	±10%	Monores	RA43W	247
18			100	±5%	Ceramic	WX47B	246	680	0.68		160	±5%	Polystyrene	BX34M	248	6800	6.8	0.0068	125	±1%	1% Polysty	BX66W	248
22			100	±10%	SMD Ceramic	DH87U	246	680	0.68		350	±1%	Mica	WX23A	247	6800	6.8	0.0068	400	±10%	Poly Layer	WW27E	249
22			100	±5%	Ceramic	WX48C	246	750	0.75		125	±1%	1% Polysty	BX56K	248	8200	8.2	0.0082	125	±1%	1% Polysty	BX86G	248
22			100	±5%	Monores	RA34M	247	820	0.82		100	±10%	Ceramic	WX67X	246	8200	8.2	0.0082	400	±10%	Poly Layer	WW28F	249
22			160	±5%	Polystyrene	BX24B	248	1000	1		50	±5%	Radial Polystyrene	JA86T	248	10000	10	0.01	50	-20+80%	Minidisc	BX00A	247
22			350	±0.5pF	Mica	WX05F	247	1500	1.5		50	±5%	Radial Polystyrene	JA87U	248	10000	10	0.01	63	±1%	1% Polysty	BX86T	248
27			100	±5%	Ceramic	WX49D	246	3300	3.3		50	±5%	Radial Polystyrene	JA89W	248	10000	10	0.01	63	±10%	MiniEster	CX18U	249
33			100	±10%	SMD Ceramic	DH88V	246	4700	4.7		50	±5%	Radial Polystyrene	JA90X	248	10000	10	0.01	63	±10%	Poly Film	DT95D	249
33			100	±5%	Ceramic	WX50E	246	6800	6.8		50	±5%	Radial Polystyrene	JA91Y	248	10000	10	0.01	63	±20%	SubminEster	CW97F	249
33			350	±0.5pF	Mica	WX07H	247	10000	10		50	±5%	Radial Polystyrene	JA92A	248	10000	10	0.01	63	-20+80%	Ceramic	WX77J	246
39			100	±5%	Ceramic	WX51F	246	1000	1	0.001	63	±10%	Poly Film	DT92A	249	10000	10	0.01	100	±10%	MiniCarb	CX09K	248
47			100	±10%	SMD Ceramic	DH89W	246	1000	1	0.001	63	±20%	SubminEster	CW94C	249	10000	10	0.01	100	±10%	Monores	RA44X	247
47			100	±5%	Ceramic	WX52G	246	1000	1	0.001	100	±10%	Ceramic	WX68Y	246	10000	10	0.01	100	±10%	Mylar	WW18U	251
47			100	±5%	Monores	RA35Q	247	1000	1	0.001	100	±10%	MiniCarb	CX06G	248	10000	10	0.01	100	±10%	Polyester 10%	CX26D	250
47			160	±5%	Polystyrene	BX26D	248	1000	1	0.001	100	±10%	Monores	RA38N	247	10000	10	0.01	100	±10%	SMD Ceramic	DH87F	246
47			350	±0.5pF	Mica	WX08K	247	1000	1	0.001	100	±10%	Mylar	WW15R	251	10000	10	0.01	100	±20%	MiniFoil	CX51F	250
56			100	±5%	Ceramic	WX53H	246	1000	1	0.001	100	±10%	SMD Ceramic	DH94C	246	10000	10	0.01	250	±10%	Polyester 10%	CX34M	250
68			100	±5%	Ceramic	WX54J	246	1000	1	0.001	100	±20%	MiniFoil	CX48C	250	10000	10	0.01	250	±20%	IS Cap	JR31J	252
68			160	±5%	Polystyrene	BX27E	248	1000	1	0.001	125	±1%	1% Polysty	BX56L	248	10000	10	0.01	275V AC±20%	HV Polyprop	JA96E	252	
68			350	±1%	Mica	WX11M	247	1000	1	0.001	160	±5%	Polystyrene	BX35Q	248	10000	10	0.01	400	±10%	Poly Layer	WW29G	249
82			100	±5%	Ceramic	WX56K	246	1000	1	0.001	275V AC±20%	HV Polyprop	JA93B	252	10000	10	0.01	400	±10%	Polyester 10%	CX41U	250	
100			50	±5%	Radial Polystyrene	JA80B	248	1000	1	0.001	350	±1%	Mica	WX25C	247	10000	10	0.01	400	±20%	Polyester 20%	BX70M	250
150			50	±5%	Radial Polystyrene	JA81C	248	1000	1	0.001	350	-20+80%	Feed Thro	BX16S	247	10000	10	0.01	500	-20+80%	High Voltage Disc	BX15R	247
220			50	±5%	Radial Polystyrene	JA82D	248	1000	1	0.001	400	±10%	Poly Layer	WW22Y	249	10000	10	0.01	630	±10%	HV Polyester	DS81C	250
330			50	±5%	Radial Polystyrene	JA83E	248	1000	1	0.001	500	-20+80%	High Voltage Disc	BX12N	247	10000	10	0.01	1000	-20+80%	High Voltage Disc	JL04E	247
330			100	±10%	SMD Ceramic	DH82A	246	1000	1	0.001	1000	-20+80%	High Voltage Disc	JL03D	247	15000	15	0.015	250	±5%	Poly Layer	WW31J	249
470			50	±5%	Radial Polystyrene	JA84F	248	1200	1.2	0.0012	100	±10%	Ceramic	WX69A	246	15000	15	0.015	400	±20%	Polyester 20%	BX71N	250
680			50	±5%	Radial Polystyrene	JA85G	248	1200	1.2	0.0012	125	±1%	1% Polysty	BX57M	248	22000	22	0.022	50	-20+80%	Minidisc	BX01B	247
100	0.1		100	±10%	MiniCarb	CX03D	248	1500	1.5	0.0015	100	±10%	Ceramic	WX70M	246	22000	22	0.022	63	±1%	1% Polysty	BX87U	248
100	0.1		100	±10%	SMD Ceramic	DH90X	246	1500	1.5	0.0015	125	±1%	1% Polysty	BX58N	248	22000	22	0.022	63	±10%	MiniEster	CX19V	249
100	0.1		100	±5%	Ceramic	WX56L	246	1500	1.5	0.0015	400	±10%	Poly Layer	WW23A	249	22000	22	0.022	63	±10%	Poly Film	DT96E	249
100	0.1		100	±5%	Monores	RA36P	247	1800	1.8	0.0018	100	±10%	Ceramic	WX71N	246	22000	22	0.022	63	±20%	SubminEster	CW98G	249
100	0.1		160	±5%	Polystyrene	BX28F	248	1800	1.8	0.0018	125	±1%	1% Polysty	BX59P	248	22000	22	0.022	63	-20+80%	Ceramic	WX78K	246
100	0.1		350	±1%	Mica	WX13P	247	2200	2.2	0.0022	63	±10%	Poly Film	DT93B	249	22000	22	0.022	100	±10%	Monores	RA45Y	247
100	0.1		500	±1%	1% Polysty	BX46A	248	2200	2.2	0.0022	63	±20%	SubminEster	CW95D	249	22000	22	0.022	100	±10%	Mylar	WW19V	251
100	0.1		500	±10%	High Voltage Disc	BX07H	247	2200	2.2	0.0022	100	±10%	Ceramic	WX72P	246	22000	22	0.022	100	±10%	Polyester 10%	CX27E	250
120	0.12		100	±5%	Ceramic	WX57M	246	2200	2.2	0.0022	100	±10%	MiniCarb	CX07H	248	22000	22	0.022	100	±10%	SMD Ceramic	DH88G	246
120	0.12		350	±1%	Mica	WX14Q	247	2200	2.2	0.0022	100	±10%	Monores	RA40T	247	22000	22	0.022	250	±20%	IS Cap	JR32K	252
150	0.15		100	±5%	Ceramic	WX58N	246	2200	2.2	0.0022	100	±10%	Mylar	WW15R	251	22000	22	0.022	250	±5%	Poly Layer	WW33L	249
150	0.15		160	±5%	Polystyrene	BX29G	248	2200	2.2	0.0022	100	±10%	SMD Ceramic	DH95D	246	22000	22	0.022	275V AC±20%	HV Polyprop	JA98G	249	
150	0.15		350	±1%	Mica	WX15R	247	2200	2.2	0.0022	100	±20%	MiniFoil	CX48D	250	22000	22	0.022	275V AC±20%	HV Polyprop	JA97F	252	
150	0.15		500	±1%	1% Polysty	BX47B	248	2200	2.2	0.0022	125	±1%	1% Polysty	BX60Q	248	22000	22	0.022	400	±10%	Polyester 10%	CX42V	250
180	0.18		100	±5%	Ceramic	WX59P	246	2200	2.2	0.0022	160	±5%	Polystyrene	BX37S	248	22000	22	0.022	400	±20%	Polyester 20%	BX72P	250
180	0.18		350	±1%	Mica	WX16S	247	2200	2.2	0.0022	275V AC±20%	HV Polyprop	JA94C	252	22000	22	0.022	630	±10%	HV Polyester	DS82D	250	
22																							

Ref	Ref	Ref	Value (V)	Tolerance (%)	Type	Order Code	MPS Part	Ref	Ref	Ref	Value (V)	Tolerance (%)	Type	Order Code	MPS Part
4700	47	0.047	25	±5%	PolyStyrene	BV94C	248	330	0.33	35	±20%	LC Tant	WM57M	253	
4700	47	0.047	50	-20/+80%	MnEster	BV22C	247	330	0.33	50	±20%	ERC Rad	AN87U	252	
4700	47	0.047	63	±10%	MnEster	CX23W	249	330	0.33	100	±5%	Poly Layer	WM47B	249	
4700	47	0.047	63	±10%	Poly Film	DT97F	249	330	0.33	250	±20%	Polyester 20%	BX73L	250	
4700	47	0.047	63	±20%	SubmEster	AN89H	249	330	0.33	630	±5%	Auto Grade	WM69W	251	
4700	47	0.047	100	±10%	Monrons	RA47R	247	330	0.39	100	±5%	Poly Layer	WM48C	249	
4700	47	0.047	100	±10%	Mylar	WM20W	251	470	0.47	35	±20%	LC Tant	WM65N	253	
4700	47	0.047	100	±10%	Polyester 10%	CX28F	250	470	0.47	50	±20%	ERC Rad	AN88V	252	
4700	47	0.047	100	±10%	SMD Ceramic	D488H	246	470	0.47	50	±20%	SubmEster	CX22C	249	
4700	47	0.047	250	±10%	Polyester 10%	CX39P	250	470	0.47	63	±10%	MnEster	CX23A	249	
4700	47	0.047	250	±20%	IS Cap	JR32L	252	470	0.47	63	±10%	Poly Film	DS80B	249	
4700	47	0.047	250	±20%	Poly Layer	BX74R	250	470	0.47	63	±20%	Mixed	VH22C	253	
4700	47	0.047	250	±5%	Polyester 20%	WM67S	249	470	0.47	63	±20%	Monrons	RA83G	247	
4700	47	0.047	275V AC ±20%	±10%	HV Polyprop	JA98H	252	470	0.47	63	±20%	Radial Electrolytic	AT73Q	254	
4700	47	0.047	400	±10%	Polyester 10%	CX43W	250	470	0.47	100	±10%	Polyester 10%	CX31J	250	
4700	47	0.047	630	±10%	HV Polyester	DS82E	250	470	0.47	100	±20%	Electrolytic (Radial)	VH15R	254	
6000	60	0.060	100	±10%	Monrons	RA48C	247	470	0.47	100	±20%	Polyester 20%	BX80B	250	
6000	60	0.060	250	±20%	Polyester 20%	BX75S	250	470	0.47	100	±5%	Poly Layer	WM48D	249	
6000	60	0.060	250	±5%	Poly Layer	WM68N	249	470	0.47	250	±10%	HV Polyester	DS88V	250	
10000	100	0.1	16	-20/+80%	MnEster	YR75S	247	470	0.47	250	±10%	Polyester 10%	CX39N	250	
10000	100	0.1	35	±20%	LC Tant	WM65U	253	470	0.47	250	±20%	IS Cap	JR69P	252	
10000	100	0.1	50	±20%	ERC Rad	AN86G	252	470	0.47	275V AC ±10%	HV Polyprop	JE11M	252		
10000	100	0.1	50	-20/+80%	MnEster	BX00D	247	470	0.47	400	±10%	Polyester 10%	CX46A	250	
10000	100	0.1	63	±10%	MnEster	CX21X	249	470	0.47	630	±5%	Auto Grade	WM80X	251	
10000	100	0.1	63	±10%	Poly Film	DT98G	249	470	0.47	1000	±10%	HV Cap	FX22A	251	
10000	100	0.1	63	±20%	Mixed	VH01B	253	500	0.56	100	±5%	Poly Layer	WM60E	249	
10000	100	0.1	63	±20%	Radial Electro	AL07H	253	600	0.68	100	±20%	Polyester 20%	BX81C	250	
10000	100	0.1	63	±20%	SubmEster	CX00A	249	600	0.68	100	±5%	Poly Layer	WM61F	249	
10000	100	0.1	100	±10%	Monrons	RA48D	247	600	0.68	630	±5%	Auto Grade	WM81Y	251	
10000	100	0.1	100	±10%	Mylar	WM21X	251	1	1	35	±20%	LC Tant	WM60Q	253	
10000	100	0.1	100	±10%	Polyester 10%	CX28G	250	1	1	50	±20%	ERC Rad	AN86W	252	
10000	100	0.1	100	±10%	SMD Ceramic	DJ00A	246	1	1	50	±20%	Low Imp Electrolytic	WM89A	256	
10000	100	0.1	250	±10%	HV Polyester	DS94F	250	1	1	63	±10%	MnEster	CX24B	249	
10000	100	0.1	250	±10%	Polyester 10%	CX37S	250	1	1	63	±20%	Mixed	VH02D	253	
10000	100	0.1	250	±20%	IS Cap	JR64M	252	1	1	63	±20%	Radial Electro	AL08K	253	
10000	100	0.1	250	±20%	Polyester 20%	BX76H	250	1	1	63	±20%	Radial Electrolytic	AT74R	254	
10000	100	0.1	250	±5%	Poly Layer	WM41U	249	1	1	100	±10%	Polyester 10%	CX39K	250	
10000	100	0.1	275V AC ±20%	±10%	HV Polyprop	JE89K	252	1	1	100	±20%	Avail	FB12N	256	
10000	100	0.1	400	±10%	HV Polyester	DS86G	250	1	1	100	±20%	Electrolytic (Axial)	AT00A	256	
10000	100	0.1	400	±10%	Polyester 10%	CX44X	250	1	1	100	±20%	Electrolytic (Radial)	VH16S	254	
10000	100	0.1	630	±10%	HV Polyester	DS98T	250	1	1	100	±20%	H-Temp Rad	DT93G	255	
10000	100	0.1	630	±5%	Auto Grade	WM70U	251	1	1	100	±20%	Polyester 20%	BX82D	250	
10000	100	0.1	1000	±10%	HV Cap	FX21X	251	1	1	100	±5%	Radial Electrolytic	AT82T	254	
120	0.12	250	250	±5%	Poly Layer	WM42V	249	1	1	100	±5%	Poly Layer	WM63H	249	
150	0.15	250	250	±20%	Polyester 20%	BX77U	250	1	1	160	±5%	Polyprop	JY78K	251	
150	0.15	250	250	±5%	Poly Layer	WM43W	249	1	1	250	±10%	HV Polyester	DS98W	250	
180	0.18	250	250	±5%	Poly Layer	WM44X	249	1	1	250	±10%	Polyester 10%	CX40T	250	
220	0.22	16	-20/+80%	MnEster	AL01B	247	1	1	250	±20%	IS Cap	JR67S	252		
220	0.22	25	-20/+80%	MnEster	JL02C	247	1	1	275V AC ±10%	HV Polyprop	JE12N	252			
220	0.22	35	±20%	LC Tant	WM66L	253	1	1	400	±10%	Polyester 10%	CX47B	250		
220	0.22	50	±20%	ERC Rad	AN87T	252	1	1	450	-10/+60%	Electrolytic (Radial)	VH17T	254		
220	0.22	50	±20%	SubmEster	CX01B	249	1	1	600	±5%	Auto Grade	KR78K	251		
220	0.22	63	±10%	MnEster	CX22Y	249	1	1	1000	±10%	HV Cap	FX49B	251		
220	0.22	63	±10%	Poly Film	DT98H	249	1	1	35	±20%	LC Tant	WM61R	253		
220	0.22	63	±20%	Radial Electro	AL03L	253	1	1	50	±20%	ERC Rad	AN80X	252		
220	0.22	100	+10%	Mylar	WM63E	251	1	1	15	100	±20%	Reverso-radial	JAY3L	257	
220	0.22	100	±10%	Polyester 10%	CX30H	250	1	1	15	160	±5%	Polyprop	JY73L	251	
220	0.22	100	±10%	SMD Ceramic	DJ01B	246	1	1	250	AC ±10%	HV Polyprop	DS97L	251		
220	0.22	100	±20%	Monrons	RA05E	247	2	2	250	AC ±10%	HV Polyprop	DS91Y	252		
220	0.22	100	±5%	Poly Layer	WM46Y	249	22	22	35	±20%	LC Tant	WM62S	253		
220	0.22	250	±10%	Polyester 10%	CX38F	250	22	22	50	±10%	MnEster	CX25C	249		
220	0.22	250	±20%	IS Cap	JR63C	252	22	22	50	±20%	ERC Rad	AN81Y	252		
220	0.22	250	±20%	Polyester 20%	BX78H	250	22	22	50	±20%	Low Imp Electrolytic	VN70M	256		
220	0.22	275V AC ±10%	±10%	HV Polyprop	JE10L	252	22	22	50	±20%	Radial Electro	AUX0D	253		
220	0.22	400	±10%	HV Polyester	DS97U	250	22	22	63	±20%	Mixed	VH49E	253		
220	0.22	400	±10%	Polyester 10%	CX46Y	250	22	22	63	±20%	Radial Electro	AU10L	253		
220	0.22	630	±5%	Auto Grade	WM65Y	251	22	22	63	±20%	Radial Electrolytic	AT75S	254		
220	0.22	1000	±10%	HV Cap	FX22Y	251	22	22	100	±10%	Polyester 10%	CX33L	250		
270	0.27	100	±5%	Poly Layer	WM46A	249	22	22	100	±20%	Avail	FB19R	256		

# 244 - Capacitors & Crystals



Ref	Ref	Volts (V)	Tolerance (%)	Temp	Order Code	MPS Part	Ref	Ref	Volts (V)	Tolerance (%)	Temp	Order Code	MPS Part
10	10	63	±20%	Radial Electrolytic	AT7J	254	47	63	±20%	Axial	FB3N	256	
10	10	100	±20%	Electrolytic (Radial)	VH4B	254	47	63	±20%	Electrolytic (Axial)	AT0G	256	
10	10	100	±20%	H-Temp Rad	DT5L	256	47	63	±20%	Electrolytic (Radial)	VH3M	254	
10	10	100	±20%	Radial Electrolytic	AT6W	254	47	63	±20%	Radial Electrolytic	AT0B	254	
10	10	100	±20%	Reverso-radial	JV74R	257	47	100	±20%	Electrolytic (Radial)	VH8Q	256	
10	10	100	±20%	Reverso-radial	JF31J	257	47	100	±20%	H-Temp Rad	DT6Q	256	
10	10	450	-10-50%	Axial	FB2C	256	47	100	±20%	Radial Electrolytic	AT9A	254	
10	10	450	-10-50%	Electrolytic (Radial)	VH5C	254	47	100	±20%	Reverso-radial	JV7P	257	
10	10	630	±5%	Auto Grade	VH6B	251	47	100	±20%	Reverso-radial	JF3M	257	
12	12	250 AC	±10%	HV Polycap	DS9G	252	47	180	±10%	Polycap	JE1P	251	
12	12	630	±5%	Auto Grade	VH6A	251	47	400	-10-50%	Step-in (0mm)	AL5F	258	
15	15	630	±5%	Auto Grade	VH6D	251	47	450	-10-50%	Electrolytic (Radial)	LL18U	255	
16	16	250 AC	±10%	HV Polycap	DS9H	252	47	450	±20%	Axial	FB43W	256	
22	22	16	±20%	ERC Rad	AV69G	252	47	450	±20%	Electrolytic (Axial)	AT0H	256	
22	22	16	±20%	LC Tant	WM72P	253	47	450	±20%	Step-in (0mm)	AL5N	258	
22	22	16	±20%	Mixed	VH0K	253	68	400	±20%	Step-in (0mm)	AL5G	258	
22	22	16	±20%	Radial Electrolytic	AT69H	253	68	550	±20%	Can	DM67M	259	
22	22	16	±20%	Radial Electrolytic	AT67S	254	100	63	±20%	Radial Electrolytic	AT9T	253	
22	22	25	±20%	Axial	FB3H	256	100	63	±20%	Radial Electrolytic	AT5C	254	
22	22	25	±20%	Electrolytic (Radial)	VH6D	254	100	10	±20%	Axial	FB48C	256	
22	22	25	±20%	LC Tant	WM73Q	253	100	10	±20%	Electrolytic (Axial)	AT0J	254	
22	22	35	±20%	Mixed	VH10L	253	100	10	±20%	Electrolytic (Radial)	VH8P	256	
22	22	35	±20%	Radial Electrolytic	AT69L	254	100	10	±20%	LC Tant	WM79L	253	
22	22	50	±20%	Electrolytic (Radial)	VH27E	254	100	10	±20%	Mixed	VH12N	253	
22	22	50	±20%	ERC Rad	AV69H	252	100	10	±20%	Radial Electrolytic	AT3H	254	
22	22	50	±20%	H-Temp Axial	VH69N	257	100	16	±20%	ERC Rad	AS9Q	252	
22	22	50	±20%	H-Temp Rad	DT57M	255	100	16	±20%	Low Imp Electrolytic	VH76H	256	
22	22	50	±20%	Low Imp Electrolytic	WT57Q	256	100	16	±20%	Mixed	VH13P	253	
22	22	50	±20%	Radial Electrolytic	AT69W	254	100	16	±20%	Radial Electrolytic	AT4T	254	
22	22	63	±20%	Electrolytic (Axial)	AT04E	256	100	25	±20%	Electrolytic (Radial)	VH67S	256	
22	22	63	±20%	Electrolytic (Radial)	VH26F	254	100	25	±20%	H-Temp Axial	VH8Q	257	
22	22	63	±20%	Radial Electrolytic	AT78K	254	100	25	±20%	H-Temp Rad	DT61R	255	
22	22	100	±20%	Electrolytic (Radial)	VH23G	254	100	25	±20%	Radial Electrolytic	AT48C	254	
22	22	100	±20%	H-Temp Rad	DT59N	255	100	35	±20%	Axial	FB49D	256	
22	22	100	±20%	Radial Electrolytic	AT69X	254	100	35	±20%	Electrolytic (Axial)	AT0K	256	
22	22	100	±10%	Reverso-radial	JV3QX	257	100	35	±20%	Electrolytic (Radial)	VH39R	255	
22	22	160	±10%	Polycap	WM66T	251	100	35	±20%	Low Imp Electrolytic	VH77J	256	
33	33	10	±20%	LC Tant	WM74R	253	100	35	±20%	Radial Electrolytic	AT9P	254	
33	33	16	±20%	ERC Rad	AV69H	252	100	50	±20%	H-Temp Axial	VH61R	257	
33	33	16	±20%	Radial Electrolytic	AU0A	253	100	50	±20%	H-Temp Rad	DT62S	255	
33	33	16	±20%	Radial Electrolytic	AU0C	253	100	50	±20%	Radial Electrolytic	AT69Y	254	
33	33	16	±20%	Radial Electrolytic	AT69R	254	100	50	±20%	SMPS Cap	JL48D	257	
33	33	35	±20%	Electrolytic (Radial)	VH30H	254	100	63	±20%	Axial	FB51F	256	
33	33	35	±20%	Radial Electrolytic	AT57M	254	100	63	±20%	Electrolytic (Axial)	AT10L	256	
33	33	63	±20%	Electrolytic (Radial)	VH31U	254	100	63	±20%	Electrolytic (Radial)	VH69N	258	
33	33	63	±20%	Radial Electrolytic	AT79L	254	100	63	±20%	Radial Electrolytic	AT61C	254	
33	33	100	±20%	Radial Electrolytic	AT91Y	254	100	100	±20%	Electrolytic (Radial)	VH40T	255	
33	33	180	±10%	Polycap	JE14Q	251	100	100	±20%	H-Temp Rad	DT63T	255	
47	47	63	±20%	Radial Electrolytic	AT96E	253	100	100	±20%	Radial Electrolytic	AT98B	254	
47	47	10	±20%	ERC Rad	AS17T	252	100	100	±20%	Reverso-radial	WM76H	257	
47	47	10	±20%	LC Tant	WM75S	253	100	100	±20%	Reverso-radial	JF35D	257	
47	47	10	±20%	Radial Electrolytic	AT23G	254	100	400	±20%	Step-in (0mm)	AL53H	258	
47	47	16	±20%	Axial	FB38R	256	100	450	±20%	Step-in (0mm)	AL58P	258	
47	47	16	±20%	Electrolytic (Axial)	AT05F	256	150	250	±20%	Step-in (0mm)	AL46A	258	
47	47	16	±20%	H-Temp Axial	VH69P	257	150	400	±20%	Step-in (0mm)	AL54U	258	
47	47	16	±20%	LC Tant	WM76H	253	220	63	±20%	Radial Electrolytic	AT63D	254	
47	47	16	±20%	Mixed	VH11M	253	220	10	±20%	Axial	FB60Q	256	
47	47	16	±20%	Radial Electrolytic	AT01B	253	220	10	±20%	ERC Rad	AS98Y	252	
47	47	16	±20%	Radial Electrolytic	AT39N	254	220	10	±20%	Mixed	VH14Q	256	
47	47	25	±20%	Electrolytic (Radial)	VH32K	254	220	10	±20%	Radial Electrolytic	AT31J	254	
47	47	25	±20%	Low Imp Electrolytic	VH74R	256	220	16	±20%	Axial	FB61R	256	
47	47	25	±20%	Radial Electrolytic	AT47B	254	220	16	±20%	Electrolytic (Axial)	AT11M	256	
47	47	35	±20%	ERC Rad	AS43W	252	220	16	±20%	Electrolytic (Radial)	VH41U	256	
47	47	35	±20%	Radial Electrolytic	AT39N	254	220	16	±20%	H-Temp Axial	VH65S	257	
47	47	50	±20%	Electrolytic (Radial)	VH33L	254	220	16	±20%	Low Imp Electrolytic	VH78K	256	
47	47	50	±20%	H-Temp Rad	DT59P	255	220	16	±20%	Radial Electrolytic	AT41U	254	
47	47	50	±20%	Low Imp Electrolytic	VH75P	256	220	25	±20%	Radial Electrolytic	AT48D	254	
47	47	50	±20%	Radial Electrolytic	AT67X	254	220	35	±20%	Axial	FB62S	256	
47	47	50	±20%	SMPS Cap	JL47B	257	220	35	±20%	Electrolytic (Axial)	AT12N	256	

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Export carriage charges (1,2 etc.) and price information see back of catalogue. † symbol in price block indicates While Stocks Last.

Ref	Ref	Volume	Tolerance	Type	Order Code	MFR's Part No	Ref	Ref	Volume	Tolerance	Type	Order Code	MFR's Part No	Ref	Ref	Volume	Tolerance	Type	Order Code	MFR's Part No
		(1)	(%)						(1)	(%)						(1)	(%)			
1000	16	±20%	Low Imp Beryllic	VABST	256	470	63	±20%	Steph 10mm	AL31J	298	1000	80	±20%	Audio	FA18U	299			
1000	16	±20%	Pedal Beryllic	AA4X	254	470	100	±20%	Steph 10mm	AL33L	298	1000	80	±20%	Audio	FA19V	299			
1000	25	±20%	H-Temp Axial	VAB9W	257	4700	100	±20%	Steph 10mm	AL38N	298	1000	20	±20%	Steph 10mm	AU14Q	298			
1000	25	±20%	H-Temp Rad	DT78M	256	6800	16	±20%	Steph 10mm	AU12N	298	1000	20	±20%	Steph 10mm	AU18U	298			
1000	25	±20%	Low Imp Beryllic	VAB7U	256	6800	35	±20%	Steph 10mm	AL22Y	298	1000	20	±20%	Steph 10mm	AU19V	298			
1000	25	±20%	Pedal Beryllic	AT3CG	254	6800	50	±20%	Steph 10mm	AL27E	298	1000	20	±20%	Steph 10mm	AL24B	298			
1000	25	±20%	SILFS Cap	JL56L	257	6800	63	-10-±30%	Can	FR30H	299	1000	20	±20%	Audio	FA20W	299			
1000	35	±20%	Axial	FR3EE	256	6800	63	±20%	Steph 10mm	AL28X	299	1000	20	±20%	Steph 10mm	AL23A	296			
1000	35	±20%	Beryllic (Axial)	AT19V	256	6800	80	±20%	Steph 10mm	AL34M	256	1000	50	±20%	Steph 10mm	AL25F	256			
1000	35	±20%	Beryllic (Radial)	VH51F	255	10000	16	±20%	Beryllic (Radial)	VH59P	255	10000	63	-10-±30%	Can	LE3D	256			
1000	35	±20%	Pedal Beryllic	AT3ST	254	10000	16	±20%	Steph 10mm	AU17T	255	10000	63	-10-±30%	Can	LE3E	256			
1000	50	±20%	Pedal Beryllic	AT71N	254	10000	25	±20%	Steph 10mm	FR31J	299	10000	63	-10-±30%	Can	LE3E	256			
1000	50	±20%	SILFS Cap	JL57M	257	10000	35	-10-±30%	Can	FR31J	299	10000	63	-10-±30%	Can	LE3E	256			
1000	63	±20%	Axial	FR64F	256	10000	35	±20%	Steph 10mm	AL23A	256	10000	63	±20%	Steph 10mm	AL23A	256			
1000	63	±20%	Beryllic (Axial)	AT20W	256	10000	50	±20%	Steph 10mm	AL25F	256	10000	63	±20%	Steph 10mm	AL25F	256			
1000	63	±20%	Beryllic (Radial)	VH32G	256	10000	63	-10-±30%	Can	LE3D	256	10000	63	-10-±30%	Can	LE3D	256			
1000	63	±20%	H-Temp Rad	DT71N	255	10000	63	-10-±30%	Can	LE3E	256	10000	63	-10-±30%	Can	LE3E	256			
1000	63	±20%	Pedal Beryllic	AT65G	254	10000	63	±20%	Audio	FA18U	299	10000	63	±20%	Steph 10mm	AL24B	298			
1000	100	±20%	Beryllic (Radial)	VH33H	256	10000	80	±20%	Audio	FA18U	299	10000	63	±20%	Steph 10mm	AL24B	298			
1000	100	±20%	Steph 10mm	AL33Q	256	15000	25	±20%	Steph 10mm	AU14Q	298	10000	63	±20%	Steph 10mm	AU14Q	298			
1000	100	±20%	Steph 10mm	AL34X	258	22000	16	±20%	Steph 10mm	AU18U	298	10000	63	±20%	Steph 10mm	AU18U	298			
1000	200	±20%	Steph 10mm	AL34X	258	22000	16	±20%	Steph 10mm	AU18U	298	10000	63	±20%	Steph 10mm	AU18U	298			
1000	200	±20%	Steph 10mm	AL35E	258	22000	25	±20%	Steph 10mm	AU15F	298	10000	63	±20%	Steph 10mm	AU15F	298			
1500	100	±20%	Steph 10mm	AL35Y	298	22000	25	±20%	Steph 10mm	AU19V	298	10000	63	±20%	Steph 10mm	AL24B	298			
1500	250	±20%	Steph 10mm	AL38P	298	22000	35	±20%	Steph 10mm	AL24B	298	10000	63	±20%	Steph 10mm	AL24B	298			
2000	10	±20%	Pedal Beryllic	AT36Q	254	22000	56	±20%	Audio	FA20W	299	10000	63	±20%	Steph 10mm	AL24B	298			
2000	16	±20%	Beryllic (Radial)	VH54U	256	22000	55	20-±80%	Mem Rad Caps 0.22F	JF39H	299	10000	63	±20%	Steph 10mm	AL24B	298			
2000	16	±20%	H-Temp Axial	VAB7V	257	470000	55	20-±80%	Mem Rad Caps 0.47F	JF30A	299	10000	63	±20%	Steph 10mm	AL24B	298			
2000	16	±20%	Pedal Beryllic	AT45V	254	1000000	55	20-±80%	Mem Rad Caps 1.0F	JF01B	299	10000	63	±20%	Steph 10mm	AL24B	298			
2000	25	±20%	H-Temp Axial	VAB9V	257															
2000	25	±20%	H-Temp Rad	DT72P	256															
2000	25	±20%	Low Imp Beryllic	VAB9V	256															
2000	25	±20%	Pedal Beryllic	AT33H	254															
2000	35	±20%	Axial	FR60X	256															
2000	35	±20%	Beryllic (Axial)	AT21X	256															
2000	35	±20%	Beryllic (Radial)	VH55K	256															
2000	35	±20%	Low Imp Beryllic	VAB9W	256															
2000	35	±20%	Pedal Beryllic	AT64U	254															
2000	35	±20%	Steph 10mm	AL24W	298															
2000	50	±20%	Axial	FR61V	256															
2000	50	±20%	Beryllic (Axial)	AT22V	256															
2000	50	±20%	H-Temp Rad	DT73Q	255															
2000	50	±20%	Pedal Beryllic	AT72P	254															
2000	50	±20%	Steph 10mm	AL25C	298															
2000	63	-10-±30%	Can	LE18B	298															
2000	63	±20%	Axial	FR62A	256															
2000	63	±20%	Beryllic (Axial)	AT22A	256															
2000	63	±20%	Beryllic (Radial)	VH56L	256															
2000	63	±20%	Steph 10mm	AL23G	298															
2000	100	±20%	Steph 10mm	AL27S	298															
3000	25	±20%	Pedal Beryllic	AT54U	254															
3000	25	±20%	Pedal Beryllic	AT65V	254															
3000	35	±20%	Steph 10mm	AL20H	298															
3000	63	±20%	Steph 10mm	AL23R	298															
3000	100	±20%	Steph 10mm	AL23R	298															
4700	10	±20%	Pedal Beryllic	AT39P	254															
4700	16	±20%	Beryllic (Radial)	VH57M	256															
4700	16	±20%	Pedal Beryllic	AT46A	254															
4700	16	±20%	Pedal Beryllic	AT46A	254															
4700	16	±20%	Steph 10mm	AU11M	298															
4700	25	±20%	Pedal Beryllic	AT55K	254															
4700	25	±20%	Steph 10mm	AU16S	298															
4700	35	±20%	Axial	FR66E	256															
4700	35	±20%	Beryllic (Axial)	AT24B	256															
4700	35	±20%	Beryllic (Radial)	VH58N	256															
4700	35	±20%	Steph 10mm	AL21X	296															
4700	50	-10-±30%	Can	FR27E	299															
4700	50	±20%	Axial	FR30D	296															
4700	50	±20%	Steph 10mm	AL28D	298															
4700	63	-10-±30%	Can	FR26F	299															
4700	63	-10-±30%	Can	LE3C	298															
4700	63	±20%	Axial	FR65S	299															

## Capacitors

### Capacitor Pack

#### Electrolytic Capacitor Pack



Save money with this handy pack of the most commonly used radial electrolytics - 66 in total.

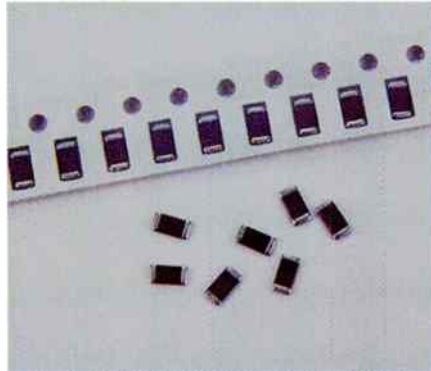
Pack includes the following values:

Value	Voltage	Quantity	Order Code
1µF	100V	10	FF01B
2.2µF	100V	5	FF02C
4.7µF	63V	5	FF03D
10µF	50V	10	FF04E
22µF	25V	5	FF06G
47µF	25V	5	FF08J
100µF	10V	5	FF10L
100µF	25V	5	FF11M
220µF	35V	5	JL22Y
470µF	16V	5	FF15R
470µF	35V	2	FF16S
1000µF	16V	2	FF17T
1000µF	100V	2	JL27E

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ32K	Capacitor Pack 1	£12.750	£14.990

### Surface Mount Capacitors

#### Ceramic Chip



A range of multilayer ceramic chip surface-mounted capacitors that are packaged in a standard 1206 format (3.45 x 1.85 x 1.52mm). The terminations are metallised silver with a tin-coated nickel barrier layer.

Value	Operating Voltage	Dielectric Type	Tolerance	Temperature Range
10pF	100V	Very stable	±10%	-55°C to +125°C
22pF	100V	Very stable	±10%	-55°C to +125°C
33pF	100V	Very stable	±10%	-55°C to +125°C
47pF	100V	Very stable	±10%	-55°C to +125°C
100pF	100V	Very stable	±10%	-55°C to +125°C
220pF	100V	Very stable	±10%	-55°C to +125°C
330pF	100V	Very stable	±10%	-55°C to +125°C
470pF	100V	Very stable	±10%	-55°C to +125°C
0.001µF	100V	Very stable	±10%	-55°C to +125°C
0.0022µF	100V	Very stable	±10%	-55°C to +125°C
0.0047µF	100V	High permittivity	±10%	-55°C to +125°C
0.01µF	100V	High permittivity	±10%	-55°C to +125°C
0.022µF	100V	High permittivity	±10%	-55°C to +125°C
0.047µF	100V	High permittivity	±10%	-55°C to +125°C
0.1µF	63V	General purpose	±20%	-25°C to +85°C
0.22µF	63V	General purpose	±20%	-25°C to +85°C

Supplied in multiples of 25 pieces (price per 25)  
Available on reels please phone for prices.

Price each is shown. Order quantities less than 4 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		4+	40+	160+	
DH86T	10pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH87U	22pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH88V	33pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH89W	47pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH90X	100pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH91Y	220pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH92A	330pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH93B	470pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH94C	0.001µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH95D	0.0022µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH96E	0.0047µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH97F	0.01µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH98G	0.022µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH99H	0.047µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DJ00A	0.1µF SMD Ceramic	£0.890	£0.590	£0.490	£2.290
DJ01B	0.22µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490

### Ceramic Capacitors

#### Metallised Ceramic Plate Capacitors

A miniature ceramic capacitor with a cement-coated case. Values up to and including 220pF are suitable for temperature compensation in tuned circuits where low losses, close tolerance and high stability are required. Values from 270pF to 4700pF are for use in coupling and decoupling applications, where a non-linear change of capacitance with temperature is permissible. Values 10,000pF and 22,000pF are suitable for use in coupling and decoupling applications, where capacitance stability is not critical.



#### Specification

Tolerance:	
1.8pF to 4.7pF:	±0.25pF
5.6pF to 330pF:	±5%
390pF to 4700pF:	±10%
10,000pF and 22,000pF:	-20% +80%
Working voltage:	
1.8pF to 4700pF:	100V DC
10,000pF and 22,000pF:	63V DC
Insulation resistance:	>1000MΩ
Temperature coefficient:	
1.8pF to 220pF:	Zero
270pF to 390pF:	+350 to -1000ppm/°C
470pF to 4700pF:	medium K (±10%)
10,000pF to 20,000pF:	high K (+22% -82%)
Power factor:	
1.8pF to 390pF:	<10x10 <sup>-4</sup>
470pF to 4700pF:	<25x10 <sup>-3</sup>
10,000pF:	<50x10 <sup>-2</sup>
22,000pF:	<25x10 <sup>-2</sup>
Dimensions	
Thickness of body:	2.25mm max.
Lead spacing:	5mm
Lead length:	25mm

Capacitance (pF)	Diameter (mm) max.	Capacitor marking
1.8	5	1-8C
2.2	5	2-2C
2.7	5	2-7C
3.3	5	3-3C
3.9	5	3-9C
4.7	5	4-7C
5.6	5	5-6
6.8	5	6-8
8.2	5	8-2
10	5	10J
12	5	12J
15	5	15J
18	5	18J
22	5	22J
27	5	27J
33	5	33J
39	6	39J
47	6	47J
56	6	56J
68	7	68J
82	7	82J
100	7	101J NPO
120	8	121J

150	8	151J NPO
180	8	181J NPO
220	10	221J NPO
270	8	270
330	7	330
390	9	391K
470	5	471K
560	5	561K
680	5	681K
820	5	821K
1000	5	102K
1200	5	122
1500	5	152
1800	5	182
2200	5	222
2700	6	272
3300	7	332
3900	7	392
4700	8	472K
10,000	6	103Z
22,000	7	223Z

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	1000+	
WX35Q	Ceramic 1.8	£0.042	£0.039	£0.015	£0.120
WX36P	Ceramic 2.2	£0.042	£0.039	£0.015	£0.120
WX37S	Ceramic 2.7	£0.042	£0.039	£0.015	£0.120
WX38R	Ceramic 3.3	£0.042	£0.039	£0.015	£0.120
WX39N	Ceramic 3.9	£0.042	£0.039	£0.015	£0.120
WX40T	Ceramic 4.7	£0.042	£0.039	£0.015	£0.120
WX41U	Ceramic 5.6	£0.042	£0.039	£0.015	£0.120
WX42V	Ceramic 6.8	£0.042	£0.039	£0.015	£0.120
WX43W	Ceramic 8.2	£0.042	£0.039	£0.015	£0.120
WX44X	Ceramic 10	£0.042	£0.039	£0.015	£0.120
WX45Y	Ceramic 12	£0.042	£0.039	£0.015	£0.120
WX46A	Ceramic 15	£0.042	£0.039	£0.015	£0.120
WX47B	Ceramic 18	£0.042	£0.039	£0.015	£0.120
WX48C	Ceramic 22	£0.042	£0.039	£0.015	£0.120
WX49D	Ceramic 27	£0.042	£0.039	£0.015	£0.120
WX50E	Ceramic 33	£0.042	£0.039	£0.015	£0.120
WX51F	Ceramic 39	£0.042	£0.039	£0.015	£0.120
WX52G	Ceramic 47	£0.042	£0.039	£0.015	£0.120
WX53H	Ceramic 56	£0.042	£0.039	£0.015	£0.120
WX54J	Ceramic 68	£0.042	£0.039	£0.015	£0.120
WX55K	Ceramic 82	£0.042	£0.039	£0.015	£0.120
WX56L	Ceramic 100	£0.042	£0.039	£0.015	£0.120
WX57M	Ceramic 120	£0.042	£0.039	£0.015	£0.120
WX58N	Ceramic 150	£0.042	£0.039	£0.015	£0.120
WX59P	Ceramic 180	£0.042	£0.039	£0.015	£0.120
WX60Q	Ceramic 220	£0.042	£0.039	£0.015	£0.120
WX61R	Ceramic 270	£0.042	£0.039	£0.015	£0.120
WX62S	Ceramic 330	£0.042	£0.039	£0.015	£0.120
WX63T	Ceramic 390	£0.042	£0.039	£0.015	£0.120
WX64U	Ceramic 470	£0.042	£0.039	£0.015	£0.120
WX65V	Ceramic 560	£0.042	£0.039	£0.015	£0.120
WX66W	Ceramic 680	£0.042	£0.039	£0.015	£0.120
WX67X	Ceramic 820	£0.042	£0.039	£0.015	£0.120
WX68Y	Ceramic 1000	£0.042	£0.039	£0.015	£0.120
WX69A	Ceramic 1200	£0.042	£0.039	£0.015	£0.120
WX70M	Ceramic 1500	£0.042	£0.039	£0.015	£0.120
WX71N	Ceramic 1800	£0.042	£0.039	£0.015	£0.120
WX72P	Ceramic 2200	£0.042	£0.039	£0.015	£0.120
WX73Q	Ceramic 2700	£0.042	£0.039	£0.015	£0.120
WX74R	Ceramic 3300	£0.042	£0.039	£0.015	£0.120
WX75S	Ceramic 3900	£0.042	£0.039	£0.015	£0.120
WX76H	Ceramic 4700	£0.042	£0.039	£0.015	£0.120
WX77J	Ceramic 10,000	£0.049	£0.007	£0.007	£0.120
WX78K	Ceramic 22,000	£0.049	£0.058	£0.032	£0.120

Want the best price but not all at once?

- Schedule your Deliveries

Call 01702 554000 and ask for "Schedules"



## Resin-Dipped



A high quality multilayer resin-dipped plate ceramic capacitor, offering a very high capacitance in a very small case at a very economical price. Applications include coupling, decoupling and filtering.

### Specification

**Tolerance**  
10pF to 220pF: ±5%  
470pF to 0.1µF: ±10%  
0.22µF to 0.47µF: ±20%  
Insulation resistance: >10<sup>11</sup> or 10<sup>9</sup> divided by µF (whichever is less)

**Temperature coefficient:**  
10pF to 220pF: ±30ppm/°C (COG)  
470pF to 0.1µF: ±15% (X7R) max from -55°C to +125°C  
0.22µF to 0.47µF: +22% -56% (Z5U) max from -25°C to +85°C

**Power factor:**  
10pF to 220pF: <0.1%  
470pF to 0.1µF: <2.5%  
0.22µF to 0.47µF: <3%

**Case size:** (H x W x T) mm      Lead pitch mm  
10pF to 0.0047µF: 4.2 x 4.2 x 3.0      2.5  
0.0068µF to 0.033µF: 5.0 x 5.0 x 3.0      2.5  
0.047µF to 0.47µF: 5.5 x 5.5 x 3.0      5.0

The following values are available:

Value	Voltage	Marking
10pF	100V	100J1C
22pF	100V	220J1C
47pF	100V	470J1C
100pF	100V	101J1C
220pF	100V	221J1C
470pF	100V	471K1D
0.001µF	100V	102K1D
0.0022µF	100V	222K1D
0.0033µF	100V	332K1D
0.0047µF	100V	472K1D
0.0068µF	100V	682K1D
0.01µF	100V	103K1D
0.022µF	100V	223K1D
0.033µF	100V	333K1D
0.047µF	100V	473K1D
0.068µF	100V	683K1D
0.1µF	100V	104K1D
0.22µF	100V	224M1F
0.47µF	50V	474M5F

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 257	Price each exc. VAT	inc. VAT each
		10+    50+    1000+	1+
RA33L	Monores Cap 10pF	£0.125    £0.080    £0.026	£0.250
RA34M	Monores Cap 22pF	£0.125    £0.080    £0.026	£0.250
RA35Q	Monores Cap 47pF	£0.125    £0.080    £0.026	£0.250
RA36P	Monores Cap 100pF	£0.080    £0.030    £0.026	£0.132
RA37S	Monores Cap 220pF	£0.080    £0.030    £0.026	£0.132
RA38R	Monores Cap 470pF	£0.080    £0.030    £0.026	£0.132
RA39N	Monores Cap 1000pF	£0.080    £0.030    £0.026	£0.132
RA40T	Monores Cap 2200pF	£0.080    £0.030    £0.026	£0.132
RA41U	Monores Cap 3300pF	£0.090    £0.030    £0.026	£0.180
RA42V	Monores Cap 4700pF	£0.090    £0.030    £0.026	£0.180
RA43W	Monores Cap 6800pF	£0.090    £0.040    £0.031	£0.180
RA44X	Monores Cap 0.01µF	£0.150    £0.050    £0.031	£0.240
RA45Y	Monores Cap 0.022µF	£0.110    £0.050    £0.055	£0.190
RA46A	Monores Cap 0.033µF	£0.110    £0.050    £0.031	£0.228
RA47B	Monores Cap 0.047µF	£0.130    £0.050    £0.031	£0.240
RA48C	Monores Cap 0.068µF	£0.130    £0.050    £0.039	£0.240
RA49D	Monores Cap 0.1µF	£0.190    £0.070    £0.055	£0.324
RA50E	Monores Cap 0.22µF	£0.190    £0.090    £0.058	£0.360
RA52G	Monores Cap 0.47µF	£0.240    £0.099    £0.090	£0.408

## Decoupling Ceramic Disc



General purpose cement-coated ceramic disc capacitor having a large capacitance in a very small case size. Ideal for decoupling applications.  
Tolerance: -20+80%  
Power factor: <8% at 1kHz

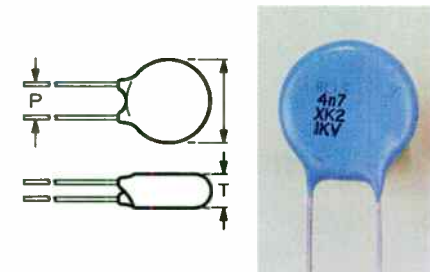
Value (µF)	Voltage (V DC)	Diameter (mm)	Thickness (mm)	Lead pitch (mm)
0.01	50	5	4	2.5
0.022	50	7	4	2.5
0.047	16	9	4	5
0.047	50	9	4	5
0.1	16	10	4	5
0.1	50	10	4	5
0.22	16	10	4	5
0.22	25	10	4	5

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 318	Price each exc. VAT	inc. VAT each
		10+    50+    1000+	1+
BX00A	Disc 0.01µF 50V	£0.049    £0.009    £0.076	£0.132
BX01B	Disc 0.022µF 50V	£0.049    £0.044    £0.032	£0.120
YR74R	Minidisc 0.047µF 16V	£0.060    £0.032    £0.022	£0.090
BX02C	Disc 0.047µF 50V	£0.083    £0.044    £0.032	£0.120
YR75S	Minidisc 0.1µF 16V	£0.070    £0.032    £0.030	£0.210
BX03D	Disc 0.1µF 50V	£0.190    £0.088    £0.062	£0.260
JL01E	Minidisc 0.22µF 16V	£0.150    £0.050    £0.040	£0.310
JL02C	Disc 0.22µF 25V	£0.150    £0.060    £0.035	£0.290

## High Voltage Ceramic Disc

Universe



Standard disc ceramic capacitors for general purpose use in high voltage circuits.  
Tolerance: ±10% ≤ 470pF  
-20+80% ≥ 1000pF

Insulation resistance: 10,000MΩ min.

Value (pF)	Voltage (V DC)	Case size (mm)	Temp coefficient	Power factor (max)
		D    T    P		
10	500	5    4    5	0	0.26%
100	500	10    4    5	0	0.4%
470	500	5    4    5	+10-10%	2.5%
1000	500	5    4    5	+22-56%	5%
1000	1000	6    4    5	+22-56%	5%
4700	500	8    4    5	+22-56%	5%
4700	1000	10    4    5	+22-56%	5%
10,000	500	8    4    5	+22-82%	5%
10,000	1000	10    4    5	+22-82%	5%

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 321	Price each exc. VAT	inc. VAT each
		10+    50+    1000+	1+
BX05F	HV Disc 10	£0.060    £0.030    £0.020	£0.130
BX07H	HV Disc 100	£0.060    £0.030    £0.020	£0.130
BX10L	HV Disc 470	£0.060    £0.030    £0.020	£0.130
BX12N	HV Disc 1000	£0.060    £0.030    £0.020	£0.130
JL03D	1000V Disc 1000pF	£0.090    £0.040    £0.020	£0.160
BX14Q	HV Disc 4700	£0.060    £0.030    £0.020	£0.150
HY18U	1000V Disc 4700pF	£0.090    £0.049    £0.030	£0.190
BX15R	HV Disc 10,000	£0.060    £0.030    £0.020	£0.190
JL04E	1000V Disc 10,000pF	£0.090    £0.070    £0.030	£0.220

## RF Capacitors

### Feed Through Capacitor

Murata

Feed through capacitor  
1000pF 300V  
DC miniature, tubular solder-in construction.



Ideal for radio amateur applications

Tolerance -0+200%

Overall size 16 x 5.5mm diameter.

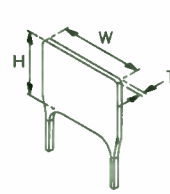
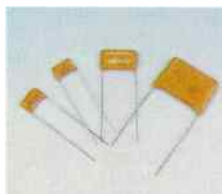
Hole size required 3mm.

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 323	Price each exc. VAT	inc. VAT each
		5+    50+    1000+	1+
BX16S	Feed Thro Cap	£0.260    £0.240    £0.190	£0.390

## High Stability Silvered Mica

A capacitor featuring high stability for use in tuned circuits, filters and for pulse operation. It has a solid wax housing impregnated with a tough cement coating.



Tolerance: 5pF to 47pF ±0.5pF  
68pF to 1000pF ±1%  
350V DC

Working voltage:

Insulation

resistance:

Temperature

coefficient:

5pF to 47pF +75ppm/°C

68pF to 1000pF

+35ppm/°C

Power factor:

5pF to 47pF:

68pF to 680pF:

1000pF:

<25x10-4

<15x10-4

<20x10-4

Case sizes (mm)

5pF to 68pF

100pF to 220pF

330pF to 470pF

680pF to 1000pF

13    8    3.2

17    12    3.2

27    17    3.2

27    22    3.2

The following values are available (pF): 5, 10, 22, 33, 47, 68, 100, 120, 150, 180, 220, 330, 470, 680 and 1000.

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 324	Price each exc. VAT	inc. VAT each
		5+    50+    1000+	1+
WX02C	Mica 5pF	£0.390    £0.310    £0.290	£0.660
WX03D	Mica 10pF	£0.390    £0.310    £0.290	£0.660
WX05F	Mica 22pF	£0.390    £0.310    £0.290	£0.660
WX07H	Mica 33pF	£0.390    £0.310    £0.290	£0.660
WX09K	Mica 47pF	£0.390    £0.310    £0.290	£0.660
WX11MM	Mica 68pF	£0.440    £0.310    £0.310	£0.780
WX13P	Mica 100pF	£0.490    £0.360    £0.350	£0.864
WX14Q	Mica 120pF	£0.490    £0.360    £0.350	£0.864
WX15R	Mica 150pF	£0.490    £0.360    £0.350	£0.864
WX16S	Mica 180pF	£0.490    £0.380    £0.370	£0.864
WX17T	Mica 220pF	£0.490    £0.430    £0.420	£0.900
WX19V	Mica 330pF	£0.590    £0.540    £0.530	£0.996
WX21X	Mica 470pF	£0.590    £0.540    £0.530	£0.996
WX23A	Mica 680pF	£0.690    £0.590    £0.590	£1.200
WX25C	Mica 1000pF	£0.690    £0.590    £0.540	£1.200

## Call and Collect

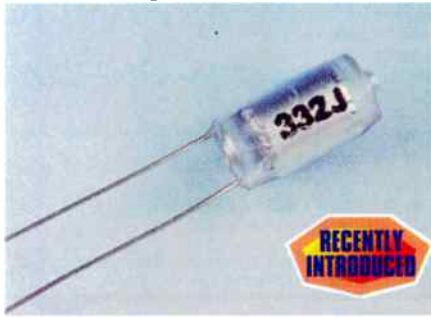
Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## All Customers

No additional freight charges for heavy items

## Polystyrene

### Radial Polystyrene



A range of radial wire-ended tubular foil polystyrene capacitors offering high insulation resistance and excellent humidity characteristics. Ideal for a wide range of applications including industrial, audio, amateur enthusiasts.

#### Specification

Tolerance:  $\pm 5\%$   
 Voltage rating: 50V DC  
 Temperature rating:  $-10^{\circ}\text{C}$  to  $70^{\circ}\text{C}$   
 Temperature coefficient:  $\pm 80\text{ppm}/^{\circ}\text{C}$   
 Insulation resistance: 100,000M $\Omega$

Value	Dimensions mm	Order Code
100pF	5.5 x 10	JA80B
150pF	5.5 x 10	JA81C
220pF	5.5 x 10	JA82D
330pF	5.5 x 10	JA83E
470pF	5.5 x 10	JA84F
680pF	5.5 x 10	JA85G
1000pF	5.5 x 10	JA86T
1500pF	7 x 10	JA87U
2200pF	7 x 10	JA88V
3300pF	7.5 x 10	JA89W
4700pF	8 x 10	JA90X
6800pF	8 x 15	JA91Y
10000pF	9 x 15	JA92A

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 12719	Price each exc. VAT			inc. VAT each
		10+	50+	100+	
JA80B	Radial Polyst 100pF	£0.060	£0.050	£0.034	£0.180
JA81C	Radial Polyst 150pF	£0.060	£0.050	£0.034	£0.180
JA82D	Radial Polyst 220pF	£0.060	£0.050	£0.034	£0.180
JA83E	Radial Polyst 330pF	£0.060	£0.050	£0.034	£0.180
JA84F	Radial Polyst 470pF	£0.060	£0.050	£0.034	£0.180
JA85G	Radial Polyst 680pF	£0.060	£0.050	£0.034	£0.180
JA86T	Radial Polyst 1nF	£0.060	£0.050	£0.034	£0.180
JA87U	Radial Polyst 1.5nF	£0.060	£0.050	£0.034	£0.205
JA88V	Radial Polyst 2.2nF	£0.060	£0.050	£0.035	£0.205
JA89W	Radial Polyst 3.3nF	£0.060	£0.050	£0.035	£0.205
JA90X	Radial Polyst 4.7nF	£0.060	£0.050	£0.040	£0.205
JA91Y	Radial Polyst 6.8nF	£0.060	£0.050	£0.040	£0.205
JA92A	Radial Polyst 10nF	£0.070	£0.060	£0.055	£0.280

### Axial Lead Polystyrene

A range of high quality axial lead polystyrene capacitors. Aluminium foil electrodes and welded terminal wires ensure good performance at low and high frequencies. Suitable for use in IFTs, tuned circuits, pulse networks, timing circuits, etc.



Tolerance:  $\pm 5\%$   
 Working voltage: 160V DC (22pF to 3,300pF)  
 63V DC (22,000pF to 47,000pF)

Insulation resistance:  $>10^9\text{M}\Omega$   
 Power factor:  $<0.0005$   
 The following values are available:

Value (pF)	Diameter	Length
22	4.0	10.0
47	4.0	10.0
68	4.0	10.0
100	4.0	10.0
150	4.0	10.0
220	4.0	10.0
470	5.0	10.0
560	6.0	10.0
680	6.0	10.0
1,000	6.0	10.0
2,200	8.0	10.0
3,300	8.0	10.0
47,000	15.0	30.0

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 321	Price each exc. VAT			inc. VAT each
		10+	50+	100+	
BX24B	Polystyrene 22	£0.140	£0.100	£0.090	£0.210
BX26D	Polystyrene 47	£0.140	£0.100	£0.090	£0.210
BX27E	Polystyrene 68	£0.140	£0.100	£0.090	£0.210
BX28F	Polystyrene 100	£0.110	£0.075	£0.069	£0.170
BX29G	Polystyrene 150	£0.110	£0.075	£0.069	£0.170
BX30H	Polystyrene 220	£0.110	£0.075	£0.069	£0.170
BX32K	Polystyrene 470	£0.110	£0.075	£0.069	£0.170
BX33L	Polystyrene 560	£0.110	£0.075	£0.069	£0.170
BX34M	Polystyrene 680	£0.110	£0.075	£0.069	£0.170
BX35Q	Polystyrene 1000	£0.110	£0.075	£0.069	£0.170
BX37S	Polystyrene 2200	£0.130	£0.075	£0.069	£0.170
BX38P	Polystyrene 3300	£0.130	£0.110	£0.080	£0.170
BX94C	Polystyrene 47,000	£0.350	£0.300	£0.260	£0.650

### Close Tolerance Polystyrene

Phillips



A polystyrene film and tin/lead foil capacitor using extended techniques, resulting in low inherent inductance and low series resistance. This combined with low temperature coefficient, makes these capacitors suitable for use in professional and general purpose applications where precision, reliability, stability and low losses are of prime importance, e.g. in tuned circuits, filter networks, discriminators etc.

Tolerance:  $\pm 1\%$   
 Working voltage: 100pF to 470pF: 500V DC, 220V AC 50Hz  
 560pF to 8200pF: 125V DC, 63V AC 50Hz  
 10,000pF and 22,000pF: 63V DC  
 Insulation resistance:  $>10^{11}\Omega$   
 Temperature coefficient:  $-150\pm 60\text{ppm}/^{\circ}\text{C}$   
 Power factor:  $<2 \times 10^{-4}$  at 1kHz  
 $<5 \times 10^{-4}$  at 1MHz

Value (pF)	Case size (mm)	
	L (max)	D (max)
100	8	3.5
150	8	3.5
220	8	3.5
270	8	3.5
330	8	3.5
390	8	3.5
470	8	3.5
560	8	3.5
750	8	4.5
1,000	10.5	4.5
1,200	11	6.3

1,500	11	5
1,800	11	5
2,200	11	5
2,700	11	5
3,300	11	5
3,900	11.5	11
4,700	14	11.5
5,600	14	12
6,800	14	12.5
8,200	15	12.5
10,000	14.5	5
22,000	15	7

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 334	Price each exc. VAT			inc. VAT each
		5+	50+	100+	
BX46A	1% Polysty 100	£0.210	£0.140	£0.120	£0.380
BX47B	1% Polysty 150	£0.210	£0.140	£0.120	£0.380
BX49D	1% Polysty 220	£0.210	£0.140	£0.120	£0.380
BX50E	1% Polysty 270	£0.210	£0.140	£0.120	£0.380
BX51F	1% Polysty 330	£0.210	£0.140	£0.120	£0.380
BX52G	1% Polysty 390	£0.210	£0.140	£0.120	£0.380
BX53H	1% Polysty 470	£0.210	£0.140	£0.120	£0.380
BX54J	1% Polysty 560	£0.210	£0.140	£0.120	£0.380
BX55K	1% Polysty 750	£0.210	£0.140	£0.120	£0.380
BX56L	1% Polysty 1000	£0.210	£0.140	£0.120	£0.380
BX57M	1% Polysty 1200	£0.210	£0.160	£0.150	£0.380
BX58N	1% Polysty 1500	£0.210	£0.140	£0.120	£0.380
BX59P	1% Polysty 1800	£0.210	£0.140	£0.120	£0.380
BX60Q	1% Polysty 2200	£0.210	£0.140	£0.120	£0.380
BX61R	1% Polysty 2700	£0.210	£0.140	£0.120	£0.380
BX62S	1% Polysty 3300	£0.210	£0.140	£0.120	£0.380
BX63T	1% Polysty 3900	£0.210	£0.140	£0.120	£0.380
BX64U	1% Polysty 4700	£0.310	£0.220	£0.185	£0.490
BX65V	1% Polysty 5600	£0.310	£0.220	£0.185	£0.490
BX66W	1% Polysty 6800	£0.310	£0.220	£0.185	£0.490
BX65G	1% Polysty 8200	£0.310	£0.220	£0.185	£0.490
BX86T	1% Polysty 10,000	£0.380	£0.220	£0.185	£0.500
BX87U	1% Polysty 22,000	£0.290	£0.260	£0.220	£0.770

### Miniature Polycarbonate Film and Foil

Wima



A range of polycarbonate film capacitors with metal foil electrodes that are designed for reservoir and decoupling applications in high-speed digital circuits. The capacitors feature low induction and low damping with an almost linear capacitance temperature coefficient. Housed in a yellow flame-retardant

plastic case (UL 94 V-O) with an epoxy resin seal.

Tolerance:  $\pm 10\%$   
 Temperature range:  $-55^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$   
 Insulation resistance: 50V:  $\pm 3.75 \times 10^9\text{M}\Omega$   
 63V:  $\pm 1 \times 10^4\text{M}\Omega$   
 Dissipation factors (tan $\delta$ ) at: 1kHz:  $\pm 2 \times 10^{-3}$   
 10kHz:  $\pm 4 \times 10^{-3}$   
 100kHz:  $\pm 8 \times 10^{-3}$

Value	Voltage	Dimensions mm		
		W	H	L
100pF	100V	2.5	6.5	7.2
220pF	100V	2.5	6.5	7.2
470pF	100V	2.5	6.5	7.2
1000pF	100V	2.5	6.5	7.2
2200pF	100V	2.5	6.5	7.2
4700pF	100V	3.5	8.5	7.2
0.01 $\mu\text{F}$	100V	4.5	9.5	7.2

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 328	Price each exc. VAT			inc. VAT each
		5+	50+	500+	
CX03D	100pF MiniCarb	£0.140	£0.090	£0.085	£0.270
CX04E	220pF MiniCarb	£0.140	£0.090	£0.085	£0.270
CX05F	470pF MiniCarb	£0.140	£0.090	£0.085	£0.270
CX06G	1000pF MiniCarb	£0.140	£0.090	£0.085	£0.270
CX07H	2200pF MiniCarb	£0.140	£0.090	£0.085	£0.270
CX08J	4700pF MiniCarb	£0.140	£0.110	£0.095	£0.270
CX09K	0.01 $\mu\text{F}$ MiniCarb	£0.140	£0.120	£0.100	£0.270

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**Polyester**

**Multilayer Metallised Polyester Film**

A range of multilayer metallised polyester film capacitors that are epoxy resin sealed in a flame-retardant thermoplastic case (UL94VO).

These low-cost capacitors have a high CV to volume ratio and are highly reliable and stable over a very wide temperature range (-5°C to +100°C). The capacitors are non-inductive with a standard 5mm lead spacing and are primarily intended for PCB mounting. Conform to IEC 384-1/384-2 and CECC 30000/30400.

**Specification**  
Voltage working: 63V DC  
Tolerance: ±10%  
Dissipation factor:  $\tan\delta \leq 0.01/1\text{kHz}$   
typical  $50 \times 10^{-4}$

Value nF	Dimensions mm		Order Code
	length	height	
1	7.5	6.5	DT92A
2.2	7.5	6.5	DT93B
4.7	7.5	6.5	DT94C
10	7.5	6.5	DT95D
22	7.5	6.5	DT96E
47	7.5	6.5	DT97F
100	7.5	6.5	DT98G
220	7.7	8.5	DT99H
470	7.7	8.5	DS80B

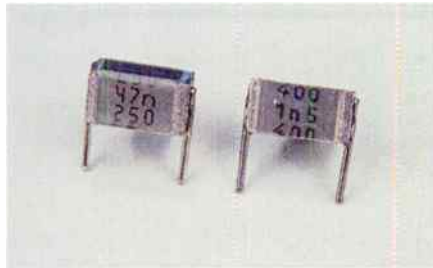
Height does not include the length of the leads (6mm).

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 12031	Price each exc. VAT			inc. VAT each 1+
		10+	50+	1000+	
DT92A	1n Poly Film	£0.045	£0.037	£0.030	£0.190
DT93B	2.2n Poly Film	£0.045	£0.037	£0.030	£0.190
DT94C	4.7n Poly Film	£0.045	£0.037	£0.030	£0.190
DT95D	10n Poly Film	£0.136	£0.080	£0.055	£0.190
DT96E	22n Poly Film	£0.045	£0.037	£0.030	£0.190
DT97F	47n Poly Film	£0.045	£0.037	£0.030	£0.190
DT98G	100n Poly Film	£0.170	£0.100	£0.070	£0.220
DT99H	220n Poly Film	£0.115	£0.086	£0.072	£0.190
DS80B	470n Poly Film	£0.290	£0.190	£0.140	£0.490

**Polyester Layer**

Siemens



A self-healing layer capacitor with a polyethylene-terephthalate dielectric. Designed specifically for use on printed circuit boards, they offer high values of capacitance in extremely small case sizes and they have low inductance and low loss characteristics.

Tolerance: 0.001µF to 0.01µF: ±10%  
0.015µF to 1µF: ±5%  
Working voltage: 0.001µF to 0.01µF: 400V DC  
160V AC rms 50Hz  
0.015µF to 0.18µF: 250V DC  
100V AC rms 50Hz  
0.22µF to 1µF 100V DC  
55V AC rms 50Hz

Insulation resistance  
0.001µF to 0.33µF: >7.5x10<sup>10</sup>Ω ave.  
0.39µF to 1µF: >2.5x10<sup>10</sup>Ω ave.  
Temp coefficient: 200ppm/°C ave.  
Self-inductance: 6nH approx.  
Power factor: <8 x 10<sup>-3</sup> at 1kHz

Value (µF)	Case size (mm)			
	l max	b max	h max	p max
0.001	9	2.4	8.2	7.5
0.0015	9	2.3	8.2	7.5
0.0022	9	2.3	8.2	7.5
0.0033	9	2.3	8.2	7.5

0.0047	9	2.3	8.2	7.5
0.0068	9	2.4	7.3	7.5
0.0082	9	2.4	7.3	7.5
0.01	9	2.4	7.3	7.5
0.015	9	2.3	7.3	7.5
0.018	9	2.3	7.3	7.5
0.022	9	2.5	7.3	7.5
0.027	9	2.4	7.3	7.5
0.033	9	2.5	7.3	7.5
0.039	9	2.9	7.3	7.5

Value (µF)	Case size (mm)			
	l max	b max	h max	p max
0.047	9	2.9	7.4	7.5
0.068	9	3.6	8.1	7.5
0.1	9	4.0	10.1	7.5
0.12	11.5	4.2	7.7	10
0.15	11.5	4.3	8.5	10
0.22	11.5	3.4	7.2	10
0.27	9	5	11.5	7.5
0.33	9	5.5	8.8	7.5
0.39	9	5.5	11.5	7.5
0.47	9	5.5	12.5	7.5
0.56	9	6.5	12.5	7.5
0.68	9	8	11.4	7.5
1	11.5	8.5	9.8	10

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 353	Price each exc. VAT			inc. VAT each 1+
		5+	50+	1000+	
WW22Y	Poly Layer 0.001	£0.160	£0.110	£0.090	£0.240
WW23A	Poly Layer 0.0015	£0.160	£0.110	£0.090	£0.240
WW24B	Poly Layer 0.0022	£0.160	£0.110	£0.090	£0.240
WW25C	Poly Layer 0.0033	£0.160	£0.110	£0.090	£0.240
WW26D	Poly Layer 0.0047	£0.160	£0.110	£0.090	£0.240
WW27E	Poly Layer 0.0068	£0.160	£0.110	£0.090	£0.240
WW28F	Poly Layer 0.0082	£0.160	£0.110	£0.090	£0.240
WW29G	Poly Layer 0.01	£0.160	£0.110	£0.090	£0.240
WW31J	Poly Layer 0.015	£0.160	£0.110	£0.090	£0.240
WW33L	Poly Layer 0.022	£0.160	£0.110	£0.090	£0.240
WW34M	Poly Layer 0.027	£0.160	£0.110	£0.090	£0.240
WW35Q	Poly Layer 0.033	£0.160	£0.110	£0.090	£0.240
WW36P	Poly Layer 0.039	£0.160	£0.110	£0.090	£0.240
WW37S	Poly Layer 0.047	£0.200	£0.110	£0.090	£0.240
WW39N	Poly Layer 0.068	£0.160	£0.110	£0.090	£0.240
WW41U	Poly Layer 0.1	£0.160	£0.122	£0.115	£0.290
WW42V	Poly Layer 0.12	£0.160	£0.122	£0.135	£0.290
WW43W	Poly Layer 0.15	£0.160	£0.122	£0.135	£0.290
WW44X	Poly Layer 0.18	£0.160	£0.122	£0.135	£0.290
WW45Y	Poly Layer 0.22	£0.160	£0.122	£0.135	£0.290
WW46A	Poly Layer 0.27	£0.190	£0.170	£0.160	£0.320
WW47B	Poly Layer 0.33	£0.190	£0.170	£0.160	£0.320
WW48C	Poly Layer 0.39	£0.190	£0.170	£0.160	£0.320
WW49D	Poly Layer 0.47	£0.365	£0.250	£0.220	£0.490
WW50E	Poly Layer 0.56	£0.350	£0.260	£0.230	£0.430
WW51F	Poly Layer 0.68	£0.410	£0.290	£0.270	£0.490
WW53H	Poly Layer 1	£0.324	£0.242	£0.230	£0.613

**Sub-miniature Metallised Polyester**

Wima



A range of metallised polyester capacitors that are designed for PCB mounting and have a 2.5mm lead spacing.

The capacitors are ideally suited for decoupling, and are housed in a flame-retardant red plastic case (UL 94 V-O) with an epoxy resin seal.

Tolerance: ±20%

Insulation resistance  
50V: ≥3.75 x 10<sup>3</sup>MΩ  
63V: ≥1 x 10<sup>4</sup>MΩ

Temperature range: -55°C to +100°C

Dissipation factors (tanδ) at 1kHz 10kHz 100kHz  
C ≤ 0.1µF: ≤0.008 ≤0.015 ≤0.025  
C ≥ 0.1µF: ≤0.008 ≤0.015

Temp coefficient: 200ppm/°C ave.

Value	Voltage	Dimensions mm		
		W	H	L
1000pF	63V	2.5	7	4.6

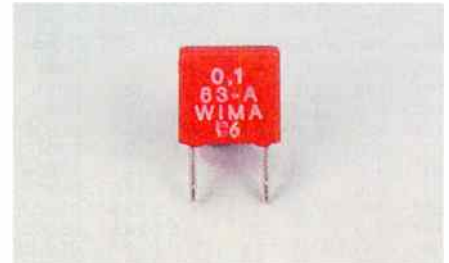
2200pF	63V	2.5	7	4.6
4700pF	63V	2.5	7	4.6
0.01µF	63V	2.5	7	4.6
0.022µF	63V	2.5	7	4.6
0.047µF	63V	2.5	7	4.6
0.1µF	63V	3	7.5	4.6
0.22µF	50V	3	7.5	4.6
0.47µF	50V	4.6	9	4.6

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 354	Price each exc. VAT			inc. VAT each 1+
		5+	50+	500+	
CW94C	1000pF SubminEster	£0.150	£0.109	£0.092	£0.252
CW95D	2200pF SubminEster	£0.150	£0.109	£0.092	£0.252
CW96E	4700pF SubminEster	£0.150	£0.109	£0.092	£0.264
CW97F	0.01µF SubminEster	£0.170	£0.118	£0.100	£0.264
CW98G	0.022µF SubminEster	£0.180	£0.122	£0.103	£0.300
CW99H	0.047µF SubminEster	£0.180	£0.140	£0.118	£0.300
CX00A	0.1µF SubminEster	£0.220	£0.165	£0.140	£0.360
CX01B	0.22µF SubminEster	£0.310	£0.244	£0.206	£0.492
CX02C	0.47µF SubminEster	£0.490	£0.399	£0.338	£0.768

**Miniature Metallised Polyester Film**

Wima



A range of polyester film capacitors with vacuum-deposited aluminium electrodes that are ideally suited for decoupling applications. The capacitors are encapsulated in a red flame-retardant plastic case (UL 94 V-O) with an epoxy resin seal.

Tolerance: ±10%  
Insulation resistance @ 20°C  
C ≤ 0.22µF: ≥1 x 10<sup>4</sup>MΩ  
(mean value 5 x 10<sup>4</sup>MΩ)  
C ≤ 2.2µF: ≥30000  
(MΩ x µF, mean value 60000s)  
C = 2.2µF: ≥10000  
(MΩ x µF, mean value 30000s)

Temperature range: -55°C to +100°C  
Dissipation factors (tanδ @ 20°):  
C ≤ 0.1µF 0.1µF - 1µF 2.2µF  
1kHz ≤8 x 10<sup>-3</sup> ≤8 x 10<sup>-3</sup> ≤10 x 10<sup>-3</sup>  
10kHz ≤15 x 10<sup>-3</sup> ≤15 x 10<sup>-3</sup> —  
100kHz ≤25 x 10<sup>-3</sup> — —

Value	Voltage	Dimensions mm		
		W	H	L
0.01µF	63V	2.5	7	7.2
0.022µF	63V	2.5	7	7.2
0.047µF	63V	2.5	7	7.2
0.1µF	63V	2.5	7	7.2
0.22µF	63V	3.5	8.5	7.2
0.47µF	63V	5.0	10	7.2
1.0µF	63V	5.5	11.5	7.2
2.2µF	50V	7.2	13	7.2

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 358	Price each exc. VAT			inc. VAT each 1+
		5+	50+	1000+	
CX18U	0.01µF MiniEster	£0.140	£0.082	£0.070	£0.240
CX19V	0.022µF MiniEster	£0.140	£0.082	£0.069	£0.240
CX20W	0.047µF MiniEster	£0.140	£0.082	£0.070	£0.240
CX21X	0.1µF MiniEster	£0.160	£0.090	£0.070	£0.275
CX22Y	0.22µF MiniEster	£0.175	£0.140	£0.120	£0.420
CX23A	0.47µF MiniEster	£0.260	£0.210	£0.180	£0.708
CX24B	1.0µF MiniEster	£0.650	£0.360	£0.320	£1.032
CX25C	2.2µF MiniEster	£1.350	£1.100	£1.017	£2.148

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## High Voltage Metallised Polyester Film



A range of high voltage, metallised polyester film capacitors that are suitable for a wide range of applications including supply decoupling, filter, integrator and audio circuits etc. These low-cost, non-inductive, self-healing capacitors conform to IEC 384-1/384-2.

### Specification

Tolerance:	±10%
Dissipation factor:	$\tan\delta \leq 100 \times 10^{-4}/1\text{kHz}$
Insulation resistance	
≤0.33μF:	104MΩ
>0.33μF:	103MΩ

Value	Voltage	Dimensions mm			Order
μF	V DC	l	h	w	Code
0.01	630	15	8.2	5	DS81C
0.022	630	15	8.5	5	DS82D
0.047	630	20	10.6	6	DS83E
0.1	250	15	9	5.4	DS84F
0.1	400	20	11.4	6	DS85G
0.1	630	20	12	7.3	DS86T
0.22	400	25	13.5	9	DS87U
0.47	250	25	12	6.5	DS88V
1.0	250	25	15	9	DS89W
2.2	250	35	19	9	DS90X

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 12022	Price each exc. VAT			inc. VAT each
		5+	50+	1000+	
DS81C	0.01 Polyester 630V	£0.042	£0.034	£0.029	£0.192
DS82D	0.022 Polyester 630V	£0.043	£0.035	£0.030	£0.192
DS83E	0.047 Polyester 630V	£0.058	£0.048	£0.040	£0.204
DS84F	0.1 Polyester 250V	£0.043	£0.035	£0.030	£0.216
DS85G	0.1 Polyester 400V	£0.072	£0.059	£0.050	£0.288
DS86T	0.1 Polyester 630V	£0.080	£0.065	£0.055	£0.372
DS87U	0.22 Polyester 400V	£0.133	£0.109	£0.092	£0.396
DS88V	0.47 Polyester 250V	£0.101	£0.083	£0.070	£0.384
DS89W	1.0 Polyester 250V	£0.153	£0.125	£0.106	£0.480
DS90X	2.2 Polyester 250V	£0.274	£0.224	£0.189	£0.696

## Metallised Polyester Film

Wima



A range of high quality polyester film capacitors with vacuum-deposited aluminium electrodes that are designed for the most stringent requirements. The capacitors have CECC approval Certificate Number 30 401-030 and are in accordance with DIN 44 122. The capacitors are encapsulated in a red flame-retardant plastic case (UL 94 V-O) with an epoxy resin seal.

Tolerance:	±10%
Insulation resistance @ 20°C	
C≤0.33μF:	
100V types	≥1.5 x 10 <sup>4</sup> MΩ
(mean value 5 x 10 <sup>4</sup> MΩ)	
≥160V types	≥3 x 10 <sup>4</sup> MΩ
(mean value 1 x 10 <sup>5</sup> MΩ)	
C≥0.33μF:	
100V types	≥5,000s
(MΩ x μF, mean value 15,000s)	
≥160V types	≥10,000s
(MΩ x μF, mean value 40,000s)	
Temperature range:	-55°C to +100°C

Dissipation factors (tanδ @ 20°):		
C≤0.1μF	0.1μF - 1μF	1μF - 2.2μF
1kHz ≤8 x 10 <sup>-3</sup>	≤8 x 10 <sup>-3</sup>	≤10 x 10 <sup>-3</sup>
10kHz ≤15 x 10 <sup>-3</sup>	≤15 x 10 <sup>-3</sup>	—
100kHz ≤30 x 10 <sup>-3</sup>	—	—

Value	Voltage	Dimensions mm			Lead Spacing mm
		W	H	L	
0.01μF	100V	4	9	10	7.5
0.01μF	400V	4	9	13	10
0.022μF	100V	4	9	10	7.5
0.022μF	400V	4	9	13	10
0.047μF	100V	4	9	10	7.5
0.047μF	250V	4	9	13	10
0.047μF	400V	5	11	18	15
0.1μF	100V	4	9	10	7.5
0.1μF	250V	4	9.5	13	10
0.1μF	400V	6	12.5	18	15
0.22μF	100V	4	9.5	13	10
0.22μF	400V	6	15	26.5	22.5
0.47μF	100V	5	11	18	15
0.47μF	250V	7	16.5	26.5	22.5
0.47μF	400V	8.5	18.5	26.5	22.5
1.0μF	100V	7	14	18	15
1.0μF	250V	8.5	18.5	26.5	22.5
1.0μF	400V	11	21	31.5	27.5
2.2μF	100V	8.5	18.5	26.5	22.5

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 3023	Price each exc. VAT			inc. VAT each
		5+	50+	250+	
CX26D	0.01μF100V Polyester	£0.135	£0.110	£0.090	£0.264
CX34M	0.01μF250V Polyester	£0.143	£0.115	£0.095	£0.264
CX41U	0.01μF400V Polyester	£0.136	£0.111	£0.094	£0.264
CX27E	0.022μF100V Polyester	£0.145	£0.110	£0.097	£0.264
CX42V	0.022μF400V Polyester	£0.146	£0.120	£0.101	£0.264
CX28F	0.047μF100V Polyester	£0.168	£0.110	£0.112	£0.264
CX36P	0.047μF250V Polyester	£0.165	£0.115	£0.110	£0.264
CX43W	0.047μF400V Polyester	£0.193	£0.158	£0.134	£0.336
CX29G	0.1μF100V Polyester	£0.175	£0.110	£0.117	£0.264
CX37S	0.1μF250V Polyester	£0.228	£0.180	£0.152	£0.396
CX44X	0.1μF400V Polyester	£0.208	£0.171	£0.144	£0.408
CX30H	0.22μF100V Polyester	£0.210	£0.155	£0.140	£0.336
CX38R	0.22μF250V Polyester	£0.243	£0.180	£0.162	£0.396
CX45Y	0.22μF400V Polyester	£0.393	£0.322	£0.272	£0.672
CX31J	0.47μF100V Polyester	£0.298	£0.210	£0.198	£0.456
CX39N	0.47μF250V Polyester	£0.463	£0.290	£0.280	£0.672
CX46A	0.47μF400V Polyester	£0.507	£0.415	£0.351	£0.864
CX32K	1.0μF100V Polyester	£0.425	£0.310	£0.283	£0.672
CX40T	1.0μF250V Polyester	£0.540	£0.440	£0.380	£0.864
CX47B	1.0μF400V Polyester	£0.800	£0.655	£0.554	£1.308
CX33L	2.2μF100V Polyester	£0.800	£0.690	£0.533	£1.308

## Metallised Polyester Film

Philips



These capacitors consist of a low-inductive wound cell of metallised (PETP) film. This is protected by a hard, water repellent, solvent resistant and flame retardant orange epoxy. Designed for use on PCBs for coupling and decoupling applications, the radial leads are solder-dipped copper wire 5mm long. Capacitors have a tolerance of 10% except those marked with \* (20%). Rated voltage (DC) and code for dielectric material (MKT = metallised PETP film). Operating temperature range -40°C to +100°C

Insulation resistance:	0.01μF to 0.33μF: >3x10 <sup>10</sup> Ω		
	0.47μF to 2.2μF: >5 x 10 <sup>9</sup> Ω		
Temperature coeff.:	333ppm/°C ave.		
Power factor:	<130 x 10 <sup>-4</sup> at 1kHz		
Value (μF)	Case size (mm)	Working V DC	Lead spacing
0.01	T H L	400	10.0
0.015	4.0 12 12.5	400	10.0
0.022	4.0 12 12.5	400	10.0
0.033*	4.0 12 12.5	250	10.0
0.047	4.0 12 12.5	250	10.0
0.068	4.5 12.5 12.5	250	10.0
0.1	5.0 13 12.5	250	10.0
0.15*	5.0 14 17.5	250	15.0
0.22	6.0 15 17.5	250	15.0
0.33*	7.0 16 17.5	250	15.0

0.47	5-5	14-5	17-5	100	15-0
0.68	6-0	15	17-5	100	15-0
1	8-5	17-5	17-5	100	15-0
2.2	10-5	22-5	30-0	100	27-94

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 301	Price each exc. VAT			inc. VAT each
		5+	50+	1000+	
BX70M	Polyester 0.01μF	£0.100	£0.070	£0.069	£0.156
BX71N	Polyester 0.015μF	£0.100	£0.070	£0.069	£0.156
BX72P	Polyester 0.022μF	£0.100	£0.070	£0.069	£0.156
BX73Q	Polyester 0.033μF	£0.098	£0.070	£0.068	£0.156
BX74R	Polyester 0.047μF	£0.100	£0.070	£0.060	£0.156
BX75S	Polyester 0.068μF	£0.104	£0.070	£0.060	£0.156
BX76H	Polyester 0.1μF	£0.122	£0.092	£0.076	£0.192
BX77J	Polyester 0.15μF	£0.142	£0.098	£0.090	£0.192
BX78K	Polyester 0.22μF	£0.167	£0.115	£0.090	£0.276
BX79L	Polyester 0.33μF	£0.189	£0.131	£0.110	£0.312
BX80B	Polyester 0.47μF	£0.189	£0.131	£0.110	£0.336
BX81C	Polyester 0.68μF	£0.243	£0.168	£0.137	£0.408
BX82D	Polyester 1μF	£0.278	£0.192	£0.156	£0.468
BX84F	Polyester 2.2μF	£0.656	£0.454	£0.369	£1.068

## Miniature Polyester and Foil

Wima

A range of polyester film capacitors with metal foil electrodes that are designed for reservoir and decoupling applications in high-speed digital circuits. The capacitors feature low inductance and low damping and are encapsulated in a blue flame-retardant plastic case (UL 94 V-O) with an epoxy resin seal.



Tolerance:	±20%			
Insulation resistance				
	@ 20°C: ≥3 x 10 <sup>4</sup> MΩ			
	(mean value 8 x 10 <sup>5</sup> MΩ)			
Temperature range:	-55°C to +100°C			
Dissipation factors (tanδ) at 20°C				
1kHz:	£7 x 10 <sup>-3</sup>			
10kHz:	£15 x 10 <sup>-3</sup>			
100kHz:	£20 x 10 <sup>-3</sup>			
Lead spacing: 5mm				
Value	Voltage	Dimensions mm		
		W	H	L
1000pF	100V	2.5	6.5	7.2
2200pF	100V	2.5	6.5	7.2
4700pF	100V	2.5	6.5	7.2
0.01μF	100V	3	7.5	7.2

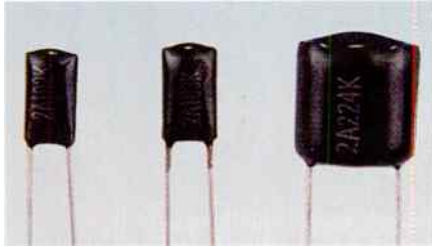
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 370	Price each exc. VAT			inc. VAT each
		10+	50+	1000+	
CX48C	1000pF100V MiniFoil	£0.078	£0.054	£0.044	£0.216
CX49D	2200pF100V MiniFoil	£0.078	£0.054	£0.044	£0.216
CX50E	4700pF100V MiniFoil	£0.080	£0.065	£0.045	£0.216
CX51F	0.01μF100V MiniFoil	£0.087	£0.060	£0.049	£0.216

ORDER BEFORE 5PM FOR SAME DAY DESPATCH

Tel: 01702 554000  
Fax: 01702 554001  
e-mail: Sales@maplin.co.uk

## Mylar Film Capacitors



A general purpose capacitor supplementing the other film and foil capacitor ranges in this catalogue.  
Tolerance:  $\pm 10\%$   
Working voltage: 100V DC  
The following values are available:

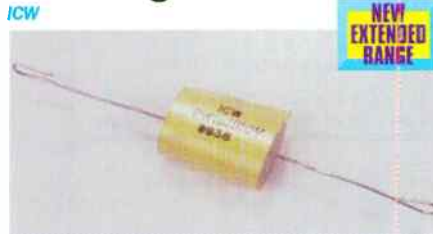
Value ( $\mu\text{F}$ )	Case Size (mm)
H	W T P
0.001	10 5 3 3-5
0.0022	11 5 3 3-5
0.0047	11 5.5 3 4
0.01	11 6 3 4
0.022	11 6 3-5 5
0.047	12 8-5 4 5-5
0.1	13 10 5-5 6-5
0.22	16 15 6-5 11

Price each is shown. Order quantities less than 20 will be sold at the one off inc. VAT price.

Order Code	Type 301	Price each exc. VAT	inc. VAT each
		10+ 50+ 1000+	1+
VW15R	Mylar 0.001	£0.030 £0.025	£0.025 £0.156
VW16S	Mylar 0.0022	£0.030 £0.025	£0.025 £0.156
VW17T	Mylar 0.0047	£0.030 £0.025	£0.025 £0.156
VW18U	Mylar 0.01	£0.070 £0.050	£0.030 £0.156
VW19V	Mylar 0.022	£0.030 £0.025	£0.025 £0.156
VW20W	Mylar 0.047	£0.050 £0.040	£0.025 £0.192
VW21X	Mylar 0.1	£0.080 £0.050	£0.040 £0.200
VW83E	Mylar 0.22	£0.110 £0.080	£0.050 £0.240

## High Voltage / Polypropylene

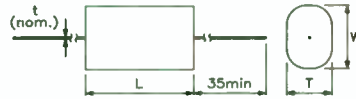
### High Grade, Low Loss 160V Range



**Audiophile quality**  
**Ideal for crossovers**  
**High stability**  
**Special construction**

General purpose, axial polypropylene capacitors rated at 160V DC working. Constructed from metallised polypropylene film and encapsulated using the 'wrap and seal' method, where the wound elements are wrapped in heavy duty insulation film wider than the element, and the end cavities sealed with high grade epoxy resin. This method results in a cost effective yet high quality construction. Ideal for a wide range of applications, in particular those requiring a low loss and/or low dielectric absorption component in such applications as sample and hold circuits and Hi-Fi including crossover networks. Not to be used for mains voltage filtering applications. Eight values available: 1 $\mu\text{F}$ , 1.5 $\mu\text{F}$ , 2.2 $\mu\text{F}$ , 3.3 $\mu\text{F}$ , 4.7 $\mu\text{F}$ , 22 $\mu\text{F}$ , 33 $\mu\text{F}$  and 47 $\mu\text{F}$ .

**Specification**  
Tolerance:  $\pm 10\%$   
Max. working voltage: 160V DC  
Max. survivable peak-voltage: 240V for 30s, not to be repeated.  
Dissipation factor:  $\leq 0.001$  at 1kHz &  $20 \pm 3^\circ\text{C}$   
Insulation resistance:  $\geq 10^4 \text{M}\Omega$  per  $\mu\text{F}$



Operating temp. range:  $-40$  to  $+85^\circ\text{C}$   
Vibration proof to BS2011 in the frequency range of 10 to 500Hz, where displacement of component not to exceed 0.75mm in any direction.

**Dimensions**

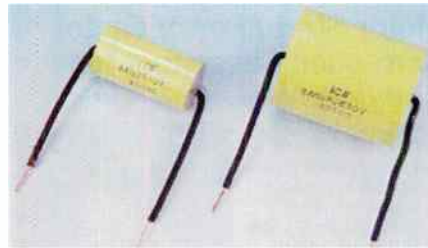
Value ( $\mu\text{F}$ )	L (mm)	W (mm)	T (mm)	t (mm)
1	20	14.5	10	0.6
1.5	30	14	9.5	0.8
2.2	30	16	11.5	0.8
3.3	30	18.5	14	0.8
4.7	34	19	14.5	0.8
22	47	31	26	0.8
33	47	37.5	33	0.8
47	47	44	39	0.8

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 303	Price each exc. VAT	inc. VAT each
		25+ 100+ 1000+	1+
JY78K	Polyprop 1 $\mu\text{F}$ 160V	£1.011 £0.700	£0.568 £1.428
JY79L	Polyprop 1.5 $\mu\text{F}$ 160V	£0.990 £0.890	£0.723 £1.668
JY80B	Polyprop 2.2 $\mu\text{F}$ 160V	£1.000 £0.900	£0.750 £1.906
JY81C	Polyprop 3.3 $\mu\text{F}$ 160V	£1.467 £1.190	£0.990 £2.628
JY82D	Polyprop 4.7 $\mu\text{F}$ 160V	£1.617 £1.260	£1.150 £2.988
VM84T	Polyprop 22 $\mu\text{F}$ 160V	£5.650 £4.990	£4.490 £9.990
JE14Q	Polyprop 33 $\mu\text{F}$ 160V	£9.760 £7.677	£6.238 £15.576
JE13P	Polyprop 47 $\mu\text{F}$ 160V	£12.050 £10.431	£9.990 £20.232

## Audio-Grade Polypropylene Axial Capacitors

ICW



- ★ Audiophile quality
- ★ Ideal for high power crossovers
- ★ High stability
- ★ Special construction

A range of capacitors that have been specially developed to be used in very high quality loudspeaker crossover networks in domestic and studio monitoring systems and in the finest valve amplifiers- when only the very best will do. The inherently low dissipation and dielectric absorption factors of polypropylene, allied with an excellent mechanical stability, result in an extremely detailed and pure sound. The construction results in a low self-inductance and ESR, and the devices are highly stable with respect to temperature and frequency plus the added bonus of a high voltage device.

Tolerance:  $\pm 5\%$   
Rated voltage: 630V DC  
Insulation resistance:  $\geq 1 \times 10^4 \text{M}\Omega/\mu\text{F}$  @ rated voltage and  $20 \pm 3^\circ\text{C}$   
Dissipation factor:  $\leq 0.001$  @ 1kHz &  $20 \pm 3^\circ\text{C}$   
Dielectric absorption:  $\leq 0.1\%$  @  $20 \pm 3^\circ\text{C}$

**Cap ( $\mu\text{F}$ )**

Case size	L (mm)	D (mm)
100nF	20	30
220nF	20	20
330nF	20	24
470nF	28	23
680nF	28	26
1.0	38	22
1.5	38	27
2.2	38	31
3.3	38	35
4.7	45	35
5.6	45	38

6-8	45	42
8	45	45
10	45	49
12	65	45
15	65	49

Terminations are PVC covered 1mm diameter copper wire. Sleeved diameter is 2.5mm.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 303	Price each exc. VAT	inc. VAT each
		25+ 100+ 500+	1+
VM87U	Audio Grade 100nF	£2.400 £1.860	£1.714 £3.456
VM88V	Audio Grade 220nF	£1.400 £1.167	£1.000 £2.364
VM89W	Audio Grade 330nF	£1.520 £1.220	£1.086 £2.568
VM90X	Audio Grade 470nF	£1.520 £1.220	£1.086 £2.568
VM91Y	Audio Grade 680nF	£1.680 £1.260	£1.200 £2.628
KR78K	Audio Grade 1 $\mu\text{F}$	£1.680 £1.400	£1.200 £2.628
KR79L	Audio Grade 1.5 $\mu\text{F}$	£2.400 £1.780	£1.714 £3.348
KR80B	Audio Grade 2.2 $\mu\text{F}$	£2.220 £1.790	£1.586 £3.588
KR81C	Audio Grade 3.3 $\mu\text{F}$	£3.540 £2.440	£2.529 £4.548
KR82D	Audio Grade 4.7 $\mu\text{F}$	£3.120 £2.480	£2.229 £4.788
VM92A	Audio Grade 5.6 $\mu\text{F}$	£3.660 £2.810	£2.614 £5.484
KR83E	Audio Grade 6.8 $\mu\text{F}$	£4.144 £2.990	£2.960 £6.228
VP09K	Audio Grade 8 $\mu\text{F}$	£3.690 £3.240	£2.990 £6.492
VM93B	Audio Grade 10 $\mu\text{F}$	£6.480 £5.090	£4.629 £9.444
VM94C	Audio Grade 12 $\mu\text{F}$	£6.450 £4.990	£4.650 £10.536
VM95D	Audio Grade 15 $\mu\text{F}$	£7.240 £6.990	£5.990 £13.152

## Metallised Polypropylene

ICW

A high quality metallised polypropylene capacitor for use at very high continuous AC or DC voltages. They meet the requirements of BS2135 for Class X or Class Y use at 250V AC mains.



Tolerance:  $\pm 10\%$  (K)  
Working voltage: 1000V DC, 500V AC  
Power factor:  $< 1.5 \times 10^{-3}$  at 1kHz  
Pulse rating: 0.1 $\mu\text{F}$  and 0.22 $\mu\text{F}$  70V/ $\Omega\text{s}$  max  
0.47 $\mu\text{F}$  and 1 $\mu\text{F}$  40V/ $\Omega\text{s}$  max

The following values are available:

Value	Length (mm)	Dia. max (mm)
0.1 $\mu\text{F}$	28	15
0.22 $\mu\text{F}$	28	18
0.47 $\mu\text{F}$	45	19
1 $\mu\text{F}$	45	28

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 302	Price each exc. VAT	inc. VAT each
		25+ 100+ 500+	1+
FA21X	HV Cap 0.1 $\mu\text{F}$	£0.910 £0.774	£0.690 £1.738
FA22Y	HV Cap 0.22 $\mu\text{F}$	£1.314 £1.195	£1.011 £2.148
FA23A	HV Cap 0.47 $\mu\text{F}$	£2.040 £1.855	£1.569 £3.348
FA24B	HV Cap 1 $\mu\text{F}$	£3.475 £3.159	£2.673 £5.388

## Class Y Suppression - Metallised Polypropylene

A range of Class Y metallised polypropylene film capacitors for 275V AC, and housed in a thermoplastic self-extinguishing case to UL94, class V-O. Approved to VDS, SEMKO, OVE, NEMKO, DEMKO, FI, UL, CSA, EN132400 (pending).



**Specification**

Tolerance: ±20%  
 Temperature range: -25°C to +85°C  
 Test voltage: 2700V for 2 seconds  
 Insulation resistance: 15,000MΩ @ 20°C 100V DC

Value	Dimensions L x H x W mm	Pitch mm	Order Code
1000pF	13 x 9.5 x 4.3	10	JA93B
2200pF	13 x 9.5 x 4.3	10	JA94C
4700pF	13 x 11 5.6	10	JA95D
10000pF	18 x 11 x 5.5	15	JA96E
22000pF	18 x 13 x 7	15	JA97F

Lead diameter: 0.6mm (≤4700pF)  
0.8mm (>4700pF)

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 12720	Price each exc. VAT			inc. VAT each
		5+	25+	50+	1+
JA93B	KNB2520 1000pF	£0.160	£0.145	£0.123	£0.408
JA94C	KNB2520 2200pF	£0.160	£0.145	£0.123	£0.408
JA95D	KNB2520 4700pF	£0.174	£0.158	£0.134	£0.456
JA96E	KNB2520 10nF	£0.186	£0.169	£0.143	£0.552
JA97F	KNB2520 22nF	£0.216	£0.196	£0.166	£0.624

## Class X2 Suppression - Metallised Polypropylene

A range of Class X2 metallised polypropylene film capacitors for 275V AC, and housed in a thermoplastic self-extinguishing case to UL94, class V-O. Approved to VDe, SEMKO, OVE, NEMKO, DEMKO, FI, UL, CSA, EN132400 (pending).



**Specification**

Tolerance: ±20% (≤0.1µF)  
±10% (>0.1µF)  
 Temperature range: -25°C to +85°C  
 Test voltage: 2635V DC for 1 seconds  
 Insulation resistance  
 C ≤ 0.22µF: 15,000MΩ @ 20°C 100V DC  
 C > 0.33µF: R x C ≥ 5000s

Value	Dimensions L x H x W mm	Pitch mm	Order Code
0.022µF	18 x 11 x 5.5	15	JA98G
0.047µF	18 x 11 x 5.5	15	JA99H
0.1µF	18 x 13 x 7	15	JE09K
0.22µF	27 x 16.5 x 7	22.5	JE10L
0.47µF	27 x 19 x 10.5	22.5	JE11M
1.0µF	32 24.5 x 15	27.5	JE12N

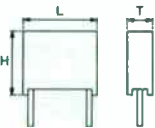
Lead diameter: 0.8mm

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 12721	Price each exc. VAT			inc. VAT each
		5+	25+	50+	1+
JA98G	KNB1530 0.022µF	£0.148	£0.135	£0.114	£0.480
JA99H	KNB1530 0.047µF	£0.158	£0.144	£0.122	£0.504
JE09K	KNB1530 0.1µF	£0.190	£0.173	£0.146	£0.564
JE10L	KNB1530 0.22µF	£0.268	£0.244	£0.206	£0.744
JE11M	KNB1530 0.47µF	£0.506	£0.460	£0.389	£1.668
JE12N	KNB1530 1µF	£0.922	£0.838	£0.709	£2.628

## Metallised Class X2 Film

Arcotronics



A metallised film PETP (polyethylene terephthalate) and impregnated paper dual dielectric moulded in flame-retardant polypropylene. The capacitors are

designed to suppress electrical interference from domestic appliances and should be connected directly across the mains (class X2). Approved to EN132 400 with IMQ approval (275V AC). Fully approved to UL1414, UL1283 and CSA C22.2 No.1 (250V AC).

The following values are available:

Value (µF)	Length (mm)	Height (mm)	Thickness (mm)	Voltage (V)
0-01	18	11	5	250
0-022	18	11	5	250
0-033	18	11	5	250
0-047	18	11	5	250
0-1	18	12	6	250
0-22	26.5	16	7	250
0-47	32	20	10	250
1-0	32	22	13	250
2-2	33	32	18	250

Tolerance: ±20%  
 Insulation resistance: >15 x 10<sup>9</sup>Ω @ 20°C  
 Power factor: ≤130 x 10<sup>-4</sup> @ 10kHz  
 Lead pitch <0.22µF: 15mm  
 Lead pitch <0.22µF: 22.5mm  
 Lead pitch >0.22µF: 27.5mm

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 381	Price each exc. VAT			
		25+	100+	500+	1+
JR31J	IS Cap 0.01µF	£0.130	£0.118	£0.100	£0.372
JR32K	IS Cap 0.022µF	£0.124	£0.113	£0.095	£0.372
FT34M	IS Cap 0.033µF	£0.137	£0.124	£0.105	£0.372
JR33L	IS Cap 0.047µF	£0.122	£0.102	£0.087	£0.372
JR34M	IS Cap 0.1µF	£0.168	£0.140	£0.120	£0.432
JR35Q	IS Cap 0.22µF	£0.272	£0.227	£0.194	£0.696
JR36P	IS Cap 0.47µF	£0.516	£0.430	£0.369	£1.176
JR37S	IS Cap 1.00µF	£0.779	£0.650	£0.557	£1.896
CH46A	IS Cap 2.2µF	£1.490	£1.290	£1.090	£2.290

## Motor Start / Power Factor Correction Capacitors for 250V/400V

A range of 250/400V AC working high capacity metallised polypropylene capacitors in a plastic case with standard 6.35mm (0.25in.) 'Lucar' style tags terminals (HF10L is suitable receptacle). These light weight, self-healing capacitors are very stable and provide high capacity in a small case. Suitable for use with single-phase induction motors; single phase supply to three-phase motors; serial and parallel power factor correction in fluorescent and gas discharge lamps etc. The capacitors meet the requirements of IEC 252/566, VDE 0560-8/0560-6, and contain no PCB or other impregnating materials. Tolerance ±10%.



Value µF	Voltage V AC	Dimensions mm		Order Code
		Dia.	Length	
2	250	25	56	DS91Y
3	250	25	56	DS92A
4	250	25	56	DS93B
5	400	35	56	DS94C
6	250	30	56	DS95D
7.2	400	40	73	DS96E
8	250	35	56	DS97F
12	250	40	73	DS98G
16	250	40	73	DS99H

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 10333	Price each exc. VAT			
		25+	100+	500+	1+
DS91Y	2.0µF Polyprop 250V	£0.798	£0.639	£0.532	£2.310
DS92A	3.0µF Polyprop 250V	£0.832	£0.665	£0.555	£2.519
DS93B	4.0µF Polyprop 250V	£0.915	£0.732	£0.610	£2.629
DS94C	5.0µF Polyprop 400V	£1.319	£1.055	£0.879	£3.289
DS95D	6.0µF Polyprop 250V	£1.010	£0.808	£0.673	£2.816
DS96E	7.2µF Polyprop 400V	£1.509	£1.207	£1.006	£3.839
DS97F	8.0µF Polyprop 250V	£1.154	£0.923	£0.769	£3.729
DS98G	12µF Polyprop 250V	£1.460	£1.168	£0.973	£3.839
DS99H	16µF Polyprop 250V	£1.650	£1.320	£1.100	£4.609

## ERC Radial Capacitors



A range of polarised epoxy resin coated capacitors that are ideal replacements, or alternatives, for tantalums. They offer low leakage, excellent stability and extended life in a well sealed, moisture and leak-proof package that is also resistant to acid and alkali.

**Specification**  
 Tolerance: ±20%  
 Leakage current: <0.0022CV or 0.5µA (whichever is larger)  
 Temperature range: -40°C to +105°C

Tan δ @ 120Hz

0.1µF to 1µF:	0.06
1.5µF to 6.8µF:	0.08
10µF to 68µF:	0.09
100µF to 470µF:	0.12

Value µF	Voltage V	Size dia x h mm (nom)	Lead Spacing mm	Order Code
0.1	50	5 x 11	2.5	AN85G
0.22	50	5 x 11	2.5	AN86T
0.33	50	5 x 11	2.5	AN87U
0.47	50	5 x 11	2.5	AN88V
1	50	5 x 11	2.5	AN89W
1.5	50	5 x 11	2.5	AN90X
2.2	50	5.5 x 11	2.5	AN91Y
3.3	50	5.5 x 11	2.5	AN92A
4.7	16	5.5 x 11	2.5	AN93B
4.7	50	5.5 x 11	2.5	AN94C
10	16	5.5 x 11	2.5	AN95D
10	25	5.5 x 12	2.5	AN96E
10	50	7.5 x 12	2.5	AN97F
22	16	7.5 x 12	2.5	AN98G
22	50	7.5 x 10	2.5	AN99H
33	16	7.5 x 10	2.5	AR99H
47	10	6 x 10	2.5	AS17T
47	35	9 x 12	3.5	AS43W
100	16	9 x 12	3.5	AS60Q
220	10	9 x 14	3.5	AS88V
330	10	9 x 15	3.5	JA17T
470	10	9 x 15	3.5	JA18U

Lead diameter for all types is 0.5mm

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 12702	Price each exc. VAT			
		25+	100+	500+	1+
AN85G	ERC Cap 0.1µF 50V	£0.064	£0.051	£0.047	£0.264
AN86T	ERC CAP 0.22µF 50V	£0.064	£0.051	£0.047	£0.264
AN87U	ERC CAP 0.33µF 50V	£0.064	£0.051	£0.047	£0.264
AN88V	ERC CAP 0.47µF 50V	£0.064	£0.051	£0.047	£0.264
AN89W	ERC CAP 1.0µF 50V	£0.064	£0.051	£0.047	£0.264
AN90X	ERC CAP 1.5µF 50V	£0.072	£0.058	£0.053	£0.300
AN91Y	ERC CAP 2.2µF 50V	£0.080	£0.064	£0.058	£0.336
AN92A	ERC CAP 3.3µF 50V	£0.080	£0.064	£0.058	£0.336
AN93B	ERC CAP 4.7µF 16V	£0.061	£0.049	£0.044	£0.252
AN94C	ERC CAP 4.7µF 50V	£0.121	£0.097	£0.088	£0.504
AN95D	ERC CAP 10µF 16V	£0.072	£0.058	£0.053	£0.300
AN96E	ERC CAP 10µF 25V	£0.129	£0.103	£0.094	£0.456
AN97F	ERC CAP 10µF 50V	£0.193	£0.155	£0.141	£0.612
AN98G	ERC CAP 22µF 16V	£0.153	£0.122	£0.111	£0.564
AN99H	ERC CAP 47µF 35V	£0.169	£0.135	£0.123	£0.708
AR99H	ERC CAP 33µF 16V	£0.153	£0.122	£0.111	£0.588
AS17T	ERC CAP 47µF 10V	£0.153	£0.122	£0.111	£0.588
AS43W	ERC CAP 47µF 35V	£0.468	£0.374	£0.340	£1.764
AS60Q	ERC CAP 100µF 16V	£0.403	£0.323	£0.293	£1.536
AS88V	ERC CAP 220µF 10V	£0.403	£0.323	£0.293	£1.692
JA17T	ERC CAP 330µF 10V	£0.484	£0.387	£0.323	£1.815
JA18U	ERC CAP 470µF 10V	£0.516	£0.413	£0.344	£1.936

**All Customers**  
 No additional freight charges for heavy items

**Tantalum Bead**

**Tantalum Bead**

**Kemet**  
A range of resin-dipped solid tantalum bead capacitors featuring very high values of capacitance in an extremely small package. Manufactured to ISO9001 standards. Tolerance: ±20%. Reverse voltage must not exceed: 0.5V.



Leakage current: 0.02µA/µFV or 1µA whichever is greater.  
Power factor: <0.1 except 100µF which is <0.2.  
Lead pitch: 5mm.

The following values are available:

Value (µF)	Working voltage (DC)	Case size L (mm)	D (mm)
0.1	35	9	4.5
0.22	35	9	4.5
0.33	35	9	4.5
0.47	35	9	4.5
1.0	35	9	4.5
1.5	35	9.5	5
2.2	35	10	5.5
3.3	35	10.5	5.5
4.7	16	10	5.5
4.7	35	11	5.5
10	16	11	5.5
10	25	11.5	6.5
10	35	12	7
22	16	12	7
22	25	16.5	8.5
33	10	12	7
47	10	13	7.5
47	16	13	7.5
100	10	16.5	8.5

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 704	Price each exc. VAT			inc. VAT each 1+
		5+	50+	1000+	
WW54	Tant 0.1µF 35V	£0.110	£0.088	£0.068	£0.363
WW56L	Tant 0.22µF 35V	£0.110	£0.088	£0.068	£0.363
WW57M	Tant 0.33µF 35V	£0.110	£0.088	£0.068	£0.363
WW58N	Tant 0.47µF 35V	£0.110	£0.088	£0.068	£0.363
WW60Q	Tant 1.0µF 35V	£0.110	£0.088	£0.068	£0.363
WW61R	Tant 1.5µF 35V	£0.115	£0.092	£0.071	£0.363
WW62S	Tant 2.2µF 35V	£0.148	£0.118	£0.091	£0.400
WW63T	Tant 3.3µF 35V	£0.170	£0.136	£0.105	£0.400
WW64U	Tant 4.7µF 16V	£0.148	£0.118	£0.091	£0.400
WW65V	Tant 4.7µF 35V	£0.245	£0.196	£0.151	£0.475
WW68Y	Tant 10µF 16V	£0.205	£0.164	£0.126	£0.475
WW69A	Tant 10µF 25V	£0.245	£0.196	£0.151	£0.475
WW70M	Tant 10µF 35V	£0.315	£0.252	£0.194	£0.613
WW72P	Tant 22µF 16V	£0.305	£0.244	£0.188	£0.613
WW73Q	Tant 22µF 25V	£0.782	£0.625	£0.481	£1.063
WW74R	Tant 33µF 10V	£0.305	£0.244	£0.188	£0.613
WW75S	Tant 47µF 10V	£0.478	£0.382	£0.294	£0.863
WW76H	Tant 47µF 16V	£0.875	£0.700	£0.538	£1.600
WW79L	Tant 100µF 10V	£0.875	£0.700	£0.538	£1.600

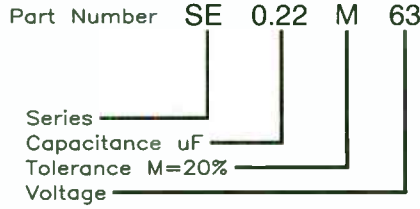
**Electrolytics**

**SE Series Low Profile Radial Electrolytic**

**Samwha**



A range of aluminium cased electrolytic capacitors with values ranging from 0.1 to 100µF with voltages from 6.3 to 63V. Suitable for operation between -40 and +85°C. Load life rating of 1000h at 85°C. Low profile 5mm high design makes this capacitor ideal for applications where space is at a premium, and offers a viable alternative to dipped tantalum types. Leakage current of 0.01CV or 3µA (whichever is greater after 1 minute).



Capacitance µF	Working Voltage (VDC)	Dimensions (dia x ht x pch) (mm)	Part Number	Order Code
0.1	63	4 x 5 x 1.5	SE0-1M63	AU07H
0.22	63	4 x 5 x 1.5	SE0-22M63	AU08J
1	63	4 x 5 x 1.5	SE1M63	AU09K
2.2	50	4 x 5 x 2	SE2-2M50	AU03D
2.2	63	4 x 5 x 1.5	SE2-2M63	AU10L
3.3	50	5 x 5 x 2	SE3-3M50	AU04E
4.7	50	5 x 5 x 2	SE4-7M50	AU05F
10	16	4 x 5 x 1.5	SE10M16	AT98G
10	50	6.3 x 5 x 2.5	SE10M50	AU06G
22	16	5 x 5 x 2	SE22M16	AT99H
33	16	6.3 x 5 x 2.5	SE33M16	AU00A
33	25	6.3 x 5 x 2.5	SE33M25	AU02C
47	6.3	5 x 5 x 2	SE47M6V3	AT96E
47	16	6.3 x 5 x 2.5	SE47M16	AU01B
100	6.3	6.3 x 5 x 2.5	SE100M6V3	AT97F

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 7013	Price each exc. VAT			inc. VAT each 1+
		10+	50+	500+	
AU07H	GenElect 0.1µF 63V	£0.062	£0.045	£0.041	£0.173
AU08J	GenElect 0.22µF 63V	£0.062	£0.045	£0.041	£0.173
AU09K	GenElect 1µF 63V	£0.062	£0.045	£0.041	£0.173
AU03D	GenElect 2.2µF 50V	£0.062	£0.045	£0.041	£0.173
AU10L	GenElect 2.2µF 63V	£0.062	£0.045	£0.041	£0.173
AU04E	GenElect 3.3µF 50V	£0.062	£0.045	£0.041	£0.173
AU05F	GenElect 4.7µF 50V	£0.066	£0.048	£0.044	£0.173
AT98G	GenElect 10µF 16V	£0.085	£0.045	£0.041	£0.173
AU06G	GenElect 10µF 50V	£0.070	£0.051	£0.046	£0.207
AT99H	GenElect 22µF 16V	£0.066	£0.048	£0.044	£0.173
AU00A	GenElect 33µF 16V	£0.070	£0.051	£0.046	£0.173
AU02C	GenElect 33µF 25V	£0.070	£0.051	£0.046	£0.207
AT96E	GenElect 47µF 6.3V	£0.066	£0.048	£0.044	£0.173
AU01B	GenElect 47µF 16V	£0.070	£0.051	£0.046	£0.207
AT97F	GenElect 100µF 6.3V	£0.070	£0.051	£0.046	£0.207

**Miniature 7mm Radial Electrolytics**

**Dubilier**



A range of sub-miniature capacitors offering size, tolerance and leakage current similar to tantalum bead. Designed for direct mounting on PCBs.

Tolerance: ±20%  
Temperature range: -40°C to +85°C

Cap (µF)	Working Voltage (DC)	Case Size (mm) l (max) d (max) p	Leakage Current (µA max)	Power Factor (max)	Ripple current (mA max) at 120Hz 85°C
0.1	63	7 4 1.5	3.1	0.1	1
0.47	63	7 4 1.5	3.3	0.1	6
1	63	7 4 1.5	3.6	0.1	13
2.2	63	7 4 1.5	4.4	0.1	21
4.7	63	7 4 1.5	6	0.1	33
10	16	7 4 1.5	4.6	0.16	29
10	35	7 4 1.5	6.5	0.12	36
10	50	7 5 2	8	0.1	44
22	16	7 4 1.5	6.5	0.16	44
22	35	7 5 2	10.7	0.12	57
47	16	7 5 2	10.5	0.16	68

100	10	7	6.3	2.5	13	0.2	80
100	16	7	6.3	2.5	19	0.16	90
220	6.3	7	6.3	2.5	25	0.2	110

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

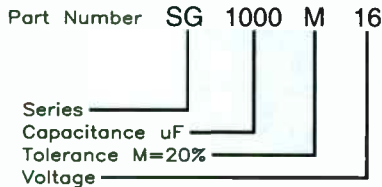
Order Code	Type 402	Price each exc. VAT			inc. VAT each 1+
		10+	50+	1000+	
VH01B	Minelect 0.1µF 63V	£0.080	£0.033	£0.033	£0.180
VH02C	Minelect 0.47µF 63V	£0.080	£0.033	£0.033	£0.180
VH03D	Minelect 1µF 63V	£0.080	£0.033	£0.033	£0.180
VH04E	Minelect 2.2µF 63V	£0.080	£0.033	£0.033	£0.180
VH05F	Minelect 4.7µF 63V	£0.080	£0.033	£0.033	£0.180
VH06G	Minelect 10µF 16V	£0.064	£0.027	£0.027	£0.180
VH07H	Minelect 10µF 35V	£0.064	£0.027	£0.027	£0.180
VH08J	Minelect 10µF 50V	£0.086	£0.037	£0.037	£0.180
VH09K	Minelect 22µF 16V	£0.064	£0.027	£0.027	£0.180
VH10L	Minelect 22µF 35V	£0.080	£0.033	£0.033	£0.180
VH11M	Minelect 47µF 16V	£0.080	£0.033	£0.033	£0.180
VH12N	Minelect 100µF 10V	£0.088	£0.037	£0.037	£0.180
VH13P	Minelect 100µF 16V	£0.092	£0.038	£0.038	£0.180
VH14Q	Minelect 220µF 10V	£0.092	£0.038	£0.038	£0.180



## SG Series Radial Electrolytic

**Samwha**

An aluminium cased electrolytic capacitor available in a wide range of values and voltages. Suitable for operation between -40°C and +85°C. Load life rating of 2000h at 85°C. Leakage current of 0.01CV or 4µA (whichever is greater after 1 minute).



Capaci- tance µF	Working Voltage (VDC)	Part Number	Dimensions (dia x ht x pct) (mm)	Order Code
0-47	63	SG0-47M63	5 x 11 x 2	AT73Q
1	63	SG1M63	5 x 11 x 2	AT74R
1	100	SG1M100	5 x 11 x 2	AT86T
2-2	63	SG2-2M63	5 x 11 x 2	AT75S
2-2	100	SG2-2M100	5 x 11 x 2	AT87U
4-7	63	SG4-7M63	5 x 11 x 2	AT76H
4-7	100	SG4-7M100	5 x 11 x 2	AT88V
10	63	SG10M63	5 x 11 x 2	AT77J
10	100	SG10M100	6-3 x 11 x 2.5	AT89W
22	16	SG22M16	5 x 11 x 2	AT37S
22	35	SG22M35	5 x 11 x 2	AT56L
22	50	SG22M50	5 x 11 x 2	AT66W
22	63	SG22M63	6-3 x 11 x 2.5	AT78K
22	100	SG22M100	8 x 11.5 x 3.5	AT90X
33	16	SG33M16	5 x 11 x 2	AT38R
33	35	SG33M35	5 x 11 x 2	AT57M
33	63	SG33M63	6-3 x 11 x 2.5	AT79L
33	100	SG33M100	10 x 12.5 x 5	AT91Y
47	10	SG47M10	5 x 11 x 2	AT29G
47	16	SG47M16	5 x 11 x 2	AT39N
47	25	SG47M25	5 x 11 x 2	AT47B
47	35	SG47M35	6-3 x 11 x 2.5	AT58N
47	50	SG47M50	6-3 x 11 x 2.5	AT67X
47	63	SG47M63	8 x 11.5 x 3.5	AT80B
47	100	SG47M100	10 x 16 x 5	AT92A
100	6-3	SG100M6V3	5 x 11 x 2	AT25C
100	10	SG100M10	5 x 11 x 2	AT30H
100	16	SG100M16	6-3 x 11 x 2.5	AT40T
100	25	SG100M25	6-3 x 11 x 2.5	AT48C
100	35	SG100M35	8 x 11.5 x 3.5	AT59P
100	50	SG100M50	8 x 11.5 x 3.5	AT68Y
100	63	SG100M63	10 x 12.5 x 5	AT81C
100	100	SG100M100	10 x 20 x 5	AT93B
220	6-3	SG220M6V3	6-3 x 11 x 2.5	AT26D
220	10	SG220M10	6-3 x 11 x 2.5	AT31J
220	16	SG220M16	8 x 11.5 x 3.5	AT41U
220	25	SG220M25	8 x 11.5 x 3.5	AT49D
220	35	SG220M35	10 x 12.5 x 5	AT60Q
220	50	SG220M50	10 x 16 x 5	AT69A
220	63	SG220M63	10 x 20 x 5	AT82D
220	100	SG220M100	13 x 25 x 5	AT94C
330	6-3	SG330M6V3	6-3 x 11 x 2.5	AT27E
330	10	SG330M10	8 x 11.5 x 3.5	AT32K
330	16	SG330M16	8 x 12 x 3.5	AT42V
330	25	SG330M25	10 x 12.5 x 5	AT50E
330	35	SG330M35	10 x 16 x 5	AT61R
330	63	SG330M63	13 x 20 x 5	AT83E
470	6-3	SG470M6V3	8 x 11.5 x 2.5	AT28F
470	10	SG470M10	8 x 11.5 x 2.5	AT33L
470	16	SG470M16	10 x 12.5 x 5	AT43W
470	25	SG470M25	10 x 16 x 5	AT51F
470	35	SG470M35	10 x 20 x 5	AT62S
470	50	SG470M50	13 x 20 x 5	AT70M
470	63	SG470M63	13 x 25 x 5	AT84F
470	100	SG470M100	16 x 31.5 x 7.5	AT95D
1000	10	SG1000M10	10 x 16 x 5	AT34M
1000	16	SG1000M16	10 x 20 x 5	AT44X
1000	25	SG1000M25	13 x 20 x 5	AT52G
1000	35	SG1000M35	13 x 25 x 5	AT63T
1000	50	SG1000M50	16 x 25 x 7.5	AT71N
1000	63	SG1000M63	16 x 31.5 x 7.5	AT85G
2200	10	SG2200M10	13 x 20 x 5	AT35Q
2200	16	SG2200M16	13 x 25 x 5	AT45Y
2200	25	SG2200M25	16 x 25 x 7.5	AT53H
2200	35	SG2200M35	16 x 31.5 x 7.5	AT64U
2200	50	SG2200M50	18 x 35.5 x 7.5	AT72P
3300	25	SG3300M25	16 x 31.5 x 7.5	AT54J
3300	35	SG3300M35	18 x 35.5 x 7.5	AT65V

4700	10	SG4700M10	16 x 25 x 7.5	AT36P
4700	16	SG4700M16	16 x 31.5 x 7.5	AT46A
4700	25	SG4700M25	18 x 35.5 x 7.5	AT55K

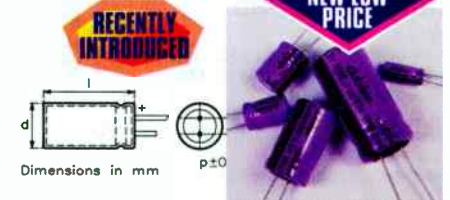
Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 7096	Price each exc. VAT			inc. VAT each 1+
		5+	50+	1000+	
AT73Q	GenElect 0.47µF 63V	£0.055	£0.023	£0.023	£0.084
AT74R	GenElect 1µF 63V	£0.055	£0.023	£0.023	£0.084
AT86T	GenElect 1µF 100V	£0.055	£0.023	£0.023	£0.156
AT75S	GenElect 2.2µF 63V	£0.055	£0.023	£0.023	£0.096
AT87U	GenElect 2.2µF 100V	£0.055	£0.023	£0.023	£0.180
AT76H	GenElect 4.7µF 63V	£0.055	£0.023	£0.023	£0.096
AT88V	GenElect 4.7µF 100V	£0.055	£0.023	£0.023	£0.180
AT77J	GenElect 10µF 63V	£0.055	£0.023	£0.023	£0.096
AT89W	GenElect 10µF 100V	£0.089	£0.037	£0.037	£0.240
AT37S	GenElect 22µF 16V	£0.055	£0.023	£0.023	£0.096
AT56L	GenElect 22µF 35V	£0.055	£0.023	£0.023	£0.096
AT66W	GenElect 22µF 50V	£0.055	£0.023	£0.023	£0.108
AT78K	GenElect 22µF 63V	£0.089	£0.037	£0.037	£0.120
AT90X	GenElect 22µF 100V	£0.108	£0.045	£0.045	£0.336
AT38R	GenElect 33µF 16V	£0.055	£0.023	£0.023	£0.096
AT57M	GenElect 33µF 35V	£0.055	£0.023	£0.023	£0.096
AT79L	GenElect 33µF 63V	£0.099	£0.041	£0.041	£0.156
AT91Y	GenElect 33µF 100V	£0.137	£0.057	£0.057	£0.468
AT29G	GenElect 47µF 10V	£0.055	£0.023	£0.023	£0.144
AT39N	GenElect 47µF 16V	£0.055	£0.023	£0.023	£0.096
AT47B	GenElect 47µF 25V	£0.055	£0.023	£0.023	£0.144
AT58N	GenElect 47µF 35V	£0.080	£0.033	£0.033	£0.120
AT67X	GenElect 47µF 50V	£0.092	£0.038	£0.038	£0.156
AT80B	GenElect 47µF 63V	£0.107	£0.045	£0.045	£0.168
AT92A	GenElect 47µF 100V	£0.165	£0.069	£0.069	£0.528
AT25C	GenElect 100µF 6.3V	£0.055	£0.023	£0.023	£0.144
AT30H	GenElect 100µF 10V	£0.055	£0.023	£0.023	£0.180
AT40T	GenElect 100µF 16V	£0.080	£0.033	£0.033	£0.120
AT48C	GenElect 100µF 25V	£0.092	£0.038	£0.038	£0.192
AT59P	GenElect 100µF 35V	£0.106	£0.044	£0.044	£0.192
AT68Y	GenElect 100µF 50V	£0.133	£0.056	£0.056	£0.204
AT81C	GenElect 100µF 63V	£0.158	£0.066	£0.066	£0.204
AT93B	GenElect 100µF 100V	£0.285	£0.119	£0.119	£0.984
AT26D	GenElect 220µF 6.3V	£0.083	£0.038	£0.038	£0.252
AT31J	GenElect 220µF 10V	£0.086	£0.036	£0.036	£0.252
AT41U	GenElect 220µF 16V	£0.104	£0.043	£0.043	£0.144
AT49D	GenElect 220µF 25V	£0.130	£0.054	£0.054	£0.264
AT70M	GenElect 220µF 35V	£0.184	£0.077	£0.077	£0.264
AT69A	GenElect 220µF 50V	£0.228	£0.095	£0.095	£0.360
AT82D	GenElect 220µF 63V	£0.276	£0.115	£0.115	£0.348
AT94C	GenElect 220µF 100V	£0.482	£0.201	£0.201	£1.260
AT27E	GenElect 330µF 6.3V	£0.094	£0.039	£0.039	£0.264
AT42V	GenElect 330µF 16V	£0.129	£0.054	£0.054	£0.192
AT50E	GenElect 330µF 25V	£0.159	£0.066	£0.066	£0.348
AT61R	GenElect 330µF 35V	£0.220	£0.092	£0.092	£0.348
AT83E	GenElect 330µF 63V	£0.384	£0.160	£0.160	£0.744
AT28F	GenElect 470µF 6.3V	£0.107	£0.045	£0.045	£0.156
AT33L	GenElect 470µF 10V	£0.125	£0.052	£0.052	£0.192
AT43W	GenElect 470µF 16V	£0.159	£0.066	£0.066	£0.192
AT51F	GenElect 470µF 25V	£0.215	£0.090	£0.090	£0.432
AT62S	GenElect 470µF 35V	£0.288	£0.120	£0.120	£0.432
AT70M	GenElect 470µF 50V	£0.415	£0.173	£0.173	£0.756
AT84F	GenElect 470µF 63V	£0.510	£0.212	£0.212	£0.624
AT95D	GenElect 470µF 100V	£1.012	£0.422	£0.422	£1.608
AT34M	GenElect 1000µF 10V	£0.205	£0.085	£0.085	£0.552
AT44X	GenElect 1000µF 16V	£0.270	£0.113	£0.113	£0.312
AT52G	GenElect 1000µF 25V	£0.393	£0.164	£0.164	£0.720
AT63T	GenElect 1000µF 35V	£0.496	£0.207	£0.207	£0.720
AT71N	GenElect 1000µF 50V	£0.700	£0.292	£0.292	£0.984
AT85G	GenElect 1000µF 63V	£0.990	£0.540	£0.460	£1.260
AT35Q	GenElect 2200µF 10V	£0.380	£0.158	£0.158	£0.984
AT45Y	GenElect 2200µF 16V	£0.456	£0.190	£0.190	£0.588
AT53H	GenElect 2200µF 25V	£0.685	£0.286	£0.286	£1.176
AT64U	GenElect 2200µF 35V	£0.920	£0.383	£0.383	£1.176
AT72P	GenElect 2200µF 50V	£1.454	£0.606	£0.606	£1.848
AT54J	GenElect 3300µF 25V	£0.968	£0.403	£0.403	£1.500
AT65V	GenElect 3300µF 35V	£1.349	£0.562	£0.562	£1.740
AT36P	GenElect 4700µF 10V	£0.643	£0.268	£0.268	£1.104
AT46A	GenElect 4700µF 16V	£0.836	£0.348	£0.348	£0.984
AT55K	GenElect 4700µF 25V	£1.301	£0.542	£0.542	£1.740

**Order £30 or above?**  
Account holder or not, your order will be sent carriage paid.  
(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## Radial Electrolytics

**Dubilier**



A range of small long life (2000H) electrolytic capacitors designed for direct mounting on PCBs.

Tolerance: ±20%  
Temperature range: -40°C to +85°C

Cap current (µF)	Working Voltage (DC)	Case Size (mm)	Leakage	Power	Ripple (mA max) at 120Hz @ 85°C
0-47	100	11 5 2	12	0-1	3-9
1	100	11 5 2	18	0-1	5
1	450	12.5 10 5	18	0-24	37
2-2	100	11 5 2	27	0-1	7-4
4-7	63	11 5 2	40	0-1	8-9
4-7	100	11 5 2	42	0-1	12-4
4-7	450	20 12.5 5	42	0-24	137
10	50	11 5 2	54	0-1	13
10	63	11 5 2	58	0-1	15-6
10	100	11 6-3 2.5	69	0-1	23
10	450	25 12.5 5	69	0-24	280
22	25	11 5 2	69	0-15	14
22	50	11 5 2.5	81	0-1	25
22	63	11 6-3 2.5	98	0-1	30-7
22	100	11.5 8 3-5	120	0-1	47
33	35	11 5 2.5	91	0-12	26-1
33	63	11 6-3 2.5	120	0-1	44-6
47	25	11 5 2	100	0-15	26-5
47	50	11 6-3 2.5	140	0-1	50
47	63	11.5 8 3-5	170	0-1	62-2
47	100	16 10 5	230	0-1	97
47	450	33 16 7.5	240	0-24	1279
100	10	11 5 2	130	0-2	23
100	25	11 6-3 2.5	170	0-15	53
100	35	11.5 8 3-5	210	0-12	73
100	63	12.5 10 5	280	0-1	129
100	100	20 12.5 5	400	0-1	203
220	16	11.5 8 3-5	270	0-17	73-4
220	35	12.5 10 5	370	0-12	157
220	63	20 10 5	490	0-1	280
220	100	25 16 7-5	710	0-1	443
330	50	20 10 5	580	0-1	333
470	16				



Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 13472	Price each exc. VAT			inc. VAT each
		5+	50+	1000+	
VH35Q	PC Elect 470F 100V	£0.167	£0.143	£0.083	£0.420
VH36P	PC Elect 1000F 10V	£0.053	£0.046	£0.027	£0.168
VH37S	PC Elect 1000F 25V	£0.060	£0.051	£0.030	£0.228
VH38R	PC Elect 1000F 35V	£0.093	£0.070	£0.047	£0.228
VH39N	PC Elect 1000F 63V	£0.170	£0.128	£0.085	£0.384
VH40T	PC Elect 1000F 100V	£0.403	£0.303	£0.202	£0.576
VH41U	PC Elect 220uF 16V	£0.090	£0.068	£0.045	£0.228
VH42V	PC Elect 220uF 35V	£0.150	£0.113	£0.075	£0.276
VH43W	PC Elect 220uF 63V	£0.267	£0.200	£0.133	£0.468
VH44X	PC Elect 220uF 100V	£0.650	£0.488	£0.325	£0.660
VH45Y	PC Elect 330uF 50V	£0.277	£0.208	£0.138	£0.488
VH46A	PC Elect 470uF 16V	£0.127	£0.095	£0.063	£0.336
VH47B	PC Elect 470uF 35V	£0.237	£0.178	£0.118	£0.444
VH48C	PC Elect 470uF 63V	£0.507	£0.380	£0.253	£0.732
VH49D	PC Elect 470uF 100V	£1.107	£0.830	£0.553	£1.740
VH50E	PC Elect 1000uF 16V	£0.217	£0.163	£0.108	£0.444
VH51F	PC Elect 1000uF 35V	£0.427	£0.320	£0.213	£0.660
VH52G	PC Elect 1000uF 63V	£0.917	£0.688	£0.456	£1.104
VH53H	PC Elect 1000uF 100V	£1.933	£1.450	£0.967	£2.868
VH54J	PC Elect 2200uF 16V	£0.387	£0.290	£0.193	£0.840
VH55K	PC Elect 2200uF 35V	£0.867	£0.650	£0.433	£1.428
VH56L	PC Elect 2200uF 63V	£1.740	£1.305	£0.870	£2.016
VH57M	PC Elect 4700uF 16V	£0.767	£0.575	£0.383	£1.668
VH58N	PC Elect 4700uF 35V	£1.633	£1.225	£0.817	£2.208
VH59P	PC Elect 10000uF 16V	£1.467	£1.100	£0.733	£1.980
JL18U	PC Elect 47uF 450V	£0.805	£0.600	£0.740	£1.908

## Electrolytic Capacitor Pack



Save money with this handy pack of the most commonly used radial electrolytics - 66 in total.

Pack includes the following values:

Value	Voltage	Quantity	Order Code
1µF	100V	10	FF01B
2.2µF	100V	5	FF02C
4.7µF	63V	5	FF03D
10µF	50V	10	FF04E
22µF	25V	5	FF06G
47µF	25V	5	FF08J
100µF	10V	5	FF10L
100µF	25V	5	FF11M
220µF	35V	5	JL22Y
470µF	16V	5	FF15R
470µF	35V	2	FF16S
1000µF	16V	2	FF17T
1000µF	100V	2	JL27E

Order Code	Type 12717	Price each exc. VAT	inc. VAT each
RJ32K	Capacitor Pack 1	£12.750	£14.990

## GCSE Component Pack



An assortment of electronic components housed in a quality storage box intended for students following the GCSE courses in Electronics. The pack includes a wide selection of capacitors, resistors, transistors, diodes ICs, LEDs and a stripboard for assembling

projects. It is also suitable for any beginner to electronics who requires a good selection of components, as the pack represent excellent value, offering a considerable saving over individual prices.

### Contents

Parts organiser box	1	BN76H
BC108	2	QB32K
BC548	2	QB73Q
1N4148	4	QL80B
1N4001	4	QL73Q
555 Timer IC	2	QH66W
741 Op-amp	2	QL22Y
Red LED	2	WL27E
Green LED	2	WL28F
Stripboard 9393	1	JP49D
Buzzer 6V	1	FL39N
10k Pot	1	FW02C
8-pin DIL Socket	2	BL17T
100pF Ceramic	4	WX56L
470pF Ceramic	4	WX64U
1nF Polyester Film	4	DT92A
2.2nF Polyester Film	4	DT93B
4.7nF Polyester Film	4	DT94C
10nF Polyester Film	4	DT95D
22nF Polyester Film	4	DT96E
47nF Polyester Film	4	DT97F
100nF Polyester Film	4	DT98G
220nF Polyester Film	4	DT99H
470nF Polyester Film	4	DS80B
1µF Radial Electrolytic	4	VH16S
4.7µF Radial Electrolytic	4	VH19V
10µF Radial Electrolytic	4	VH22Y
47µF Radial Electrolytic	4	VH32K
100µF Radial Electrolytic	4	VH37S
220µF Radial Electrolytic	4	VH41U
470µF Radial Electrolytic	4	VH46A

Resistors - 10 of each of the following values:

10	47			
100	220	330	470	680
1k	2k2	3k3	4k7	6k8
10k	22k	33k	47k	68k
100k	22k	33k	470k	680k
1M				

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 13487	Price each exc. VAT			inc. VAT each
		5+	25+	100+	
GT66W	GCSE Component Kit	£18.720	£17.190	£15.970	£23.490

## High Temperature Radial Electrolytics

**Dublier**  
A range of high temperature, miniature radial electrolytics offering excellent reliability and long life - up to 2000 hours at 1050C. The capacitors are ideal for use in the output circuits of switching power



supplies and other high temperature environments such as monitors and automotive applications. At lower operating temperatures, life expectancy is well over 10 to 15 years.

### Specification

Temperature:	-400C to +1050C
Tolerance:	±20%
Leakage current:	<0.01CV or 3µA whichever is larger (>2 mins)
Washability:	% mins in Freon TE, Arklone AM or equivalents

Value	Voltage	Dimensions mm		
		Dia	Length	Pitch
1µF	100V	5	11	2
2.2µF	100V	5	11	2
4.7µF	100V	5	11	2
10µF	50V	5	11	2
10µF	100V	6.3	11	2.5
22µF	50V	5	11	2
22µF	100V	8	11.5	3.5
47µF	50V	6.3	11	2.5
47µF	100V	10	16	5
100µF	25V	6.3	11	2.5
100µF	50V	8	11.5	3.5
100µF	100V	12.5	20	5
220µF	50V	10	16	5
220µF	100V	16	25	7.5
470µF	25V	10	16	5
470µF	50V	12.5	20	5
470µF	100V	16	31.5	7.5

1000µF	16V	10	20	5
1000µF	25V	12.5	20	5
1000µF	63V	16	31.5	7.5
2200µF	25V	16	25	7.5
2200µF	50V	18	35.5	7.5

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11882	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	
DT52G	1uF100V 105C	£0.042	£0.038	£0.032	£0.120
DT53H	2.2uF100V 105C	£0.042	£0.038	£0.032	£0.120
DT54J	4.7uF100V 105C	£0.042	£0.038	£0.032	£0.120
DT55K	10uF50V 105C	£0.036	£0.032	£0.027	£0.120
DT56L	10uF100V 105C	£0.051	£0.046	£0.038	£0.180
DT57M	22uF50V 105C	£0.042	£0.038	£0.032	£0.144
DT58N	22uF100V 105C	£0.089	£0.080	£0.067	£0.312
DT59P	47uF 50V 105C	£0.051	£0.046	£0.038	£0.180
DT60Q	47uF100V 105C	£0.178	£0.160	£0.133	£0.588
DT61R	100uF25V 105C	£0.049	£0.044	£0.037	£0.180
DT62S	100uF50V 105C	£0.096	£0.086	£0.072	£0.312
DT63T	100uF100V 105C	£0.322	£0.290	£0.242	£1.068
DT64U	220uF50V 105C	£0.160	£0.144	£0.120	£0.540
DT65V	220uF100V 105C	£0.600	£0.540	£0.450	£1.620
DT66W	470uF25V 105C	£0.138	£0.124	£0.103	£0.420
DT67X	470uF50V 105C	£0.307	£0.276	£0.230	£0.948
DT68Y	470uF100V 105C	£0.956	£0.860	£0.717	£2.220
DT69A	1000uF16V 105C	£0.153	£0.138	£0.115	£0.480
DT70M	1000uF25V 105C	£0.244	£0.220	£0.183	£0.780
DT71N	1000uF63V 105C	£0.711	£0.640	£0.533	£1.668
DT72P	2200uF25V 105C	£0.462	£0.416	£0.347	£1.188
DT73Q	2200uF50V 105C	£1.111	£1.000	£0.833	£2.640

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**e-mail: Sales@maplin.co.uk**

## Low Impedance High Temperature Radial Electrolytics

### Dublier

A range of low impedance, high temperature, miniature radial electrolytics offering excellent reliability and long life - up to 2000 hours (>8mm) for diameter (5000 hours for diameter > 8mm) at 105°C. The capacitors are ideal for use in the output circuits of switching power supplies and other high temperature environments. and audio circuits where the low impedance makes them excellent for high frequency applications

### Specification

Temperature: -40°C to +105°C  
Tolerance: ±20%  
Leakage current: <math>\le 0.01CV</math> or <math>2\mu A</math> whichever is larger (>1 mins)

Value $\mu F$	Voltage	Imp $\Omega$	Ripple mA	Dimensions mm Dia	Length
1	50V	4	25	5	11
2.2	50V	2.8	33	5	11
4.7	50V	2.4	58	5	11
10	63V	1.9	105	5	11
22	50V	1.3	135	6.3	11
47	25V	1.3	230	6.3	11
47	50V	0.7	285	8	12
100	16V	0.5	260	6.3	11
100	35V	0.25	390	8	12
220	16V	0.25	470	8	12
220	35V	0.114	740	10	17
470	16V	0.114	528	10	17
470	35V	0.065	1050	10	30
1000	16V	0.065	1180	10	30
1000	25V	0.041	1430	13	25
2200	25V	0.036	2390	13	40
2200	35V	0.034	2550	16	35

Dia. mm 5 6.3 8 10 13 16  
Pitch mm 2.0 2.5 3.5 5.0 5.0 7.5  
Positive lead is 20mm long. Negative lead is 15mm long.  
Impedance is measured at 100kHz @ 20°C.

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

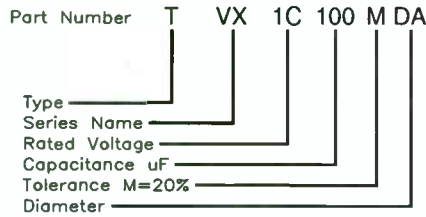
Order Code	Type 13030	Price each exc. VAT			inc. VAT each
		5+	50+	500+	1+
VN69A	Lo-Z 1uF 50V 105C	£0.041	£0.037	£0.031	£0.204
VN70M	Lo-Z 2.2uF 50V 105C	£0.041	£0.037	£0.031	£0.204
VN71N	Lo-Z 4.7uF 50V 105C	£0.041	£0.037	£0.031	£0.204
VN72P	Lo-Z 10uF 63V 105C	£0.022	£0.020	£0.017	£0.204
VN73Q	Lo-Z 22uF 50V 105C	£0.053	£0.048	£0.040	£0.228
VN74R	Lo-Z 47uF 25V 105C	£0.050	£0.045	£0.038	£0.252
VN75S	Lo-Z 47uF 50V 105C	£0.093	£0.084	£0.070	£1.416
VN76H	Lo-Z 100uF 16V 105C	£0.058	£0.052	£0.043	£0.288
VN77J	Lo-Z 100uF 35V 105C	£0.098	£0.088	£0.073	£0.444
VN78K	Lo-Z 220uF 16V 105C	£0.082	£0.074	£0.062	£0.396
VN79L	Lo-Z 220uF 35V 105C	£0.153	£0.138	£0.115	£0.636
VN80B	Lo-Z 470uF 16V 105C	£0.151	£0.136	£0.113	£0.480
VN85G	Lo-Z 470uF 35V 105C	£0.284	£0.256	£0.213	£1.416
VN86T	Lo-Z 1000uF 16V 105C	£0.249	£0.224	£0.187	£0.912
VN87U	Lo-Z 1000uF 25V 105C	£0.400	£0.360	£0.300	£1.416
VN88V	Lo-Z 2200uF 25V 105C	£0.589	£0.512	£0.427	£2.424
VN89W	Lo-Z 2200uF 35V 105C	£1.022	£0.920	£0.767	£4.164

## VX Series Axial Electrolytic

### Nichicon



A range of axial leaded capacitors with values from 1 to 4700 $\mu F$  at voltages of 10 to 450V. Load life of 2000h at 85°C. Operating temperatures of -40 to +85°C. Leakage current not more than 0.03CV or 4 $\mu A$  (whichever is greater).

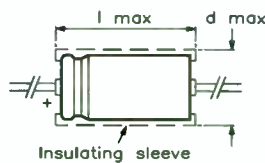


Capaci-Working Voltage $\mu F$ (VDC)	Part Number	Dimensions (dia x height) (mm)	Order Code
1	100 TVX2A010MAA	5 x 12	AT00A
2.2	100 TVX2A2R2MAA	5 x 12	AT01B
10	25 TVX1E100MAA	5 x 12	AT02C
10	63 TVX1J100MAA	5 x 12	AT03D
22	63 TVX1J220MAA	6-3 x 12	AT04E
47	16 TVX1C470MAA	5 x 12	AT05F
47	63 TVX1J470MAA	8 x 16	AT06G
47	450 TVX2W470MDA	22 x 40	AT07H
100	10 TVX1A101MAA	6-3 x 12	AT08J
100	35 TVX1V101MAA	8 x 16	AT09K
100	63 TVX1J101MAA	8 x 20	AT10L
220	16 TVX1C221MAA	8 x 16	AT11M
220	35 TVX1V221MAA	8 x 20	AT12N
470	10 TVX1A471MAA	8 x 16	AT13P
470	16 TVX1C471MAA	8 x 20	AT14Q
470	25 TVX1E471MCA	10 x 26	AT15R
470	63 TVX1J471MCA	13 x 31-5	AT16S
1000	10 TVX1A102MCA	10 x 21	AT17T
1000	16 TVX1C102MCA	10 x 26	AT18U
1000	35 TVX1V102MCA	13 x 31-5	AT19V
1000	63 TVX1J102MCA	16 x 31-5	AT20W
2200	35 TVX1V222MCA	16 x 31-5	AT21X
2200	50 TVX1H222MCA	18 x 40	AT22Y
2200	63 TVX1J222MCA	22 x 40	AT23A
4700	35 TVX1V472MCA	22 x 40	AT24B

Price each is shown. Order quantities less than 50 will be sold at the one off inc. VAT price.

Order Code	Type 7011	Price each exc. VAT			inc. VAT each
		50+	100+	1000+	1+
AT00A	GenElect 1uF 100V	£0.087	£0.078	£0.065	£0.168
AT01B	GenElect 2.2uF 100V	£0.096	£0.086	£0.072	£0.180
AT02C	GenElect 10uF 25V	£0.096	£0.086	£0.072	£0.180
AT03D	GenElect 10uF 63V	£0.107	£0.096	£0.080	£0.204
AT04E	GenElect 22uF 63V	£0.109	£0.098	£0.082	£0.240
AT05F	GenElect 47uF 16V	£0.107	£0.096	£0.080	£0.216
AT06G	GenElect 47uF 63V	£0.127	£0.114	£0.095	£0.348
AT07H	GenElect 47uF 450V	£2.118	£1.906	£1.588	£2.508
AT08J	GenElect 100uF 10V	£0.115	£0.103	£0.086	£0.324
AT09K	GenElect 100uF 35V	£0.127	£0.114	£0.095	£0.348
AT10L	GenElect 100uF 63V	£0.171	£0.154	£0.128	£0.396
AT11M	GenElect 220uF 16V	£0.127	£0.114	£0.095	£0.228
AT12N	GenElect 220uF 35V	£0.171	£0.154	£0.128	£0.396
AT13P	GenElect 470uF 10V	£0.147	£0.132	£0.110	£0.300
AT14Q	GenElect 470uF 16V	£0.169	£0.152	£0.127	£0.312
AT15R	GenElect 470uF 25V	£0.242	£0.218	£0.182	£0.444
AT16S	GenElect 470uF 63V	£0.469	£0.422	£0.352	£0.768
AT17T	GenElect 1000uF 10V	£0.206	£0.186	£0.155	£0.360
AT18U	GenElect 1000uF 16V	£0.289	£0.260	£0.217	£0.396
AT19V	GenElect 1000uF 35V	£0.433	£0.390	£0.325	£0.900
AT20W	GenElect 1000uF 63V	£0.824	£0.742	£0.618	£1.140
AT21X	GenElect 2200uF 35V	£0.824	£0.742	£0.618	£1.140
AT22Y	GenElect 2200uF 50V	£1.209	£1.088	£0.907	£2.148
AT23A	GenElect 2200uF 63V	£1.376	£1.238	£1.032	£2.388
AT24B	GenElect 4700uF 35V	£1.322	£1.190	£0.992	£2.388

## Axial Lead Electrolytic



A range of miniature, general purpose aluminium electrolytic capacitors, using high etch factor foils to enable wide operating temperatures and high capacitance to be achieved in a miniature can size.

For new designs we recommend the use of radial

### types.

Cap	Working Voltage (DC)	Case Size l d (mm)	Ripple current @120Hz 85°C	Tolerance (%)	Leakage Current ( $\mu A$ max)	Power Factor (max)
1	100	12.5 6.3	17	±20	3	0.08
2.2	100	12.5 6.3	31	±20	3	0.08
3.3	100	12.5 6.3	39	±20	3	0.08
4.7	100	12.5 6.3	46	±20	4.7	0.08
10	25	12.5 6.3	27	±20	3	0.14
10	63	12.5 6.3	60	±20	6.3	0.09
10	450	31 16	60	-10+50	470	0.25
22	35	12.5 6.3	70	±20	5.5	0.14
47	16	12.5 6.3	101	±20	7.6	0.16
47	63	16 8	164	±20	29.7	0.09
47	450	50 22.4	138	±20	645	0.25
100	10	16 8	169	±20	10	0.2
100	35	16 8	220	±20	35	0.12
100	63	20 10	300	±20	63	0.09
220	10	16 8	250	±20	22	0.2
220	16	20 8	310	±20	35.2	0.16
220	35	20 10	410	±20	77	0.12
330	25	20 10	480	±20	82.5	0.14
470	10	20 10	459	±20	47	0.2
470	16	20 10	510	±20	75.2	0.16
470	25	25 10	600	±20	117.5	0.14
470	63	31.5 12.5	890	±20	297	0.09
1000	10	25 10	733	±20	100	0.2
1000	16	25 12.5	940	±20	160	0.16
1000	35	31.5 12.5	1190	±20	350	0.12
1000	63	40 16	1660	±20	630	0.09
2200	35	40 16	2080	±20	770	0.15
2200	50	50 18	2740	±20	1100	0.13
2200	63	50 22.4	3000	±20	1386	0.12
4700	35	50 22.4	3580	±20	1645	0.2
4700	50	50 25	4050	±20	2350	0.18

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 411	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
FB12N	Axial 1uF 100V	£0.110	£0.090	£0.080	£0.252
FB15R	Axial 2.2uF 100V	£0.110	£0.090	£0.080	£0.252
FB17T	Axial 3.3uF 100V	£0.110	£0.090	£0.080	£0.252
FB18U	Axial 4.7uF 100V	£0.110	£0.090	£0.080	£0.252
FB22Y	Axial 10uF 25V	£0.110	£0.090	£0.080	£0.252
FB23A	Axial 10uF 63V	£0.110	£0.090	£0.080	£0.252
FB25C	Axial 10uF 450V	£0.590	£0.490	£0.490	£1.260
FB30H	Axial 22uF 35V	£0.110	£0.090	£0.080	£0.252
FB38R	Axial 47uF 16V	£0.110	£0.090	£0.080	£0.252
FB39N	Axial 47uF 63V	£0.110	£0.090	£0.080	£0.372
FB43W	Axial 47uF 450V	£1.790	£1.490	£1.390	£3.708
FB48C	Axial 100uF 10V	£0.110	£0.090	£0.080	£0.348
FB49D	Axial 100uF 35V	£0.213	£0.128	£0.107	£0.504
FB51F	Axial 100uF 63V	£0.307	£0.184	£0.153	£0.540
FB60Q	Axial 220uF 10V	£0.184	£0.110	£0.092	£0.384
FB61R	Axial 220uF 16V	£0.200	£0.120	£0.100	£0.420
FB62S	Axial 220uF 35V	£0.293	£0.176	£0.130	£0.456
FB68Y	Axial 330uF 25V	£0.300	£0.180	£0.120	£0.420
FB71N	Axial 470uF 10V	£0.230	£0.138	£0.115	£0.384
FB72P	Axial 470uF 16V	£0.240	£0.144	£0.120	£0.420
FB73Q	Axial 470uF 25V	£0.330	£0.198	£0.165	£0.684
FB74R	Axial 470uF 63V	£1.100	£0.660	£0.460	£1.068
FB81C	Axial 1000uF 10V	£0.320	£0.192	£0.160	£0.588
FB82D	Axial 1000uF 16V	£0.719	£0.432	£0.320	£0.792
FB83E	Axial 1000uF 35V	£0.730	£0.438	£0.315	£0.816
FB84F	Axial 1000uF 63V	£1.500	£0.900	£0.680	£1.500
FB90X	Axial 2200uF 35V	£1.533	£0.920	£0.650	£1.500
FB91Y	Axial 2200uF 50V	£2.565	£1.539	£1.000	£2.460
FB92A	Axial 2200uF 63V	£3.633	£2.180	£1.390	£3.468
FB96E	Axial 4700uF 35V	£3.498	£2.099	£1.390	£3.468
RK26D	Axial 4700uF 50V	£2.490	£2.310	£1.930	£5.148

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## High Temperature Axial Electrolytics

Dubilier



A range of high temperature, miniature axial electrolytics offering excellent reliability and long life - up to 2000 hours at 105°C, and high ripple current. The capacitors are ideal for use in the most demanding applications and environments such as automotive applications.

### Specification

Temperature: -40°C to +105°C  
Tolerance: ±20%  
Leakage current: <0.01CV or 3µA whichever is larger (>5 mins)

Value	Voltage	Dimensions mm		Lead dia mm
		Dia	Length	
4.7µF	63V	6.3	12.5	0.6
10µF	50V	6.3	12.5	0.6
22µF	50V	6.3	12.5	0.6
47µF	16V	6.3	12.5	0.6
100µF	25V	8	16	0.6
100µF	50V	8	21	0.6
220µF	16V	8	16	0.6
470µF	16V	10	17	0.6
470µF	35V	10	25	0.6
1000µF	16V	10	25	0.6
1000µF	25V	12.5	25	0.8
2200µF	16V	13	30	0.8
2200µF	25V	16	30	0.8

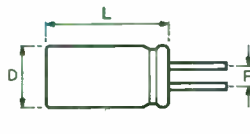
Each lead is 35mm long.

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		5+	50+	500+	
VN56L	Ax 4.7µF 63V 105C	£0.153	£0.092	£0.071	£0.424
VN57M	Ax 10µF 50V 105C	£0.157	£0.094	£0.072	£0.420
VN58N	Ax 22µF 50V 105C	£0.170	£0.102	£0.078	£0.444
VN59P	Ax 47µF 16V 105C	£0.167	£0.100	£0.077	£0.408
VN60Q	Ax 100µF 25V 105C	£0.203	£0.122	£0.094	£0.492
VN61R	Ax 100µF 50V 105C	£0.253	£0.152	£0.117	£0.624
VN62S	Ax 220µF 16V 105C	£0.207	£0.124	£0.095	£0.516
VN63T	Ax 470µF 16V 105C	£0.267	£0.160	£0.123	£0.616
VN64U	Ax 470µF 35V 105C	£0.417	£0.250	£0.192	£1.056
VN65V	Ax 1000µF 16V 105C	£0.360	£0.216	£0.166	£1.008
VN66W	Ax 1000µF 25V 105C	£0.513	£0.308	£0.237	£1.248
VN67V	Ax 2200µF 16V 105C	£0.603	£0.362	£0.278	£1.612
VN68Y	Ax 2200µF 25V 105C	£0.917	£0.550	£0.423	£1.848

## High Frequency Electrolytics

Nichicon



Radial lead electrolytic capacitors having very low impedances at high frequencies, designed primarily for use in switch mode power supplies, but suitable for use in many applications where a high grade capacitor is required.

### Specification

Tolerance: ±20%  
Temperature range: -55°C to +105°C  
Leakage current: 0.03CV  
Load Life: 5000h@105°C  
Power factor: <0.08 (0.1 for 1000µF types)

Cap (µF)	Working Voltage (DC)	Case Size (mm)			Ripple current (mA)	ESR (mΩ)	Impedance m:1 @ 1kHz
		L	D	P			
47	50	11.5	8	3.5	0.5A	2000	1000
100	50	15	10	5	0.9A	760	530
220	50	15	12.5	5	1.75A	400	300
470	50	25	12.5	5	3.3A	120	80
1000	25	25	12.5	5	3.3A	150	90
1000	50	31.5	16	5	4.5A	80	60

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	
JL47B	SMPS Cap 47µF 50V	£0.136	£0.124	£0.113	£0.408
JL49D	SMPS Cap 100µF 50V	£0.187	£0.170	£0.156	£0.504
JL51F	SMPS Cap 220µF 50V	£0.248	£0.225	£0.207	£0.756
JL53H	SMPS Cap 470µF 50V	£0.479	£0.436	£0.400	£1.260
JL56L	SMPS Cap 1000µF 25V	£0.471	£0.428	£0.393	£1.164
JL57M	SMPS Cap 1000µF 50V	£0.656	£0.596	£0.547	£1.260

## Non-Polarised Electrolytics

Samwha

A range of non-polarised electrolytic capacitors primarily intended for use in loudspeaker crossover networks, but also suitable for use in applications where a large capacitance is required in a compact case with a large bipolar signal.



### Specification

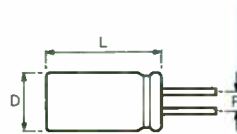
Tolerance: ±20%  
Temperature range: -40°C to +85°C  
Leakage current: 0.03CV or 3µA whichever is greater after 5 mins

Cap (µF)	Working voltage VAC rms	Case size (mm)			Ripple current mA max	Power factor max
		L	D	P		
1.5	100	11	6.3	2.5	20	0.12
2.2	100	11	6.3	2.5	20	0.12
3.3	100	11	6.3	2.5	40	0.12
4.7	100	11.5	8	3.5	50	0.12
10	50	11	6.3	2.5	60	0.12
10	100	12.5	10	5.0	80	0.12
22	100	16	10	5.0	140	0.12
47	100	20	13	5.0	260	0.12
100	100	25	16	7.5	460	0.12
220	100	35.5	18	7.5	860	0.12

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		5+	25+	100+	
JA79L	NP 1.5µF 100V	£0.055	£0.033	£0.028	£0.408
JA78K	NP 2.2µF 100V	£0.055	£0.033	£0.028	£0.408
JA77J	NP 3.3µF 100V	£0.055	£0.033	£0.028	£0.480
JA76H	NP 4.7µF 100V	£0.550			£0.480
JA75S	NP 10µF 50V	£0.055	£0.033	£0.028	£0.456
JA74R	NP 10µF 100V	£0.252			£0.696
JA73Q	NP 22µF 100V	£0.252	£0.151	£0.126	£0.696
JA72P	NP 47µF 100V	£0.462	£0.277	£0.231	£1.308
VM76H	NP 100µF 100V	£0.793	£0.476	£0.366	£1.752
JA71N	NP 220µF 100V	£1.623	£0.974	£0.812	£2.628

## Non-Polarised Electrolytics



Non-polarised electrolytic capacitors designed for use in loudspeaker crossover networks, but suitable for use in many applications where a large capacitance is required with a large bipolar signal at relatively low cost.

Tolerance: ±20%  
Temperature range: -40°C to +85°C


Cap (µF)	Working voltage (VAC rms)	Case size (mm)			Leakage current (µA max)	Power factor (max)
		L	D	P		
2.2	100	14.1	8.1	3.4	11.3	0.09
3.3	100	14	8	3.5	15.4	0.09
4.7	100	20	10	5	20.6	0.09
10	50	12.5	8	3.5	21.9	0.15
10	100	21	13	5	40.5	0.09

47 100 21 13 5 179.3 0.09  
100 100 27 16 7.5 378 0.09  
Available while stocks last.


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	
KP53H	Reverso Radial 2.2µF	£0.125	£0.114	£0.105	£0.324
JH29G	Reverso Radial 3.3µF	£0.209	£0.125	£0.105	£0.468
JH30H	Reverso Radial 4.7µF	£0.275	£0.165	£0.138	£0.468
KP54J	Reverso Radial 10µF	£0.230	£0.170	£0.120	£0.468
JH31J	Reverso Radial 10µF	£0.379	£0.228	£0.190	£0.576
JH34M	Reverso Radial 47µF	£0.757	£0.454	£0.379	£0.900
JH35Q	Reverso Radial 100µF	£0.650	£0.555	£0.500	£1.020





**RS12750**  
**BS EN ISO 9002**  
Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System



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## HC Series Snap-In Radial Electrolytic

Samwha



A range of aluminium cased electrolytic capacitors with values ranging from 47 to 22,000µF with voltages from 16 to 450V. Suitable for operation between -25 and +85°C (-40°C for working voltages <350V). Load life rating of 2000h at 85°C. Leakage current of 0.03CV or 3µA (whichever is smaller after 5 minutes).

Part Number **HC 4700 M 16 Y**

Series  
Capacitance µF  
Tolerance M=20%  
Voltage  
Case Size

Capacitance µF	Working Voltage (VDC)	Part Number	Dimensions (dia x ht x pch) (mm)	Order Code
47	400	HC47M400Y	20 x 25 x 10	AU51F
47	450	HC47M450Z	22 x 25 x 10	AU58N
68	400	HC68M400Z	22 x 25 x 10	AU52G
100	400	HC100M400Z	22 x 30 x 10	AU53H
100	450	HC100M450A	25 x 35 x 10	AU59P
150	250	HC150M250Y	22 x 30 x 10	AU46A
150	400	HC150M400A	25 x 30 x 10	AU54J
220	200	HC220M200Z	22 x 25 x 10	AU40T
220	250	HC220M250Z	22 x 30 x 10	AU47B
220	400	HC220M400A	25 x 40 x 10	AU55K
220	450	HC220M450B	30 x 45 x 10	AU60Q
330	200	HC330M200Z	22 x 30 x 10	AU41U
330	400	HC330M400B	30 x 45 x 10	AU56L
330	450	HC330M450C	35 x 40 x 10	AU61R
470	200	HC470M200A	25 x 35 x 10	AU42V
470	250	HC470M250A	25 x 40 x 10	AU48C
470	400	HC470M400C	35 x 45 x 10	AU57M
680	200	HC680M200A	25 x 4 x 45 x 10	AU43W
680	250	HC680M250B	30 x 40 x 10	AU49D
1000	100	HC1000M100A	22 x 30 x 10	AU35Q
1000	200	HC1000M200C	35 x 35 x 10	AU44X
1000	250	HC1000M250C	35 x 45 x 10	AU50E
1500	100	HC1500M100A	25 x 30 x 10	AU38P
1500	200	HC1500M200C	35 x 45 x 10	AU45Y
2200	35	HC2200M35Y	20 x 25 x 10	AU20W
2200	50	HC2200M50Z	22 x 25 x 10	AU25C
2200	63	HC2200M63A	25 x 25 x 10	AU29G
2200	100	HC2200M100A	25 x 40 x 10	AU37S
3300	63	HC3300M63Z	22 x 40 x 10	AU30H
3300	100	HC3300M100B	30 x 40 x 10	AU38R
4700	16	HC4700M16Y	20 x 25 x 10	AU11M
4700	25	HC4700M25Z	22 x 25 x 10	AU16S
4700	35	HC4700M35Z	22 x 30 x 10	AU21X
4700	50	HC4700M50B	30 x 25 x 10	AU26D
4700	63	HC4700M63B	30 x 30 x 10	AU31J
4700	80	HC4700M80A	25 x 50 x 10	AU33L
4700	100	HC4700M100C	35 x 40 x 10	AU39N
6800	16	HC6800M16Y	20 x 30 x 10	AU12N
6800	35	HC6800M35A	25 x 30 x 10	AU22Y
6800	50	HC6800M50A	25 x 40 x 10	AU27E
6800	63	HC6800M63B	30 x 40 x 10	AU32K
6800	80	HC6800M80C	35 x 40 x 10	AU34M
10000	16	HC10000M16A	25 x 25 x 10	AU13P
10000	25	HC10000M25B	25 x 40 x 10	AU17T
10000	35	HC10000M35B	30 x 35 x 10	AU23A
10000	50	HC10000M50C	35 x 35 x 10	AU28F
15000	16	HC15000M16B	25 x 40 x 10	AU14Q
15000	25	HC15000M25B	30 x 35 x 10	AU18U
22000	16	HC22000M16A	25 x 40 x 10	AU15R
22000	25	HC22000M25B	30 x 45 x 10	AU19V
22000	35	HC22000M35C	30 x 45 x 10	AU24B

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	100+	
AU51F	GenElect 47µF 400V	£1.656	£0.994	£0.764	£1.668
AU58N	GenElect 47µF 450V	£2.800	£1.740	£1.338	£2.508
AU52G	GenElect 68µF 400V	£2.233	£1.340	£1.031	£2.508
AU53H	GenElect 100µF 400V	£2.967	£1.780	£1.369	£3.108
AU59P	GenElect 100µF 450V	£5.367	£3.220	£2.477	£5.388
AU46A	GenElect 150µF 250V	£1.933	£1.160	£0.892	£2.028
AU54J	GenElect 150µF 400V	£4.267	£2.560	£1.969	£3.828
AU40T	GenElect 220µF 200V	£2.011	£1.207	£0.928	£2.508
AU47B	GenElect 220µF 250V	£2.767	£1.660	£1.277	£2.508
AU55K	GenElect 220µF 400V	£6.467	£3.880	£2.985	£6.228
AU60Q	GenElect 220µF 450V	£11.667	£7.000	£5.385	£10.188
AU41U	GenElect 330µF 200V	£2.447	£1.468	£1.129	£3.108
AU56L	GenElect 330µF 400V	£8.942	£5.365	£4.127	£8.148
AU61R	GenElect 330µF 450V	£9.467	£5.680	£4.369	£11.388
AU42V	GenElect 470µF 200V	£3.067	£1.840	£1.415	£4.068
AU48C	GenElect 470µF 250V	£5.200	£3.120	£2.400	£4.068
AU49D	GenElect 470µF 400V	£11.000	£6.600	£5.077	£8.748
AU43W	GenElect 680µF 200V	£3.867	£2.320	£1.785	£6.228
AU49Q	GenElect 680µF 250V	£7.827	£4.576	£3.520	£6.708
AU35Q	GenElect 1000µF 100V	£2.133	£1.280	£0.985	£3.108
AU44X	GenElect 1000µF 200V	£6.971	£4.182	£3.217	£7.548
AU50E	GenElect 1000µF 250V	£10.329	£6.198	£4.767	£8.748
AU36P	GenElect 1500µF 100V	£2.833	£1.700	£1.308	£3.228
AU45Y	GenElect 1500µF 200V	£11.337	£6.802	£5.232	£10.788
AU20W	GenElect 2200µF 35V	£1.077	£0.646	£0.497	£1.668
AU25C	GenElect 2200µF 50V	£1.560	£0.936	£0.720	£2.508
AU29G	GenElect 2200µF 63V	£2.000	£1.200	£0.923	£2.508
AU37S	GenElect 2200µF 100V	£3.900	£2.340	£1.800	£6.228
AU30H	GenElect 3300µF 63V	£2.700	£1.620	£1.246	£3.228
AU38R	GenElect 3300µF 100V	£5.733	£3.440	£2.646	£7.548
AU11M	GenElect 4700µF 16V	£1.000	£0.600	£0.462	£1.308
AU16S	GenElect 4700µF 25V	£1.410	£0.846	£0.651	£2.028
AU21X	GenElect 4700µF 35V	£1.800	£1.080	£0.831	£2.268
AU26D	GenElect 4700µF 50V	£2.717	£1.630	£1.254	£3.228
AU31J	GenElect 4700µF 63V	£3.733	£2.240	£1.723	£4.068
AU33L	GenElect 4700µF 80V	£5.400	£3.240	£2.492	£5.748
AU39N	GenElect 4700µF 100V	£8.067	£4.840	£3.723	£8.748
AU12N	GenElect 6800µF 16V	£1.283	£0.770	£0.592	£1.668
AU22Y	GenElect 6800µF 35V	£2.550	£1.530	£1.177	£2.988
AU27E	GenElect 6800µF 50V	£3.580	£2.148	£1.652	£3.828
AU32K	GenElect 6800µF 63V	£5.133	£3.080	£2.369	£5.508
AU34M	GenElect 6800µF 80V	£7.833	£4.700	£3.615	£8.748
AU13P	GenElect 10000µF 16V	£1.733	£1.040	£0.800	£2.268
AU17T	GenElect 10000µF 25V	£2.467	£1.480	£1.138	£2.988
AU23A	GenElect 10000µF 35V	£3.567	£2.140	£1.646	£3.828
AU28F	GenElect 10000µF 50V	£5.333	£3.200	£2.462	£5.748
AU14Q	GenElect 15000µF 16V	£2.453	£1.472	£1.132	£2.988
AU18U	GenElect 15000µF 25V	£3.533	£2.120	£1.631	£3.708
AU15R	GenElect 22000µF 16V	£3.333	£2.000	£1.538	£3.828
AU19V	GenElect 22000µF 25V	£5.033	£3.020	£2.323	£5.028
AU24B	GenElect 22000µF 35V	£7.300	£4.380	£3.369	£8.748

## Low Profile Can Solder Tagged Electrolytics

Samwha

A range of low-profile, can-type electrolytic capacitors offering long life and stability.

The capacitors feature etched aluminium foil, non-inductively wound with impregnated electrolytic tissue.

Vertical mounting clips are available separately.



Value µF	Working V DC	Ripple current (max)	Leakage current (max)	Power factor (max)
2200	63	2.75A	5mA	0.35
4700	63	5.25A	8.9mA	0.5
10000	35	5.1A	10.5mA	0.5
10000	63	8.25A	18.9mA	0.5

Order Code	Value µF/V DC	Case size (mm max) L x D
LE01B	2200/63	30 x 25.4
LE02C	4700/63	50 x 25.4
LE03D	10000/35	60 x 30
LE04E	10000/63	60 x 30

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
LE01B	2200µF 63V Can	£1.790	£1.380	£1.094	£3.588
LE02C	4700µF 63V Can	£3.350	£2.450	£1.877	£7.188
LE03D	10000µF 35V Can	£2.600	£2.100	£1.808	£5.148
LE04E	10000µF 63V Can	£5.500	£4.250	£3.954	£11.388

## Can-Type Electrolytic Mounting Clips

Vertical mounting clips for the standard range can type electrolytics. Available for 25mm (LE05F) and 30mm (LE80B) diameter capacitors. Requires M3 x 10mm nut and bolt.



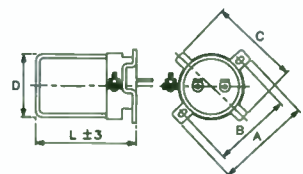
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
LE05F	25mm Clip	£0.220	£0.165	£0.092	£0.432
LE80B	30mm Clip	£0.350	£0.265	£0.154	£0.708

## Standard Range Can-Type Electrolytics with Clips

A range of can-type electrolytic capacitors employing high gain etched aluminium foil non-inductively wound with electrolytic tissue impregnated with long life electrolyte.

All dimensions in mm.



30 to 40mm dia. types

Tolerance:	-10+30%				
Temperature range:	-40°C to +85°C				
Order Value	Working	Case size	Ripple	Leakage	Power

RS12750  
BS EN ISO 9002  
Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

### THE QUALITY CATALOGUE DISTRIBUTOR WITH MORE OUTLETS THAN ANY OTHER

Code (µF)	voltage (DC)	(mm max) L	(mm max) D	current (max) at 100Hz 55°C	current (max)	factor (max)
FF27E 4700	50	50	30	5-2A	7-1mA	0-5
FF28F 4700	63	60	35	5-6A	8-9mA	0-5
FF30H 6800	63	76	35	5A	12-9mA	0-5
FF31J 10000	35	60	30	5-1A	10-5mA	0-5
FF32K 10000	63	80	35	9-8A	18-9mA	0-5

Ripple currents: These shown are the maximum allowable at 100Hz, 55°C. The maximum allowable at other frequencies and temperatures is as follows:

50Hz: 95%	120Hz: 100%	1kHz: 110%
10kHz: 130%	20kHz: 133%	
20°C: 150%	30°C: 125%	
70°C: 75%	85°C: 50%	of value shown.

All types are supplied with vertical mounting clips. Clip dimensions in mm.

Capacitor dia. (D)	Fixing centres (B)	Overall area A x C
30	43	52 38
35	50	61 44

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

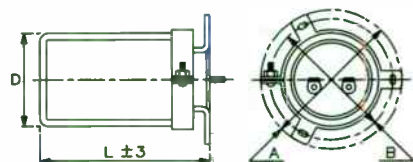
Order Code	Type 435	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
FF27E	Can 4700µF 50V	£3.014	£1.808	£1.391	£3.820
FF28F	Can 4700µF 63V	£2.549	£2.549	£1.961	£7.784
FF30H	Can 6800µF 63V	£3.700	£3.150	£2.831	£8.143
FF31J	Can 10,000µF 35V	£2.100	£1.800	£1.636	£4.788
FF32K	Can 10,000µF 63V	£8.250	£7.650	£6.850	£14.675
FF22Y	Can 22000µF 63V	£1.900	£1.600	£1.350	£3.250

## High-Grade Can-Type Electrolytic Capacitors

**Elna**

A very high grade capacitor designed for use in the power supplies and outputs of high power audio amplifiers. The capacitor's excellent response is obtained by lowering the equivalent circuit series resistance to half that of ordinary capacitors. The high grade materials used in the capacitor are chosen to give superior aging and stable tonal quality over the audio range. In addition, particular care has been taken to ensure very low distortion levels, for example third harmonic distortion at 10kHz, 0.1A is 150dB or less.

Tolerance: ±20%.  
Temperature range: -40 to +85°C.



50.8mm dia.type

Value (µF)	Working V (DC)	Case size L mm	Case size D mm	Ripple current (max) at 100Hz 55°C	Leakage current (max)	Power factor (max)
4700	63	80	35-5	7-7A	5mA	0-20
10,000	63	80	50-8	13-2A	6-3mA	0-20
10,000	80	100	50-8	14-6A	8mA	0-20
22,000	56	112	50-8	22-3A	12-3mA	0-20

Ripple currents: Those shown are the maximum allowable at 100Hz, 55°C. The maximum allowable at other frequencies and temperatures is as follows:

50Hz: 95%	120Hz: 100%	1kHz: 110%
10kHz: 130%	20kHz: 133%	
20°C: 140%	40°C: 120%	
70°C: 80%	85°C: 40%	of value shown.

Dimensions for 35.5mm diameter type refer to drawings in Standard Range.

All types are supplied with vertical mounting clips. Clip dimensions in mm:

Capacitor	Fixing	Overall
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Dia. (D)	Centres (B)	area (A x C)
35-5	48	58 x 46
50-8	65 dia.	74-5 dia.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 435	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
FA16S	Audio 4700µF 63V	£10.910	£10.050	£8.900	£20.988
FA18U	Audio 10,000µF 63V	£19.960	£18.460	£16.660	£35.988
FA19V	Audio 10,000µF 80V	£22.920	£21.030	£18.960	£41.988
FA20W	Audio 22,000µF 56V	£26.120	£23.690	£21.260	£47.988

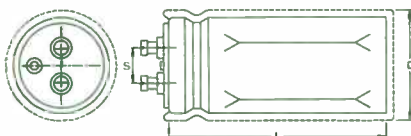
## 500V Can Electrolytic

A high quality 68µF 500V can electrolytic specifically for high voltage supply decoupling and reservoir applications. Connections are to two M5 tapped terminals. Supplied with screws and shakeproof washers.



Volts	Volts	Cap. µF	Max. ripple @ 100Hz	Max. ESR
500V	550V	68	4-0A	0-6A
			0-6A	0-4A
				5,850

Dimensions	L	D	S
	49mm	35-8mm	13mm



Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 442	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
DM57M	68µF 500V Can Elect	£10.202			£11.988

## High Voltage Radial Electrolytic

A compact 47µF 450V radial electrolytic ideal for valve circuits.



Specification	
Tolerance:	-10% to +50%
Temperature range:	-25°C to +85°C
Leakage current:	240µA
Power factor:	0.24
Ripple current:	1.279A
Size:	11mm (l) x 33mm (dia.) 7.5mm pitch

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

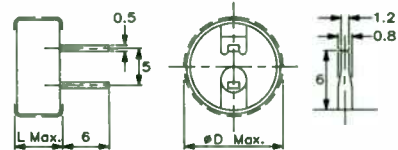
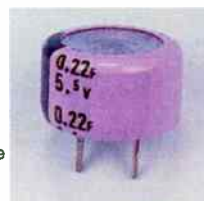
Order Code	Type 12158	Price each exc. VAT			inc. VAT each
		5+	50+	1000+	
JL18U	PC Elect 47µF 450V	£0.805	£0.600	£0.740	£1.908

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## Memory Retention Capacitors

**Elna**

A range of very compact, high value polarised memory retention capacitors. Primarily intended for use with 5V CMOS low power static memory devices to provide a back-up supply so that data is retained when power is switched off. Three values are available; 0.22F, 0.47F and 1F (1F = 1 x 10<sup>6</sup> µF).



### Specification

Tolerance:	-20/+80%
Working voltage:	5.5V DC (max)
Leakage current 0.22F:	135µA
Leakage current 0.47F:	216µA
Leakage current 1.0F:	315µA
Internal resistance 0.22F:	75Ω
Internal resistance 0.47F:	30Ω
Internal resistance 1.0F:	30Ω
Operating temperature range:	-25 to +70°C
Size 0.22F:	7.5mm x 13.5mm dia.
Size 0.47F:	8.0mm x 21.5mm dia.
Size 1.0F:	8.0mm x 21.5mm dia.
Lead pitch:	5mm

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 435	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
JP99H	Rnd Memcap 0.22F 5.5	£1.300	£1.150	£1.100	£2.748
JR00A	Rnd Memcap 0.47F 5.5	£2.750	£2.250	£2.150	£5.268
JR01B	Rnd Memcap 1.0F 5.5	£3.100	£2.600	£2.490	£5.988

## Variable Capacitors

### Miniature Film Dielectric Trimmers



A miniature trimmer sturdily constructed on a plastic frame. The dielectric is arranged so as to support the vanes giving a very high degree of stability. Adjustment is by means of a screwdriver slot in the upper face.

Working voltage: 100V DC  
Insulation resistance: >10,000MΩ  
Power factor: <10x10<sup>-4</sup> at 1MHz;  
<25x10<sup>-4</sup> at 100MHz

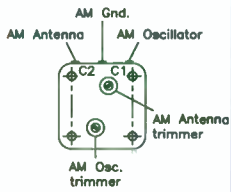
The following values are available:

Max value:	10pF	22pF	65pF
Range:	2 to 10pF	2 to 22pF	5.5 to 65pF
Body colour:	Yellow	Green	Yellow
*Temp. coef:	-200	-350	-200
Hgt above board:	10	10	11 (max)
Max diameter:	8.8	8.8	11.5
Max dissipation:	0.35W	0.35W	0.9W
*Temperature coefficient is in ppm/°C with a tolerance of ±300.			

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

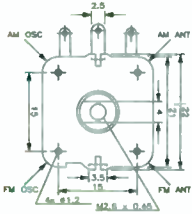
Order Code	Type 410	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	
WL68A	Trimmer 10pF	£0.290	£0.250	£0.230	£0.990
WL70M	Trimmer 22pF	£0.340	£0.300	£0.280	£1.090
WL72P	Trimmer 65pF	£0.385	£0.287	£0.287	£1.190

## AM/FM Miniature Tuning Capacitors



Drawing of FT78K

Miniature tuning capacitors for radios, ZN416 circuits and crystal sets. Each has an antenna section and an oscillator section for each band, and a trimmer for each section. The control shaft is a flatted 6mm dia. brass spindle, tapped down the centre with an M2.5 thread. Fixing is either direct pcb or by two M2.5 screws on 14mm centres on same face as shaft. (Note: Thread length is 3mm. If using long screws, take care that they do not foul the vanes.)



Drawing of AB11M

### Specifications:

For stock code:	AB11M	FT78K
Capacity AM sections:	126pF	141.6/59.2pF*
Capacity FM sections:	20pF	-
Q AM sections:	<500	500
Q FM sections:	<150	-
Total rotation:	180°	180°
Max voltage:	100V	100V
Dimensions mm:	20x20x13	20x20x13

\*Antenna/Oscillator gang.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 413	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
AB11M	Mini AM FM Tuner	£0.900	£0.650	£0.606	£2.190
FT78K	Mini AM Tuner Cap	£0.750	£0.500	£0.230	£1.980

## Type O 1-Gang

Jackson



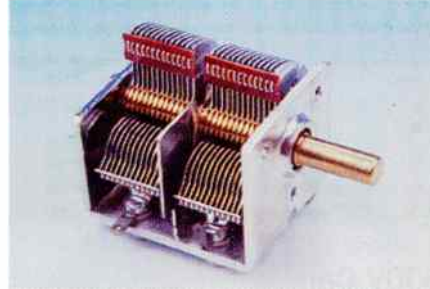
Length (excluding spindle) 23.8mm. AM capacity 10 to 365pF. Tested up to 750V.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 3437	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
FF39N	Vari O	£10.542	£9.663	£8.283	£17.988

## Type O 2-Gang

Jackson



Length (excluding spindle) 43.25mm. AM capacity, each gang 10 to 365pF. Tested up to 750V.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 472	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
FF40T	DG Vari	£15.503	£14.211	£12.181	£23.988

## Type C804A Series

Jackson



Air dielectric trimmer, SLC Low characteristics. Air gap 0.4mm, 750V tested, air gap 1.15mm 1250V DC tested. Front plate 23.8 x 31.75mm. Values available: 10pF, 15pF, 25pF, 50pF, 100pF and 150pF.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 474	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
FF42V	SW Trim 10pF	£8.236	£7.550	£6.471	£12.588
FF43W	SW Trim 15pF	£8.443	£7.740	£6.634	£12.588
FF44X	SW Trim 25pF	£9.218	£8.450	£7.243	£13.788
FF45Y	SW Trim 50pF	£8.782	£8.050	£6.900	£13.788
FF48C	SW Trim 100pF	£10.891	£9.983	£8.557	£15.588
FF49D	SW Trim 150pF	£12.539	£11.494	£9.852	£17.388

## Dilecon Capacitors

Jackson



Solid dielectric. Front area 44.5 x 46mm. The following values are available: 6.5 to 300pF, 7 to 500pF.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 476	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
FF50E	Dilecon 300pF	£10.945	£10.033	£8.600	£13.188
FF51F	Dilecon 500pF	£10.677	£9.787	£8.389	£13.188

## Quartz Crystals

### General Purpose Crystals

A range of crystals for use with microprocessors and other ICs. A typical application for each crystal is shown below.



Frequency	Application
1MHz	6800
2MHz	6502
2.4576MHz	Baud rates
2.5MHz	ZNA234E
3.6864MHz	6802
4MHz	6802, Z80A
5MHz	SAA1043
5.824MHz	TA8662
6MHz	Z80B
6.144MHz	8085A
6.552MHz	NICAM
8MHz	NSC800
10MHz	Frequency counters
12MHz	TMS9995
16MHz	General purpose
16.93MHz	TD6710
18.432MHz	8080A
20MHz	Z80A
24MHz	General purpose

Freq	Can Style	Adjustment Tolerance	Temp. Stability	Load Cap
1MHz	HC-33/U	±50ppm	±50ppm	30pF
2MHz	HC-49/U	±30ppm	±30ppm	20pF
2.4576MHz	HC-49/U	±30ppm	±30ppm	30pF
2.5MHz	HC-49/U	±30ppm	±30ppm	30pF
3.6864MHz	HC-49/U	±30ppm	±30ppm	30pF
4MHz	HC-49/U	±30ppm	±30ppm	30pF
5MHz	HC-49/U	±30ppm	±30ppm	30pF
5.824MHz	HC-49/U	±30ppm	±30ppm	30pF
6MHz	HC-49/U	±30ppm	±30ppm	30pF
6.144MHz	HC-49/U	±30ppm	±30ppm	30pF
6.552MHz	HC-49/U	±30ppm	±30ppm	30pF
8MHz	HC-49/U	±30ppm	±30ppm	30pF
10MHz	HC-43/U	±20ppm	±20ppm	30pF
12MHz	HC-49/U	±30ppm	±30ppm	30pF
16MHz	HC-49/U	±30ppm	±30ppm	30pF
16.93MHz	HC-49/U	±30ppm	±30ppm	30pF
18.432MHz	HC-49/U	±30ppm	±30ppm	SR
20MHz	HC-49/U	±30ppm	±30ppm	SR
24MHz	HC-49/U	±30ppm	±30ppm	SR

The crystals have a temperature range of -10°C to +60°C.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 478	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
FY79L	MP Crystal 1MHz	£4.418	£4.050	£3.471	£7.788
FY80B	MP Crystal 2MHz	£1.436	£1.317	£1.129	£4.188
FY81C	MP Crystal 2.4576MHz	£1.091	£1.000	£0.857	£3.348
UK82D	Crystal 2.5MHz	£3.178	£2.383	£2.200	£3.948
UJ04E	Crystal 3.6864MHz	£0.725	£0.580	£0.483	£1.548
FY82D	MP Crystal 4MHz	£0.436	£0.400	£0.343	£1.548
UL15F	Crystal 5MHz	£0.711	£0.533	£0.492	£1.548
UK99H	Crystal 5.824MHz	£0.493	£0.370	£0.341	£1.548
UJ05F	Crystal 6MHz	£0.725	£0.580	£0.483	£1.548
FY83E	MP Crystal 6.144MHz	£0.564	£0.517	£0.443	£1.548
UK98G	Crystal 6.552MHz	£0.493	£0.370	£0.341	£1.548
UJ06G	Crystal 8MHz	£0.850	£0.680	£0.567	£1.788
FY78K	F5 Crystal 10MHz	£0.873	£0.800	£0.686	£2.988
UJ07H	Crystal 12MHz	£0.775	£0.620	£0.517	£1.548
UJ08J	Crystal 16MHz	£0.689	£0.517	£0.477	£1.548
UL00A	Crystal 16.930MHz	£0.780	£0.680	£0.540	£1.548
FY84F	MP Crystal 18.432MHz	£0.711	£0.652	£0.559	£1.788
UJ09K	Crystal 20MHz	£1.133	£0.850	£0.785	£2.388
UJ10L	Crystal 24MHz	£1.444	£1.083	£1.000	£2.388

## Colour TV Crystals

Crystals for use in colour TV receivers, TV games, home computers etc. Frequencies available operate at the colour sub-carrier frequency in American standard NTSC receivers (3.579545MHz), standard British PAL TV receivers (4.433619MHz), and at twice that frequency (8.867238MHz).

Can style	HC-49/U
Adjustment tolerance	±30ppm
Temperature stability	±30ppm

**Business Account Holders**  
No Delivery Charges for any order

Temperature range -10°C +60°C  
Load capacitor 20pF (30pF for 8.867238MHz)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 479	Price each exc. VAT	25+	100+	inc. VAT each 1+
UJ03D	Crystal 3.5794MHz	£0.725	£0.580	£0.483	£1.308
FY85G	Colour TV Crystal	£0.675	£0.540	£0.450	£1.188
LH85G	Crystal 8.867238 MHz	£0.800	£0.640	£0.533	£1.428

## Timing Crystals

Three crystals for time keeping purposes, counters etc., using simple flip-flop divider stages. Two crystals generate 1Hz and one generates 50Hz when divided by 2n. The 32.768kHz crystal is suitable for use as a replacement in most digital watches, and the crystal for generating 50Hz can be used to drive mains operated clocks from a battery when mains fails or in portable applications.

Frequency	Application
32.768kHz	Divide by 215 for 1Hz (digital watch crystal)
3.2768MHz	Divide by 216 for 50Hz
4.194304MHz	Divide by 222 for 1Hz

Freq	Can Style	Adjust Tol	Temp Stability	Temp Range	Load Cap
32.768kHz	3 x 8	±15ppm	±200ppm	210°C to 160°C	12.5pF
3.2768MHz	HC-49U	±30ppm	±30ppm	210°C to 160°C	12pF
4.194304MHz	HC-49U	±30ppm	±30ppm	210°C to 160°C	12pF

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 480	Price each exc. VAT	25+	100+	inc. VAT each 1+
UJ02C	Crystal 32.768kHz	£0.661	£0.529	£0.441	£1.546
FY86T	Crystal 50HzX 2.16	£0.925	£0.740	£0.617	£1.786
FY87U	Crystal 1HzX 2.22	£0.775	£0.620	£0.517	£1.546

## Radio Control Crystals

A range of third overtone crystals for radio controlled models etc. All are plug-in with 6mm pins on 4.9mm centres and are directly interchangeable.



Can style: HC-25/U Solder weld.  
Adjustment tole 13.5 x 11.1 x 4.7mm.  
Available only in matched pairs as follows:

Channel	Transmitter frequency	Receiver frequency
Brown	26.995MHz	26.540MHz
Red	27.045MHz	26.590MHz
Orange	27.095MHz	26.640MHz
Yellow	27.145MHz	26.690MHz
Green	27.195MHz	26.740MHz
Blue	27.245MHz	26.790MHz

Suitable for use with 455kHz i.f.s.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 481	Price each exc. VAT	25+	100+	1000+	inc. VAT each 1+
HX30H	MCR Crys Brown Pairs	£4.725	£3.780	£3.150	£5.968	
HX31J	MCR Crystal Red Pair	£4.725	£3.780	£3.150	£5.968	
HX32K	MCR Crys Orange Pair	£4.725	£3.780	£3.150	£5.968	
HX33L	MCR Crys Yellow Pair	£4.725	£3.780	£3.150	£5.968	
HX34M	MCR Crystal Green Pr	£4.725	£3.780	£3.150	£5.968	
HX35Q	MCR Crys Blue Pair	£4.725	£3.780	£3.150	£5.968	

## Radio Control Crystal Holder



Keep track of your RC crystals with this holder

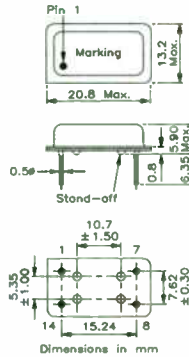
which will securely hold five pairs of crystals (Tx/Rx). Can be held to a suitable surface. Dimensions: 79 x 18 x 8mm.

Price each is shown. Order quantities less than 0 will be sold at the one off inc. VAT price.

Order Code	Type 11904	Price each exc. VAT	inc. VAT each 1+
DX93B	Crystal Holder	£0.510	£0.600

## TTL Oscillators

Euroquartz



A range of TTL oscillators that are housed in a standard 14-pin DIL package and have a universal output. The oscillators have a HCMOS output buffer capable of driving the usual 10 TTL loads. Therefore, the devices are both CMOS and TTL compatible.

### Specification (EQXO-1000U series)

Overall tolerance: ±100ppm (0.1%)  
Operating temperature range: 0°C to +70°C  
Supply voltage: 5V ±10%  
Maximum supply current: 13mA to 3.5MHz (7mA typical) 47mA to 64.0MHz (37mA typical)  
Logic levels: '0' +0.5V max '1' +4.5V min  
Duty cycle: 40% to 60% to 2.5V (45% to 5% typical)  
Rise/fall times: 6ns max., 10% to 90% @ 15pF load  
Start up times: 50ms for first full cycle to within 1% of nominal frequency  
Output: Universal - HCMOS or 10 TTL loads  
Packaging: Hermetically sealed resistance weld package

Manufacturer's Code	Frequency	MPS Code
LK02457H	2.45760MHz	CW83E
LK03276H	3.27680MHz	CW84F
LK03686H	3.68640MHz	CW85G
LK10000H	10.0000MHz	CW86T
LK12000H	12.0000MHz	CW87U
LK16000H	16.0000MHz	CW88V
LK20000H	20.0000MHz	CW89W
LK24576H	24.5760MHz	CW90X
LM032H00	32.0000MHz	CW91Y
LM050H00	50.0000MHz	CW92A
LM064H00	64.0000MHz	CW93B

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 485	Price each exc. VAT	10+	25+	100+	inc. VAT each 1+
CW83E	2.45760MHz Osc	£2.756	£2.067	£1.908	£4.188	
CW84F	3.27680MHz Osc	£2.333	£1.750	£1.615	£4.188	
CW85G	3.68640MHz Osc	£2.333	£1.750	£1.615	£4.188	
CW86T	10MHz Oscillator	£2.333	£1.750	£1.615	£4.188	
CW87U	12MHz Oscillator	£2.333	£1.750	£1.615	£4.188	
CW88V	16MHz Oscillator	£1.909	£1.750	£1.500	£4.188	
CW89W	20MHz Oscillator	£1.982	£1.817	£1.557	£4.188	
CW90X	24.5760MHz Osc	£2.164	£1.983	£1.700	£4.188	
CW91Y	32MHz Oscillator	£1.982	£1.817	£1.557	£4.188	
CW92A	50MHz Oscillator	£1.909	£1.750	£1.500	£4.188	
CW93B	64MHz Oscillator	£2.164	£1.983	£1.700	£4.188	

## Filters/Resonators

### Ceramic Resonators

Murata

A range of ceramic resonators that offer an alternative to quartz crystals in clock generation circuits. Both the CSA and CSB series are very stable (±0.5%), and have a high mechanical Q making them ideal for use in microprocessors and remote control units.



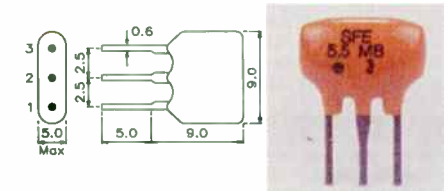
Murata Code	MPS Code	Frequency
CSB455E	UL61R	455kHz
CSB500E	DJ28F	500kHz
CSB1000J	CP91Y	1MHz
CSA358MG	DJ31J	3.58MHz
CSA400MG	DJ32K	4MHz
CSA419MG	DJ33L	4.19MHz
CSA491MG	DJ34M	4.91MHz
CSA600MG	DJ35Q	6MHz
CSA800MT	DJ37S	8MHz
CSA1000MT	DJ38R	10MHz

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 489	Price each exc. VAT	25+	100+	500+	inc. VAT each 1+
UL61R	Ceramic Resnr 455kHz	£0.300	£0.250	£0.214	£0.828	
DJ28F	Ceramic Resnr 500kHz	£0.238	£0.218	£0.187	£0.828	
CP91Y	Ceramic Resnr 1MHz	£0.405	£0.304	£0.281	£0.828	
DJ31J	Ceramic Resnr 3.58MHz	£0.238	£0.218	£0.187	£0.828	
DJ32K	Ceramic Resnr 4MHz	£0.238	£0.218	£0.187	£0.828	
DJ33L	Ceramic Resnr 4.19MHz	£0.245	£0.225	£0.192	£0.828	
DJ34M	Ceramic Resnr 4.91MHz	£0.243	£0.223	£0.191	£0.828	
DJ35Q	Ceramic Resnr 6MHz	£0.187	£0.171	£0.147	£0.828	
DJ37S	Ceramic Resnr 8MHz	£0.365	£0.334	£0.286	£0.828	
DJ38R	Ceramic Resnr 10MHz	£0.415	£0.380	£0.326	£0.828	

## TV Sound IF Filters

Murata



Two TV F.M. sound I.F. bandpass filters, the 5.5MHz version follows the European TV I.F. standard, the other is for the U.K. standard of 6MHz.

### Specification

	UL54J	UL53H
Centre freq.	5.5MHz	6MHz
Bandwidth	-3dB @ ±50kHz	-3dB @ ±50kHz
	-20dB @ ±400kHz	-20dB @ ±420kHz
Insertion loss	-8dB	-8dB
Temperature range	-20°C to +180°C	-20°C to +180°C
Rated voltage	50V DC	50V DC

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 487	Price each exc. VAT	25+	100+	1000+	inc. VAT each 1+
UL54J	Ceramic Ftr 5.5MHz	£0.312	£0.260	£0.223	£0.708	
UL53H	Ceramic Filter 6MHz	£0.325	£0.271	£0.232	£0.708	

## Call and Collect

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## Ceramic Filter

**Toko**

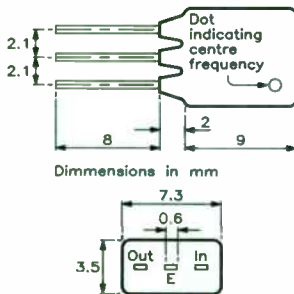
A ceramic filter designed primarily for use in FM receivers using a 10.7MHz i.f.

The filters are small in size with high selectivity, good temperature stability and low distortion.



### Specification

Bandwidth:	280kHz (-3dB) 600kHz max (-20dB)
Spurious peaks:	(9 to 12MHz): <40dB (typical)
Insertion loss:	6dB
Input-Output Impedance:	330Ω±15%
Breakdown voltage:	50V DC max
Ripple:	<1dB



Owing to the way ceramic filters are manufactured they do not all have an exact 10.7MHz centre frequency.

All designers should be aware of this fact and all commercial designs usually allow the i.f. to be used to at least 10.58 to 10.82. The fact that the i.f. is not exactly 10.7MHz has no effect whatsoever on any other parameter and the overall quality of the tuner is not affected in any way. However, it is absolutely vital that all the ceramic filters in one tuner have the same nominal centre frequency. Therefore, during manufacture they are tested and colour coded into matched groups as follows:

- 10.64MHz ±30kHz Black
- 10.67MHz ±30kHz Blue
- 10.70MHz ±30kHz Red
- 10.73MHz ±30kHz Orange
- 10.76MHz ±30kHz White

Therefore, if you are ordering ceramic filters for more than one tuner please indicate how many filters are required per tuner so that we can supply them in sets if we do not have enough of one colour to fulfil the whole order.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 490	Price each exc. VAT	inc. VAT each
HX99H	Ceramic Filt 10.7MHz	25+ £0.727 100+ £0.667 500+ £0.571	1+ £1.188

## 50kHz Scan Filter

**Murata**

A ceramic filter with a centre operating frequency of 10.7MHz, and an especially narrow bandwidth.



### Specification

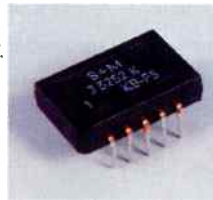
Bandwidth:	50kHz
Input-output impedance:	330Ω
Breakdown voltage:	50V DC max
Dimensions:	width 8mm x height 7mm x 3mm thick.
Pin spacing:	2.5mm.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 492	Price each exc. VAT	inc. VAT each
UF71N	Filt 10.7MHz/50kHz	25+ £1.364 100+ £1.250 500+ £1.071	1+ £2.148

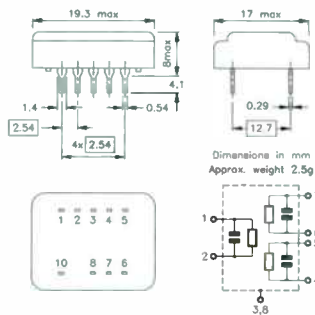
## SAW TV IF Filter

A NICAM compatible Surface Acoustic Wave (SAW) IF filter for PAL TV. Passes vision carrier at 39.50 MHz, FM sound carrier at 39.50 and NICAM at 32.95 MHz. Plastic DIP 10 package.



### Features

- ★ TV IF filter for quasi/parallel sound (separate picture and sound suppression)
- ★ Picture channel with Nyquist slope and sound suppression
- ★ Constant group delay
- ★ Sound channel with two passbands for picture and sound carrier
- ★ Tinned copper terminals



### Pin configuration

- 1 Input
- 2 Input-Ground
- 3,8 Chip Carrier-ground
- 4,5 Output-Sound channel
- 6,7 Output-Picture channel
- 9 Free
- 10 Not connected

### Specification

	MHz	Typical
Rated insertion loss:	38.50	19.0 dB
Relative attenuation		
Picture carrier:	39.50	5.4 dB
Colour carrier:	35.07	3.2 dB
Sound carrier:	33.50	59.0 dB
NICAM stereo sound carrier:	32.95	46.0 dB
Adjacent picture carrier:	31.50	54.0 dB
Adjacent NICAM sound carrier:	40.95	43.0 dB
Adjacent sound carrier:	41.50	49.0 dB
Lower sidelobe:	25.00-33.50	45.0 dB
Upper sidelobe:	41.50-45.00	40.0 dB
Group delay ripple:		±20ns

### Impedance at 38.00 MHz

Input: $Z_{in} = R_{in}    C_{in}$	2.2    17.2	kΩ    pF
Output: $Z_{out} = R_{out}    C_{out}$	1.4    4.2	kΩ    pF

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 11589	Price each exc. VAT	inc. VAT each
GV15R	SAW Filter OFWJ3252	10+ £7.360 25+ £6.133 100+ £5.257	1+ £10.788





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## IN CAR ENTERTAINMENT

### CASSETTE / RADIOS

#### In-car Radio Cassette

Goodmans



- ★ 3 band analogue tuner with digital display
- ★ Rotary on/off volume, bass and treble controls
- ★ CD input
- ★ Tuning/balance control
- ★ Metal tape facility
- ★ Auto stop cassette deck
- ★ Mono/stereo button
- ★ 2 x 10w MPO output
- ★ IAC
- ★ Full detachable panel with anti theft LED
- ★ Local DX button
- ★ Bass boost
- ★ Local/distant function

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS34M	head unit+det.pri	£42.540	£49.990

#### In-Car Radio Cassette

Goodmans



- ★ LW/MW/FM Stereo PLL digital tuner
- ★ Auto station store
- ★ Auto reverse cassette
- ★ Output bi-amp 2 x 25 watts, plus 2 x 7 watts
- ★ Clock / recall
- ★ IAC
- ★ Fully detachable fascia with carry case
- ★ 30 pre-set station memories
- ★ Pre-set scan, seek, manual tuning
- ★ Electronic volume, bass, treble, front/rear fader and balance control
- ★ Built in local DX facility
- ★ Auto antenna lead
- ★ Night illumination
- ★ Flashing security LED
- ★ X bass

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS35Q	Headunit	£68.070	£79.990

#### In-Car Radio Cassette GCE445RDS

Goodmans



- ★ 2 X 35 watts plus 2 x 7 bi-amp
- ★ Auto-reverse cassette desk
- ★ 42 pre-set station memories
- ★ Electronic volume, bass, treble
- ★ Balance controls
- ★ Loudness control
- ★ Full detachable front panel
- ★ Full RDS EON
- ★ Program type, traffic announcement
- ★ Clock
- ★ 64 watts total
- ★ MW/LW/FM stereo PLL digital tuner

- ★ Seek/scan/ pre-set scan/manual tuning
- ★ Front/rear fader
- ★ Local/DX function
- ★ Mute switch
- ★ Station identification
- ★ Alternative frequency

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FN63T 1	GCE445 Car Rad/Cass	£102.110	£119.990

#### High Power Cassette Tuner - KEH1530

Pioneer



- ★ 24 tuner pre-set stations
- ★ BSM (Best Station Memory)
- ★ Power assisted cassette mechanism
- ★ Radio intercept
- ★ Max power output (EIAJ): 4 x 22 W
- ★ DIN Power output (DIN45324,+B = 14.4 V) : 4 x 14 W
- ★ Separate Bass/Treble
- ★ Loudness control
- ★ Fader
- ★ Amber illumination
- ★ Removable front panel

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS36P	Cass/Rad KEH 1530	£119.140	£139.990

#### High Power Cassette/RDS Radio - KEH2530R

Pioneer



- Tuner
  - ★ RDS with EON and PTY
  - ★ High-speed PLL synthesizer tuner
  - ★ 18-Station Presets
  - ★ BSM(Best Station Memory)
  - ★ BSA(Best TP Station Auto Search)
- Cassette
  - ★ PA (Power Assisted) Mechanism
  - ★ Radio Intercept
- Audio
  - ★ Max power output (EIAJ):4 x 35 W
  - ★ DIN Power output (DIN45324, + B = 14.4V): 4 x 14 W
  - ★ Separate bass/treble
  - ★ Loudness button
  - ★ Fader
- General
  - ★ Digital clock
  - ★ Amber illumination
  - ★ Removable front panel

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS38R	Cass/RDS Rad KEH2530	£153.180	£179.990

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#### High Power Cassette RDS tuner -KEH-P4630

Pioneer



- Tuner
  - ★ RDS with EON and PTY
  - ★ High-speed PLL synthesizer tuner
  - ★ 24 Station Pre set
  - ★ BSM (Best Memory Selection)
  - ★ BSA (Best TP Station Auto Search)
- Cassette
  - ★ Full-logic mechanism
  - ★ Dolby<sup>®</sup> NR B
  - ★ Metal tape selector
  - ★ Music search
  - ★ Blank Skip/Repeat
  - ★ Radio intercept
- Audio
  - ★ Max. Power output (EIAJ): 4 x 35W
  - ★ DIN Power output (DIN45324, + B=14.4 V) : 4x22 W
  - ★ Front image enhancer
  - ★ Separate bass/treble
  - ★ Loudness
  - ★ Selectable fader
  - ★ RCA preout
- General
  - ★ Multi-CD control/CD ready
  - ★ CD server control
  - ★ Remote control ready
  - ★ Amber illumination
  - ★ Removable front panel
  - ★ RFP alert (security feature)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS39N	Cas/RDSRad KEHP4630R	£212.750	£249.990

#### High Power Cassette/RDS Tuner - KEH-P7400R

Pioneer



- ★ Full IP Bus Multi-CD control for system expansion including ADPS (Automatic disc Programme Selection) of up to 100 discs, Disc title memory, ITS (instant Track Selection) CD pause and the useful random/Repeat Play and Track/Manual Search.
- ★ Improved RDS reception thanks to high-Speed ARC 5 tuner.
- ★ BSM, 12 Button/24-Station Preset.
- ★ Advanced full logic cassette mechanism with Flex, Music search, Dolby<sup>®</sup>B and Auto Metal for superb cassette sound reproduction.
- ★ 4 x 35W (max EIAJ) output power.
- ★ Continuous output power (DIN 45324, +B=14.4 V): 4x22 W
- ★ Selectable fader and dual RCA preout.
- ★ Electronic Audio Controls (Volume, Balance, Loudness, Bass/Mid/Treble).
- ★ Level indicator.
- ★ Source Level Adjuster.
- ★ Front Image Enhancer.
- ★ Cellular telephone audio muting.
- ★ AUX-in enabling connection of an external audio source through the optional CD-RB20 interconnector.
- ★ Driver's friendly remote control.

- ★ Removable Front Panel with handy carry case and warning beep tone.
- ★ EL Multi colour illumination.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM41U	Pioneer KEHP7400	£340.410	£399.990

**CD / CASSETTE / RADIOS**

**In-Car CD Head unit GCE490CD with DSP**

Goodmans



- ★ LW/MW/FM stereo PLL digital tuner
- ★ Single CD - skip/search/random play/repeat
- ★ 1 bit DAC
- ★ Digital signal processor - stadium, concert, auditorium effects
- ★ Loudness function
- ★ Mute
- ★ Switchable illumination amber/green
- ★ 30 pre-set station memories - auto station store, pre-set scan, scan manual tune
- ★ Electronic volume, bass, treble, front/rear fader and balance control
- ★ Output 2 x 25 watts plus 2 x 7 watts
- ★ Local/DX function
- ★ Line out
- ★ Fully detachable fascia with carry case

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FN64U 1	GCE490 Rad/Cas CD	£153.180	£179.990

**High Power CD/RDS tuner - DEH-435R**

Pioneer



- ★ RDS with EON and PTY
- ★ High-speed PLL synthesizer tuner
- ★ 18-station presets
- ★ BSM (Best Stations Memory)
- ★ BSA (Best TP station Auto Search)

- CD Players
- ★ 1-bit D/A converter with 8x oversampling digital filter.
  - ★ Track Search/Scan/Repeat
  - ★ Track/manual search
  - ★ Random play
  - ★ Last position memory

- Audio
- ★ Max. Power output (EIAJ): 4 x 35 W
  - ★ DIN Power output (DIN45324, + B = 14.4 V) : 4 x 22 W
  - ★ Front image enhancer
  - ★ Separate bass/treble
  - ★ Loudness
  - ★ Selectable fader
  - ★ RCA preout
- General
- ★ Digital clock
  - ★ Green illumination
  - ★ Removable front panel with warning beep

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS40T	CD/Radio DEH435R	£229.770	£289.990

**High Power CD/RDS tuner - DEH535RDS**

Pioneer



- Tuner
- ★ RDS with EON and PTY
  - ★ High speed PLL synthesizer tuner
  - ★ 24 station pre sets
  - ★ BSM (Best Stations Memory)
  - ★ BSA (Best TP Station Auto search)
- CD Player
- ★ 1-bit D/A converter with 8x oversampling digital filter
  - ★ Track Search/scan/repeat
  - ★ Track/manual Search
  - ★ Random play
  - ★ Last position memory

- Audio
- ★ Max. Power output (EIAL): 4x40W
  - ★ DIN Power output (DIN45324, + B = 14.4 V) : 4 x 25 W
  - ★ Front image enhancer
  - ★ Separate bass/treble
  - ★ Loudness
  - ★ Selectable fader
  - ★ RCA preout
- General
- ★ Remote control ready
  - ★ Digital clock
  - ★ EL Multi colour illumination
  - ★ Removable front panel with warning beep
  - ★ RFP alert (security feature)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS41U	CD Rad DEH535R	£280.840	£329.990

**MULTI DISC PLAYER**

**High Power cassette/ RDS tuner and multi CD system**

Pioneer



- Tuner
- ★ RDS with EON and PTY
  - ★ High-speed PLL synthesizer tuner
  - ★ 24 station presets
  - ★ BSM (Best memory selection)
  - ★ BSA (Best TP Station Auto search)

- Cassette
- ★ PA (Power assisted) mechanism
  - ★ Music search
  - ★ Radio intercept

- Audio
- ★ Max Power output (EIAJ): 4 x 35W
  - ★ DIN Power output (DIN45324, + B = 14.4V) : 4 x 22W
  - ★ Separate bass treble
  - ★ Loudness
  - ★ Selectable fader
  - ★ RCA preout

- CD Player
- ★ 1-bit D/A converter with 8x oversampling digital filter
  - ★ Random play
  - ★ Direct disc number search
- General
- ★ Digital clock
  - ★ Multicolour illumination
  - ★ Removable front panel

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS42V	Cas/Rad Multi Cd	£340.410	£399.990

**CD CAR KITS**

**Personal CD/Car Kit**

Goodmans



- ★ 3 second anti shock
- ★ 3 way repeat one/all/programme
- ★ Bass boost
- ★ Battery recharge facility for standard Nicad batteries.
- ★ AC adaptor
- ★ intro scan
- ★ Random play
- ★ Complete with car conversion kit
- ★ 1 bit D/A converter
- ★ 8 x oversampling
- ★ 20 track programmable
- ★ inner ear neodymium earphones
- ★ Line out
- ★ Audio leads
- ★ LCD display with elapsed time and data sio
- ★ Auto power off

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS29G 1	CD + car kit	£68.070	£79.990

**CD Car Conversion Kit**

Goodmans



This kit will convert your existing personal CD player for use in the car. Included in the kit is an anti vibration platform on a flexible mounting arm. An audio converter cassette is used to 'connect' the output from the CD to your in-car radio cassette player. A power supply is provided to connect to your CD player which plugs into the car cigar lighter, and can be set to the required voltage. Supplied with six sizes of connecting plugs to accommodate almost all popular models.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AY13P 2	CD Travel Kit	£29.770	£34.990

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Electronics Magazine

## CD to Cassette Player Adaptor



An adaptor in the form of a 'dummy' cassette, enabling the stereo headphones output of a portable personal CD player to be directly played by an in-car stereo cassette player. The adaptor has a magnetic play head in the position normally occupied by the tape. Includes connecting lead with moulded 3.5mm stereo jack plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CB47B	CD/Cass Adaptor	£5.940	£4.000	£3.500	£6.990

## CD Adaptor



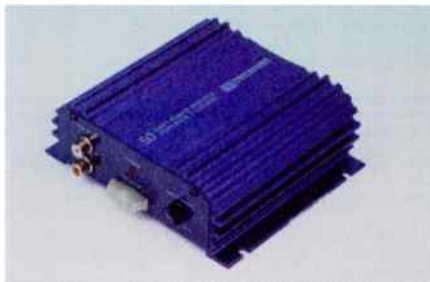
A compact CD adaptor that is built into a standard audio cassette and requires no power. Designed to take the headphone output from the CD and feed it through the car cassette player into the car hi-fi system. Supplied with a plug-in 12V DC to 9V DC power supply for the CD player.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DU09K	CD Adaptor	£11.050			£12.990

## AMPLIFIERS

### 50W Car Booster Amplifier



A compact booster amplifier for in-car audio systems offering 25W maximum output per channel (50W total). This high definition amplifier will accept line level inputs, via gold plated phono sockets, or from the loudspeaker outputs from radio cassettes. A gain control is provided to match the amplifier to the source equipment. The amplifier features fully complimentary audio stages, an excellent signal-to-noise ratio thermal shut down and short circuit protection. Generally, the amplifier is mounted in the boot, but it can be mounted in other locations such as under a seat. It is advisable to keep all wiring to a minimum, where possible.

Supplied with a detailed instruction book and fixing screws.

#### Specification

Maximum power output: 10W rms per channel into 4Ω  
0.06% at 10W

THD with 4Ω load: 95%

S/N ratio: 100

Damping factor: 60dB

Channel separation: 200mV to 1.2V

Input sensitivity: 20kΩ

Input impedance: 11.5V to 14.4V DC negative earth

Supply Voltage: 140 x 49 x 120mm

Dimensions: 140 x 49 x 120mm  
Please note: Colour of case may vary.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
RZ29H	50W Car Booster Amp	£29.770	£23.350	£21.600	£34.990

### 100W In-Car Booster Amplifier



A 4-channel high definition amplifier rated at 10W rms per channel. The unit is intended for use as the output power amplifier for in-car stereo systems, offering four stereo sound sources. Two pairs of stereo phono line level inputs are provided for connection to a main radio/cassette unit having compatible low-level outputs, and input sensitivity controls and a power on LED are included. The input sensitivity can be adjusted to accommodate input levels from 200mV to 1.2V. This unit must be mounted securely to the vehicle before it is used.

#### Specification, each channel

Mean power output: 10W rms into 4Ω

Total harmonic distortion: 1% nominal

Power bandwidth: ±0.7dB 20Hz to 20kHz (-3dB @ 60kHz)

Signal to noise ratio: 60dB nominal

Channel separation: 45dB nominal

Input sensitivity: 200mV to 1.2V, adjustable

Input impedance: 10kΩ

Quiescent current drain: 740mA

Full power current drain: 8.2A rms into 4Ω load, 11.5A peak

Please note: colour of case may vary.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AQ24B	100W Car Booster Amp	£40.840	£34.850	£31.350	£47.990

### 120W In-Car Booster Amplifier



A 4-channel stereo high-power amplifier with outputs of up to 15W rms per channel. The unit is intended for use as the output power amplifier for

in-car stereo systems, offering four stereo sound sources. Two pairs of stereo phono line level inputs are provided for connection to a main radio/cassette unit having compatible low-level outputs, and input sensitivity controls are included. Screw terminals are mounted at both ends for supply and speaker wire connections, including a remote power on/off control line which can be connected to the automatic antenna drive output of the main stereo unit. Protection includes thermal shutdown and integral 20A fuse and a mode switch can select 2-channel stereo operation if required. Fixing screws supplied.

#### Specification, each channel

Mean power output: 15W rms into 4Ω, 4 channels; 25W rms into 4Ω, 2 channels.

Total harmonic distortion: 0.06% nominal

Power bandwidth: ±0.7dB 20Hz to 20kHz (23dB @ 60kHz)

Signal to noise ratio: 65dB nominal

Channel separation: 48dB nominal

Input sensitivity: 200mV to 2V, adjustable

Input impedance: low: 10kΩ high: 100Ω

Quiescent current drain: 740mA

Full power current drain: 8.2A rms into 4Ω load, 11.5A peak

Dimensions: 175 x 56 x 140mm

Please note: colour of case may vary.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AQ25C	120W Car Booster Amp	£42.540	£39.950	£36.000	£49.990

### 180W Bridgeable Booster Amplifier



A 45W rms per channel booster amplifier which will accept both line level inputs, via gold speaker sockets, and high level inputs from the speaker outputs of your head unit. This amplifier can be used as a single channel bridged amplifier if both inputs are provided with a common signal and the speaker is connected between the '+L' and '+R' outputs.

#### Specification

Supply voltage range: 11.5V to 14.4V

Fuse rating: 20A

Maximum power output: 45W rms into 4Ω

Output power, bridged: 90W into 8Ω

Peak current output: 10A

Speaker/amplifier protection schemes: Internal failure (DC), short circuit, overheating

Total harmonic distortion: 0.05% into 4Ω

Frequency response: 20Hz to 30kHz ±0dB

Signal to noise ratio: 100dB

Channel separation: 60dB

Sub woofer boost: 10dB @ 40Hz

Damping factor: 200

Input sensitivity: 100mV to 1V, variable

Input impedance: 20kΩ

Dimensions, inches: 8.2W x 2.1H x 8.5D

Please note: Colour of case may vary.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AF24B	180W Bridge Car Amp	£72.330	£69.950	£64.750	£84.990

See Stock Code Index For More Price Breaks

## Stereo 360W Per Channel Booster Amplifier



A 90W rms per channel booster module which includes an integral fuse in series with the +12V supply line. The module can be used as a single channel bridged amplifier if both inputs are provided with a common signal and the speaker is connected between the '+L' and '+R' outputs.

### Specification

Supply voltage range:	11.5V to 14.4V
Fuse rating:	40A
Maximum power output:	90W rms per channel max., into 4Ω
Output power, bridged:	180W rms into 4Ω
Peak current output:	20A
Speaker/amplifier protection schemes:	Internal failure (DC), short circuit, overheating
Total harmonic distortion:	0.05% into 4Ω
Frequency response:	20Hz to 30kHz ±0dB
Signal to noise ratio:	100dB
Channel separation:	60dB
Sub woofer boost:	6dB @ 80Hz
Damping factor:	400
Input sensitivity:	100mV to 1V, variable
Input impedance:	20kΩ
Dimensions:	208 x 53 x 305mm
Please note: Colour of case may vary.	

Retail Unit Price each (inc. VAT).

Order Code	Type #970	Price each exc. VAT			inc. Vat each
		1+	5+	10+	1+
AF25C 8	300W Car Booster Amp	£110.620	£97.990	£85.500	£129.990

## Multi Channel Stereo Amplifiers

Jensen

KM78K - A82



- ★ 2 channel amplifier
- ★ 2 CH (4 ohms) 15 Watts per channel RMS 0.3% THD
- ★ (2 ohms) 20 Watts per channel RMS 0.5% THD
- ★ Floating ground inputs
- ★ High and low level inputs
- ★ Input sensitivity control
- ★ Remote turn on

KS77J - A84



- ★ 4 Channel amplifier
- ★ 4 CH (4 ohms) 15 Watts per channel RMS 0.3% THD
- ★ (2ohms) 20 watts per channel RMS 0.5% THD
- ★ Floating ground inputs

- ★ High and low level inputs
- ★ Remote turn on
- ★ Line level input adjustment
- ★ Soft turn on circuit
- ★ Thermal and circuit overload protection

## HLX AMPLIFIERS

HLX amplifiers are fitted with a three position selectable low pass filter which eliminates the need for an external crossover, reduces distortion and extends the loudspeaker's life.

Mosfet stages have been used to give better sound reproduction to dynamic peaks which are indispensable for digital sound sources. Mosfet transistors also allow the amplifier to operate at much lower temperatures than traditional transistors would normally allow.

Common features of the range

- ★ Selectable high/flat/low pass filter
- ★ Blue anodised heat sink
- ★ MOSFET power supply
- ★ 2 ohms operation for maximum efficiency
- ★ Bridgeable stereo amplifier
- ★ Phantom channel for powering centre speaker of subwoofer
- ★ Gold plated low level inputs
- ★ Gold plated screw terminal connections
- ★ High and low level inputs
- ★ Input sensitivity control
- ★ Circuit and thermal overload protection
- ★ Remote on/off sensor turns amp on and off with car stereo

KM76H - A222HLX



- ★ 3 CH (4 ohms) 2x50 Watts per channel RMS 0.3% THD + 1x150 Watts bridged RMS 0.5% THD
- ★ 2 CH (4ohms) 2x50 Watts per channel RMS 0.3% THD
- ★ (2 ohms) 2x75 Watts per channel RMS 0.5% THD
- ★ 1 CH (4 ohms) 1x150 Watts bridged RMS 0.5% THD

KM75S - A322HLX



- ★ 3 CH (4 ohms) 2x75 Watts per channel RMS 0.3% THD + 1x200 Watts bridged RMS 0.5% THD
- ★ 2 CH (4 ohms) 2x75 Watts per channel RMS 0.3 THD
- ★ (2 ohms) 2x100 Watts per channel RMS 0.5%THD
- ★ 1 CH (4 ohms) 1x200 Watts bridged RMS 0.5% THD

KM74R - A432HLX



- ★ 4 CH (4 ohms) 4x50 Watts per channel RMS 0.3 THD
- ★ (2 ohms) 4x75 Watts per channel

- RMS 0.5% THD + 2x150 Watts bridged RMS 0.5% THD (Bi-Trimode)
- ★ 3 CH (4 ohms) 2x50 Watts per channel RMS 0.3% THD + 1x150 Watts bridged RMS 0.5% THD
- ★ 2 CH (4ohms) 2x150 Watts bridged RMS 0.5% THD.

Retail Unit Price each (inc. VAT).

Order Code	Type 17416	1+	inc. VAT 1+
KM74R	A432HLX Jensen amp	£170.200	£199.990
KM75S	A322HLX Jensen amp	£127.650	£149.990
KM76H	A222HLX Jensen amp	£85.090	£99.990
KM77J	A84 Jensen amp	£51.050	£59.990
KM78K	A82 Jensen amp	£34.030	£39.990

## JBL Amplifiers

JBL

GV67X - JBL GTS100X

A two channel power amplifier rated at 35 Watts rms per channel into 4 ohms stereo. Bridgeable to 1 x 100 watts rms. This amplifier is designed to recover a high quality sound signal from factory fitted OEM head units. Additional features include built in 12dB crossover, line level inputs and pre amp outputs. Made in the USA.

### Specification

Power 4 ohms stereo:	35Wx2
2 ohms stereo:	50Wx2
4 ohms bridged:	100Wx1
Signal to noise ratio:	100dB

Dimensions: (136(L)x196(W)x49(H))mm

GV68Y - JBL GTS180x

A two channel power amplifier rated at 60 watts rms per channel into 4 ohms stereo. Bridgeable to 1 x 180 watts rms. Built in variable crossover can be configured for high-pass or low-pass operation and eliminates the need for external crossover. Use with any factory fitted OEM head unit. Additional features include line level inputs, preamp outputs and remote out. Made in the USA.

### Specifications

Power 4 ohms stereo:	60Wx2
2 ohms stereo:	90Wx2
4 ohms bridged:	180Wx1
Signal to noise ratio:	100dB

Dimensions: 136(L)x196(W)x49(H)mm

GV69A - JBL GTQ190

A four channel amplifier rated at 35 watts rms per channel into 4 ohms stereo. Can be configured to operate as a 4,3 or 2 channel amplifier. Bridgeable to 2 x 100 watts rms. Designed to recover a high quality signal from factory fitted or OEM head units. Built in variable crossover can be configured for high pass or low pass operation. Additional features include mute in which can be triggered by a cellular phone or relay to mute amplifier output, line level inputs, preamp outputs and remote out. Made in the USA.

### Specification

Power 4 ohms stereo:	35Wx4
2 ohms stereo:	50Wx4
4 ohms bridged:	100Wx2
Signal to noise ratio:	100dB

Dimensions: 245(L)x196(W)x49(H)mm

Retail Unit Price each (inc. VAT).

Order Code	Type 18116	Price each exc. VAT 1+	inc. VAT each 1+
GV67X	2 Channel Amp 35w	£102.110	£119.990
GV68Y	2 Channel Amp 60w	£153.180	£179.990
GV69A	4 Channel Amp 35W	£170.200	£199.990

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## CROSSOVERS

### Passive Mono Crossover



A 2-way mono crossover which splits the power amplifier's output signal into treble and bass frequencies, for feeding to a woofer and tweeter. It is easy to mount, and features gold-plated connectors for purity of signal.

**Specification:**  
 Type: 2-way mono  
 Power(max): 200W  
 Crossover frequency: 3kHz, 12dB/octave  
 Impedance: 4Ω  
 Dimensions: 120 x 65 x 30mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DR59P	Mono 2 Way Xover	£11.050	£9.750	£8.950	£12.990

### Stereo 2 and 3-way Crossover Networks



200W per channel maximum through-put crossover networks for more sophisticated systems. Each channel is separated two ways (DR00A) or three ways (DR01B) for bass and treble or bass, midrange and treble. Type DR00A provides an additional sub-bass output for frequencies below 150Hz. Connections to amplifier are via flying leads, connections to speakers are by spring terminals.



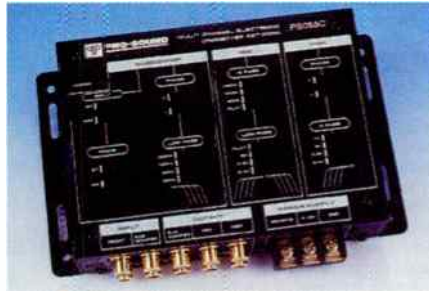
**Specification**

	DR00A	DR01B
Type:	2 x 2-way	2 x 3-way
Power (max.):	200W	200W
Crossover frequencies:	3kHz	800Hz & 5kHz
	6dB/octave	6dB/octave
Sub-woofer point:	150Hz	N/A
Dimensions:	240 x 155 x 55mm	200 x 135 x 55mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DR00A	Ste Xover 2 Way	£25.520	£22.950	£20.950	£29.990
DR01B	Ste Xover 3 Way	£25.520	£22.950	£20.950	£29.990

### Car Stereo 3-Way Active Electronic Crossovers



Two examples of a high quality active crossover which are as near as possible universal, and so can be set up to suit many differing, multi-way speaker systems. Both units are common in having essentially three bands forming a 3-way crossover deriving separate bass, midrange and treble channels. In addition the advanced version has preset controls for adding bass boost or cut by up to ±12dB to improve the response of the driver used, depending on where its resonant frequency lies. Level controls for conventional bass, midrange and treble outputs are also included on the advanced unit. Each complete unit is housed in a matt black steel case having 15mm wide fixing flanges at both ends, and hardware is supplied for screwing to a panel or bulkhead or under the dashboard. The basic unit measures 150 x 120 x 40mm, while the advanced unit is 170 x 130 x 40mm.

#### Specification

	Basic unit (CJ06G)	Advanced unit (GK10L)
Power supply:	+12V DC @ 250mA max.	+12V DC @ 90 to 150mA
Gain, all channels:	0dB	0dB ±2dB
Maximum bass boost/cut:	N/A	12dB ±2dB @ 40Hz
Crossover roll-off, all:	12dB/octave	12dB/octave
Signal to noise ratio:	70dB	100dB
Total harmonic distortion:	0-03%	0-01%
Maximum input level:	>6V r.m.s.	6V r.m.s.
<b>Crossover points:</b>		
Bass:	50 80 120 180Hz	
Lower midrange:	80 120 180Hz	flat
Upper midrange:	2.4 3.5 5kHz	flat
Treble:	2.4 3.5 5 7kHz	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CJ06G 3	Basic 3W Crossover	£31.480	£27.600	£24.900	£36.990
GK10L 2	Adv. 3W Crossover	£39.990	£31.480	£31.200	£46.990

### Multichannel Electronic Crossover



A superb car stereo active crossover that offers a wide range of functions. The compact unit offers two outputs for feeding two sets of subwoofers (normal and boost), a rear 3-way crossover, and a front 3-way crossover, with each section having an output level control (7 in total). All the connectors are gold plated, and are marked inputs for subwoofer, rear and front; outputs for front - low, mid, high; rear - low, mid, high; subwoofer - normal and boost. The subwoofer section has a normal low-pass, frequency selectable output with a 12dB or 18dB/octave slope, and the added facility of a switchable 0 or 180° phase change. With the boost output, all the controls are common to normal output with the addition of 45Hz or 80Hz boost switch and boost level control. A rear input on/off switch is provided. The front and rear sections feature a comprehensive

selection of crossover points to tailor the sound output for individual tastes and vehicles. The high frequency crossover features a 0 or 180° phase change switch. Additionally, the rear section has an input on/off switch. Screw terminals are provided for connection to the vehicle's 12V supply and include a remote on/off facility. There are no fuses in the unit, therefore it is essential that the unit is powered from a fused supply. The unit is finished in a pleasing graphite grey colour with light grey legend.

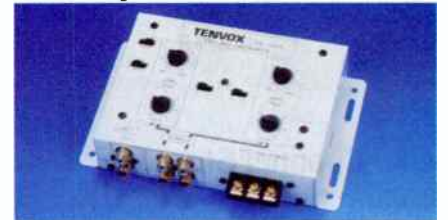
#### Specification

Crossover range	
Subwoofer	
normal output:	60Hz, 80Hz, 120Hz, 180Hz
boost output:	as normal with 45Hz or 80Hz boost
Front and rear outputs	
low bandpass:	50Hz, 80Hz, 120Hz, flat - high pass 1.5kHz, 2.4kHz, 3.5kHz, flat - low pass
mid bandpass:	50Hz, 80Hz, 120Hz, flat - high pass 5kHz, 6.8kHz, 8kHz, flat - low pass
high:	2.4kHz, 3.5kHz, 5kHz, 7kHz with 0 or 180° phase change
Crossover slope rate	
subwoofer:	12dB or 18dB/octave (±3dB), selectable
rear/front:	12dB/octave (±3dB)
Input impedance:	10kΩ
Output impedance:	1kΩ
Output gain:	0dB
S/N ratio:	>98dB
THD:	0-01%
Power requirements:	12V DC, 0-5A max. negative ground
Size:	264 x 50 x 180mm
Weight:	1.23kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RZ98G 3	Multichannel X-Over	£93.600	£79.000	£72.000	£109.990

### Two Way Crossover



Dramatically improve the sound performance of your in-car multispeaker system with this electronic two way active crossover system (suitable for use with two power amplifiers or equaliser/amplifiers). The crossover works by directing a specific range of audio frequencies to each of your amplifiers, resulting in cleaner, more dynamic sound, an improved transient response, lower distortion and greater efficiency.

The high and low channel selectors can be tuned to any point between 50Hz and 500Hz and each has a multiplier switch that boosts the output by a factor of 10 (500Hz to 5000Hz). Other controls include a phase shift selector that allows you to change the phase of your subwoofers from 0 to 180° (to help compensate for timing differences between drivers), a stereo/mono selector (to switch subwoofer output from stereo to mono for single subwoofer installations) and gain controls for each channel. A single LED power indicator lights up when the unit is properly powered and the remote power is turned on.

Supplied with 4 self-tapping screws and washers for mounting in a suitable location and full instructions.

#### Specification

Input current:	0-5A max
Power supply:	10-16V DC negative earth
S/N ratio:	100dB
Frequency response:	20Hz-30kHz
Input impedance:	>10kΩ
Output impedance:	<1kΩ
Dimensions:	180 x 132 x 40mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DR66W	2 Way Crossover	£25.520	£23.000	£21.600	£29.990

## Car Stereo High and Subwoofer Crossover Units



This crossover unit accepts either high or low level stereo inputs from a car stereo, where the high level originates from loudspeaker outputs, and low level originates from a line level signal for feeding power amplifiers, equalisers, etc. The low level inputs are via phono sockets, whereas the high level inputs are via a 300mm long, 4-way wiring loom terminated with a special plug which is keyed to prevent accidental reversal. Similarly, the power supply, earth and the 'remote' on/off switching control line are connected via a 300mm long, 3-way loom with connector. The main supply wire includes an in-line fuse. All loom wires are colour-coded and identified with labels.

The subwoofer electronic crossover has left and right input level presets, a phase switch, and a crossover frequency point selectable at 50, 90 or 180Hz. In addition  $\pm 12$ dB of bass boost or cut can be added, operating at 45, 80 or 120Hz, with left and right presets. Stereo output to a following stereo power amplifier is via phono sockets. The unit is contained in a steel case with 8mm wide mounting flanges at the sides for fixing to a panel or bulkhead or under the dashboard.

**Specification**  
Crossover frequency: 50, 90 or 180Hz switchable  
Crossover slope: 12dB/octave  
Maximum signal level: 2.5V r.m.s.  
Total harmonic distortion: 0.05% maximum  
Gain: 0dB  
Bass boost:  $\pm 12$ dB adjustable  
Bass boost operating point: 45, 80 or 120Hz switchable  
Signal to noise ratio: 100dB  
Channel separation: 70dB  
Power supply range: 9 to 16V DC  
Overall dimensions: 98 x 130 x 23mm high including sockets

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CJ07H	Sub-Wool Crossover	£28.500	£22.950	£20.100	£34.490

## Two/Three/Four and Five Way Crossover



A high quality electronic crossover network for use with in-car hi-fi equipment giving improved bass and treble response with the inherent clarity of separate bass, mid and high frequency amplifiers. Ideal for multi-speaker systems where a specific range of audio frequencies needs to be directed to a specific amplifier and speaker group. Among the many improvements you'll hear clarity like never before due to the greater flexibility, better transient response, lower distortion, and greater efficiency.

Other features include input for sub-bass; mid-bass and rear fill from sound source; input for front stage and highs; choice from an infinite number of crossover points from 40Hz to 90Hz, 90Hz to 1kHz and 1kHz to 8kHz for both front and rear speakers; a phase invert selector, stereo mono selector SINGLE/DUAL input switch; gain controls for each channel level; use of RCA phono type connectors throughout; outputs (for all the corresponding input channels); an LED power indicator and a power connector port with BATTERY, GROUND and REMOTE connections. Simply connect up according to your system configuration and apply the power for excellent frequency response, power handling and sound quality. Supplied with full operating and installation instructions.

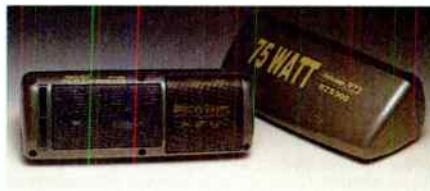
**Specification**  
Input current: 0.5A  
Power supply: 10-16V DC  
Signal/noise ratio: 100dB  
Distortion: 0.01%  
Frequency response: 20Hz-30kHz  
Input impedance:  $>10k\Omega$   
Output impedance:  $<1k\Omega$   
Output voltage level: 6V maximum  
Maximum output with 1V input: 3V, all channels  
Dimensions: 235 x 175 x 49mm (W x D x H)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DR67X 1	5 Way Crossover	£55.310	£47.500	£44.750	£64.990

## SHELF/DOOR SPEAKERS

### 75W Shelf Speakers



Hi-fi quality, 3-way bass reflex rear shelf speakers. Unique design gunmetal plastic cabinets with gold trim. 75W maximum power handling per cabinet.

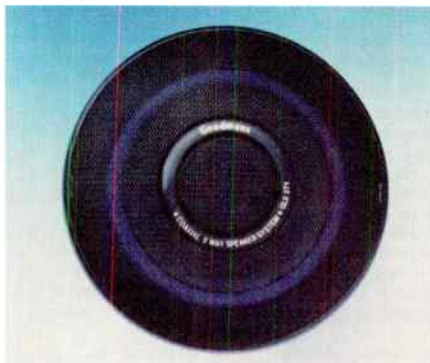
Maximum power: 75W  
Frequency response: 80Hz to 18kHz  
Speaker sizes: Bass 75mm  
Midrange 50mm  
Treble 25mm  
Impedance: 4 $\Omega$   
Dimensions: 249 x 97 x 120mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DR19V 1	75W Shelf Spkrs	£25.910			£29.990

### GLX271 70W Door/Shelf Speakers

Goodmans



High-quality 2-way co-axial speaker system for door or shelf mounting. 120W maximum power handling. Speaker drive unit polypropylene-coned.

**Specification**  
Maximum power: 70W  
Frequency response: 80Hz to 20kHz  
Speaker sizes: Bass 120mm  
Treble 25mm (effective)  
4 $\Omega$   
Impedance: 4 $\Omega$   
Mounting depth: 50mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DR20W	70W Door/Shelf	£17.010	£16.400	£15.800	£19.990

### GLX291 120W Shelf Speakers

Goodmans



Decent sound quality at a fair price is the objective of this 3-way co-axial speaker system, which has been designed for mounting on a rear parcel shelf. 100W maximum power handling.

**Specification**  
Maximum power: 100W  
Frequency response: 40Hz to 26kHz  
Speaker sizes: Bass 152 x 229mm  
Midrange 51mm  
Treble 38mm  
Impedance: 4 $\Omega$   
Mounting depth: 80mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DR21X 1	100w Shelf Mount	£42.540	£40.250	£38.750	£49.990

### 200W Shelf Speakers



Co-axial 3-way shelf mounting speakers consisting of a 200mm woofer with mid range and tweeter mounted on-axis. These speakers feature a very broad frequency response, ideal for digital systems. 200W maximum power handling per speaker.

Maximum power: 200W  
Frequency response: 35Hz to 20kHz  
Speaker sizes: Bass 200mm  
Midrange 60mm  
Treble 40mm  
Impedance: 4 $\Omega$   
Mounting depth: 82mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DR25C 1	200W Shelf Speakers	£42.540	£38.250	£35.500	£49.990

Maplin is opening new stores all the time.  
Call for latest details

## 40W Shelf Speakers



Compact high quality double cone rear shelf speakers. Unique design gunmetal plastic pod with gold trim. 40W maximum power handling per pod.

Maximum power: 40W  
 Frequency response: 100Hz to 18kHz  
 Speaker size: 75mm double cone  
 Impedance: 4Ω  
 Dimensions: 114 x 105 x 113mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DR29G	40W Shelf Speakers	1+ 5+ 10+ £11.900 £10.250 £9.450	1+ £13.990

## Car Tweeter

DR28F



A pair of high quality, in-car tweeters that can be flush mounted or pod mounted (DR28F). Built-in high bass filtering allows direct connection across existing car speakers.

Maximum power: 40W  
 Frequency response: 3kHz to 20kHz  
 Sensitivity: 93dB, 1W @ 1m  
 Impedance: 4Ω  
 Dimensions: 75 x 60 x 50mm

FR65V



A round, 1 inch, high power version (FR65V) is available for surface mounting only, supplied with easy fit brackets.

Maximum power: 100W  
 Frequency response: 2.5kHz to 23kHz  
 Sensitivity: 91dB, 1W @ 1m  
 Impedance: 4Ω  
 Dimensions: 45 x 22mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DR28F	Pair Car Tweeters	1+ 5+ 10+ £11.050 £9.800 £9.050	1+ £12.990

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FR65V	1 Hard Dome Tweeters	1+ 10+ 25+ £12.750 £9.750 £8.650	1+ £14.990



See Section Loudspeakers Sounders and Accessories for our full range of Loudspeakers

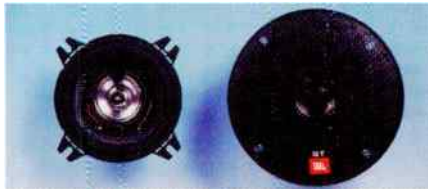
## CAR SPEAKERS

### JBL In Car Speakers

JBL

4", 5", and 6" Two Way Round Co-axial.

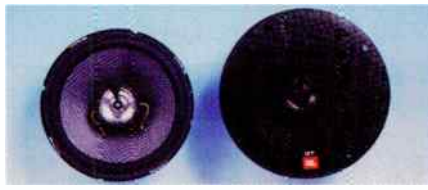
GTO402



GTO502



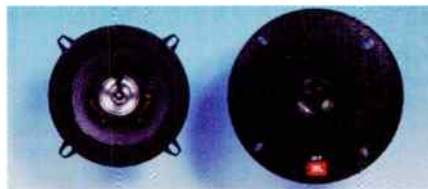
GTO602



These co-axial two way models have a unique textured polypropylene bass cone, designed to ensure smooth response by breaking up harmonics that normally travel along the cone edge. This material is also stronger and stiffer than conventional polypropylene cones, allowing it to hold its shape at higher output levels. The titanium composite tweeter selected for these speakers is more compact than most, and rated to 21 kHz. Its combination of stiffness and polymer damping greatly reduces high frequency distortion. In all models the surround material is Butyl rubber and the tweeter is 1 1/2"

CODE	VC94C	PD84F	VC95D
	GTO402	GTO502	GTO602
Freq Response (Hz)	85-21k	65-21k	55-21k
Sensitivity (dB)	90	90	91
Recommended input power range (W RMS)	6-75	5-90	5-125
Mounting depth:	1 7/8	2 7/16	2 7/16

5 1/2" Two Way Round Co-axial  
 VC92A - GTO522

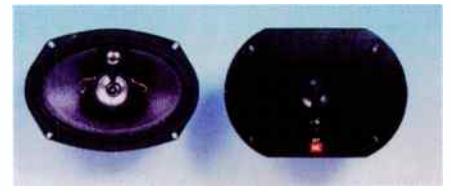


This two way co-axial model has a titanium composite injection moulded cone which is extremely strong, stiff and light, resulting in increased bass response and power handling capabilities. The titanium composite tweeter is rated at 22kHz and uses an off axial mounting system. This equalises the signal path length between the mid-range and the tweeter and ensures correct alignment of the frequencies. Optimum imaging is achieved by simply rotating the speaker in the speaker opening prior to mounting.

Surround material: Butyl rubber.  
 Tweeter size: 3/4"  
 Frequency Response: 55Hz - 22kHz.  
 Sensitivity: 90dB  
 Recommended input

power range: 5 to 160 watts RMS.  
 Mounting depth: 2 7/8"

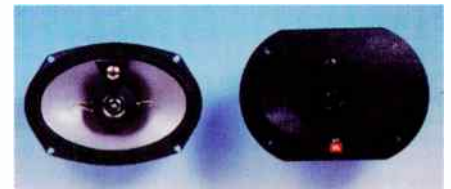
6" x 9" Three Way Elliptical Co-axial.  
 VC96E - GTO963



This three way co-axial model has a unique textured polypropylene bass cone. Designed for smooth response, it is stronger and stiffer than conventional cones and so holds its shape even at high output. The titanium composite mid-range and titanium composite solid state balanced dome super tweeter both provide a smooth response at high outputs.

Surround material: Butyl rubber.  
 Tweeter size: 1/2"  
 Midrange size: 1 3/4"  
 Frequency Response: 45Hz - 21kHz.  
 Sensitivity: 92dB  
 Recommended input power range: 5 to 175 watts RMS.  
 Mounting depth: 3 1/8"

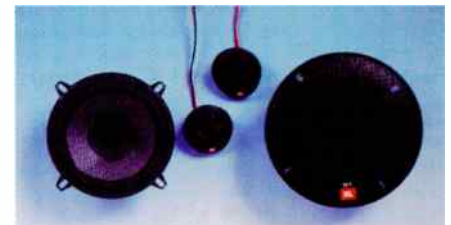
VC93B - GTO923



This three way co-axial model features a titanium composite injection moulded curvilinear bass cone, which is extremely strong, stiff and light for increased bass response and power handling. The titanium composite mid-range and titanium composite solid state balanced dome super tweeter provide smooth, clear response at high output levels. The tweeter is mounted off-axis. This equalises the signal path length between the mid range and the tweeter, ensuring correct alignment of all frequencies while simplifying installation.

Surround material: Butyl rubber.  
 Tweeter size: 3/4"  
 Midrange size: 1 3/4"  
 Frequency Response: 45Hz - 21kHz.  
 Sensitivity: 92dB  
 Recommended input power range: 5 to 175 watts RMS.  
 Mounting depth: 3 1/8"

4", 5 1/4" and 6 1/2" Two-Way Component Systems  
 GT4.0c, GT5.0c, GT6.0c



These three two way component systems have a textured polypropylene bass cone which is stronger and stiffer than conventional poly cones, allowing it to handle more power. The titanium composite, balanced dome tweeter offers a combination of stiffness and polymer damping which greatly reduces distortion even at high output. To simplify installation and save space, the crossover for the tweeter, which has a slope rate of 12dB per octave is mounted in line. Installation accessories include the surface mounting kits. In all component sets the surround material is Butyl rubber and the tweeter is 1" balanced dome.

CODE	VC97F	VA39N	VA40T
	(GT4.0c)	(GT5.0c)	(GT6.0c)
Midrange size (in)	4	5 1/4	6 1/2
Freq response (Hz)	70-21k	60-21k	50-21k
Sensitivity (dB)	90	91	91



Recommended input power range(W RMS)	5-100	5-110	5-125
Mounting depth(in)	1 7/8	2 1/8	2 1/8

Retail Unit Price each (inc. VAT).

Order Code	Type (344)	Price each exc. VAT 1+	inc. VAT each 1+
VC92A	5.25 JBL 2 Way Spkr	£76.580	£89.900
VC93B	6 X9 JBL 3way Spkr	£110.620	£129.990
VC94C	4 JBL 2 Way Spkr	£38.280	£44.960
VC95D	6.5in JBL 2way Spkr	£51.060	£59.960
VC96E	6x9in JBL 3way Spkr	£68.070	£79.960
VC97F	4in JBL Component Set	£68.070	£79.960
VA39N	5.25in JBL Comp Set	£76.580	£89.960
VA40T	6.5in JBL Comp Set	£85.090	£99.960
PDB4F	5 1/4 JBL Spkr	£42.540	£49.960

## Wharfedale Valdus in car a Speakers

### Wharfedale CO-Axials

KS55K - 2 way co-axial 4" speaker



These speakers give superior sound and fit factory cut-outs in door, dash and parcel shelf location.

Specification	
Mms (gm)	4.5
Vas (m <sup>3</sup> x 10 <sup>-3</sup> )	2.06
Diameter (mm)	76
X max (mm)	1.6
BL	3.5
Power (watts)	80
Sensitivity (2.83V/1M)dB	89
Weight (kg)	0.5
Voice coil (diam mm)	25
DC Resistance (Re ohms)	3.6
Frequency (Hz)	86
Cms (mm/N)	0.73
Qms	4.13
Qes	0.74
Qts	0.62

KS56L - 2 way co-axial 5.25" Speaker



Specification	
Mms (gm)	8
Vas (m <sup>3</sup> x 10 <sup>-3</sup> )	4.48
Diameter (mm)	111
X max (mm)	3
BL	3.65
Power (watts)	100
Sensitivity (2.83V/1M)dB	90
Weight (kg)	0.67
Voice coil (diam mm)	25
DC Resistance (Re ohms)	3.4
Frequency (Hz)	72
Cms (mm/N)	0.46
Qms	5.22
Qes	1.07
Qts	0.89

KS57M - 2 way co-axial 6.5" speaker



Specification	
Mms (gm)	12
Vas (m <sup>3</sup> x 10 <sup>-3</sup> )	33
Diameter (mm)	133
X max (mm)	3.6
BL	4.3
Power (watts)	120
Sensitivity (2.83V/1M)dB	92
Weight (kg)	0.96
Voice coil (diam mm)	30
DC Resistance (Re ohms)	2.8
Frequency (Hz)	42
Cms (mm/N)	1.21
Qms	4.06
Qes	0.49
Qts	0.43

## Ellipticals

KS58N - 3 way co-axial 6" x 9" speaker



Specification	
Mms (gm)	15.8
Vas (m <sup>3</sup> x 10 <sup>-3</sup> )	37.8
BL	5.15
Power (watts)	120
Sensitivity (2.83V/1M)dB	90
Weight (kg)	1.53
Voice coil (diam mm)	25
DC Resistance (Re ohms)	4.1
Frequency (Hz)	47
Cms (mm/N)	0.62
Qms	4.06
Qes	0.75
Qts	0.63

## Component Sets



KS59P - 5.25" 2 way component set + crossover

Specification	
Mms (gm)	9
Vas (m <sup>3</sup> x 10 <sup>-3</sup> )	4.68
Diameter (mm)	111
X max (mm)	3
BL	3.8
Power (watts)	100
Sensitivity (2.83V/1M)dB	90
Weight (kg)	0.6
Voice coil (diam mm)	25
DC Resistance (Re ohms)	3.4
Frequency (Hz)	80
Cms (mm/N)	0.48
Qms	3.88
Qes	1.04
Qts	0.82

KS60Q - 6.5" 3 way component set + crossover

Specification	
Mms (gm)	13
Vas (m <sup>3</sup> x 10 <sup>-3</sup> )	28.5
Diameter (mm)	133
X max (mm)	3.5

BL	4.2
Power (watts)	120
Sensitivity (2.83V/1M)dB	92
Weight (kg)	0.95
Voice coil (diam mm)	30
DC Resistance (Re ohms)	2.8
Frequency (Hz)	43
Cms (mm/N)	1.05
Qms	4.25
Qes	0.55
Qts	0.49

Price each (inc. VAT).

Order Code	Type (1738)	Price each exc. VAT 1+	inc. VAT each 1+
KS55K 1	2 Way 4in Speaker	£68.070	£79.990
KS56L 1	2 Way 5.25in Speaker	£76.580	£89.990
KS57M 1	2 Way 6in Speaker	£85.090	£99.990
KS58N 1	3 Way 6x9in Speaker	£85.090	£99.990
KS59P 1	2way Comp Set 5.25in	£106.370	£124.990
KS60Q 1	3way Comp Spkr 6.5in	£119.140	£139.990

## In-Car Speakers

Eminence



Bumper



JBL



Stock Code	Type	Impedance	Frequency Response	Nominal Power	Fs	Qts	Vas	Sensitivity	Magnet Weight	Mounting Depth
MK45Y	165mm 100W Bass to Midrange Driver	4Ω	60Hz to 3kHz	100W	66-12Hz	0.59	12.00L	90dB	454g	83.5mm
MK46A	200mm 150W Bass to Midrange Driver	4Ω	45Hz to 3kHz	150W	58-69Hz	0.57	18.43L	94dB	1020g	96.5mm
LN71N	200mm 200W Bass to Midrange Driver	4Ω	20Hz to 6.2kHz	150W(rms)	62.5Hz	0.48	31.16L	98dB	1360g	85mm
MK47B	250mm 200W Bass Driver	4Ω	40Hz to 4kHz	200W	43-60Hz	0.57	56.48L	94dB	1080g	113mm
LN72P	250mm 300W Bass Driver	4Ω	20Hz to 3.9kHz	150W(rms)	39.8Hz	0.28	36.83L	97.2dB	1360g	100mm
MK48C	300mm 200W Bass Driver	4Ω	33Hz to 3kHz	200W	41-61Hz	0.73	122.56L	96dB	1080g	120mm
LN73Q	300mm 250W Bass Driver	4Ω	20Hz to 3-6kHz	150W(rms)	36.9Hz	0.57	73.66L	98.1dB	1360g	140mm
LN74R	375mm 250W Bass Driver	4Ω	20Hz to 3-8kHz	150W(rms)	38.1Hz	0.66	167.15L	99dB	1360g	165mm
MK49D	380mm 300W Bass Driver	4Ω	25Hz to 2kHz	300W	38.3Hz	0.87	211.03L	99dB	1590g	166mm
MK50E	450mm 400W Bass Driver	4Ω	20Hz to 1kHz	400W	21.92Hz	0.36	858.59L	99dB	2690g	181mm
DR35Q	250mm Subwoofer	4Ω	20Hz to 3.5kHz	260W	40-0Hz	0.415	60.00L	94dB	1130g	225mm
DR36P	300mm Subwoofer	4Ω	25Hz to 3kHz	280W	33-0Hz	0.351	101.00L	95dB	1130g	271mm
DR37S	380mm Subwoofer	4Ω	20Hz to 2kHz	300W	24-0Hz	0.393	319.00L	97dB	1130g	338mm

Retail Unit Price each (inc. VAT).

Retail Unit Price each (inc. VAT).

Retail Unit Price each (inc. VAT).

Order Code	Type 18072	Price each exc. VAT	inc. VAT each
MK45Y 5	100W 6.5in Driver	£27.220	£31.990
MK46A 6	150W 8in Driver	£34.030	£39.990
LN71N 1	Bumper Spkr 8in 300W	£34.030	£39.990
MK47B 8	200W 10in Bass Drivr	£40.840	£47.990
LN72P 1	Bumper Spkr 10in 300W	£38.280	£44.990

Order Code	Type 18072	Price each exc. VAT	inc. VAT each
MK48C 9	200W 12in Bass Drivr	£47.650	£55.990
LN73Q 1	Bumper Spkr 12in 250W	£42.540	£49.990
LN74R 1	Bumper Spkr 15in 250W	£51.050	£59.990
MK49D 13	300W 15in Bass Drivr	£66.370	£77.990
MK50E 26	400W 18in Bass Drivr	£133.600	£156.990

Order Code	Type 18072	Price each exc. VAT	inc. VAT each
DR35Q 1	10in JBL Subwoofer	£68.070	£79.990
DR36P 1	12in JBL Subwoofer	£85.090	£99.990
DR37S 1	15in Subwoofer	£119.140	£139.990

**Car Speakers**

BUMPER



Code	Dia cm(ir)	Dual Voice coil	Impedance (Ω)	Frequency response (Hz)	P max (W)	Prms (W)	Magnet Weight (kg)	fo (Hz)	Qts	Vas (l)	Ref efficiency (dB, 1W@1m)	Mounting Depth (mm)
VM06G	38(15)	Yes	4+4	30-3600	300	150	1.69	35.8	0.48	4.8	92.5	165
VM07H	30(12)	-	4	20-4500	800	400	6.33	44.9	0.31	2	93.8	143
VM08J	38(15)	-	4	20-4000	800	400	6.33	39.8	0.36	6.3	96.9	158
VM09K	38(15)	-	4	20-3900	500	250	3.16	39.8	0.52	5.4	94.2	140
VM10L	30(12)	-	4	20-3900	600	300	3.16	43.5	0.35	2.4	93.7	137.5
VM11M	20(8)	-	8	20-6900	300	150	1.69	69.5	0.62	0.6	86.4	85
VM12N	30(12)	-	8	20-3400	300	150	1.69	34.8	0.65	3.4	89.3	140
VM13P	30(12)	Yes	4+4	20-3500	300	150	1.69	34.8	0.37	2.5	90.6	140
VM14Q	25(10)	-	4	20-5100	800	400	6.33	51.4	0.22	0.9	93.6	112
VM15R	25(10)	-	4	20-3000	600	300	3.1	51	0.18	4.5	97	125

Retail Unit Price each (inc. VAT)

Order Code	Type 1877	Price each exc. VAT 1+	inc. VAT each 1+
VM06G	38cm 300W Car Spkr	£42.540	£49.990
VM07H	30cm 600W Car Spkr	£110.620	£129.990
VM08J	38cm 600W Car Spkr	£136.160	£159.990
VM09K	38cm 500W Car Spkr	£85.090	£99.990
VM10L	30cm 500W Car Spkr	£68.070	£79.990
VM11M	20cm 300W Bohm Spkr	£29.770	£34.990
VM12N	30cm 300W Bohm Spkr	£35.730	£41.990
VM13P	30cm 300W Car Spkr	£36.580	£42.990
VM14Q	25cm 600W Car Spkr	£98.710	£115.990
VM15R	25cm 600W Car Spkr	£72.330	£84.990

**Subwoofers - Valdue**

Wharfedale

KS61R - 10" Subwoofer



**Specification**

Mms (gm)	45.5
Vas (m <sup>3</sup> x 10 <sup>-3</sup> )	86
Diameter (mm)	210
X max (mm)	4.5
BL	7.2
Power (watts)	300
Sensitivity(2.83v/1m)dB	90
Weight (kg)	2.83
Voice Coil diam mm	50
DC Resistance re ohms	3.2
fs Hz	35
Cms mm/N	0.55
Qms	3.12
Qes	0.65
Qts	0.54

KS62S - 12" Subwoofer



**Specification**

Mms (gm)	51.9
Vas (m <sup>3</sup> x 10 <sup>-3</sup> )	160
Diameter (mm)	255
X max (mm)	4.5
BL	9.3
Power (watts)	400
Sensitivity(2.83v/1m)dB	92
Weight (kg)	3.96
Voice Coil diam mm	50
DC Resistance re ohms	3.3
fs Hz	30
Cms mm/N	0.47
Qms	2.35
Qes	0.49
Qts	0.34

KS63T - 15" Subwoofer



**Specification**

Mms (gm)	100
Vas (m <sup>3</sup> x 10 <sup>-3</sup> )	420
Diameter (mm)	330
X max (mm)	4.8
BL	11.1
Power (watts)	500
Sensitivity(2.83v/1m)dB	94
Weight (kg)	5.18
Voice Coil diam mm	65

DC Resistance re ohms	3.2
fs Hz	25
Cms mm/N	0.45
Qms	2.51
Qes	0.41
Qts	0.36

Retail Unit Price each (inc. VAT)

Order Code	Type 17736	Price each exc. VAT 1+	inc. VAT each 1+
KS61R	10in Subwoofer 150W	£68.070	£79.990
KS62S	12in Subwoofer 200W	£76.580	£89.990
KS63T	15in Subwoofer 250W	£102.110	£119.990

**BOXED BASS SPEAKERS**

**Bass Box fitted with Bumper 10" 300 Watt Speaker**

Bumper



This bass reflex box has been designed with a sloping back to conserve boot space and to reduce internal standing waves. The bass reproduction is both powerful and accurate. The quality materials used throughout guarantee that this box will look as good as it sounds in your car.

Retail Unit Price each (inc. VAT)

Order Code	Type 13009	Price each exc. VAT 1+	inc. VAT each 1+
VM16S	10 300W Bass Box	£110.620	£125.990

See Stock Code Index For More Price Breaks

## Twin Bass Box fitted with two 10" Bumper 300 Watt speakers

Bumper



**NEW**

This twin bass reflex box has been designed with a sloping back to conserve boot space and to reduce internal standing waves. With 600 watts power handling, this box is capable of producing awesome amounts of deep bass. This is bass that you can feel as well as hear.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
GT81C	Twin Bass Box 300W	£170.200	£199.990

## 3-Chamber Dual 10" Woofer Bandpass System

Jenson



**NEW**

This high performance dual 10" driver 4th order bandpass subwoofer system brings thundering bass into your car.

- ★ Designed for in boot or hatchback area
- ★ Left and right channel inputs (4 ohms x 2)
- ★ High mass conc subwoofers
- ★ Black carpeted enclosure
- ★ Acrylic viewing window into 3rd chamber
- ★ Requires nominal amplification for thunderous bass output
- ★ No crossover needed so easy to install.
- ★ Easy to add onto existing sound system
- ★ Computer tuned acoustic chambers
- ★ High SPL efficiency: 97.5dB (1W@1M)
- ★ Quad port design for deeper bass
- ★ Dual 4th order bandpass subwoofer system
- ★ Utilises dual 10" drivers
- ★ Usable frequency response: 20Hz-140Hz
- ★ Dimensions (HxWxD): 30x58x40.2cm

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
K354J	Jen. 3 Chamber Dual 10" Woofer	£153.18*	£179.990

## IN CAR ENTERTAINMENT ACCESSORIES

### High Power In-Car Entertainment Accessories

A range of the finest quality accessories for use with your high power car audio equipment. The accessories are manufactured from solid brass, precision machined and hand finished. They are then plated with 24 carat pure gold to ensure the very best audio performance in a demanding environment.

## GOLD PLATED BATTERY CLAMPS

### Screw Type



These gold-plated battery clamps (one for the positive terminal only and one for the negative) are specifically designed for high quality, high power in-car entertainment systems. Suitable only for use on lead acid batteries with round connecting terminals, both clamps are suitable for use with 4AWG and 8AWG lugs. For added protection, a clear silicone cover is available (DN12N).



Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
DN02C	Batt Clamp Positive	£5.940	£6.990
DN03D	Batt Clamp Negative	£5.940	£6.990
DN12N	Rub Cover For Term S	£2.110	£2.490

## Gold-Plated Car Battery Clamps



These top quality gold-plated battery clamps (one for the positive terminal only and one for the negative) are designed for use in cars with high quality in-car entertainment systems, particularly CD players



Please note that these clamps are only suitable for use on lead acid batteries with round connecting terminals. For added protection, red (MX01) and black (MX02) PVC covers are available for the positive and negative clamps respectively.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
CN82A	Car Battery Term Neg	£5.520	£6.490
CN81Y	Car Battery Term Pos	£5.520	£6.490
MX01B	cover for CN81	£1.260	£1.490
MX02C	cover for CN82	£1.260	£1.490

See Stock Code Index For More Price Breaks

## Multiway Type



These top quality multiway battery clamps, one for the positive and one for the negative, have outlets for two 4AWG cables and two 8AWG cables. Typically, they could be used for the starter lead, a high power amplifier, and two other auxiliary feeds. The clamps require 3, 4 and 5mm Hex keys (MX09K, MX10L and MX11M) to fix the cables. Please note that these clamps are only suitable for use on lead acid batteries with round connecting terminals. For added protection, a clear silicone cover is available



Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
DN00A	Multiway Batt Clamp Pos	£12.750	£14.990
MX03D	Multiway negative	£8.500	£9.990
DN13P	Rub Cover For Term L	£2.970	£3.490

See Section 10, Connectors for our full range of Audio connectors

## Battery Terminal Lugs



Gold plated lugs for use with the above battery clamp. They are available for use with either 4AWG (DN09K) or 8AWG (DN10L) cable. For added protection, a clear silicone cover is available.



Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
DN09K	Batt Term Lug 4AWG	£5.690	£6.690
DN10L	Batt Term Lug 8AWG	£3.390	£3.990
DR85G	Term Lug	£3.390	£3.990
MX04E	Cover for DN09/10	£0.842	£0.990

## Cable connectors

Gold plated in-line cable connectors for 4AWG and 8AWG cable.



Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
MX06F	4AWG in-line connectors	£3.390	£3.990
MX06G	8AWG in-line connectors	£3.390	£3.990

## Gold Terminals Lug

Gold-plated grounding terminal for use with 8AWG cable.



Retail Unit Price each (inc. VAT).

Order Code	Type 17881	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MX07H	Spade terminal 8AWG	£3.390	£2.980	£2.670	£3.190

## Insulated Terminals

A range of PVC insulated, gold plated terminals for use with 4AWG and 8AWG cables.

Ring terminals with 8mm internal diameter rings are available for 4AWG (CN94C) or 8AWG (CN93B).



Spade terminals are available for 8AWG cables, (MY10L) has the spade stepped for use with 3mm, 4mm, or 5mm studs, and MX08J is for 4mm studs. All types are supplied in pairs of one red and one black.



Retail Unit Price each (inc. VAT).

Order Code	Type 17881	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MX08J	Insul spde term 4mm	£1.690	£1.520	£1.350	£1.990
MY10L	Ins spd term 3.5-5mm	£1.260	£1.140	£1.010	£1.490
CN94C	Gold-Plated 4AWG Lug	£2.540	£1.630	£1.410	£2.990
CN93B	Gold-Plated 8AWG Lug	£2.540	£1.280	£1.070	£2.990

## Gold Plated Hex Key Wrenches



Gold-plated hex keys to suit the screws fitted to many of the accessories in this range. These high grade keys are tempered and hardened chromo-vanadium steel and then gold plated. Available in 3mm, 4mm or 5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 17883	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MX09K	3mm HEX KEY	£0.842	£0.758	£0.674	£0.990
MX10L	4mm HEX KEY	£0.842	£0.758	£0.674	£0.990
MX11M	5mm HEX KEY	£0.842	£0.758	£0.674	£0.990

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## GOLD PLATED POWER DISTRIBUTION BLOCKS

### Single ended Types



Gold plated power distribution blocks with one input for 4AWG cable and four outputs for 8AWG cable. Both types have an acrylic cover and base that snap together. CN95D has a 5mm diameter fixing hole in each corner. The cover of MX12N can interlock with its neighbours so that groups of blocks can be constructed. It has a 5mm diameter fixing hole at each corner.

Retail Unit Price each (inc. VAT).

Order Code	Type 3054	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CN95D	4-1 Car Connec Block	£7.650	£5.250	£4.540	£8.990
MX12N	4AWG-4 8AWG inlock	£8.500	£7.650	£6.480	£9.990

## Distribution Block for Car Audio Systems



Gold-plated power distribution blocks that can be inserted into a power line for sub-cables to be tapped off. The blocks have an entry hole at both ends for 4 AWG cable. MX13P has four outputs for 8AWG cables and CN97F has eight outputs for 8AWG cables. Both types have an acrylic cover and base that snap together and 5mm diameter fixing holes in each corner.

Retail Unit Price each (inc. VAT).

Order Code	Type 4999	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CN97F	8Way Power Dis Block	£11.050	£8.670	£7.090	£12.990
MX13P	In-line 4AWG-4 8AWG	£7.650	£7.240	£6.240	£8.990

## 5 AG Types

Four fuseholders for use with standard 5AG fuses, nominal dimensions 10.3mm diameter and 38.1mm long.

DR84F is for a single fuse and comprises a water resistant clear acrylic case with black screw on end caps with rubber seals. It can be used with 4AWG and 8AWG cables. The base has two 4mm diameter fixing holes.



CN89G has two separate fuseholders with cable entry holes for 8AWG cables at each end of both fuses.



CN99H. has a single large block at one end with holes for three 4AWG cables. The hole in the end is for single-ended use, and the two on the sides for in-line use. To this block, two fuseholders are connected, each having an outlet for 8AWG cable at the other end.



MX14Q is similar to CN99H, but has four fuseholders connected to the large block at one end, and each fuseholder has an outlet for 8AWG cable at the other end. All these types have a clear acrylic cover and base with two 5mm diameter fixing holes in the base.



Retail Unit Price each (inc. VAT).

Order Code	Type 10147	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CN99H	HD Car Aud Fuse Box	£10.200	£7.400	£6.480	£11.990
CN99G	Car Audio Fuse Box	£12.750	£9.130	£7.650	£14.990
DR84F	Fuseholder	£5.940	£3.630	£3.200	£6.990
MX14Q	4 AWG to four 8AWG	£11.050	£8.250	£6.800	£12.990

## Fuseholders for Maxi Fuses

Four fuseholders for use with MAXI blade Fuses which are a larger version of the standard blade fuses used in cars.

MX15R - Waterproof fuseholder



MX15R is not gold-plated, but is waterproof and all plastic and for a single fuse. To use, cut wire loop and connect the ends in series with the circuit. The wire loop is 8AWG and 300mm long.

BV54J and BV55X



BV54J has two separate fuseholders with cable entry holes for 8AWG cables at each end of fuses. MX17S has a single large block at one end with holes for three 4 AWG cables. The hole in the end is for single ended use, and the two on the sides for in-line use. To this block, two fuseholders are connected, each having an outlet for 8AWG cable at the other end. BV55X is similar to MX17S, but has four fuseholders connected to a large block at one end, and each fuseholder has an outlet for 8 AWG cable at the other end. All types have a clear acrylic cover and base with four 4mm diameter fixing holes in the base. The fuse protrudes through the cover for easy identification and replacement.

Retail Unit Price each (inc. VAT).

Order Code	Type 17866	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MX15R	In-Line fuse	£1.690	£1.520	£1.350	£1.990
MX17T	4 AWG to four 8AWG	£9.350	£8.410	£7.480	£10.990

Retail Unit Price each (inc. VAT).

Order Code	Type 17868	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BV55K	Maxi Fuseholder Quad	£22.110	£14.270	£12.730	£25.990
BV54J	Maxi Fuseholder Twin	£13.600	£9.690	£8.670	£15.990

**All Customers**  
No additional freight charges for heavy items

## GOLD PLATED FUSES AND CIRCUIT BREAKERS

### 5AG Types

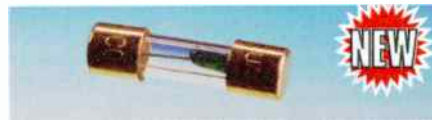


A standard 5AG fuse (sometimes known as AWG) with gold-plated end caps and glass barrel. Rated 32V for in car use. Overall size 10.3mm diameter, 38.1mm long. The following values are available: 20A, 25A, 30A, 35A, 40A, 50A, 60A, 70A, 80A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MX18U	20 A gold plated fuse	£0.757	£0.650	£0.570	£0.890
MX19V	25 A gold plated fuse	£0.757	£0.650	£0.570	£0.890
CK32K	30A Fuse	£0.757	£0.650	£0.570	£0.890
DN08J	AGU 35a Fuse	£0.757	£0.650	£0.570	£0.890
BZ98G	40A Fuse	£0.757	£0.650	£0.570	£0.890
MX20W50A	gold plated fuse	£0.757	£0.650	£0.570	£0.890
MX21X	60A gold plated fuse	£0.757	£0.650	£0.570	£0.890
MX22Y	70A gold plated fuse	£0.757	£0.650	£0.570	£0.890
MX23A	80A gold plated fuse	£0.757	£0.650	£0.570	£0.890

### 5AG Types with Fail Indicator



The 5AG fuse is also available with an indicator lamp inside which lights when the fuse has gold-plated end caps and a glass barrel. Rated 32V for in-car use (18V max for lamp). Overall size 10.3mm diameter, 38.1mm long. The following range is available and the lamp is colour coded as follows: 20A - yellow, 25A - Transparent, 30A - green, 35A - pink, 40A - orange, 50A - Red, 60A - Blue.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MX24B	20A fuse+fail ind	£0.927	£0.700	£0.620	£1.090
MX25C	25A fuse+fail ind	£0.927	£0.700	£0.620	£1.090
MX26D	30A fuse+fail ind	£0.927	£0.700	£0.620	£1.090
MX27E	35A fuse + fail ind	£0.927	£0.700	£0.620	£1.090
MX28F	40A fuse + fail ind	£0.927	£0.700	£0.620	£1.090
MX29G	50A fuse+fail ind	£0.927	£0.700	£0.620	£1.090
MX30H	60A fuse + fail ind	£0.927	£0.700	£0.620	£1.090

### Maxi Type

The maxi fuse is a large size version of the standard plug-in fuse. It has gold plated blades and is rated 32V for in car use. The following values are available and colour coded as follows: 20A - Yellow, 30A - Light green, 35A - pink, 40A - orange, 50A - Red, 60A - Light Blue.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MX31J	20A maxi fuse	£0.842	£0.800	£0.750	£0.990
MX32K	30A maxi fuse	£0.842	£0.800	£0.750	£0.990
MX33L	35A maxi fuse	£0.842	£0.800	£0.750	£0.990
MX34M	40A maxi fuse	£0.842	£0.800	£0.750	£0.990
MX35Q	50A maxi fuse	£0.842	£0.800	£0.750	£0.990
MX36P	60A maxi fuse	£0.842	£0.800	£0.750	£0.990

### Wafer types

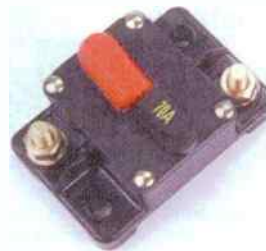


The wafer fuse (sometimes known as ANL) is especially designed for use with very high power in-car audio systems. The metal parts of the fuse including the element are 24 carat gold plated. The element is visible through the mica window. Rated at 32V. The following values are available: 35A, 60A, 100A, 200A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DN11M	35A Wafer Fuse	£2.110	£1.990	£1.730	£2.490
MX37S	60A Wafer fuse	£2.110	£1.900	£1.690	£2.490
MX38R	100A Wafer fuse	£2.110	£1.900	£1.690	£2.490
MX39N	200A Wafer fuse	£2.110	£1.900	£1.690	£2.490

### Circuit Breakers



A range of fast-acting circuit breakers with gold plated terminals marked 'BATT' and 'AUX' for correct insertion in the power feed. There are two 6mm diameter fixing holes in the base. The following values are available: 50A, 70A, 100A, 200A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DR91Y	50A Circuit Breaker	£12.750	£9.990	£8.490	£14.990
DR92A	100A Circuit Break	£13.180	£10.000	£8.670	£15.490
DR93B	200A Circuit Break	£19.560	£11.480	£10.150	£22.990

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BZ96E	70A Circuit Breaker	£16.580	£11.990	£9.990	£19.490

**ORDER BEFORE 5PM FOR SAME DAY DESPATCH**

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## HUGE POWER RESERVOIR

### 1 Farad Capacitor



A 1 farad electrolytic capacitor for use with high power in-car entertainment systems. Rated at 20V, it is capable of providing massive instantaneous currents to improve the crispness of heavy bass sounds. The capacitor has a -10% to 50% tolerance and an extremely low ESR of <math>2m\Omega</math>. Terminals are gold-plated. A gold plated fixing clamp is also available as well as a gold plated connecting bar.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MX40T	One farad capacitor	£55.310	£49.780	£44.240	£64.990
MX41U	Capacitor clamp	£1.690	£1.520	£1.350	£1.990
MX42V	Connecting Bar	£2.970	£2.670	£2.370	£3.490

## CABLES

### Power Cable for In-Car Entertainment Systems



High quality 8AWG flexible copper cable made from 700 strands of 0.12mm diameter copper, intended for connecting power to high quality in-car entertainment systems. A gold-plated 4 into 1 cable connector, fuse blocks and fuses are also available (see entertainment section). This cable is for use with car audio equipment and is NOT intended for connecting to other car electrical accessories. Available in red and black and sold by the metre (max length in one piece 50m) and on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BZ92A	8AWG Cable Red	£1.600			£1.890
BZ93B	8AWG Cable Black	£1.600			£1.890
CK96E	12 8AWG Cable Red 50m	£59.560	£53.000	£48.000	£69.990
CK97F	11 8AWG Cable Black 50m	£59.560	£53.000	£48.000	£69.990

See Section Capacitors  
for our full range of Capacitors

**SHARK CABLE PACKS**

**Shark Cable Packs**

A range of the highest quality pre-cut cable packs for use with the finest hi-fi equipment and in-car entertainment systems. Designed by shark Engineering, one of the worlds leading design houses for audio cables, they offer probably the highest quality available today. Only the highest quality oxygen free copper is used to make these tightly wound multi-stranded cables sheathed with the highest quality PVC for use in the demanding environments found in cars etc.

Loudspeaker Cables  
**KS88V**



**KS89W**



Two types are available. KS88V is a 10m length of Shark 17AWG loudspeaker cable in a clear sheath. KS89W is a 10m length of Shark Hotwires 12AWG loudspeaker cable in a clear sheath.

Interlink Cables



Very high quality twin phono cables for the highest quality audio connections. Types KS91Y (3m long) and KS92A (5m long) have a figure 8 twin-cable construction and each cable contains 156 strands of 0.06mm diameter OFC copper with PE insulation wrapped with an aluminium foil then covered by a OFC braided shield and sheathed in an outer sheath of jewellery blue PVC. The cable is terminated in the finest quality phono plugs constructed of solid brass and plated with 24 carat pure gold. Connections are made with solder containing 10% pure silver.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS88V	17 Gauge Cable 10m	£11.050	£12.990
KS89W	Hotwires 10M spool	£17.010	£19.990
KS91Y	Interlink 101 3M	£20.410	£23.990
KS92A	Interlink 101 5M	£24.670	£28.990

See Section Cable and  
Accessories  
for our full range of cables

**GENERAL PURPOSE FUSE-HOLDERS AND FUSES**

**In-Line Type**



Bayonet-action in-line car type fuseholder with moulded body, suitable for 31mm (1 1/4 in.) fuses. Length 52mm, diameter 14mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DR79L	Car Fuseholder	1+ 25+ 100+	1+ 25+ 100+
		£0.331 £0.170 £0.150	£0.390

**Waterproof In-Line Fuseholder**

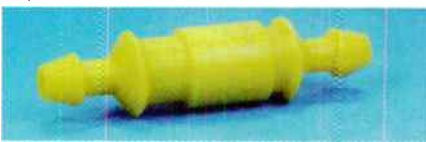


This high quality 1 1/4" fuseholder, constructed in tough, waterproof thermo plastic, is ideal for use in harsh environments. Designed for use with 6-35mm fuses, the fuseholder is coloured a bright yellow for high visibility.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DR82D	Waterproof Fusehold	1+ 10+ 25+	1+ 10+ 25+
		£2.110 £1.490 £1.200	£2.450

**Nylon In-Line Fuseholder**

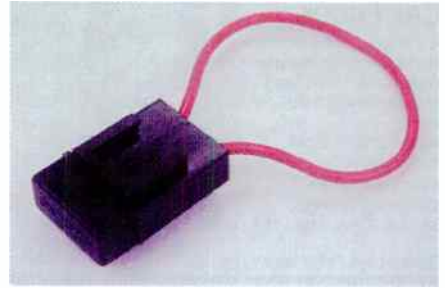


This quality 20mm nylon fuseholder is designed for use with 6-35mm fuses and is coloured bright yellow for high visibility.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DR83E	Car Fuseholder	1+ 10+ 25+	1+ 10+ 25+
		£1.090 £0.840 £0.710	£1.290

**Plug-in In-Line Fuse Holder**



A black nylon in-line fuseholder suitable for use with the plug-in type fuses becoming increasingly common in vehicle electrical systems. To use, cut the red wire connected between both terminals to give lead-outs to each terminal. Access to the fuse is by means of a snap-fit lid on the top of the holder, and several of these holders can be fitted together by virtue of a tongue and groove moulded into opposite sides of the casing. Suitable for currents up to 15A. Dimensions of body (lid closed): 27mm long, 37.5mm high, 18mm wide.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KU34M	Plug-In Fuseholder	1+ 25+ 100+	1+ 25+ 100+
		£0.842 £0.525 £0.444	£0.990

**Plug-In Fuses**

A range of plug-in style fuses to fit the fuseholders GW75S and GW76H.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DR88V	50A Fuse	1+ 10+ 25+	1+ 10+ 25+
DR87U	40A Fuse	£1.090 £1.000 £0.900	£1.290
DR86T	30A Fuse	£1.090 £1.000 £0.900	£1.290
DR89W	60A Fuse	£1.090 £1.000 £0.900	£1.290

**Blade-Type Fuses**

Fuses intended as standard plug-in replacements for fuses fitted in recent European cars.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CN83E	Blade Fuse 3A	1+ 10+ 25+	1+ 10+ 25+
CN84F	Blade Fuse 4A	£0.246 £0.200 £0.180	£0.290
CN85G	Blade Fuse 5A	£0.246 £0.200 £0.180	£0.290
CN86T	Blade Fuse 7.5A	£0.246 £0.200 £0.180	£0.290
CN87U	Blade Fuse 10A	£0.246 £0.200 £0.180	£0.290
CN88V	Blade Fuse 15A	£0.246 £0.200 £0.180	£0.290
CN89W	Blade Fuse 20A	£0.246 £0.200 £0.180	£0.290
CN90X	Blade Fuse 25A	£0.246 £0.200 £0.180	£0.290
DR81C	Blade Fuse 35A	£0.246 £0.200 £0.180	£0.290
DR80B	Blade Fuse 30A	£0.246 £0.200 £0.180	£0.290

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Export carriage charges (1,2 etc.) and price information see back of catalogue. † symbol in price block indicates While Stocks Last.

## Mini Blade Car Fuses

A range of miniature blade fuses for car use. Transparent, coloured bodies denote the rating. Rated at 32V. Sold individually.

Available in the following ratings: 3A, 5A, 7.5A, 10A, 15A, 20A, 25A, 30A



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VJ48C	Mini Blade Fuse 3A	£0.246	£0.290
VJ49D	Mini Blade Fuse 5A	£0.246	£0.290
VJ50E	Mini Blade Fuse 7.5A	£0.246	£0.290
VJ51F	Mini Blade Fuse 10A	£0.246	£0.290
VJ52G	Mini Blade Fuse 15A	£0.246	£0.290
VJ53H	Mini Blade Fuse 20A	£0.246	£0.290
VJ54J	Mini Blade Fuse 25A	£0.246	£0.290
VJ55K	Mini Blade Fuse 30A	£0.246	£0.290

## ENCLOSURES

## COVERING CLOTH

### Speaker Box Cover Cloth

A needle punched, carpet style, heavy duty covering cloth for stage equipment such as speakers guitar amplifiers etc. Available in dark grey with either thin or thick pile or in a dappled grey with thin pile. extremely tough and hard wearing.

KS46 is plain grey thick pile.



KS45Y is plain grey thin pile



KS47B is dappled grey thin pile.



Note: The carpet is sold in multiples of 1/4m in a width of approximately 1.5m (60in). We will cut to length required in multiples of 1/4m only. Maximum length in one piece approx 45m.

Please order in multiples of 1/4m e.g. to order 1m of KS45Y, order 4 KS45Y; to order 3 3/4m order 15 x KS45Y.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS45C	1 plain grey thin	£1.690	£1.990
KS46D	1 plain grey thick	£2.110	£2.490
KS57E	1 dappled grey thin	£1.690	£1.990

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## SPEAKER CLOTH

### Close Weave Loudspeaker Grille Cloth

An acoustically transparent loudspeaker grille cloth. All types are plain black in three thicknesses KS48C the thinnest and KS50E the thickest (KS50E is like felt in texture and therefore ideal for hiding speakers under your parcel shelf). All types are made from non flammable 100% polyester.

Note: The cloth is sold in multiples of 1/2m in a width of approximately 1.5m(60in). We will cut to length required in multiples of 1/2m only. Maximum length in one piece 64m (KS50E 59m) For example to order 1m of KS48C, order 2 x KS48C; to order 2 1/2m of KS50E, order 5 KS50E.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS48C	1 standrd spkr cloth	£1.690	£1.990
KS49D	1 hrd weavng spkr cloth	£1.940	£2.290
KS50E	1 thck weave spkr cloth	£1.690	£1.990

See Section Loudspeakers Sounders and Accessories for our full range of Loudspeakers

## CAR PRODUCTS

### CIGARETTE LIGHTER ACCESSORIES

#### Flexible Maplight



This small navigator's map lamp is ideal for reading maps in the dark. Powered by the car's 12V cigarette lighter, it features an on/off switch and a detachable lamp unit with a cable that extends to 1 metre in length, allowing you to direct the light exactly where you want it.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AG96E	Flexible Maplight	£4.240	£4.990

† = While Stocks Last

## 220 PSI Portable Air Compressor



This easy to use portable air compressor features a compact design, with built-in car cigarette connector, pressure gauge, and a universal valve adaptor.

**Specification**  
 Model number: 6622C  
 Power: DC 12V 10A  
 Pressure gauge: Indicates 1lb/in<sup>2</sup>:kg/cm<sup>2</sup>:kpa

Comes complete with 2 nozzle adaptors and sports needle, 15 inch air hose, and 10 foot cord with on/off switch and cigarette adaptor.

**Not available until November.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV64U	Air Compress 220PSI	£17.010	£19.990

## 12V Mini Car Fan



A mini car fan that will help to keep you cool during the summer. Plugs in to a standard cigarette lighter socket and is fitted with a convenient on/off switch and large suction pad. Supplied with 1.5m of lead. 12V DC.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AQ26D	12V Mini Car Fan	£6.800	£7.990

## Car Heater Demister



Ideal for motoring, caravanning and marine.  
 ★ **Instant heat/defrost, no waiting for engine to warm up.**  
 ★ **Can be positioned with velcro or clip provided.**  
 ★ **Complete with cigarette lighter plug and 2 meters of cable**  
 ★ **Full adjustable 45° up/down-90° left/right.**  
 ★ **150 watts**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX98G	1 car heater demister	£15.310	£17.990



**Car Ioniser**



This compact ioniser is designed to improve the quality of the air in your car. The ioniser generates a copious stream of negative ions into the air that combine with the positively charged pollution particles. Airborne particles and odours are removed from the atmosphere by a process of electrostatic precipitation which results in a 'after a rainstorm freshness'. The device may help to relieve colds and similar respiratory problems, as well as benefiting headache and hayfever sufferers. Easy to install, just connects to a cigarette lighter socket. Supplied with plug and 1m of connecting lead.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RZ54J	Car Ioniser	£11.050	£12.990

**High Power Halogen Spotlight**



A robust, powerful, hand-held halogen 55W spotlight that plugs into the 12V DC cigarette lighter socket fitted to most motor vehicles. The high light output makes this a very useful spotlight for mobile and emergency lighting. A metal hanger is provided in the top of the spotlight which also houses an on/off switch. The spotlight is provided with three metres of coiled cord and a protective cover. Please note that, in use, the lamp will get very hot and will draw a very high current from the vehicle's battery. Care should be taken to avoid discharging the battery. Overall dimensions: 160 x 117 x 90mm. Replacement bulb available: KP62S

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CJ50E	1 Halogen Spotlight	£8.500	£9.990
KP62S	Bulb for AG30/CJ50	£1.690	£1.990

**Be sure – call the store before you travel**

See front of catalogue for your nearest store

**Auto Hand Lamp**

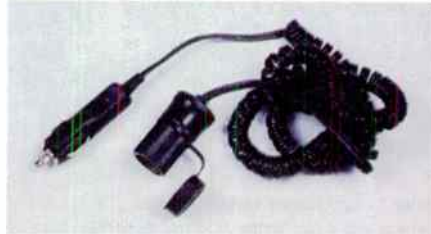


An extremely useful hand lamp with a 12V, 6W bulb and 4.55m cord terminated in a standard car cigarette lighter plug. The main body is constructed from sturdy black plastic and features an on/off switch. The top grille is orange in colour and features a hook from which the lamp can be suspended. It incorporates a safe plastic lens to protect the bulb and is detachable from the main body to facilitate bulb replacement. Replacement bulbs are available from most auto part suppliers. Overall dimensions: 166mm x 50mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZC18U	6W Auto Hand Lamp	£2.970	£3.490

**Cigarette Lighter Extension Lead**



An extension lead with plug at one end to fit the cigarette lighter socket in a car and socket at the other end to accept cigarette lighter plug. Approx. 3-7m of lead.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV47B	Car Lead Fuse/LED	£4.240	£4.990

**Car Accessory Plug**



A plug for connecting car accessories to the vehicle's 12-volt supply via the cigarette lighter socket. The plug has a continuous current rating of 2A (3A at 12V) and a maximum short term rating of 10A. Two versions are available: fused and unfused, both have a LED.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BV46A	Car Plug Fuse/LED	£1.060	£1.250
BV63T	Car Acc Plug	£0.842	£0.990

See Stock Code Index For More Price Breaks

**Car Accessory Socket**



An in-line socket for cigarette lighter plugs.

Retail Unit Price each (inc. VAT).

**Car Cigar Lighter Multi-Socket**



Now you can run up to four appliances from your car cigarette lighter socket (within the cigarette lighter fuse rating) with this handy adaptor. This item is also a battery checker with LED indication to show state of charge. Supplied with approximately 1m of cable and plug, and double-sided sticky tape for securing to dash.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HV07H	Multi Sckt/Bat Tester	£5.940	£6.990

**ORDER BEFORE 5PM FOR SAME DAY DESPATCH**

**Tel: 01702 554000**  
**Fax: 01702 554001**

**e-mail: Sales@maplin.co.uk**

## Mains and 12V Rapid Ni-Cd Charger for Radio Control Models



A fast charger for recharging 7-2V 1200mAh nickel-cadmium radio control battery packs. The charger can be powered from either 240V AC mains or from 12V DC car accessory socket (the charger must not be plugged into 24V DC sockets found on lorries). The charger incorporates a timer that will fast charge a battery pack for 20 minutes and then switch to trickle charge. This prevents battery packs from being overcharged, yet continues to top up the charge at a low enough rate such that it could be left on indefinitely without harming the battery pack. 90% of full charge will be reached during fast charge, the remaining charge to 100% is obtained by safe trickle charging. To use: connect the charger's connector to the battery pack. Plug the charger into the power source (either 240V AC or 12V DC), the red LED will illuminate indicating fast charging. After 20 minutes the LED will extinguish and the charger switches automatically to trickle charge. When charging is completed, disconnect the charger from the power source and detach the battery pack. It is essential to disconnect the charger before recharging another battery pack to allow the timer to reset. Battery packs should not be recharged when they are warm (i.e. straight after removal from a model after racing) nor should battery packs be recharged whilst still fitted in a model. During charging both battery pack and charger will become warm, this is normal. The charger is fitted with a mains lead (and plug), a 12V DC power lead and accessory plug, and a battery connector lead to suit standard battery packs.

Overall dimensions: 81 x 67 x 131mm (excluding lead outs).  
Charging current: 2.4A  
Charging voltage: 7.2V

Retail Unit Price each (inc. VAT).

Order Code	Type 212	Price each exc. VAT	inc. VAT each
YP69W2	Rapid Charger	£30.370	£35.690

## Car Voltage Step-down Converter



An easy-to-use car voltage step-down converter and regulator which simply plugs into any cigar lighter socket and converts the car battery supply to

any of seven levels, 1.5V, 3V, 4.5V, 6V, 7.5V, 9V or 12V DC. The output is selected by a 7-way slide switch and max. current rating for each voltage is as follows:

12V	800mA	9.6W
9V	700mA	6.3W
7.5V	500mA	3.75W
6V	400mA	2.4W
4.5V	350mA	1.58W
3V	300mA	900mW
1.5V	250mA	375mW

Fitted with a 1.7m long lead terminated with a moulded 2-pin line socket. To this any one of six little right-angled adaptor plugs can be connected in either polarity. These comprise a 3.5mm jack, then miniature 1.3mm, standard 2.1 and 2.5mm, 'narrow sleeve' 2.1mm (5mm o/d), and 'fat sleeve' 1.3mm (5.5mm o/d) power plugs, one of which should fit nearly all items using these types of connectors. (For 2.5mm use a 3.5/2.5mm adaptor.) A flexible plastic keeper strip has six holes to hold all adaptors. All power plugs are long reach type for both short and long reach sockets. Max. insertion depth of car plug, 55mm; diameter 20mm. Dimensions of regulator unit 80 x 55 x 28mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 215	Price each exc. VAT	inc. VAT each
JY53H	Car Power Adaptor	£7.650	£8.990

## Handy Mains Inverter



### CC86T - 12V Handy Mains Inverter

Similar to the Car Battery Converter KR64U but mounted on an alloy base with a pressed steel cover and plugs directly into the cigar lighter socket of cars with negative earth. It converts 11V to 15V DC to 230V AC RMS 48-53Hz 200W continuous, 250W short term and 500W surge. Powers domestic appliances up to 200W continuously by a standard UK 13A socket outlet. There is an audible warning if the battery voltage drops too low (approximately 11V) and the unit turns off when the voltage falls below approximately 10V. The output is a stepped quasi sine wave. A red neon indicator illuminates when an output is present. Over current protection is provided to prevent any damage. If overloaded the output will 'latch off', requiring the load to be removed and the plug withdrawn from the cigar lighter socket to reset it. A 30A fuse in the supply input helps prevent damage should the unit be seriously overloaded or misconnected; this is user replaceable. There is a wiring kit available for a direct connection to a high current source if the in-car lighter wiring is insufficient. Under no circumstances should the cigar lighter fuse be changed for a higher fuse rating as this can result in a fire hazard.

#### Specification

Voltage input: 11V to 15V DC, 12V nominal  
Input current: 1A approx. for every 10W of load  
Output voltage: 230V AC RMS nominal, 216V to 255V RMS over continuous load range up to 1.1A  
Power output: 200W continuous, 250W short term, 500W surge  
Size: 141 x 94 x 45mm  
Weight: 739g

#### Direct Wiring Kit

A heavy duty wiring kit that can be used in conjunction with this product is available (CC87U).

### GT82 - 24V Handy Mains inverter

Similar to CC86 but for use with a 24V battery. Specification

Voltage input: 20V to 36V DC

Input Current: 1 amp (at 12V) or 0.5 amp (at 24V) for every 10W of load.  
Voltage output: 240V AC rms nominal, 216 to 255V rms over continuous load range up to 1.1amps.  
Power output: 200 watts continuous, 250 watts short term. Surge capability of 500 W  
Size: 141 x 94 x 45mm  
Weight: 739g

Retail Unit Price each (inc. VAT).

Order Code	Type 217	Price each exc. VAT	inc. VAT each
GT82D	24V Mains Inverter	£127.650	£149.990

Retail Unit Price each (inc. VAT).

Order Code	Type 217	Price each exc. VAT	inc. VAT each
CC86T 1	Mobile Mains Adaptor	£93.600	£109.990

## Dual Function Camcorder Battery Charger/Discharger

Unlross



This multi-function charger/discharger is suitable for a wide range of camcorder battery packs. It will charge 4-8V, 6V and 9-6V Ni-Cad packs of 800mA or higher capacity, and various physical shapes, e.g. Sony 6V and JVC 9-6V types. It can be used from the cigar lighter socket of your car or from the mains adaptor included. The charger stops automatically when charging is complete to prevent batteries from overcharging; a 4 LED status indicator decreases in brightness as charging proceeds and extinguishes when charging is completed. It takes about 5 to 6 hours to completely charge a 1000mAh battery. A plug and lead to connect to a car's cigar lighter socket is included. The charger comes complete with operating instructions.  
Dimensions of charger: 152 x 68 x 53mm  
Weight: 175g

Retail Unit Price each (inc. VAT).

Order Code	Type 205	Price each exc. VAT	inc. VAT each
EM05F	Camcharger/Discharger	£25.520	£29.990

## ACCESSORIES

### Indoor/Outdoor Thermometer



This versatile and easy to use digital thermometer will give you an accurate reading of the internal or external temperature of your home or car at the flick

of a switch.

The thermometer features an integral sensor for internal temperature and a separate sensor at the end of approx 3m of cable that can be mounted outside your home or car to test the outside temperature.

Either temperature can be displayed in °C or °F, again at the flick of a switch, and there's an integral back-light that'll ensure you can even read the temperature at night.

Powered by a single 'AAA' type battery (not supplied). The thermometer has an extra wide temperature range (-30°C to +50°C, -58°F to +122°F) and is supplied with double-sided adhesive pads for easy installation.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CN82D	Thermometer/Light	£8.500	£6.500	£5.750	£9.690

## Digital Tyre Pressure Gauge



Now you can check your tyre pressures anywhere, anytime and get a reliable and accurate reading every time. Operation couldn't be simpler. Just press the on/off switch and wait for the LED display to read '00'. Push the nozzle firmly against the tyre valve stem (ensuring that no air can escape) and wait 2 to 3 seconds for the reading to register. Read off the pressure shown and turn the unit back off again. In fact it's all so simple that once you have one of these gauges, you have no excuse for not checking your tyre pressures every time you drive. It's your key to safer driving and lower motoring costs. The digital tyre pressure gauge features a fully digitalized, microprocessor controlled circuit for low power consumption.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FU01B	Tyre Pressure Gauge	£8.500	£6.500	£5.800	£9.990

## Tyre Servicing Kit



Don't get caught with your tyres down! A complete kit to service and maintain the tyres of your car. The kit contains a tyre pressure gauge, tyre valve extensions, tread/depth gauge, and a tyre valve tool for tightening or removing defective valves. Ideal gift box.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BV60Q	Tyre Servicing Kit	£4.240	£3.680	£3.350	£4.990

**We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers**

## Steering Wheel Knob



Ideal for use in cars, trucks and boats.

- ★ Fits most sizes of steering wheel
- ★ Makes turning your wheel easy
- ★ Ideal for reversing
- ★ Useful steering aid for disabled persons

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MX97F	Steering Wheel Knob	£8.500			£9.990

## Car Clock/Calendar

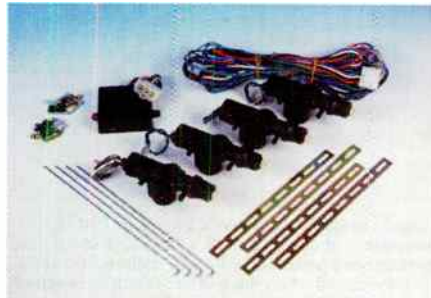


A car clock with hour/min/sec and month/date display in jumbo easy-to-read figures. The display can be swivelled through 360° horizontally and 90° vertically for the best viewing angle. Supplied with double sided tape for fixing. Powered by watch type battery (supplied).

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DR60Q	Car Clock/Calendar	£4.240			£4.990

## Central Door Locking System



- ★ 4 Door system
- ★ Universal fitting
- ★ Easy installation
- ★ Silent operation
- ★ All fittings included

This 4 door central locking system is easy to install and can be fitted to any car which runs off a 12V negative earth battery. The system enables all doors to lock and unlock simultaneously from the drivers door by way of the existing key. All wiring

and fixings are included. Unit comes complete with fitting and operating instructions and 12 months guarantee.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YD77J	Central Lock System	£38.280	£29.500	£25.990	£44.990

## Door Lock Motors



Replacement door locks for central locking systems. Sold individually and available in 2 wire (YD79L) and 5 wire (YD78K) versions for single or multiple operation depending on your requirements. Supplied with fixings, bracket and connecting rod.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YD79L	Car Door Lock 2W	£5.520	£3.660	£3.350	£6.490
YD78K	Car Door Lock 5W	£6.370	£4.310	£3.950	£7.490

## Battery and Alternator Checker



A handy device for checking the condition of your car battery and alternator charging voltage. Simply connect the tester to a suitable ground point and place the test probe on the positive terminal of the battery while the engine is switched off. A number of LEDs will now light up to show the current state of the battery. One LED shows the battery is discharged, two indicate a slightly discharged state and three indicate a good battery condition. Now with the engine running at about 2000 rpm, connect the test probe to the output of the alternator. Indicators now illuminate to show the state of the alternator. As with the battery condition, combinations of LEDs indicate whether the alternator voltage is low, normal or too high. Ideal for fast and simple diagnostics. Supplied with full operating instructions.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FU00A	Batt/Volt Checker	£7.650	£5.760	£5.030	£8.990

**Order £30 or above?**

**Account holder or not, your order will be sent carriage paid.**

*(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)*

## AERIALS

### Car Aerial



A good quality AM/FM car aerial with a 4 section, approx 72cm (28in.) stainless steel mast. Supplied with two keys and 122cm (48in.) cable.

Retail Unit Price each (inc. VAT).

Order Code	Type 11454	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DR730	Car Aerial	£1.690	£1.580	£1.480	£1.990

### VHF FM Flexible Car Aerial



A band II VHF FM car aerial with a vertical element 345mm (415mm including base), designed to fit onto bodywork using a 9mm hole. The angle is fully adjustable and the aerial is supplied with a 1.3m lead terminated in a standard 49mm car aerial jack.

Retail Unit Price each (inc. VAT).

Order Code	Type 7034	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AS28F	Car Aerial 104	£3.390	£3.330	£2.930	£3.990

### Windscreen Mounting Aerial



A crystal clear self-adhesive polypropylene film tape that will not crack, yellow or dry out even in extreme heat or cold. The tape is connected to 1m of coax cable terminated in a car aerial plug. This type of aerial has many advantages over externally fitted aerials.

1. It is much longer, giving an improvement on AM reception and it has vertical and horizontal components giving an improvement on FM reception.
2. As it is internal it cannot be stolen or snapped off (in car washes for example).
3. Easy to install — no holes to drill in car body.
4. Fits any car.

A chrome blanking grommet is supplied to fill hole where wing-mounted aerial was previously fitted.

Retail Unit Price each (inc. VAT).

Order Code	Type 081	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
LH99H	Windscreen Aerial	£4.240	£2.780	£2.120	£4.990

### Windscreen Antenna



Eliminate all of the hassle of dealing with bent and unsightly exterior aerials with this sophisticated windscreen mounted electronic antenna. Simple to install, it will replace your existing antenna and provide excellent reception on all wavebands. Adhesive double sided pads, all necessary cabling and fitting instructions.

#### Specification:

Input voltage: 12V  
Gain: FM: 14dB, AM/LW/SW 18dB

Retail Unit Price each (inc. VAT).

Order Code	Type 10170	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DR75S	Windscreen Aerial	£8.500	£6.310	£5.000	£9.990

### AM/FM Power Antenna



This universal power antenna can be installed in any car and is fully automatic — the antenna mast will be extended when the car radio is switched on and retracted when it (or the car's engine) is turned off. The unit features an integrated circuit that protects the motor from overloading if an obstruction prevents the antenna from extending fully. Supplied with all necessary cabling, full mounting kit and comprehensive installation instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type 10160	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DR71N	Electric Car Aerial	£21.260	£14.990	£12.600	£24.990

### Fully Automatic Car Aerial



A good quality fully automatic car aerial that is designed to fit negative earth cars and is electrically operated and powered by the car battery. The aerial will only extend when the radio/cassette is switched on and is retracted when the radio/cassette is off, so greatly reducing the risk of the aerial being damaged by vandals. Power and control connections to the aerial are made by three wires, green and red, which have bullet type connectors, and a black wire which has an eyelet connector. The red must be connected to the positive battery supply via a suitable fuse rated at 5A. Green must be connected to the power antenna lead output of the radio-cassette, or directly to the on/off switch of the radio-cassette. Black is connected to the car

chassis or negative battery terminal. The antenna when fully extended is 0.81m in length, and is supplied with 1.3m of screened cable which is terminated in a standard car aerial plug. The assembly is 335mm in length with the aerial completely retracted.

Retail Unit Price each (inc. VAT).

Order Code	Type 8141	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RJ98G	Automatic Car Aerial	£34.030	£20.910	£18.380	£39.990

### Car Aerial Booster



A booster amplifier for car radios suitable for AM and FM reception. The amplifier is easy to install as it connects directly in-line with the existing aerial and the car radio. A separate feed of 12V DC (at less than 10mA) is required to power the booster. Body diameter 18mm, length 80mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 10168	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DR74R	Car Aerial Booster	£5.940	£4.290	£3.540	£6.990

## NOISE SUPPRESSERS

### Noise Suppressor Isolation Transformer

This noise suppressor has been designed to eliminate the noise in a car audio signal line without affecting the audio quality of the system. The suppressor is housed in a metal tubular case with gold-plated phono connections fitted on flying leads. Dimensions of case: 70 x 35mm dia. Total length is 550mm approximately (with flying leads). Weight 147g.



Retail Unit Price each (inc. VAT).

Order Code	Type 4076	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RZ95D	Noise Suppressor	£10.620	£7.990	£6.060	£12.490

### High Quality Isolation/Noise Suppressor

A very high quality in-line car stereo line level isolation/noise suppression transformer. All the inputs to inputs, inputs to outputs, outputs to outputs and ground to any ground are fully isolated. The connections are via flying leads with the inputs connected to gold-plated phono plugs and the outputs to gold-plated phono sockets. The phono connections have a total length of approximately 650mm. The enclosure is rectangular, with a mounting base 125 x 55mm, and a height of 40mm. Weight 300g. Colour black.



Retail Unit Price each (inc. VAT).

Order Code	Type 4086	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RZ96E	HQuality Noise Supp	£11.900	£8.490	£6.770	£13.990

## 20A DC Noise Suppressor

A 20A in-line suppressor specifically designed for DC supplies to in-car audio equipment. The unit is very easy to install having just three flying cable connections, and is housed in a rugged rectangular enclosure with a mounting base 125 x 55mm and an overall height of 40mm. The overall length including cables is 400mm approx. Weight 440g approx.



Retail Unit Price each (inc. VAT).

Order Code	Type #492	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RZ97F	20A Noise Suppressor	£9.010	£7.990	£6.770	£10.590

## High/Low Impedance Matching Transformer

A high/low impedance matching transformer designed to convert high level car stereo speaker outputs to line level inputs of a power amplifier.



Housed in a plastic tubular enclosure with flying leads and an overall length (including leads) of 350mm approx. The enclosure is 65mm long with a diameter of 25mm. The device has an extremely flat frequency response from 20Hz to over 100kHz. The input connections are by a male bullet connector (positive) and a female bullet connector (negative). The output is via two female phono sockets.

Retail Unit Price each (inc. VAT).

Order Code	Type #990	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RZ94C	Hi/Lo Match T.Fmer	£7.650	£5.990	£4.990	£8.990

## TOOLS

### Car Battery Booster/Charger

Clarke



A high quality, powerful battery charger that besides supplying a useful 15A charge is also capable of providing a short boost charge or even starting a car. This compact charger will prove a useful tool to anyone who uses machinery, such as the building and farming industries, or the motor trade. It will also prove valuable to most car owners in winter when engines and batteries are cold and indifferent towards starting, because it can supply a healthy 12V 100A boost for up to 5 seconds. The charger is housed in a robust plastic case with a built-in handle and can be wall mounted. Two sturdy leads, terminating in heavy duty crocodile clips, carry the charge to the battery. Built-in overload protection is provided and reset with a push switch. Overall dimensions: 130 x 173 x 240mm. Weight: 4.0kg.

Retail Unit Price each (inc. VAT).

Order Code	Type #615	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RJ60Q	Car Bat Boost	£34.030	£32.450	£31.750	£39.990

## Start-Check

Gunson



A compact hand-held LED voltage indicator unit that clips to the battery terminals via a pair of crocodile clips. Start-Check is a valuable accessory that has a range of applications for 12V petrol/diesel cars, vans and motorcycles. It can be used to test the charge state of a battery, whether it is in the vehicle or not, and hence whether it will be able to start an engine. Three LEDs indicate 0% to 25%, 25% to 75% and 75% to 100% of full capacity respectively. Another LED is used for the 'cranking' test, which will indicate if the battery is faulty and should be replaced. Other uses of Start-Check include the prevention of over-charging of sealed ('maintenance-free') batteries, and testing of the vehicle's alternator. A pair of indicators can be used to check overcharging (premature battery failure, frequent top-ups and/or lamp bulb replacements), undercharging (flat battery or frequent poor starting) or no charging at all (flat battery). Supplied with full instructions, Start-Check is a useful addition to any motorist's toolkit.

Retail Unit Price each (inc. VAT).

Order Code	Type 10106	Price each exc. VAT		inc. VAT each
		1+		1+
BP28F	Start-Check	£9.350		£10.990

## Remota-Start

Gunson



It is often necessary to start the engine, or just turn it over a little (i.e. inch or edge it) when working under the bonnet. Such instances include carburettor adjustment, points setting, tappet adjustment, or tests on starters or other electrical components. Remota-Start, a pistol-type trigger device, will allow you to do this from the convenience of the engine compartment, without the assistance of somebody to operate the ignition switch. Remota-Start is supplied with full instructions, and takes only a few moments to connect, and so anybody can benefit from the convenience that it provides. You work alone (saving money in some cases) and do the job better because it is less trouble. If you often tune, test, adjust or check, Remota-Start is a low-priced accessory that you cannot afford to be without.

Retail Unit Price each (inc. VAT).

Order Code	Type 10110	Price each exc. VAT		inc. VAT each
		1+		1+
BP30H	Remota-Start	£5.090		£5.990

## Timelite

Gunson



Ideal for those learning about engine maintenance, the AA-approved Timelite is a high-quality neon stroboscopic timing light that allows basic checks to be made on any type of vehicle ignition system. Timelite, which is built into a tough pistol-grip case, is supplied with instructions that will make the checking and setting of timing straightforward and accurate. You can use Timelite anywhere, as long as the engine area of your vehicle can be darkened. Timelite will pay for itself very quickly in reduced repair costs and fuel bills, while helping to ensure that your car's performance is optimal.

Retail Unit Price each (inc. VAT).

Order Code	Type 10103	Price each exc. VAT		inc. VAT each
		1+		1+
BP33L	Timelite	£8.500		£9.990

## Xenontime DC

Gunson



A compact strobe timing light, for the measurement and adjustment of timing on any petrol-engined vehicle. Xenontime's features include a super-bright xenon flash tube, and a robust and conveniently-shaped ABS case, which incorporates a special focusing lens. The xenon flash tube, powered by the vehicle's 12V battery, is triggered by the No.1 spark plug HT output of any ignition system, whether conventional or electronic. Since its bright flashes are clearly visible in daylight, Xenontime would be a good choice for field mechanics. Supplied with full instructions and a crankshaft pulley timing disc.

Retail Unit Price each (inc. VAT).

Order Code	Type 10108	Price each exc. VAT		inc. VAT each
		1+		1+
BP29G	Xenontime DC	£13.600		£15.990

## Timestrobe Timing Light

Gunson



Timestrobe, approved by the AA, is a cost-effective and simple method of checking whether the ignition timing of your car's engine is within specification, and could pay for itself very quickly through improved performance, lower repair and reduced fuel bills. It can also be used when converting an engine to run on unleaded fuel, since the ignition timing has to be retarded to a new setting recommended by the car manufacturer. Timestrobe is suitable for use with any type of ignition system, and for engines of any number of cylinders. A timing disc for fitting to the engine's fan belt pulley is provided.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BP32K	Timestrobe	£17.010	£19.990

## Timestrobe RPM

Gunson



This allows ignition timing to be checked, adjusted where necessary, and rechecked. Timestrobe's unique 'logic' RPM indicator allows accurate engine speed setting prior to timing measurement and adjustments. Speed setting is advisable for most engines - and essential for some - particularly when basic settings are made at faster than idling speed. Using Timestrobe RPM, you can (with minimal experience) adjust your car's timing dynamically to ensure that the most precise setting is made to take account of wear and other factors, and to make sure that the most economical use is made of that expensive petrol. You will also be able to check for faults in advance/retard mechanisms, saving on garage costs. Timestrobe RPM, which is supplied with full instructions, can be used with confidence on engines of any capacity or ignition system (including electronic).

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
BP31J	Timestrobe RPM	£19.560	£22.990

## Ratchet Tie Down Belt



A quick and easy way to secure loads on trolleys, roof racks, trailers, pickup trucks and lorries, and even a boat or motorcycle to a trailer. The belt ends have strong 'S' hooks, and the ratchet action very quickly tightens the belt on to the load. A simple press of the release lever slackens off the 4m long belt.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BP84F	Tie Down Ratchet	£4.240	£4.990

## Adjustable Torque Wrench



Quality, precision made torque wrenches available with either a 12.7mm (1/2in., code RJ11M) or 10mm (3/8in., code BP83E) square drive. The required torque is set by turning the knurled handle until the zero mark lines up with the desired setting on the main stem. Both types have a reversible ratchet action and are supplied in a black plastic carry case with instructions and conversion tables.



Specification	12.7mm drive (RJ11M)	10mm drive (BP83E)
Torque range:	2.9kg/m to 21.4kg/m	1.4kg/m to 11.1kg/m
Overall length:	470mm	280mm
Supplied extras:	10mm extension 10mm square converter	- -

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ11M	4 Torque Wrench	£16.930	£19.900
BP83E	1 Torque Wrench 3/8	£15.310	£17.990

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## Accessories

### Copy Holders

#### Monitor Copy Holder



A cost effective solution for holding copy. Fixes to the side of your monitor using the adhesive pads supplied and holds the copy by way of a weighted roller. The copy holder does not require any valuable desk space and folds back against the side of your monitor when not in use.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CD77J	Monitor Copy Holder	£3.390	£2.980	£2.700	£3.990

#### Easyview Copy Holder

A high quality desktop copy stand that is adjustable for both height and angle to give exactly the position required for comfortable use. The paper is held at the top by a sprung lever, a paper guide is fitted to the front. Convenient for areas with limited desk-top space.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CH64U	Easyview Copy Holder	£10.200	£9.000	£8.350	£11.990

### Mice & Accessories

#### 3 Button Serial Mouse



- ★ **Opto-Mechanical Accuracy**
- ★ **Variable Resolution, 20-6400 dpi**
- ★ **Dynamic Acceleration**
- ★ **Audible Click form Buttons**

A general purpose 3 button mouse ideal for replacing manufacturer's original equipment. The mouse features a 9 pin serial connector and is supplied with 3.5in driver disk.

**Specification:**

Tracking Speed:	500mm/sec
Switch Life:	1 million cycles
Cable Length:	1.5 metres ± 5%
Total Current:	<8mA
Baud Rate:	1200bps

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JT23A	Serial Mouse 3 Btn	£7.650	£6.400	£5.800	£8.990

#### 2 Button PS/2 Mouse

ENTA



- ★ **Dynamic Resolution up to 4200 dpi**
- ★ **Ergonomic Design for Extra Comfort**
- ★ **Microsoft and PC Mouse Compatible**
- ★ **Auto-switching Compatibility**

An ergonomic PS/2 mouse featuring 2 buttons, supplied with mouse pad. Suitable for use with computers fitted with PS/2 (6 pin Mini-DIN) ports.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JT24B	PS/2 Mouse & Pad	£8.500	£7.450	£7.100	£9.990

#### Mouse AM-5E



Microsoft and Mouse Systems compatible AM-5E with a dynamic resolution of 350 to 3500 DPI. Supplied with mouse driver software and manual.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
ZG99H	Mouse AM-5E	£8.500	£8.500	£7.7500	£9.990

#### High Resolution 3-Button Serial Mouse



Microsoft and Mouse Systems compatible 3 button PC mouse with a programmable dynamic resolution of 350 to 700dpi. Selectable 2/3 button mode through boot option. Supplied with mouse driver software and manual. Available in four different colours: Ivory, Gunmetal, Red and Blue

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
RT46A	Serial Mouse Ivory	£11.050	£9.750	£8.750	£12.990
RT47B	Serial Mouse Gunmetal	£11.050	£9.750	£8.750	£12.990
RT48C	Serial Mouse Red	£11.050	£9.750	£8.750	£12.990
RT49D	Serial Mouse Blue	£11.050	£9.750	£8.750	£12.990

#### Amiga and Atari Mice



Two versions of a mouse with opto-mechanical encoder having a resolution of 350dpi. Two types are available, one developed for use with Atari computers, and the second specifically for the Amiga. Atari type has three buttons, Amiga type has two buttons, which can be configured according to the capabilities and requirements of the software on the machine in question. Since, for these machines mouse operation is most often software dependent, the mice are NOT supplied with driver software, unlike those for a PC.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+		1+
RT52G	Atari Mouse	£11.050		£12.990
RT51F	Amiga Mouse	£11.050		£12.990

#### Extra High Resolution Mouse AM5-P



A superb, high quality mouse for use with all IBM PC XT, AT and compatible computers. The mouse produces a serial output, connected to the serial (RS232) port of the host PC, hence no extra hardware is required. Connecting lead is 1.9m long and terminated in a 9-way D-range female connector, and a 9-way to 25-way adaptor is included if your PC does not have a 9-way serial port. The mouse can be configured to use either COM1, COM2, COM3 or COM4 if required. Compatible with 2-button Microsoft and 3-button system mouse modes. The mouse driver supports both modes and you can select between two hardware modes using the mode switch on the left side of the mouse. Most software can use either mode. High resolution is available by 'switch' instructions following typing of the mouse driver's name; resolution can be 1:1 or double, triple, quadruple and quintuple (ranging from 290 to 1,450dpi). In addition a fast tracking speed of 700m/sec. and upwards is possible. Other hardware included comprises (in addition to the serial adaptor) a mouse holder and mouse mat. Supplied software on a 90mm (3.5") disc not only includes the mouse driver and test programs, but also an IMAGE72 graphics painting software. IMAGE72 is designed specifically for use with a mouse or mouse assistance, and has abundant editing tools and useful utilities. It is able to support \*.PCX, \*.TIF, \*.IMG, \*.MSP and \*.PUT file formats and read ASCII files. Editing of scanned images is also possible and Hercules, EGA and VGA high resolution modes are also supported. Images can be processed across EMS and conventional memory with auto-detect functions to improve speed. Supports dot matrix, laser and HP paint jet printers. The numerous editing tools include pencil, lines, circle, rectangle, eraser, airspray, air fill, scissors, text entry, rotate, 'Fabiit' edit, full page edit, retrieve, etc. To use IMAGE72 the host machine can



be an XT, Hercules or EGA or VGA or compatible video card and monitor and DOS 2.1 or higher. Any other mouse can be used. Supplied complete in a pack with software disk and manuals.

Retail Unit Price each (inc. VAT).

Order Code	Type 254	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RT33L	AMSP Mouse + IMAGE72	£12.750	£12.340	£11.240	£14.990

## 3 Button Serial Track-Ball



A neatly styled track-ball, which provides an ingenious alternative to a mouse when desk space is limited. Designed for use with IBM PC, XT, AT and IBM compatible computers. The track-ball produces a serial output signal, which is connected to the serial (RS232C) port of the host computer, thus no interface card or extra hardware is required. The unit is supplied with 1.5m of cable terminated in a 9-way D-type socket. As some computer serial ports are fitted with a 25-way D-type plug, an adaptor is supplied to facilitate connection. The track-ball is supplied complete with instruction manual and driver software on 133mm (5 1/4 in.) floppy disk. The software consists of a test program, track-ball driver and pop-up menu, driver programs may be invoked from batch files and can also be installed on hard disk. The track-ball is compatible with most software intended to be track-ball or mouse driven and the pop-up menu allows the track-ball to be used with programs that are not normally track-ball or mouse driven.

Retail Unit Price each (inc. VAT).

Order Code	Type 275	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YU12N	Serial Track-Ball	£34.000	£30.000	£27.500	£39.990

## Hand-Held Trackball Mouse

Primax



A Microsoft and PS/2 compatible device for any IBM PC XT, AT and equivalents, which functions as a mouse, for directing the cursor on-screen, but consists of a miniature trackball device which can be operated by finger or thumb while held in the hand or placed on any surface where space is restricted. As a 'stationary mouse' it can be operated from within your hand or, when operated on a desk, only a minimum of table space is needed with no mouse pad required, so therefore it never 'falls off' the edge of the pad which often happens with ordinary mice. More accurate movement of the cursor is possible, and two keys are provided for left or right-handed use, together with a 'drag button' to facilitate icon dragging operations. As it fits comfortably in either hand it is particularly convenient for demonstrations and ideal for laptop and notebook computers whilst travelling. The device can automatically switch between Microsoft and PS/2 modes, and the latest available, officially licensed driver software on both 89mm (3 1/2 in.) and 133mm (5 1/4 in.) disks. An opto-mechanical encoder

system is used having 200 to 400dpi hardware resolution, and a dynamic software resolution up to 100 times (20,000dpi). Key switches are of 'micro' type and have a life of 1 million operations. Colour may vary from that shown above.

Retail Unit Price each (inc. VAT).

Order Code	Type 273	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
RT50E	Master Mouse PC	£25.520	£24.000	£22.500	£29.990

## CD File



- ★ Storage for 100 CDs
- ★ Stackable
- ★ Easy to Assemble
- ★ Securable for Transportation
- ★ Strong Plastic Construction

Retail Unit Price each (inc. VAT).

Order Code	Type 17711	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VC12N	Medialife CD File	£8.500	£7.700	£7.410	£9.990

## Disk Storage Box



- ★ Storage for 50 disks
- ★ Locking design for security

A 50 capacity disk storage box with clear plastic cover, plastic dividers and lock.

Retail Unit Price each (inc. VAT).

Order Code	Type 17740	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KV74R	50 Disk Storage Box	£2.540	£2.090	£1.750	£2.990

## 100 Capacity Disk Box



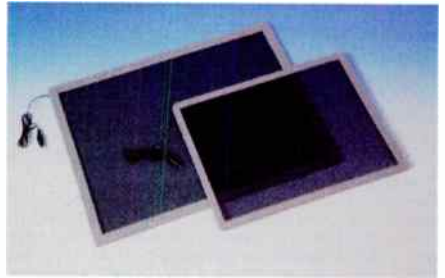
- ★ Storage for 100 disks
- ★ Locking design for security

A 100 capacity disk storage box with clear plastic cover, plastic dividers and lock.

Retail Unit Price each (inc. VAT).

Order Code	Type 17735	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VC11M	100 Disk Storage Box	£5.090	£3.340	£2.940	£5.990

## Glass Screen Filters



A pair of glass screen filters for use with either 14in or 17in monitors depending on the part number. The filters are attached to the monitor by adjustable fixings, an earth drain wire is fitted with a crocodile clip for fastening to a suitable earthing point on your PC.

Retail Unit Price each (inc. VAT).

Order Code	Type 17445	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VC13P	Screen Filter 14in	£8.500	£5.830	£5.220	£9.990
VB66W	17in Glass Filter	£15.310	£12.750	£11.000	£17.990

## Mouse Mats

Medialife

Medialife produce a range of computer accessories designed to compliment modern PCs.



Their range of mouse mats include designs in 6mm and 8mm thickness in varying colours.

Retail Unit Price each (inc. VAT).

Order Code	Type 13622	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VB64U	Mousemat 6mm Red	£0.842	£0.700	£0.500	£0.990
JT41U	Mousemat 6mm Blue	£0.842	£0.700	£0.500	£0.990
JT42V	Mousemat 6mm Black	£0.842	£0.700	£0.500	£0.990
VB65V	Mousemat 8mm Red	£1.690	£1.500	£1.250	£1.990
JT43W	Mousemat 8mm Blue	£1.690	£1.500	£1.250	£1.990
JT44X	Mousemat 8mm Black	£1.690	£1.500	£1.250	£1.990

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## Mouse Bracket

A useful accessory for anyone who uses a computer with a mouse. The bracket can be attached to a convenient surface, e.g. side of workstation, system unit etc. When the mouse is not in use it can be placed in the bracket, thus preventing it being accidentally damaged. The bracket is moulded in durable plastic and is supplied with a double-sided self-adhesive pad for fixing.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU11M	Mouse Bracket	1+ 10+ 25+ £1.690 £1.120 £0.988	1+ £1.990

## Mouse Cleaning Kit



The real solution to mouse cleaning. Every mechanical mouse requires some simple maintenance; the three small rollers inside collect dust and grime, and cleaning them is a tedious task with a cotton swab after removing the ball. This mouse cleaner utilises a simple tool, a circular brush on a shaft. One drop of the cleaning solution (supplied) and three twists of the tool is all it takes, (warning: the cleaning solution must not be used to clean the ball). Includes five foam swabs on sticks.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZA68Y	Mouse Cleaner Kit	1+ 10+ 25+ £5.090 £3.700 £2.950	1+ £5.990

## Joystick Controllers

### Warrior Joystick Controller

Quickshot



IBM compatible joystick with 2 fire buttons, dual axis trim adjusters and high-speed auto-fire selector. Compatible with high-speed PCs (IBM PC, XT, AT, 386, 486 and compatibles). A game card is needed.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZH08J	Joystick Controller	1+ £9.350	1+ £10.990

## Strato Joystick Controller

Quickshot

A high quality joystick featuring a rotary throttle control and supplied with a detachable pedal control. Suitable for use with all modern PCs. X and Y axis can be separately adjusted for correct calibration if needed. The Strato joystick also features a sturdy metal base for increased stability and improved performance. The ergonomic design is particularly suitable for flight simulations or driving games.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC08J	1 Strato Joystick Controller	1+ £25.520	1+ £29.990

## Squadron Commander Joystick Controller

Quickshot



The Squadron Commander controller is an advanced programmable joystick designed for use with flight simulators. Featuring 10 programmable buttons with 20 pre-programmed settings for popular games, LED status indicators and 3 position rocker switch, supplied with software.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC09K	1 Squadron Commander	1+ £59.560	1+ £69.990

## F1 Sim Controller

Digital Edge



- ★ F1 race styled metal pedals
  - ★ Genuine 10in Mounthey race steering wheel
  - ★ F1 style steering column unit and mounting base
  - ★ Gear paddles for semi auto gear changes built into steering column
  - ★ Self-centring steering and torque action
  - ★ Plug and Play - runs from single game port
- Realistic race car driving system designed for the

PC. Each unit is built by hand, using durable coated steel and the highest quality componentry for ultimate realism.

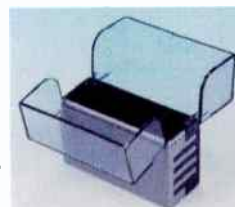
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC10L	1 F1 Steering Wheel	1+ £170.200	1+ £199.990

## Media Storage

### Expanding 89mm (3 1/2in.) Disk Box

A plastic disk box capable of holding up to 10, or when expanded, 13.89mm disks. The main body of the case is pulled apart, thus increasing its capacity by up to three disks. The box is finished in grey and charcoal and has two transparent lids that overlap thus keeping the disks secure in transport. Dimensions are 105 x 105 x 40mm unexpanded and 105 x 105 x 50mm expanded.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DK30H	Expanding Disk Box	1+ 25+ 100+ £1.690 £1.350 £1.230	1+ £1.990

## CD File



- ★ Storage for 100 CDs
- ★ Stackable
- ★ Easy to Assemble
- ★ Securable for Transportation
- ★ Strong Plastic Construction

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC12N	1 Medialife CD File	1+ 10+ 25+ £8.500 £7.700 £7.410	1+ £9.990

## Disk Storage Box



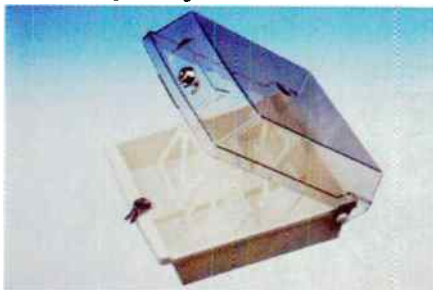
- ★ Storage for 50 disks
- ★ Locking design for security

A 50 capacity disk storage box with clear plastic cover, plastic dividers and lock.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV74R	50 Disk Storage Box	1+ 10+ 25+ £2.540 £2.090 £1.750	1+ £2.990

**100 Capacity Disk Box**



- ★ Storage for 100 disks
- ★ Locking design for security

A 100 capacity disk storage box with clear plastic cover, plastic dividers and lock.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VC11M	100 Disk Storage Box	£5.090	£3.340	£2.940	£5.990

**Disk Drive Cleaners**



Disk drive head cleaners for use with 133mm (5 1/4 in.), 89mm (3 1/2 in.) and 76mm (3 in.) disk drives. The cleaners utilise a 'wet' system to prolong the life of the head and avoid damage to the critical head gap. Each cleaner contains one diskette with fibre 'disk' and a bottle of specially formulated cleaning fluid. The 133mm (5 1/4 in.) kit can be used with either single sided or double sided drives, by inserting the diskette the appropriate way round. The 76mm (3 in.) type is for the 76mm (3 in.) Amstrad drives as featured on the CPC464, 664, 6128 and 8000 and 9000 series word processors etc. Full instructions for use are supplied, and a chart is printed on each disk for you to keep a record of the number of cleaning operations.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YT08J	Disc Drv Clnr 3.5in	£2.540	£1.660	£1.370	£2.890

**Enclosures & Cases**

**CPU Cases**

**Industrial 19in. Rack**



Help keep your controller cards easily accessible. By using this professional 19in. rack, controllers and connections are easy to maintain. The nickel/copper housing guarantees complete shielding from EMI/EMC interference. Handles and front panel (IP65) are fabricated from high quality aluminium.

Built-in switched mode power supply and cooling fan. The rack is vibration and shockproof and has sufficient space to install 3 hard disks or disk drives. Colour: Industrial grey.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
CS33L	19 Industrial Rack	£340.410	£333.500	£328.000	£399.990

**Computer Cases**



A range of two PC computer cases, each provided with a power supply incorporating all internal and mains connectors and an extractor cooling fan.

**Slimline Type**

Main board size: Baby, A4, Half AIO  
 Dimensions: 418 x 105 x 375mm  
 Drive capacity: 1 x 133mm (5 1/4 in.) and 3 x 89mm (3 1/2 in.)

Expansion card slots: 5  
 Weight: 7kg

**Full-Tower**

Main board size: Full, Baby, A4, Half  
 Dimensions: 186 x 550 x 419mm  
 Drive capacity: 4 x 133mm (5 1/4 in.) and 4 x 89mm (3 1/2 in.)

Expansion card slots: 8  
 Weight: 12kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	+	+	1+
ZG63T	12 Slim-Line Case	£55.310			£64.990
ZG66W	30 Full-Tower Case	£76.580			£89.990

**AT Style 600 Series Cases**



Available in two versions this AT case is suitable for use with any baby AT motherboard. The 600 series case is available in desktop or midi-tower versions to suit individual needs.

**Specification:**

**Desktop:**  
 Dimensions: 425 x 155 x 424mm  
 Drive Bays: 5.25in x 3  
 3.5in x 2 (1in height)  
 Expansion Slots: 8

**Midi-tower:**  
 Dimensions: 186 x 425 x 420mm  
 Drive Bays: 5.25in x 3  
 3.5in x 3 (1in height)  
 Expansion Slots: 8

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VL07H	AT Desktop Case	£46.800			£54.990
VL08J	AT Mini Tower Case	£46.800			£54.990

**ATX Style 600 Series Cases**



Available in two versions the ATX600 series cases are suitable for use with ATX motherboards. Desktop and Midi-tower versions are available.

**Specifications:**

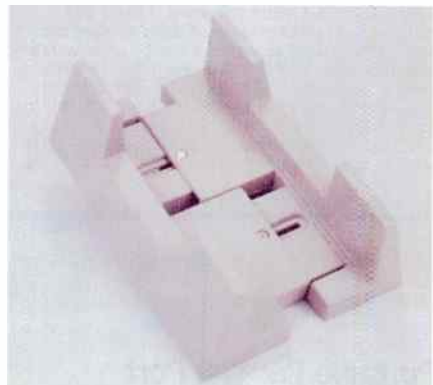
**Desktop:**  
 Dimensions: 425 x 155 x 424mm  
 Drive Bays: 5.25in x 3  
 3.5in x 2 (1in height)  
 Expansion Slots: 7

**Midi-tower:**  
 Dimensions: 235 x 435 x 424mm  
 Drive Bays: 5.25in x 3  
 3.5in x 3 (1in height)  
 Expansion Slots: 7

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VL09K	ATX Desktop Case	£68.070			£79.990
VL10L	ATX Midi Tower Case	£72.330			£84.990

**Computer Main Unit Universal Stand**



This device saves worktop space by enabling a PC 'main unit' to be stood edgewise and supported securely. Width is adjustable from 98mm to 170mm and locked by two wingnuts underneath. Made in tough injection moulded light grey plastic.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GK31J	1 Universal Stand	£5.090	£4.250	£3.500	£5.990

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## Power Supplies

### Replacement PSUs



A pair of replacement power supplies designed for mounting in standard AT enclosures. Available as either 200W or 230W versions for more demanding applications. Both offer switch mode operation for high reliability and performance.

Retail Unit Price each (inc. VAT).

Order Code	Type 112	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VL11M	200W Power Supply	£17.010	£16.250	£15.000	£19.990
VL12N	230W Power Supply	£18.710	£17.750	£16.250	£21.990

## Peripheral Cases

### External SCSI Casing



This stylish case can accommodate an internal SCSI device such as a hard drive, CD-ROM drive, back-up device, etc., and can also be used for 5.25in. and 3.5in. floppy drives. It is ideal for portable computers or devices used at more than one location. Easy to install, it can be used with any SCSI controller and is even more versatile when used in conjunction with the Bridge 777 Adaptor (see below). The case comes complete with internal power supply, leads, device Id select, audio outlet and 2 SCSI inlet/outlets. The power supply is multi-voltage and can be connected to 230V or 110V AC.

Retail Unit Price each (inc. VAT).

Order Code	Type 110C	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
CE34M1	External SCSI Case	£51.050	£48.000	£45.500	£59.990

### Portable Parallel Port CD-ROM System



This CD-ROM housing is designed to accept a standard internal ATAPI CD-ROM player. It is ideal for connecting a CD-ROM player to a notebook or laptop. The unit is connected to the printer port. By interconnecting the parallel port a printer can still be connected. Supplied with built-in power supply, instructions, driver disk and cables. The colour and design of the casing may vary.

Retail Unit Price each (inc. VAT).

Order Code	Type 117B	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CD78K 1	CD External Case	£68.070			£79.990

## Hard Drive Caddy



A pair of removable hard drive caddies for use in 5.25in drive bays for mounting either IDE or SCSI drives dependant on type. The hard drive caddy features both power and activity LEDs and a locking keyswitch to secure the drive carrier. The caddies are particularly useful for security, data transport, backup and multiple operating system requirements. All drive carriers can be used with other caddies of the same type, IDE and SCSI carriers can not be interchanged.

Retail Unit Price each (inc. VAT).

Order Code	Type 17451	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
KX05F	SCSI Drive Caddy LED	£25.520			£29.990
KX06G	IDE Drive Caddy LED	£25.520			£29.990

## Removable Hard Disk Caddy



This ingenious device allows fast removal of a standard 3.5in hard disk drive for transportation and backup purposes. Available for IDE and SCSI hard drives. Simply install the frame in a spare 133mm (5 1/4in.) drive bay and connect the data and power cables. Now mount your disk drive into the removable module and slide into the drive bay. All the connections will automatically be made on insertion. Once in place turn the locking key to supply power to the drive and activate the locking mechanism. Ideal for the transport of data between home and the office, use as a backup drive (especially when disk mirroring on networks). Just plug in, switch on and go! Supplied with installation instructions, fixing screws and two locking keys.

Retail Unit Price each (inc. VAT).

Order Code	Type 10268	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
CD49D	SCSI Hard Disk Caddy	£21.260	£18.000	£16.500	£24.990
ZE79L	Hard Disk Caddy	£18.710	£17.500	£16.500	£21.990



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## Fixing Kits

### 89mm (3.5in.) Drive Adaptor Fixing Kit



A fixing kit and slide-in frame enabling a slimline 89mm (3.5in.) floppy drive to be installed in a conventional half-height, 133mm (5.25in.) floppy drive front panel slot.

Retail Unit Price each (inc. VAT).

Order Code	Type 110Z	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
ZG47B	3.5 Inch Fixing Kit	£5.940	£4.500	£4.000	£5.990

### Hard Disk Drive Fixing Kit



A fixing kit and slide-in frame enabling a 3.5in. 'internal' hard drive to be installed in a conventional half-height 5.25in. floppy drive front panel slot.

Retail Unit Price each (inc. VAT).

Order Code	Type 110	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
ZG43W	HD to Floppy Kit	£4.240	£3.500	£3.000	£4.990

## Notebook Cases

### Budget Notebook Case

Addup



This black nylon case offers a cost effective solution to transport and protection of your laptop computer. The case two external pockets, one suitable for small peripherals, such as modems, the other suitable for paperwork. Inside there are a number of pockets for cables, disks, business cards and pens. Supplied with carry strap.

Retail Unit Price each (inc. VAT).

Order Code	Type 1223H	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CJ22Y	Budget Notebook Case	£17.010	£14.900		£19.990

**Notebook Case**

Addup



A quality notebook case with a large number of storage pockets and dividers. The interior houses two document flaps, storage for disks, pens, business cards and PCMCIA devices. The main compartment is divided by movable partitions to separate your computer and power supply. To the front of the case is a printer pocket for storage of your portable printer and cables. To the side of the case is a pocket for storage of your mobile phone. Supplied with shoulder strap.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK24B 1	Exec Notebook Case	1+ 3+ £46.800 £43.250	1+ £54.990

phone, documents, business cards, pens, disks, PCMCIA devices, cables, power supply and a wealth of other items.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK24B 1	Exec Notebook Case	1+ 3+ £46.800 £43.250	1+ £54.990

**'Notepac' Case**

Targus



This basic notebook case will take all popular notebooks and will carry a portable printer in the exterior accessory pocket. The Notepac has an adjustable interior divider, pen/pencil holders, business card holder, shoulder strap with detachable cushioned pad and shock absorbing feet.

Specifications:

Material: 600D Nylon Polyester  
 Notebook Dimensions: 360 x 280 x 60 mm  
 External Pocket: 330 x 210 x 45 mm  
 Disk Storage: 9 disks  
 PCMCIA Storage: 2 Cards  
 Overall Dimensions: 400 x 290 x 125 mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB76H	Targus Notepac Case	1+ £29.770	1+ £34.990

**'Premier Nylon' Case**

Targus



This executive case will take all popular notebooks and portable printers. The Premier Nylon has airline ticket pocket, storage for sunglasses, pen/pencil holders and self-closing disk storage.

Specifications:

Material: 1000D Nylon Polyester  
 Notebook Dimensions: 370 x 300 x 60 mm  
 Disk Storage: 6 disks  
 Printer Storage: 370 x 300 x 60 mm  
 Overall Dimensions: 380 x 330 x 150 mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB78K	Targus Nylon Premier	1+ £68.070	1+ £79.990

**Large Notebook Case**

Addup



A high capacity notebook case for the demanding user. Features an external fold-down pouch for disks, business cards and pens with zip up pouch. To the other side there is a printer pouch suitable for a portable printer and cables. Inside there is a full depth area for a notebook computer with docking station. Supplied with shoulder strap.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK03D 1	Large Notebook Case	1+ 3+ £51.050 £48.050	1+ £59.990

**'Universal Notebook' Case**

Targus



This notebook case will take all popular notebooks and portable printers. The Universal Notebook case has separate notebook and printer sections, pen/pencil holders, business card holder, and shock absorbing feet.

Specifications:

Material: Koskin  
 Notebook Dimensions: 330 x 280 x 60 mm  
 Disk Storage: 6 disks  
 PCMCIA Storage: 2 Cards  
 Printer Storage: 330 x 280 x 60 mm  
 Overall Dimensions: 360 x 310 x 250 mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB77J	Targus Univ Notepac	1+ £59.560	1+ £69.990

**'Leather Notebook' Case**

Targus



This executive leather case will take all popular notebooks and has an external accessory pocket for most portable printers. The Leather Notebook case has adjustable divider, business card holder, pen/pencil holders and shock absorbing feet.

Specifications:

Material: Full Grain Leather  
 Notebook Dimensions: 380 x 280 x 60 mm  
 Disk Storage: 9 disks  
 PCMCIA Storage: 1 Card  
 External Pocket: 350 x 220 x 45 mm  
 Overall Dimensions: 400 x 300 x 150 mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB79L	Targus Leather Case	1+ £93.600	1+ £109.990

**Executive Notebook Case**

Addup



An attractively styled notebook case that can comfortably house your laptop and accessories. Compartments include storage for your mobile

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## High Protection Watertight Cases

**Peli**

A range of high quality watertight and airtight cases made from a lightweight structural resin, and fitted with a neoprene 'O' ring seal. The cases are virtually indestructible and are airtight and watertight to a depth of 9m. They are fitted with a unique 'purge' valve for easy opening after air travel, locking flanges, multiple latches for absolute security and a comfortable moulded fold down handle.



A panel frame kit (MG13P) is available for MG10L that allows for equipment to be directly mounted into the case.

- ★ Lifetime guarantee
- ★ Supplied with prescored 'Pick & Pluck' foam inserts
- ★ Nato approvals for 1500 & 1600 models
- Model 1500: 6760-01-295-3560
- Model 1600: 6760-01-258-0449

### Dimensions

Order Code	Peli Model	External (mm)	Internal (mm)
MG10L	1300	273 x247 x178	240 x185x165
MG11M	1500	470 x387 x175	435 x290x155
MG12N	1600	591 x527 x228	555 x430x200

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG10L 1	Protector 1300	£43.640	£41.460	£39.280	£51.280
MG11M 1	Protector 1500	£90.590	£86.070	£81.540	£106.450
MG12N 1	Protector 1600	£155.240	£147.480	£139.720	£182.410
MG13P	Panel kit 1300	£14.800	£14.060	£13.320	£17.390

## Keyboards & Accessories

### Keyboards

#### Keyboards



A conventional, 102 key, extended AT style keyboard with 12 function keys and cursor movement keys separate from the numeric keypad. A 105 key Windows 95 keyboard is also available, this gives you direct access to Windows 95 commands. Fitted with AT style 5 pin DIN plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
CK13P †	102 Key AT Keyboard	£19.950	£17.980	£15.780	£23.450
JN600 1	Windows 95 Keyboard	£21.260			£24.990

## 105 Key Keyboard



- ★ Suitable for use with Windows 95
- ★ Direct Access to Windows 95 Features
- A 105 Key keyboard for use with DOS, Windows 3.x, Windows 95 and other operating systems.
- Fitted with captive cable terminated by a male 5 pin Din plug for use with AT style computers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JT28F	105 Key Keyboard	£13.600	£11.500	£10.000	£15.990

## Membrane Keyboards

**Cherry**



- ★ Windows 95 Compatible & Certified
- ★ Rugged Construction
- ★ Full-travel Key Switches
- ★ High Reliability (MTBF 80,000 Hrs)
- ★ Housing Design Resistant to Spillages
- ★ Laser-etched Key Legends for Durability

A highly reliable keyboard suitable for word processing, data entry and general purpose PC applications. Available in AT & PS/2 versions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
VL72P	Membrane AT Keyboard	£21.260	£20.500	£19.700	£24.990
VL73Q	Membrane PS/2 Keybd	£21.260	£20.500	£19.700	£24.990

## Quality Membrane Keyboard

**Cherry**



- ★ Quality feel
- ★ Long Life (50,000,000 key operations)
- ★ Designed for Windows 95
- ★ Wear Resistant Key Caps

A high quality membrane keyboard that uses FTSC technology to give superb linear feel and reliability. The MY type key switches provide full 4mm travel and unrestricted use for professional typing applications.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
VL75S	HQ Membrane Keyboard	£29.770	£28.750	£27.650	£34.990

## Click-type Keyboard

**Cherry**



- ★ Mechanical MX Keyswitches
- ★ Long Life (50,000,000 key operations)
- ★ Click-type Key Action
- ★ AT Type 5 pin DIN Connection
- ★ Designed for Windows 95

A very high quality click-type keyboard for demanding users and high usage applications. The click-type action gives a positive feel and indication of successful key press.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
VL74R	Click AT Keyboard	£55.310	£52.300	£49.000	£64.990

## 19in Compact Keyboard

**Cherry**



- ★ Cherry MY Key Modules (FTSC technology)
- ★ Linear Feel
- ★ Low Profile, Low Height
- ★ Separate Cursor Pad
- ★ 50 million Operation Lifetime per Contact

This 101 key compact keyboard is designed for use in 19in rack enclosures or in any situation where space is limited.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
VL71N	19in Rack Keyboard	£55.310	£51.350	£47.250	£64.990

## Numeric Keypad

**Cherry**



- ★ Provides Left or Right Handed Operation
- ★ Low Space Requirements
- ★ Four Fully Programmable Function Keys
- ★ Simple Installation Using Male-Female Keyboard Adaptor

This high quality numeric keypad can be used either right or left-handed and simply plugs between the keyboard and computer. Suitable for use in control systems, custom applications and situations where numeric data is regularly input. Keys are single mechanical versions using MX-technology and 'Gold Crosspoint' contacts.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
VL70M	Numeric Keyboard PRG	£42.540	£41.800	£40.950	£49.990

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## Laptop Keyboard

Cherry



- ★ **Mechanical ML Series Key Module with Tactile Feedback**
- ★ **Life Guarantee (20 million operations)**
- ★ **LED Indicators**
- ★ **'Gold Crosspoint' Contacts**

An innovative low profile 83 key compact keyboard for use in any application that requires a fully portable keyboard. Ideal for notebook computers and 19" systems or as a supplement for pen-based computers. Supplied with a PS/2 (6 pin mini-DIN) connector as standard.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
VL76H	Laptop Keyboard	£42.540	£42.000	£41.300	£49.990

## Keyboard Accessories

### Keyboard Adapters



A range of keyboard adapters, available either with or without cables, that allow keyboards with PS/2 (6 Pin Mini Din) or AT (5 Pin Din) type connectors to be used with systems that are equipped with the wrong socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CD50E	PS/2 M-F 5 Din Cable	£5.090	£3.000	£2.250	£5.990
CD51F	PS/2 F-M 5 Din Cable	£5.090	£3.000	£2.250	£5.990
CD69A	PS/2 Male - 5Din Fem	£5.090	£3.000	£2.250	£5.990
CD70M	PS/2 Fem - 5Din Male	£5.090	£3.000	£2.250	£5.990

## Keyboard Drawers



A choice of keyboard drawers which provide storage for your keyboard when not in use. Available in two versions, desktop and under-desk. A mouse slide is available for both versions which provides a stable platform for your mouse during operation. The desktop version is constructed from a steel casing designed to provide a suitable platform for your monitor. The under-desk version slides under the desk when not in use freeing up useful desk-top space.

Keyboard is not supplied with product.

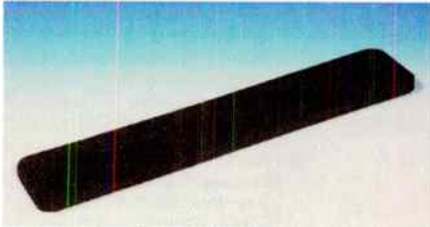
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CH60Q	Mouse Tray	£12.750	£10.600	£9.800	£14.990

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CH59P	Under Desk Key Slide	£22.110	£22.100	£20.700	£25.990
CH61R	Keyboard Storage Drawer	£36.950	£33.100	£31.280	£43.420

## Wrist Rest



A black foam wrist rest designed to be placed on the desk-top to provide support while typing.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CH56L	Black Wrist Rest Pad	£5.940	£5.400	£4.950	£6.990

## Adjustable Wrist Rest



A fully adjustable wrist rest to ease the tension of typing! Simply place in front of your keyboard then use the adjustment controls to alter the height of the bar to the required level. The large cushioned bar ensures your hands stay at the correct level for accurate and comfortable working. Fits almost all keyboards, regardless of length and styling. Supplied with full instructions and user guide.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZE80B	Adj. Wrist Rest	£12.750	£11.750	£10.500	£14.990

## Comfort Tread Footrest

Rubbermaid



A sturdy plastic moulded footrest that swivels about its central access to allow the user to find the most comfortable position for their individual needs. Provides a comfortable platform on which to rest your feet while working at your computer at home or in the office.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CH57M	Comfort Footrest	£17.010	£14.500	£13.250	£19.990

## Handy Mini Vacuum Cleaner



A miniature vacuum cleaner ideal for removing dust and fluff from between keyboard keys, PCBs etc. The vacuum cleaner is supplied with two heads: a long reach nozzle and a brush. The dust compartment is attached to the body with a bayonet type connector for emptying, and the inlet has a diaphragm valve to prevent contents spilling out. Powered by four AA cells (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	25+	1+
ZA83E	Mini Vacuum Cleaner	£7.650	£5.000	£4.750	£8.990

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## Monitors & Accessories

### Monitors

#### 14in Colour Monitor

CTX



This entry-level monitor offers excellent value for money with high performance operation.

**Specifications:**

Screen Attributes: 14in diagonal conventional CRT, 13.2in (252 x 189mm) viewable image, 0.28mm dot pitch, non-glare, antistatic screen.

Resolutions: 640 x 480, 50-120Hz  
800 x 600 NI, 50-80Hz  
1024 x 768 NI, 50-65Hz

Frequencies: Horizontal 30-50Hz  
Vertical 50-90Hz

Features: Vertical/Horizontal Position/Size, Brightness, Contrast

Regulations: EPA, MPRII, CE  
Weight: 11kg

Dimensions (WxHxD) 352 x 366 x 372mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
JT30H	14in 28 Col Monitor	£144.670	£140.000	£135.000	£169.990

#### 15in Colour Monitor

CTX



This business-level monitor offers a 15in screen coupled with digital controls and MAC compatibility.

**Specifications:**

Screen Attributes: 15in diagonal flat square technology, 13.8in (270 x 202mm) viewable image, 0.28mm dot pitch, non-glare, anti-static screen with Invar shadow mask.

Resolutions: 640 x 480, 50-120Hz  
800 x 600 NI, 50-110Hz  
1024 x 768 NI, 50-85Hz  
1280 x 1024 NI, 50-65Hz

Mac Resolutions: 640 x 480, 67Hz  
832 x 624, 75Hz  
1024 x 768, 75Hz

Frequencies: Horizontal 30-69Hz  
Vertical 50-120Hz

Features: Digital Control with OSD, Vertical/Horizontal Position/Size, Brightness, Contrast, Tilt, Sidepin, Trapezoid, Rotation, Convergence, Degauss,

Regulations: Reset and Plug and Play  
EPA, MPRII, CE  
Weight: 13.5kg  
Dimensions (WxHxD) 368 x 382 x 406mm

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
JT31J	15in 28 Col Monitor	£195.730	£194.000	£192.000	£229.990

#### 17in Colour Monitor

CTX



This monitor offers a 17in screen coupled with digital controls and MAC compatibility.

**Specifications:**

Screen Attributes: 17in diagonal flat square technology, 15.7in (310 x 232mm) viewable image, 0.28mm dot pitch, non-glare, anti-static screen with Invar shadow mask.

Resolutions: 640 x 480, 50-120Hz  
800 x 600 NI, 50-100Hz  
1024 x 768 NI, 50-82Hz  
1280 x 1024 NI, 50-60Hz

Mac Resolutions: 640 x 480, 67Hz  
832 x 624, 75Hz  
1024 x 768, 75Hz

Frequencies: Horizontal 30-65Hz  
Vertical 50-120Hz

Features: Digital Control with OSD, Vertical/Horizontal Position/Size, Brightness, Contrast, Tilt, Sidepin, Trapezoid, Rotation, RGB Colour, Convergence, Degauss, Reset and Plug and Play

Regulations: EPA, MPRII, CE  
Weight: 19.9kg  
Dimensions (WxHxD) 418 x 438 x 417mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
JT32K	17in 28 Col Monitor	£331.900	£329.000	£325.000	£389.990

#### 17in 0.26mm Dot Pitch Colour Monitor

CTX



This monitor offers a 17in screen coupled with 0.26mm dot pitch and digital controls and MAC compatibility.

**Specifications:**

Screen Attributes: 17in diagonal flat square technology, 15.7in

(310 x 232mm) viewable image, 0.26mm dot pitch, non-glare, anti-static screen with Invar shadow mask.

Resolutions: 640 x 480, 50-120Hz  
800 x 600 NI, 50-120Hz  
1024 x 768 NI, 50-105Hz  
1280 x 1024 NI, 50-82Hz  
1600 x 1200 NI, 50-70Hz

Mac Resolutions: 640 x 480, 67Hz  
832 x 624, 75Hz  
1024 x 768, 75Hz

Frequencies: Horizontal 30-85Hz  
Vertical 50-120Hz

Features: Digital Control with OSD, Vertical/Horizontal Position/Size, Brightness, Contrast, Tilt, Sidepin, Trapezoid, Rotation, RGB Colour, Convergence, Degauss, Reset and Plug and Play

Regulations: EPA, MPRII, CE  
Weight: 17.5kg  
Dimensions (WxHxD) 418 x 438 x 417mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
JT33L	17in 26 Col Monitor	£382.970	£380.000	£375.000	£449.990

#### 21in Professional Colour Monitor

CTX



This monitor offers a professional quality 21in screen coupled with digital controls and MAC compatibility.

**Specifications:**

Screen Attributes: 21in diagonal flat square technology, 19.6in (390 x 290mm) viewable image, 0.26mm dot pitch, non-glare, anti-static screen with Invar shadow mask.

Resolutions: 640 x 480, 50-120Hz  
800 x 600 NI, 50-120Hz  
1024 x 768 NI, 50-105Hz  
1280 x 1024 NI, 50-82Hz  
1600 x 1200 NI, 50-70Hz

Mac Resolutions: 640 x 480, 67Hz  
832 x 624, 75Hz  
1024 x 768, 75Hz

Frequencies: Horizontal 30-85Hz  
Vertical 50-120Hz

Features: Digital Control with OSD, Vertical/Horizontal Position/Size, Brightness, Contrast, Tilt, Sidepin, Trapezoid, Rotation, Colour Temp, BNC Connectors, Convergence, Degauss, Reset and Plug and Play

Regulations: EPA, MPRII, CE  
Weight: 34.6kg  
Dimensions (WxHxD) 512 x 508 x 516mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
JT34M	21in 26 Col Monitor	£851.050	£849.000	£845.000	£999.990



## Monitors



A mono monitor suitable for use with monochrome video cards, low specification systems or EPOS systems.

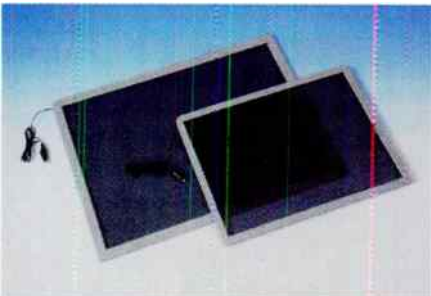
Code	Low Emission	Dot Pitch	Resolution	Non-Interlaced
ZH38R	-	0.3mm	800 x 600	-

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZH38R	19 Mono Monitor	£59.560	£69.990

## Monitor Accessories

### Glass Screen Filters

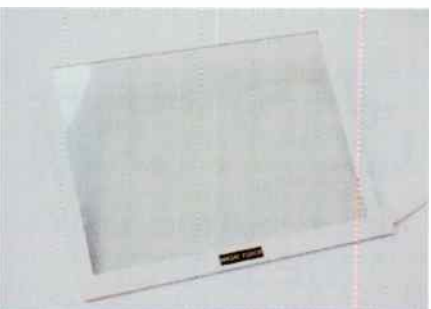


A pair of glass screen filters for use with either 14in or 17in monitors depending on the part number. The filters are attached to the monitor by adjustable fixings, an earth drain wire is fitted with a crocodile clip for fastening to a suitable earthing point on your PC.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC13P	Screen Filter 14in	£8.500	£9.990
VB66W	17in Glass Filter	£15.310	£17.990

### Touchscreen



A cost effective method of adding touchscreen capabilities to your monitor, simply overlay the touch screen over your monitor using the velcro fastenings supplied. The touchscreen is powered from the keyboard connector on your system so that no power adapter is required. The touchscreen interfaces with the comms port of the PC and can

be used with or without an additional mouse for direct control of windows applications. Suitable for use where other forms of input may not be suitable or for interactive presentations.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JT29G	Touchscreen	£170.200	£199.990

### Monitor Changers

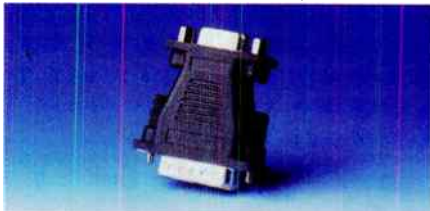


9 way D type male to 15 way HD type female adapter for connecting monitors with incompatible cables or connectors. Available in two types, either with or without approximately 10cm of cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CD67X	9 D Male - 15 HD Fem	£5.090	£5.990
CD68Y	9 D Fem - 15 HD Male	£5.090	£5.990
CD09K	15 HD M-9D F Cable	£5.090	£5.990
CD10L	15 HD F-9D M Cable	£5.090	£5.990

### Apple Monitor Changer



Standard SVGA monitor to Apple Mac converter.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG30H	SVGA - Apple Mac	£4.240	£4.990

### VDU Platform



Ideal for raising your monitor closer to eye level helping to ease tiring and potentially harmful neck strain. Since it clears your desktop of a bulky monitor, the platform restores valuable work space, allowing you to spread out your work. A handy tray underneath the monitor takes advantage of the freed up space and is ideal for storage of paper, pens and small objects like erasers, etc. Supplied with full operating and assembly instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZE76H	EasyVue Platform	£17.010	£19.990

### Monitor Arm



A high quality monitor arm providing eye-level viewing with the ability to rotate the monitor to almost any position - ideal for shared computers and terminals, etc. With your monitor raised above your desk you will have more desk space to work on, freeing up the monitor's footprint. Simply fix to your desk with the extra rugged metal clamp and assemble the arm and platform - no tools necessary! Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZE77J	EasyVue Monitor Arm	£25.520	£29.990

### Heavy Duty Monitor Arm



A very heavy duty platform suitable for supporting a monitor and keyboard on an easily adjustable mount. Ideal for computer sharing and space optimisation - pull forward when working then slide to the back of your desk when you need your desk space!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZE78K	Monitor Ext Arm	£42.540	£49.990

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Stockholding and Supply  
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## Monitor/TV Wall Mount



Allows you to mount your TV or monitor on a wall anywhere in the home or office. The platform will take a set of up to 49cm screen size and weight up to 12kg in complete safety. The platform can be tilted using a knurled adjuster screw, and swivelled horizontally in any direction. The support comprises a double jointed extension arm for total versatility; can be turned round completely and even around corners. Ideal for alcoves and through rooms, etc. Also ideal for computer monitors. Quickly and easily installed using the full instructions provided. Six 50mm screws, a spanner and wall plugs may be required for wall fixing.

**Warning:** This installation depends on a strong and sturdy attachment to a solid brick or block wall. Attaching to board partitioning is not recommended, unless fixing directly to an underlying, vertical timber support. In any event, if in doubt, consult an experienced person.

Made in high grade steel, painted white. Dimensions of platform, 305mm wide x 280mm deep, 20mm raised lip at front. Distance from wall: fully retracted, 305mm; fully extended, 580mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GK28F 6	TV Wall Bracket	£21.260	£19.650	£17.800	£24.990

## Printer Accessories

### Printer Refills

## Inkjet Refills

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- ★ Easy to use.
- ★ Very Clean, No Spills
- ★ Correct Amount of Ink Every Time
- ★ Fast and Economical

A range of inkjet refill kits for a variety of printers, available in both mono and colour versions where applicable. The highest quality of ink is used to provide hassle free refills. Supplied with full instructions. Available for HP DeskJet 500 Series (51626A & 51625A), DeskJet 600 Series (51629A &

51649A) and Canon BJ10/200 series / Apple Stylewriter I, II, 1200 (BC-01, BC-02, M8041G/A, M8052G/A)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
JT36P	HP 500 Refill Mono	£7.650	£7.250	£6.750	£8.990
JT37S	HP 500 Refill Colour	£19.560	£18.750	£17.750	£22.990
JT38R	HP 600 Refill Mono	£7.650	£7.250	£6.750	£8.990
JT39N	HP 600 Refill Colour	£19.560	£18.750	£17.750	£22.990
JT40T	BJ10/200 Refill Mono	£8.500	£8.000	£7.250	£9.990

## Inkjet Refills



The easy way to refill your empty cartridges – Black and Colour Inkjet refill packs! Suitable for most types of inkjet printer including Deskjet, Deskjet Plus, Deskjet 500/510/520/500C /550C/560C, Olivetti Bubblejet JP150/250/350 and Canon Bubblejet BJ10e/BJ10ex/BJ10sx/BJ200 /BJ130/BJ300/BJ330/BJC600 and BJ4000. Also works with Epson Stylus 800/1000/colour printers. Also available in bulk refill packs containing 60 and 250ml of Ink solutions in magenta, cyan, yellow and black. Also available is a 60ml bottle of refill cartridge flush used to remove any remaining ink and deposits from cartridges prior to refilling.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
BJ54U	Black Refill Kit	£5.940	£5.000	£4.250	£6.990
BJ65V	Colour Refill Kit	£10.200	£9.500	£8.750	£11.990
BJ66V	Black Refill 250ml	£17.010	£16.000	£15.000	£19.990
BJ67X	Magenta Refill 250ml	£29.770	£28.500	£27.250	£34.990
BJ68Y	Cyan Refill 250ml	£29.770	£28.500	£27.250	£34.990
BJ69A	Yellow Refill 250ml	£29.770	£28.500	£27.250	£34.990
BJ70M	Black Refill 60ml	£5.940	£5.000	£4.250	£6.990
BJ71N	Cyan Refill 60ml	£8.500	£8.000	£7.500	£9.990
BJ73Q	Magenta Refill 60ml	£8.500	£8.000	£7.500	£9.990
BJ74R	Yellow Refill 60ml	£8.500	£8.000	£7.500	£9.990
BJ72P	Flush Refill 60ml	£2.110	£1.750	£1.500	£2.490

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## Original Printer Supplies

### CANBC01

Canon



Black cartridge for Canon BJ10e, BJ10ex, BJ10sx, BJ200

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
KX48C	Canon CANBC01	£17.010	£15.250	£13.750	£19.990

### CANBC02

Canon



Blank ink cartridge for Canon BJ200, BJ230, BJC210, BJC240

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
KX49D	Canon CANBC02	£17.860	£15.250	£13.750	£20.990



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**CANBC05**

Canon



3-colour cartridge for Canon BJC210, BJC240

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
KX50E	Canon CANBC05	£23.120	£17.500	£16.500	£27.990

**CANBJI201BKHC**

Canon



High capacity black cartridge for Canon BJC600, 610, 600e, BJC620

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
KX51F	Canon CANBJI201BKHC	£6.800	£5.750	£5.000	£7.990

**CANBJI201C**

Canon



Cyan cartridge for Canon BJC600, 610, 600e, BJC620

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
KX52G	Canon CANBJI201C	£5.370	£5.750	£5.000	£7.490

**CANBJI201M**

Canon



Magneta cartridge for Canon BJC600, 610, 600e, BJC620

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
KX53H	Canon CANBJI201M	£6.370	£5.750	£5.000	£7.490

**CANBJI201Y**

Canon



Yellow cartridge for Canon BJC600, 610, 600e, BJC620

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
KX54J	Canon CANBJI201Y	£6.370	£5.750	£5.000	£7.490

**CANBC20**

Canon



High-speed black cartridge for Canon BJC4000, BJC4100, BJC4200, BJC4550

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
KX55K	Canon CANBC20	£25.520	£20.500	£21.000	£29.990

**CANBC21**

Canon



Black and colour cartridge for Canon BJC4000, BJC4100, BJC4200, BJC4550

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
KX56L	Canon CANBC21	£39.140	£33.000	£28.500	£45.990

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## CANBCI21BK

Canon



**NEW**

Black refill for CANBC21

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX57M	Canon CANBCI21BK	£5.940	£5.250	£4.250	£6.990

## CANBC06

Canon



**NEW**

Colour photo ink cartridge for Canon BJC240

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX59F	Canon CANBC06	£23.820	£17.500	£16.500	£27.990

## CANBC09F

Canon



**NEW**

Colour fluorescent ink cartridge for Canon BJC240

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX61R	Canon CANBC09F	£24.670	£22.250	£20.000	£28.990

## CANBCI21C

Canon



**NEW**

Colour refill for CANBC21

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX58N	Canon CANBCI21C	£14.450	£13.250	£12.000	£16.990

## CANBC22

Canon



**NEW**

Photo colour cartridge for Canon BJ-4550

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KXE0Q	Canon CANBC22	£26.370	£24.000	£21.500	£30.990

## CANBC29F

Canon



**NEW**

Fluorescent cartridge for Canon BJ4200, 4550

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX62S	Canon CANBC29F	£29.770	£28.000	£24.500	£34.990

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**CANBC10**

Canon



Black cartridge for Canon BJ-30, BJC-70

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX63T	Canon CANBC10	£28.070	£26.000	£22.750	£32.990

**CANBC11**

Canon



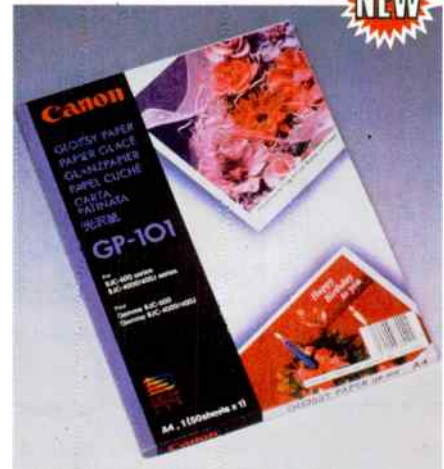
4-colour cartridge for Canon BJC-70

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX65V	Canon CANBC11	£35.180	£29.500	£25.500	£38.990

**CANGP-101A4**

Canon



50 sheets of glossy A4 paper suitable for Canon BJ-30, BJC-70, BJC-150, BJC-210, BJC-240, BJC-600/e, BJC-610/620, BJC-4000/4100, BJC-4200, BJC-4550, BJC-5500

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX68Y	Canon CANGP-101A4	£23.820	£22.500	£21.000	£27.990

**CANBC10BK**

Canon



3-pack black cartridge for Canon BJ-30, BJC-70

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX64U	Canon CANBC10BK	£11.900	£10.500	£9.250	£13.990

**CANBC11BK**

Canon



3 pack black cartridge for Canon BJC-70

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX66V	Canon CANBC11BK	£5.350	£8.500	£7.500	£10.990

**CANHR101A4**

Canon



200 sheets of high resolution A4 paper suitable for Canon BJC-240, BJC-610/620, BJC-4200, BJC-4550

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX69A	Canon CANHR101A4	£17.860	£16.500	£16.000	£20.990

**CANBC11C**

Canon



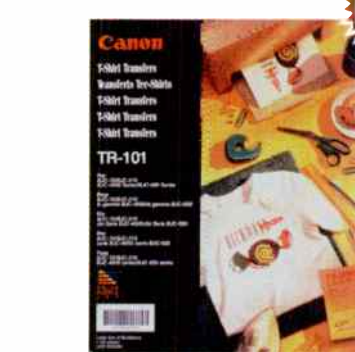
3-colour ink cartridge for Canon BJC-70

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX67X	Canon CANBC11C	£14.450	£13.250	£12.000	£16.990

**CANTR101A4**

Canon



10 sheets of T-Shirt transfer material suitable for BJC-70, BJC-210, BJC-240, BJC-600/e, BJC-610/620, BJC-4000/4100, BJC-4200, BJC-4550

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX70M	Canon CANTR101A4	£11.900	£10.500	£9.500	£13.990

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## EPSS020047

Epson



**NEW**

Black cartridge for Epson Stylus 820, Color, II/IIi, 200

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX71N	Epson EPSS020047	£15.310	£14.250	£13.500	£17.990

## EPSS020097

Epson



**NEW**

3-colour cartridge for Epson Stylus Color 500/200

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX74R	Epson EPSS020097	£21.260	£20.250	£18.500	£24.990

## EPSS020110

Epson



**NEW**

5 colour ink cartridge for Epson Stylus Photo.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX77J	Epson EPSS020110	£15.310	£14.250	£13.500	£17.990

## EPSS020049

Epson



**NEW**

3-colour cartridge for Epson Stylus Color II/IIi, 1500, 820

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX72P	Epson EPSS020049	£21.260	£20.250	£18.500	£24.990

## EPSS020089

Epson



**NEW**

3-colour cartridge for Epson Stylus Color 400/600/800/1520

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX75S	Epson EPSS020089	£18.710	£17.500	£16.000	£21.990

## EPSS041059

Epson



**NEW**

100 sheets of Epson 360dpi A4 paper suitable for Epson Stylus Color I/II

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX78K	Epson EPSS041059	£8.500	£7.750	£7.000	£9.990

## EPSS020093

Epson



**NEW**

Black cartridge for Epson Stylus Color 500/400/600

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX73Q	Epson EPSS020093	£16.160	£15.750	£14.750	£18.990

## EPSS020108

Epson



**NEW**

Black cartridge for Epson Stylus Color 800/1520

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX76H	Epson EPSS020108	£17.860	£16.500	£15.500	£20.990

## EPSS041061

Epson



**NEW**

100 sheets of Epson 720dpi A4 paper suitable for Epson Stylus Color I/II

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX79L	Epson EPSS041061	£10.200	£9.250	£8.250	£11.990

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**EPSS041126**

Epson



20 sheets of Epson Stylus A4 photo glossy paper

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX20B	Epson EPSS041126	£7.650 3+ £6.750 5+ £8.250	£8.390 1+

**EPSS041134**

Epson



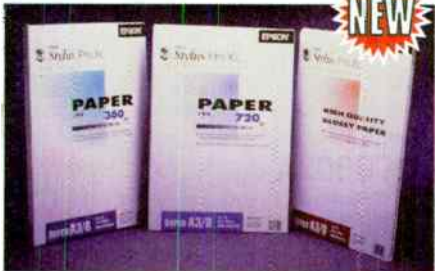
20 sheets (4in x 6in) of Epson photo paper.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KJ31C	Epson EPSS041134	£5.090 1+ £4.750 5+ £5.990	£5.990 1+

**EPSS041001**

Epson



10 sheets A4 Epson Stylus iron-on transfer.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX82D	Epson EPSS041001	£11.900 1+ £14.500 5+ £9.500	£13.990 1+

**HP51625A**

Hewlett Packard

Tri-chamber 3-colour refill cartridge for DeskJet 400 and 500 series Hewlett Packard inkjet printers.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX83E	HP HP51625A	£22.110 1+ £20.250 3+ £18.500 5+	£25.990 1+

**HP51626A**

Hewlett Packard

High capacity black refill cartridge for DeskJet 400 and 500 series Hewlett Packard inkjet printers.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX84F	HP HP51626A	£19.560 1+ £18.750 3+ £17.750 5+	£22.950 1+

**HP51633M**

Hewlett Packard

High capacity black refill cartridge for DeskJet 310, 320 and 340 Hewlett Packard inkjet printers



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX85G	HP HP51633M	£18.710 1+ £17.500 3+ £15.750 5+	£21.990 1+

**HP51641A**

Hewlett Packard

3-colour refill cartridge for DeskJet 850C, 820Cxi, 870Cxi and OfficeJet Pro 1150C Hewlett Packard inkjet printers.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX86T	HP HP51641A	£23.820 1+ £22.500 3+ £21.250 5+	£27.990 1+

**HP51645A**

Hewlett Packard

Black refill cartridge for DeskJet 850C, 1600C, 1600CM, 820Cxi, 870Cxi and OfficeJet Pro 1150C Hewlett Packard inkjet printers



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX87U	HP HP51645A	£22.110 1+ £20.250 3+ £18.500 5+	£25.990 1+

**HP51649A**

Hewlett Packard

3-colour refill cartridge for DeskJet/DeskWriter 600, 660C and 690C Hewlett Packard inkjet printers



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX88V	HP HP51649A	£23.820 1+ £21.500 3+ £19.000 5+	£27.990 1+

**HP51629A**

Hewlett Packard

Black refill cartridge for DeskJet/DeskWriter 600, 660C and 690C Hewlett Packard inkjet printers



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX89W	HP HP51629A	£22.110 1+ £20.250 3+ £18.500 5+	£25.990 1+

**HPC1816A**

Hewlett Packard

Photo cartridge for HP DeskJet 690C Hewlett Packard inkjet printer.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX90X 1	HP HPC1816A	£27.220 1+ £26.500 3+ £23.500 5+	£31.990 1+

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## HPC3832A

**Hewlett Packard**

Premium transparency film for use with Hewlett Packard DeskJet inkjet printers. Provides the highest quality transparencies for use with OHP machines. Pack contains 20 sheets of A4 inkjet transparency film.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX91Y	HP HPC3832A	£13.600	£12.500	£11.750	£15.990

## HPC1821A

**Hewlett Packard**

Pack contains 5 x 20 A4 sheets of HP DeskJet 690C banner paper.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX95D	HP HPC1821A	£8.500	£7.750	£7.250	£9.990

## HPC3831A

**Hewlett Packard**

Premium glossy paper for use with Hewlett Packard inkjet printers. Provides superior print reproduction. Pack contains 10 sheets of A4 inkjet premium cut sheet glossy paper.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX92A	HP HPC3831A	£6.800	£6.000	£5.500	£7.990

## HPC6042A

**Hewlett Packard**

20 sheets of A4 greeting cards paper for HP InkJet printers



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX96E	HP HPC6042A	£5.940	£5.250	£4.500	£6.990

## HPC1825A

**Hewlett Packard**

Paper specifically designed for use with inkjet technologies to provide crisp clear output. Pack contains 500 sheets of A4 bright white paper for all inkjet printers.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX93B	HP HPC1825A	£9.350	£8.500	£7.500	£10.990

## HPC1847A

**Hewlett Packard**

Photographic type paper for the production of high quality full colour prints. Pack contains 20 sheets of A4 satin-gloss HP DeskJet 690C photo paper.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX94C	HP HPC1847A	£8.500	£7.750	£7.250	£9.990

## Specialist Inkjet Papers

**Kodak**

A range of high quality papers for use with inkjet printers:



- Kodak KO1975937 - 15 sheets of letter weight inkjet paper
- Kodak KO8574675 - 15 sheets of photo weight inkjet paper
- Kodak KO1456979 - 36 sheets of inkjet snapshot paper

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KX97F	Kodak KO1975937	£8.500	£7.750	£6.750	£9.990
KX98G	Kodak KO8574675	£8.500	£7.750	£6.750	£9.990
KX99H	Kodak KO1456979	£8.500	£7.750	£6.750	£9.990

## HP92274A

**Hewlett Packard**



Refill for LaserJet 4L, 4ML, 4P and 4MP Hewlett Packard laser printers

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
LQ16S 1	HP HP92274A	£59.560	£52.500	£45.000	£69.990

## HP92275A

**Hewlett Packard**



Refill for LaserJet IIP, IIP+ and IIP+ Hewlett Packard laser printers

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
LQ17T 1	HP HP92275A	£68.070	£62.500	£55.000	£79.990

## HP92298A

**Hewlett Packard**



Refill for LaserJet 4, 4M, 4Plus, 4M Plus 5, 5M and 5N Hewlett Packard laser printers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
LQ18U 1	HP HP92298A	£85.090	£72.500	£63.000	£99.990

## HPC3903A

**Hewlett Packard**



Refill for LaserJet 5P, 6P and 6MP Hewlett Packard laser printers

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
LQ19V 1	HP HPC3903A	£68.070	£62.500	£55.000	£79.990

See Stock Code Index For More Price Breaks



## HPC3906A

Hewlett Packard



Refill for LaserJet 5L and 6L Hewlett Packard laser printers

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LC20W 1	HP HPC3906A	£51.050 £45.500 £41.000	£59.990

## Printer Accessories

### Printer Stand



A compact printer stand for 80 column printers which permits the paper to be stacked beneath the printer whilst the print-out is deposited automatically in the tray behind the printer. The stand is made of lightweight durable plastic coated steel wire and folds up for storage. This stand is suitable for use with almost all 80 column printers and can support a maximum weight of 60kg. The stand is 330mm wide, 120mm high and 320mm deep when closed and 610mm deep when opened out.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YT33L 3†	Printer Stand 80	£7.690 £6.450 £5.250	£9.990

### Multi-Purpose Printer Stand



A smart printer stand comprising a base with a transparent cover measuring 380 x 345 x 100mm high, containing a drawer for holding up to 50mm (2in.) of fan-fold paper. The drawer is removable from front or rear for replenishment without disturbing the printer itself. The transparent lid will help to keep dust away from paper in situ while not in use. It includes a central slot for printers which draw paper from underneath. In addition a delivery

tray is provided for collecting the output, which is stowed flush in the bottom of the base when not in use, but extends to 279mm (11in.), supported by a locking cantilever, to overhang the edge of a table. Only suitable for A4 or 279 x 241mm (11 x 9 1/2in.) fan-fold paper. Made in light grey ABS.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GK29G 5	Printer Stand Multi	£11.050 £10.000 £9.000	£12.990

## Security Products

### Equipment Security

#### 3.5in Floppy Drive Lock



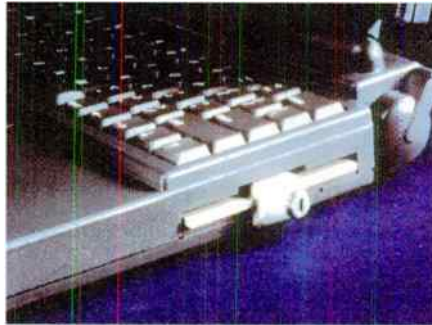
A floppy drive lock for preventing access to a 3.5in floppy drive, suitable for use with most 3.5in PC drives. Can be used to prevent unauthorised installation of software, unauthorised saving of software and protection against disks infected by viruses.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ15R	Floppy Lock	£8.500	£9.990

#### File-Lok II

Qualtec



- ★ Prevents Copying of Data
- ★ Reduces Chance of Viruses

Prevent unauthorised copying of data from your network or hard drive by restricting access to the floppy disk drive. File-Lok II works on most laptop, notebook and desktop systems with 3.5in drives.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL00A	File Lok II	£19.560 £17.400 £15.800	£22.990

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#### File-Lok III

Qualtec

- ★ Heavy Duty Disk Drive Lock
- ★ 50,000 Different Key Variations
- ★ Prevents Copying of Data
- ★ Reduces Risk of Virus Infection

The File-Lok III is a 'high security' lock which secures 3.5in floppy drives. The lock offers 50,000 different key variations for maximum security. This lock will work on most desktop PC systems.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL01B	File Lok III	£20.410 £19.900 £19.500	£23.990

#### Cable Trap

Qualtec



- ★ Prevents Peripheral Theft and Swapping
- ★ Heavy Duty Metal Construction
- ★ No Special Tools Needed
- ★ Works with all Qualtec Cable Kits

Prevent swapping and theft of your keyboard and mouse. With Cable Trap you can protect up to 5 peripherals with one device. Simply attach it to the back of your PC with the Super bond adhesive provided then place the cables to be protected into the unit and lock in place.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL02C	Cable Trap	£23.820 £21.450 £19.750	£27.990

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## Steel-Lok I

Qualtec



- ★ Over 1,500lbs of Holding Strength
- ★ Side Mountable

★ **Ideal for all Computers and Business Machines**  
Protect all valuable computer equipment with this universal heavy duty anti-theft security product. It is ideal for PCs, laser printers, fax machines, copiers etc. The four rubber bonding feet are permanently mounted to the equipment to be secured using the Super Bond system. These are then locked into the metal encasements that mount to the work surface with industrial adhesive and/or screws (screws not supplied). The kit includes two metal encasements, four rubber bonding feet and Super Bond adhesive.

Retail Unit Price each (inc. VAT).

Order Code	Type 13442	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VL04E	Steel Lok I	£85.090	£75.000	£65.000	£94.990

## Cable-Lok

Qualtec

A replacement/additional 5ft cable for use with Qualtec's cabled products, supplied singularly.



Retail Unit Price each (inc. VAT).

Order Code	Type 13444	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VL05F	Cable Lok 5a	£11.900	£10.990	£10.150	£13.990

## Pad-Lok II Rectangular

Qualtec



A pair of additional/replacement anchor points for use with Qualtec's cabled products. kit includes one 1.75in round Super Bond plate, one 0.75in x 2in Super Bond plate and Super Bond adhesive.

Retail Unit Price each (inc. VAT).

Order Code	Type 13445	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VL06G	Pad Lok II Rectangle	£14.450	£13.300	£12.300	£16.990

## Lok-Kit Basic

Qualtec

- ★ 400 lbs Adhesive Strength
- ★ Heavy Duty 133 Strand Vinyl Coated Steel Cable
- ★ Keyed Padlock
- ★ Expandable

This affordable theft deterrent is ideal for preventing opportunist thieves and providing asset management. Kit includes two 2.5in x 3.25in steel plates, 5ft cable and keyed lock.



Retail Unit Price each (inc. VAT).

Order Code	Type 13428	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VB96E	Lok Kit II Basics	£17.010	£15.500	£14.350	£19.990

## Lok-Kit II

Qualtec



- ★ 700 lbs Adhesive Strength
- ★ Heavy Duty 133 Strand Vinyl Coated Steel cable
- ★ 3 Super Bond Plates
- ★ Hardened Steel Shackle Keyed Padlock
- ★ Expandable

This heavy-duty low profile security kit is one of the most versatile theft deterrent products available. Three heavy duty cast metal plates with vinyl surfaces attach to your equipment with 'Super Bond' adhesive. The size of the 'Super Bond' plates make this product ideal for computers, copiers, printers and faxes. Kit contains two 1.75in round 'Super Bond' plates, one 0.75in x 2in rectangular 'Super Bond' plate, one 5ft cable, 'Super Bond Adhesive' and keyed lock.

Retail Unit Price each (inc. VAT).

Order Code	Type 13427	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VB96D	Lok Kit II / Putty	£29.770	£26.300	£24.000	£34.990

**We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers**

## Uni-Kit II

Qualtec



- ★ Prevents Board Theft and Swapping
- ★ Heavy Duty 133 Strand Vinyl Coated Steel Cable
- ★ No Special Tools Required
- ★ Hardened Steel Shackle Keyed Padlock
- ★ Expandable

Prevent board theft and internal tampering of your computer with this easy to use kit. Security housings mount into external cover screw holes. A round Super Bond plate is provided as an anchoring point or to secure an additional peripheral. Kit includes two security housings with mounting hardware, one 1.75in round Super Bond plate, 5ft cable, Super Bond adhesive and keyed lock.

Retail Unit Price each (inc. VAT).

Order Code	Type 13431	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VB99G	Uni-Kit II System	£25.520	£23.850	£22.250	£29.990

## Notebook Security Kit

Qualtec



- ★ Fits all Laptop and Notebook Computers
- ★ Heavy Duty 133 Strand Vinyl Coated Steel Cable
- ★ Hardened Steel Shackle Keyed Lock
- ★ Anchoring Plate for the Office

A complete theft deterrent for portable computers. This kit includes a removable 'Micro-Clip' that utilizes the small security retention socket built into many computers, a 'Super Bond' plate is also included for computers not equip with the security socket. Includes one 'Micro-Lok Clip', one 1.75in Super Bond round plate, one 0.75 x 2in Super Bond rectangular plate, one 5ft cable, Super Bond Adhesive and keyed lock.

Retail Unit Price each (inc. VAT).

Order Code	Type 13430	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VB97F	Notebook Kit	£25.520	£23.850	£22.250	£29.990

**Universal Mac-Kit II**

Quatec



- ★ 700lbs of Adhesive Strength
- ★ Heavy Duty 133 Strand Vinyl Coated Steel Cable
- ★ Hardened Steel Shackle Keyed Padlock
- ★ Expandable.

A complete Mac security kit for securing all type of Macintosh computers. The Mac-Kit secures using two types of security clip and Super Bond security plates. Kit includes one Mac-Clip, one Micro-Lok clip, one security loop for securing keyboard, one 0.75in x 2in Super Bond rectangular plate, one 1.75in Super Bond round plate, one 7ft steel cable, Super Bond adhesive and keyed lock.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB99H	Mac Kit Universal	£38.280	£44.990

**Chassis-Lok**

Quatec



- ★ Prevent Removal of Internal Chips and Boards
- ★ Heavy Duty Pick and Drill Resistant Lock
- ★ 50,000 Different Key Variations
- ★ 2 per Pack

Protect internal components from theft and tampering with this heavy duty security solution. The Chassis-Lok not only mounts to a cover screw but also uses a Super Bond system for added strength. The high security lock is also pick and drill resistant with over 50,000 lock combinations available. Kit includes tow Chassis-Loks, Super Bond adhesive and 2 keys.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL03D	Chassis Lok	£34.030	£39.160

**Surge Protection**

**Mains Protection**

**Distribution Surge Protector**

Bowthorpe



The Single Phase 6651C unit provides three mode system protection from mainsborne voltage spikes and surges that can occur between phase and neutral, phase and earth and neutral and earth. The unit has two stages of protection with lights to indicate the status of the unit should the first stage cease to protect. The unit is connected in parallel alongside the incoming electrical supply with no complicated by-pass wiring. Suitable for direct connections on lines up to 60A. Automatic resetting is available for surges up to 10KA.

A Three Phase 6651 is also available for protection of three phase electrical circuits, it features similar electrical characteristics to the single phase unit.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CH71N1	Dist Surge Prot Sng	£102.110	£119.990
VC28F	3Phase Surge Protect	£170.200	£199.990

**Spur Protector**

Bowthorpe



Ideal for industrial and commercial applications the spur protector provides an economic means of preventing damage to sensitive electronic equipment on individual ring mains. Protects from damage due to transients which can occur due to nearby lightning strike or surges caused by the switching of inductive or capacitive loads. The protector can be wired in line with equipment or hardwired into wall mounted conduits. Two LED status lights are provided for indication of operative state. The spur protector features high surge current handling capability under normal conditions. Should a very high current (>6.5KA) appear it will be clamped but further protection will be lost, a red LED will indicate this.

**Specifications:**  
 Operating Voltage: 240 Volts RMS  
 Max Operating Voltage: 280 Volts RMS  
 Max Current Rating: 13A  
 Max Surge Current: 6.5KA 8/20 µs  
 Response Time: <10ns  
 Let Through Voltage at 3KA 8/20µs: 850V L-N, L-E, N-E

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC29G	Spur Protector	£51.050	£59.990

**Single Phase Distribution Surge Protector**

Bowthorpe



The DSP should be installed at the cable entry to the building or at the distribution point for each floor in a multi-storey building. The unit is suitable for connection directly to lines rated at up to 100A. The unit requires no maintenance but the LEDs should be checked regularly to ensure that protection is present.

**Specification:**  
 Voltage Rating: 230V RMS  
 Operating Voltage: 200 - 300V RMS  
 Maximum Current: Unlimited (Parallel Connection)  
 Max Current Surge: 20kA (8/20µs)  
 Joule Rating: 1560  
 Response Time: <10 ns  
 Leakage Current: 200µA  
 Operating Temp: -40° to +70° C  
 Case: Steel - Epoxy Paint  
 Dimensions: 174 x 90 x 62mm (L x W x D)  
 Weight: 750g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC26D	1 Phase Distr Prot	£119.140	£139.990

**Three Phase Distribution Surge Protector**

Bowthorpe



The Three Phase DSP should be installed at the cable entry to the building or at the distribution point for each floor in a multi-storey building. The unit is suitable for connection directly to lines rated at up to 100A. The unit requires no maintenance but the LEDs should be checked regularly to ensure that protection is present.

**Specification:**  
 Voltage Rating: 400V RMS  
 Operating Voltage: 200 - 300V RMS (L-N)  
 350 - 500 V RMS (L-L)  
 Maximum Current: Unlimited (Parallel Connection)  
 Max Current Surge: 20kA (8/20µs)  
 Joule Rating: 4050  
 Response Time: <10 ns  
 Leakage Current: 600µA  
 Operating Temp: -40° to +70° C  
 Case: Steel - Epoxy Paint  
 Dimensions: 174 x 200 x 60 (L x W x D)  
 Weight: 1500g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC27E	3PH Dist Surge Prot	£212.750	£249.990

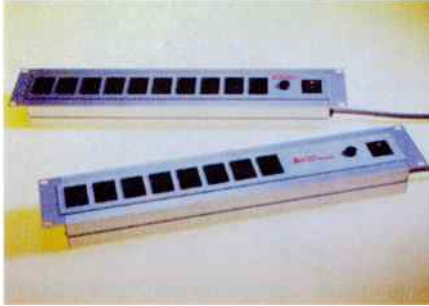
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## Protected Mains Distribution Units for 19 inch Racks

Bowthorpe



Available in two versions these robust units are housed in tough aluminium enclosures suitable for mounting in 19 inch rack cabinets. VC24B offers 10 surge protected IEC outlets while VC23A offers 8 filtered, surge protected IEC outlets. Both versions are equipped with a main on/off switch and are fitted with a 2 metre mains lead terminated with an IEC320 plug.

### Specifications:

#### VC24B

4.5KA surge protection  
10 IEC outlets  
Aluminium 2U enclosure  
Neon power 'on' indicator  
Power switch  
Thermal overload protection  
2 metre mains lead.

#### VC23A

As VC24B with the following exceptions  
RFI filtration  
6.5KA surge protection  
8 IEC outlets

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC24B	IEEE Filter 19in 8W	£85.090	£99.990
VC23A	IEEE Surge 19in 10W	£88.070	£79.990

## Network Protection

### 10 Line Telephone Protector

Bowthorpe



This unit provides a high level of protection for PABX systems situated in high lightning exposure areas and other electrically harsh environments. This model is fitted with gas discharge tubes (GDTs) designed to handle surges of up to 10,000 Amps on each line (or twisted pair) and plugs directly into most PABX distribution frames.

### Specification:

Connectors: LSA-Plus compatible edge connector  
Surge Capacity: 10,000 Amps (8/20µs)  
Clamping Voltage: 80 Volts (10/700µs)  
Clamping Voltage: 40 Volts (1/1µs)  
Max Loop Resistance: 10Ω  
Max Capacitance: 140pF  
Dimensions: 120 x 16 x 44mm (LxDxW)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC30H	10Pair Telecom Prot	£102.110	£119.990

## Telephone Line Protectors

Bowthorpe



A pair of telephone line protectors designed for use as either stand alone units or in conjunction with DIN rail mountings. Each unit will protect a single telephone line and any extensions that are connected past the point of installation. There are two versions available, the first (CH68Y) is fitted with a captive lead terminated with a standard BT style line plug. A BT style socket is fitted to the other side of the unit allowing ease of installation. The second version (CH69A) is fitted with wire clamps for reliable connection to bare wires. Both units must be suitably earthed for correct operation.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CH68Y 1	Tel Line Prot BT	£51.050	£59.990
CH69A 1	Tel Line Prot Bare	£51.050	£59.990

## Network Surge Protectors

Bowthorpe



A range of network surge protectors designed for use as either standalone units or for use with DIN rail mountings for modular installation. Available in BNC (10 Base 2), RJ45 (10 Base T) and Cat 5 RJ45 versions, CH72P, CH73Q and VC25C respectively. Designed to protect your network segment against surges caused by lightning, nearby power systems, power-cross faults, electrical machinery and electro-static discharge.

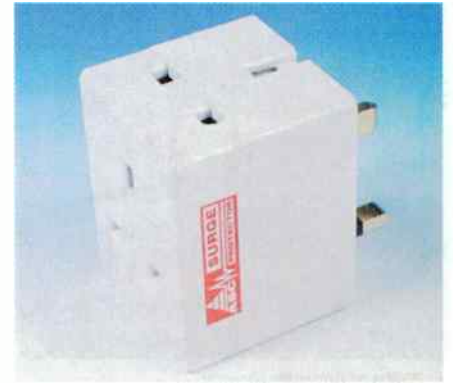
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CH72P 1	BNC Surge Protector	£74.880	£87.990
CH73Q 1	RJ45 Surge Protector	£74.880	£87.990
VC25C	Cat5 Surge Protector	£85.090	£99.990

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## Three Way Surge Protected Adaptor

Bowthorpe



Used in the same way as an ordinary adaptor to supply surge protected power to three appliances. Manufactured from a white flame retardant moulding and fitted with a 13A fuse.

### Specification

Working Voltage: 230V AC  
Max Current: 13A  
Max Surge Current: 2500A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CH67X	3 Way Surge Adaptor	£17.010	£19.990

## Surge Protecting Mains Plug



A standard 3-pin mains pulse protector plug includes BS6651 Category B surge protection, and a thermal protection unit. A mechanical indicator clearly shows the protection status. Using standard 13A rated pins and connections, the plug is intended to protect computer and other sensitive equipment against voltage spikes and surges on the mains supply. It need not even be fitted onto a cable at all but can simply be inserted into a socket on its own to control the local supply, and has a removable blanking plate to cover the cable entry for this purpose. Fitted with standard size 5A cartridge fuse. Cable connections are identical to those in normal 13A plug. Dimensions: 50 x 33 x 50mm (excluding pins). Weight: 118g.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KU20W	Surge Plug	£13.600	£15.990

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**Surge Clock**



A device that counts the number of damaging surges on a mains supply. Surges in excess of 700V can create havoc for electronic equipment such as computers, etc.; this device will register up to nine surges. The clock is operated by simply plugging into the mains; initially the 'clean' green LED will be illuminated. When a potentially damaging surge is detected the clock will change from the 'clean' green LED to a red LED 1, and subsequent surges will cause the indicator to advance one position until '9' is reached. Removal from the mains supply causes the clock to reset. Line-neutral surge voltages that exceed twice the normal peak AC supply will register, surges below 650V will not normally cause damage to electronic equipment; so will not be registered. The unit is housed in a flame retardant plastic case with integral pins. N.B. The Surge Clock does NOT protect equipment from surges.  
Size: 100 x 95 x 70mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 10375	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KR42V	Surge Clock	£22.970	£22.030	£21.950	£24.990

**3A Filtered Mains Plug**



A mains plug incorporating a comprehensive noise filter for removing unwanted noise and pulses from the mains supply before entering sensitive electronic equipment such as a computer. The filter includes a double wound toroidal choke, 3-way capacitive decoupling including the earth connection, and a pair of metal oxide varistor surge suppressors. Fitted with a standard mains size cartridge fuse rated at 3A which must not be uprated. Cable connections are to a block of three screw terminals. Dimensions 95mm long x 65mm wide x 58mm high not including pins.

Retail Unit Price each (inc. VAT).

Order Code	Type 10384	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KU19V	Filter Plug	£27.770	£21.330	£18.830	£32.630

**13A Pulse Protector**



These single way 13A surge protectors are ideal for use with electrical and electronic equipment that is now being supplied fitted with moulded plugs. When plugged into a standard socket the units will provide protection against transients on the mains electrical supply thus preventing electronic equipment from malfunctioning. PP1 is fitted with a multipurpose neon that verifies that the protection unit is intact, power is 'ON' and operation is normal, and that vital earth connection is present.

In the rare event of a high energy strike destroying the internal surge protection, Model PP1 will disconnect power to the associated equipment. Should the light go out, the unit must be replaced to restore power and full protection. This model is ideal for non-essential equipment such as computer games, TVs, VCRs, photocopiers, test equipment, electronic scales, etc.

Model PP3 has an audible alarm to announce when the unit needs replacing, should the internal surge protection be overloaded due to severe surge. In such an event, the unit must be replaced to restore surge protection. However, power to the associated equipment will continue WITHOUT surge protection. The unit is ideal for business computers, telephone exchanges, fax machines, modems, or any equipment that must be continually powered. In both models, the internal three mode surge/spike suppressors, have a response time of less than 10ns with a maximum surge rating of 4-5kA. Both models commence clamping below 600V, are noise free in operation and automatically reset after a transient has passed. Incoming and outgoing surges are dissipated so 'no fault found' service calls are reduced and equipment performance improved.

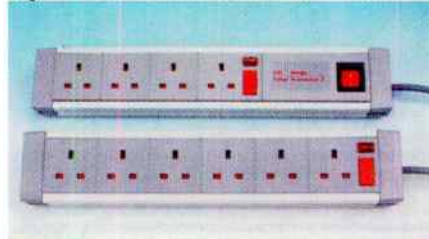
Protection: L-N, L-E, N-E  
Voltage rating: 220 to 240V AC 50Hz  
Maximum current: 13A  
Maximum current surge handling 8/20µs: 4500A  
Response time: <10ns  
Thermal fuse: Operates @ 100°C  
Housing: Flame retardant  
          ABS rating UL94 V-O

Plug and socket connections: Conforms to BS1363

Retail Unit Price each (inc. VAT).

Order Code	Type 10390	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CX64U	Pulse Protector PP1	£12.750	£10.650	£9.950	£14.990
CX65V	Pulse Protector PP3	£17.010	£14.100	£13.150	£19.990

**Spike Protectors**



Over 80% of unexplainable equipment problems occur as a result of power surges or radio frequency interference. This is the easy way to make sure that your electronic equipment always receives a clean power supply.

The Spike Protector provides you with fully protected outlets with intersocket protection and an earth connector, all encased in a flame retardant housing. The protector comes in three versions - 4 sockets with power switch and filter strip and a choice of 4 sockets or 6 sockets without power switch. All are fitted with a neon lamp that, when lit,

indicates that the protection unit is intact and that the supply fuse is not ruptured.

It protects all types of electronic equipment - including computers and modems, fax machines, electronic cash registers and EPOS systems, medical equipment, and telephone exchanges - from power surges and RFI noise from sources such as lightning, fluorescent lights, vacuum cleaners, lifts, power tools, etc.

The spike protector is supplied with 2m of cable and a fitted 13A fused plug. It meets BS6651 1992 Appendix C and allows the user to comply with BS6396 by fitting a 7A fuse.

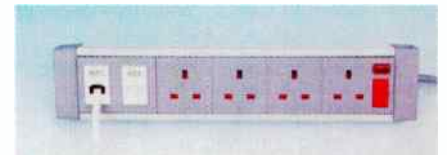
**Specification**

Working voltage: 230V AC  
Max current: 13A (13A fuse fitted)  
Max surge current handling: 6500A  
RFI average attenuation (BJ84F only): -50dB (1 to 30MHz)

Retail Unit Price each (inc. VAT).

Order Code	Type 10376	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BJ84F	4-Way + Filter Strip	£59.560	£57.000	£56.000	£69.990
KR41U	4W Spike Protector	£25.520	£23.500	£22.000	£29.990
BJ83E	6-Way Surge Strip	£34.030	£32.500	£31.500	£39.990

**Spike Protector with Telecom Protection**



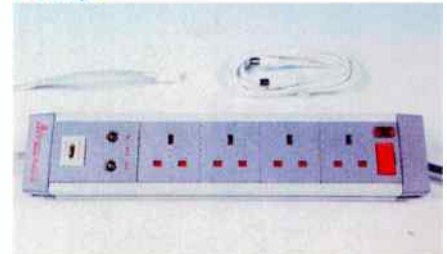
All the facilities of the 4-way Spike Protector plus the added advantage of a protected telecom connection, so providing added protection to modems, fax machines, etc. Supplied with approximately 2m of telecom extension lead. The design of this unit may vary slightly from the photograph above.

Retail Unit Price each (inc. VAT).

Order Code	Type 10380	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VC31J	4 Way + Telephone	£42.540	£41.500	£40.000	£49.990

**Multimedia Surge Protector**

*Bowthorpe*



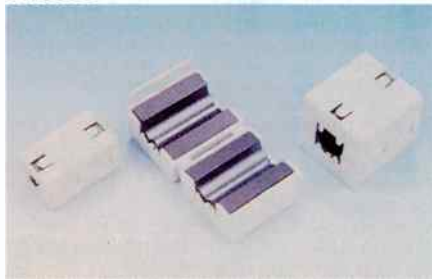
All the facilities of the 4 way Spike Protector with the added benefit of a telephone protection jack and coax protection jacks for video equipment. Supplied with a coax extension lead approximately 2m in length.

Retail Unit Price each (inc. VAT).

Order Code	Type 12058	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CH65V	Multi M Surge Prc	£68.070	£65.000	£62.500	£79.990

**MAPLIN**  
on the Net  
<http://www.maplin.co.uk>

## Computer Data Line Noise Filters

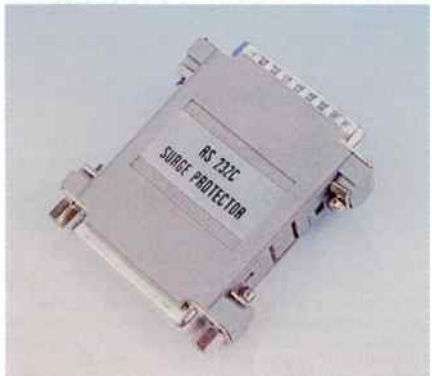


An ingenious device to help prevent noise being transmitted along interconnecting cables between sensitive computer equipment and peripherals. The principle is successfully based on applying effective common-mode countermeasures locally to the cable. The device is hinged to wrap around and grip the single or multi-way cable or bus, and contains a ferrite core which is inductively coupled to the line or lines, and which in turn couples the separate conductors in a common-mode rejection arrangement. This can even apply to screened conductors since the screen will not exclude a magnetic field. Excellent rejection of transmitted or induced electrical noise is possible, protecting central processors and peripherals from random unwanted pulses which might be misinterpreted as data bits. Ideal for long cables which can have a filter at each end to exclude noise induced along the run. The high performance ferrite core removes RF noise in the range of 300MHz and over, but has negligible effect on transmission waveforms, while providing common-mode noise countermeasures right at the data line. Can even be used on power leads. Manufactured to UL 94V-0. Effective impedance of cable with filter fitted is 125Ω at 25MHz, and 275Ω at 100MHz except round types DK33L and DK34M, which are typically 70Ω at 25MHz and 115Ω at 100MHz. Five types are available for different thicknesses of cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DK33L	Noise Filter 3.5mm	£1.690	£1.000	£0.750	£1.990
DK34M	Noise Filter 5mm	£2.110	£1.750	£1.500	£2.490
KW37S	Noise Filter 6.5	£2.370	£2.100	£1.600	£2.790
BZ33L	Noise Filter 10	£2.540	£2.000	£1.500	£2.990
BZ34M	Noise Filter 13	£2.970	£2.250	£1.750	£3.490

## Surge Protector



This unit protects your RS232 ports from the power surges and spikes generated by motors starting, lightning etc. Varistors protect pins 2, 3 and 7. The unit has a 25-way D plug on one end and a 25-way D socket on the other.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YP84F	Surge Protect RS232	£5.940	£4.550	£3.750	£6.990

## Upgrades

### CPU Coolers

#### 486 CPU Cooler



A clip-on heatsink with accompanying fan for 486 CPUs to prevent overheating. Press fits onto the top of the CPU, with clips to secure the unit at the base. Fitted with piggy-back style power connector.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VL50E	486 Heatsink/Fan	£3.390	£3.000	£2.500	£3.990

#### Pentium CPU Cooling Fan



A clip-on cooler for Pentium CPUs that is quick and easy to install. Can be used with ZIF sockets. Fitted with piggy-back style power connector.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VL45Y	Pentium Cooling Fan	£5.090	£4.750	£4.250	£5.990

#### Cyrix 6x86 Cooling Fan

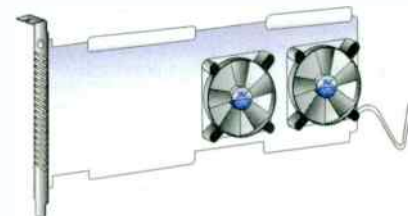
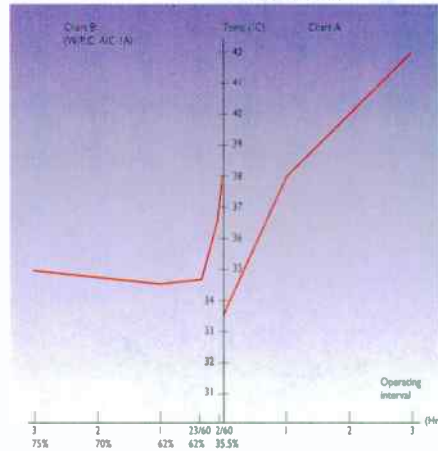


A clip-on CPU cooling fan that is designed for use with Cyrix 6x86 chips, the fan is ball bearing mounted and is very quiet in use. Fitted with piggy-back style power connector.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GT60Q	Cyrix 686 CPU Cooler	£6.800	£5.650	£5.300	£7.990

## Twin Fan PC Air Conditioner



A PC air conditioner. The best way to cool your PC. Due to the use of faster and more complex integrated circuits, for example on controller cards, high speed hard disks, etc., the temperature of the chips used is increasing. Chips cool down by releasing the heat into the air. Because of that, the air temperature inside a PC is so high within 30 minutes that the temperature of the air in the PC approaches that of the chips. This means that the type of cooling systems currently being used, like a fan in the power supply, is not efficient enough to be effective. The chip can fail with very high temperatures, approximately 85°C. This shortens the life span of a chip by approximately 75%. If the temperature of an operational PC has reached the maximum acceptable temperature, the twin fan air conditioner lowers the temperature by 62% within two minutes. Within 23 minutes the temperature in a PC is at a constant level. This extends the lifetime of valuable chips. The twin fan air conditioner is supplied with two fans which are placed symmetrically or asymmetrically. The symmetrical type is ideal for standard PC systems, the asymmetrical type for servers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	1+
ZE42V	Asymmetric PC Fan	£15.310		£17.990
ZE41U	Symmetric PC Fan	£13.600		£15.990
ZE43W	PCI BUS Adapter	£3.460		£4.070

## Multimedia

### Loudspeakers

#### Small Passive Multimedia Loudspeakers



A pair of shielded loudspeakers that are suitable for use near computer monitors. The attractive, light grey plastic case houses a full range 76mm speaker. The wide frequency response and low distortion makes the speakers ideal for use in multimedia applications. The speakers are connected via a 1m length of cable to a 3.5mm stereo jack plug which can be used to plug into a computer sound generator card. The maximum

input power to the speakers is 2W, and the input impedance is 8Ω. Overall dimensions of each case 114 x 95 x 76mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DK32K	Passive MM LSpkrs	£4.240	£3.620	£3.380	£4.990

## Active Multimedia Loudspeakers



A pair of shielded active loudspeakers which are intended for use with computer sound cards etc. and can operate from either batteries or a suitable mains adaptor. Each high quality loudspeaker has a 38mm tweeter and a 76mm bass and mid-range unit. A level control and two boost switches are incorporated, one switch is used to increase the bass output and the other treble. Each speaker has an on/off switch and an LED which illuminates when the loudspeakers are powered. A battery compartment is built in to each speaker which requires 2 x 1.5V 'C' cells (four in total, JY47B). Because the speakers are shielded, they can be mounted near to colour monitors, and the supplied interconnecting cable allows the speakers to be placed up to 1m (approx.) apart. The speakers are connected to the sound source by 1m of cable, which is terminated in a 3.5mm gold plated stereo jack plug. A 6V DC adaptor (YM85G) can be used to power the speakers. Finished in an attractive light beige plastic, overall dimensions of each case: 81 x 104 x 186mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DK31J	Active MM LSpkrs	£11.050	£9.430	£8.830	£12.990

## 240W (PMPO) Speakers



240W (PMPO) mains powered desktop multimedia speakers for use with personal computers.

Driver: 4inch  
Controls: Power On/Off, Volume, Treble, Bass.  
Connectors: RCA Phono type

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KV730	240W Speaker	£34.030			£39.99

## Subwoofer 200W (PMPO)

Typhoon



### Speaker

- ★ Base Reflex enclosure
- ★ Magnetically shielded
- ★ Frequency response 35-2,500 Hz

### Control Unit

- ★ Built-in 25 watt power amplifier
- ★ Typhoon "T" Junction power plug
- ★ Volume controls for subwoofer and satellite speakers
- ★ Earphone jack socket
- ★ Mute button

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KM93B	Sub Woofer 200w	£42.540			£49.990

## ZY-FI Compact Speakers

Zydec



A pair of magnetically shielded stereo speakers which are designed for use with computer sound cards, CD-ROMs etc. Able to operate in either active (via optional PSU), or passive mode to produce high quality sound output. Treble and bass boosters along with separate volume control are located on the front for easy access. The speakers have a built-in stereo amplifier and can produce 16 Watts PMPO (4W RMS). Connection is via a 3.5mm stereo jack plug. The speaker is fitted with a 3in full range cone, overall dimensions are 95mm x 156mm x 105mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VB71N	Zy-Fi Compact	£12.750			£14.990

## ZY-FI 2 Speakers

Zydec



A pair of mains powered magnetically shielded stereo speakers which are designed for use with computer sound cards, CD-ROMs etc. Operating in active mode using the supplied AC adapter they produce 64 Watts PMPO (12 Watts RMS). Tone and volume controls are located on the front for easy access. Connection is via a 3.5mm stereo jack plug, with an additional headphone socket to the rear. The speaker is fitted with a 3in full range speaker, overall dimensions are 132mm x 193mm x 130mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VB68Y	ZY-FI 2 SPEAKERS	£25.520			£29.990

## ZY-FI 2 Pro Speakers

Zydec



A pair of mains powered magnetically shielded stereo speakers which are designed for use with computer soundcards, CD-ROMs etc. Operating in active mode using the integrated mains power adapter the built-in stereo amplifier produces 120 Watts PMPO (36W RMS). Separate bass, treble and volume controls are located on the front panel for easy access. Connection is via a stereo 3.5mm jack plug, an additional headphone socket is located to the rear. The speakers are fitted with a 4in woofer and 2.5in tweeter for the best in sound reproduction. Overall dimensions are 142mm x 233mm x 148mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VB69A	ZY-FI 2 PRO SPEAKERS	£42.540			£49.990

**24** HR  
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## Zy-FI Bass Speaker System

Zydec



NEW LOW PRICE

A multimedia subwoofer system for adding total realism to your computer system. The speaker system is fully magnetically shielded and is suitable for locating close to the monitor. Operating in active mode using the built-in AC adapter the stereo amplifier produces 80 Watts PMPO (20W RMS) for the subwoofer and 2 x 12 Watts PMPO for the satellites (2 x 3W RMS). The subwoofer is designed to be located under the desk, the satellites on the desk. Separate bass and volume controls are provided on the front of the unit. The subwoofer features a 5.25in drive unit. Overall dimensions, 165mm x 273mm x 275mm for the subwoofer, 120mm x 96mm x 98mm for each satellite speaker.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB70M	Zy-Fi Bass Speakers	£68.070	£79.990

## EPOS Hardware

### Barcode Scanners

## 67mm Barcode CCD Scanner with AT Keyboard Interface

CipherLab



NEW

A lightweight, durable Barcode scanner that can be connected between a PC AT type keyboard and computer. Interface and decoding electronics are fully integrated. The unit is functionally programmable for specific applications and is suitable for scanning the most commonly used Barcodes: Standard Code 39, Full ASCII Code 39, Standard 2 of 5, Industrial 2 of 5, UPC A,B and C, EAN-13 and 8, Matrix 2 and 5, MSI, CP 25, Codabar, Code 93, Code 128 and Pharma Codes. Supplied complete with AT keyboard cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV75S	Barcode 67mm AT	£127.650	£150.000

## 67mm Barcode CCD Scanner with RS-232 Interface

CipherLab



NEW

A CCD Barcode scanner that connects directly to any serial port all communications parameters are programmable to suit application. Ideal for special applications such as portable computers or dumb terminal based data collection tasks. Suitable for scanning the most commonly used Barcodes: Standard Code 39, Full ASCII Code 39, Standard 2 of 5, Industrial 2 of 5, UPC A,B and C, EAN-13 and 8, Matrix 2 and 5, MSI, CP 25, Codabar, Code 93, Code 128 and Pharma Codes. Supplied complete with 9 or 25-way cable and 5VDC 300mA external PSU.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV76H	Barcode 67mm RS232	£127.650	£150.000

## High Performance Barcode CCD Scanner with Selectable Interface

CipherLab



NEW

A new generation high speed scanning engine CCD coupled with built-in powerful decoding electronics equipped this unit for the most demanding Barcode reading applications, such as high-density, laminated and coloured labels. Available in 67mm and 90mm widths with an ergonomically designed lightweight housing this unit fits comfortably in your hand ideal for long periods of use. Suitable for scanning the most commonly used Barcodes: Standard Code 39, Full ASCII Code 39, Standard 2 of 5, Industrial 2 of 5, UPC A,B and C, EAN-13 and 8, Matrix 2 and 5, MSI, CP 25, Codabar, Code 93, Code 128 and Pharma Codes. Supplied in an extensive range of cable interface options: keyboard wedge PCAT and Macintosh, Serial RS-232 port 9/25 way female and dual port.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV77J	Barcode 67mm CS	£165.940	£199.990
KV78K	Barcode 90mm CS	£182.970	£219.990
LR89W	CCD Cable DIN5P Kybd	£8.500	£9.990
LR90X	CCD Cab Min-DIN4 Mac	£7.350	£8.990
LR91Y	CCD Cab F DB9 RS232	£8.500	£9.990
LR92A	CCD Cab MF DB9 RS232	£8.500	£9.990
LR93B	CCD Cab F DB25 RS232	£8.500	£9.990

## Low Cost Laser Scanner with Keyboard Interface

Meteorologic



NEW

The Meteorologic MSR951 is a compact and very fast laser scanner with a fully decoded keyboard interface, allows scanner to be easily integrated to existing PC based applications without the need for additional software. The scanner Y-cable sits in-line with computer and keyboard, emulating the keyboard, scanned barcode appears as if typed at the keyboard. The scanner recognises the 13 most commonly used barcode types (EAN, UPC, Code 39, 93, 128, interleaved 2 of 5, code-bar, etc). Supplied with flexible support which turns your scanner into a high quality desktop laser scanner, keyboard wedge interface cable and instruction manual.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV85G	Low Cost Laser Scan	£246.800	£299.990

## High Performance Laser Scanner

QuickScan



NEW

Featuring depth of field from contact to 30.5cm this rugged (5 feet drop test proof), durable and ergonomically designed barcode laser scanner is ideal for the most demanding EPOS and warehouse environments. The scanner recognises the 13 most commonly used barcode types (EAN, UPC, Code 39, 93, 128, interleaved 2 of 5, code-bar, etc). Supplied either with Keyboard PCAT or Serial RS-232 9-way interface unit options. Supplied with UK PSU.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV83E	Quick Laser RS232	£595.730	£719.990
KV84F	Quick Laser PC-AT	£595.730	£719.990

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**Slim-scan 1200**

Fujitsu



This unique product represents the new benchmark in omni-directional fixed and hand-held barcode scanning. The scanner has a dual optic arrangement that produces a multi-line scan pattern (good for high throughput) and a single line scan (good for menu or contact reading). A multi-mount stand is included to suit all application. Simply choose between RS232 or keyboard wedge type PCAT interfaces. Supplied complete with external 5VDC 600mA PSU and detailed manual.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each	
LR81C	1	Fujitsu Scanner	£680.940	£799.990

**Omni-directional Barcode Scanner**

Scantech



- ★ Omni-directional scanning
- ★ Available with RS232 or keyboard interfaces
- ★ Fast scan acquisition

A high performance fixed vertical omni-scanner ideally suited for hands free scanning in a small counter environment. With an aggressive scan rate that can be maximised through tilting of the vertical stand (included) operator fatigue is now a thing of the past. Supplied either as RS232 or keyboard wedge interface unit with external PSU.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each	
KV88V	1	Hunter Scanner RS232	£834.030	£908.950
KV88W	1	Hunter Scanner K/B	£834.030	£908.950

**Labels Unlimited**

Softkey

- ★ 11 bar code formats supported
- ★ 100 fonts included
- ★ 2600 clip art images included
- ★ 500 pre-defined label formats
- ★ Database function including sort for merge printing
- ★ Windows 95 OLE 2.0 support



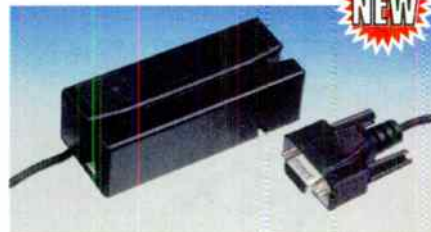
Labels Unlimited is a professional labelling system ideal for both professional and home use. Perfect for bar code printing, ticketing, address labels and ad-hoc applications. Supports all major industry and postal bar codes, including ISBN, EAN-8, EAN-13, Code 39, UPC-A, UPC-E, Codabar, Code 128, Interleaved 2 of 5, POSTNET and FIM. Requires Windows 3.x or Windows 95, 386 IBM-compatible PC, 8MB RAM and CD ROM drive

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each	
KV43W	1	Labels Unlimited CD	£34.030	£39.990

**Infra-Red Card Reader**

CipherLab



Ideal for reading self-made Barcode membership cards, infra-red light source allows accurate and fast reading of laminated obscured or normal Barcode. Built-in programmable decoder makes this unit easy to integrate into most applications. Suitable for scanning the most commonly used Barcodes: Standard Code 39, Full ASCII Code 39, Standard 2 of 5, Industrial 2 of 5, UPC A,B and C, EAN-13 and 8, Matrix 2 and 5, MSI, CP 25, Codabar, Code 93, Code 128 and Pharma Codes.

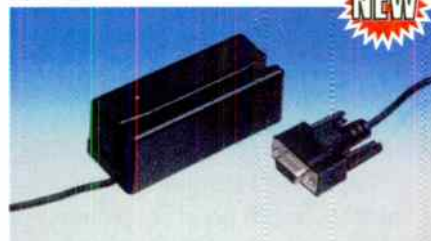
Supplied in the following cable interface options: Keyboard Wedge PCAT, Serial RS-232 25-way female and TTL output (not decoded) 9-way female.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each	
KV80B	1	Bar Slot Plus PC-AT	£127.650	£120.550
KV81C	1	Bar Slot Plus RS232	£127.650	£120.550
KV79L	1	Bar Slot Plus TTL 9D	£76.580	£89.750

**Rugged Metallic Infra-Red Card Reader**

CipherLab



This card reader is packaged in a rugged metallic housing for harsh environments such as factory floor data collection, car parking and other demanding applications. The unit provides a TTL

data output (not decoded) and needs to be used with an external decoder. Supplied with a 9-way female connector.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each	
KV82D	1	Bar Slot Met TTL 9D	£85.090	£79.000

**Barcode Wands**



Plastic PC AT version shown

This polycarbonate housed pen provides simple connection to either a serial port via a 9 or 25 way D-type plug. Its integral decoder automatically detects all leading Barcode symbologies. Successful reading is achieved by simply swiping the reader tip over the length of the Barcode. Supplied complete with external PSU.

This product is also available in a stainless steel package for demanding environments with a PC AT keyboard interface and in polycarbonate with a barcode wand interface with 9way D-type connector.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each	
KV91Y	1	Plas Wand RS232 25D	£110.620	£101.250
KV92A	1	Plas Wand 9D W Int	£85.090	£78.950
KV90X	1	Stainless Wand PC-AT	£127.650	£115.250

**Track 2 Card Reader**

CipherLab



Configurable magnetic card reader for standard track 2 applications, accepts both Hi/Lo Co type cards. Connects directly to PCAT type keyboard or RS-232 serial port by selecting cable option and DIP switch setting. The following cable options are available, PC AT keyboard, Mac Mini-Din keyboard, single RS232 9 way D-type and dual RS232 9 way D-type.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each	
KV93B	1	MSR Track 2	£89.350	£96.250

**All Customers**  
No additional freight charges for heavy items

## Track 1,2 & 3 Card Reader

CipherLab



Configurable magnetic card reader for standard track 1,2 & 3 applications, accepts both Hi/Lo Co type cards. Connects directly to PCAT type keyboard or RS-232 serial port by selecting cable option and DIP switch setting. The following cable options are available, PC AT keyboard, Mac Mini-Din keyboard, single RS232 9 way D-type and dual RS232 9 way D-type.

Retail Unit Price each (inc. VAT).

Order Code	Type 18287	Price each exc. VAT			inc. VAT each 1+
		1+	2+	5+	
KV94C 1	MSR Track 1, 2, 3	£127.650	£126.000	£123.050	£149.990
LR87U	MSR Cable DIN5P Kybd	£8.500	£7.350	£6.850	£9.990
KV96E	Cable Mini-DIN4 Mac	£8.500	£7.350	£6.850	£9.990
KV97F	Cable DB9 Fem RS232	£8.500	£7.350	£6.850	£9.990
LR88V	MSR Cab MF DB9 RS232	£8.500	£7.350	£6.850	£9.990

## Card Reader For Track 2

CipherLab



Configurable magnetic card reader for standard track 2 applications, accepts both Hi/Lo Co type cards. Connects directly to PCAT type keyboard or RS-232 serial port by selecting cable option and DIP switch setting.

Cable options include PC AT, Mini-Din 4 Mac keyboard, DB9 RS232 single and dual DB9 RS232 male/female, all cables are approx 1.2m in length.

Retail Unit Price each (inc. VAT).

Order Code	Type 18356	Price each exc. VAT			inc. VAT each 1+
		1+	2+	5+	
KV93B 1	MSR Track 2	£89.350	£86.250	£83.300	£104.990
LR87U	MSR Cable DIN5P Kybd	£8.500	£7.350	£6.850	£9.990
KV96E	Cable Mini-DIN4 Mac	£8.500	£7.350	£6.850	£9.990
KV97F	Cable DB9 Fem RS232	£8.500	£7.350	£6.850	£9.990
LR88V	MSR Cab MF DB9 RS232	£8.500	£7.350	£6.850	£9.990

## Card Reader For Track 1 & 2

Low cost magnetic stripe card reader, capable of reading dual track providing with un-decoded data and clock TTL data outputs, ideal for integration into application specific data terminals.

Retail Unit Price each (inc. VAT).

Order Code	Type 18069	Price each exc. VAT			inc. VAT each 1+
		1+	2+	5+	
KV95D 1	MSR Track 1&2	£46.800	£42.950	£38.650	£54.990

## Card Reader/Writer for Track 1, 2 and 3

Tysso



- ★ Compatible with ISO 7811/2, 7811/4, 7811/5
- ★ RS232 interface
- ★ Built-in high level serial interface command set
- ★ Overwrite protection capability
- ★ Self-diagnosis capability

This reader/writer is used to put information on tracks 1, 2 and 3 of magnetic cards. It is connected to the serial port of a PC. Very useful for writing membership, incentive and security cards. This unit comes complete with easy to use software, connection cables and manual.

Retail Unit Price each (inc. VAT).

Order Code	Type 11204	Price each exc. VAT			inc. VAT each 1+
		1+	3+	5+	
ZE07H 1	Std Card Read/Write	£680.840	£570.000	£560.000	£799.990

## Storage Devices

### Hard Drives

## Caviar EIDE Hard Drives

Western Digital



A range of EIDE hard drives that offer very high performance storage in a 3.5in form factor. Available in 3 variants of 2.5Gb, 3.1Gb and 4.0Gb.

#### Specifications:

Bytes per Sector:	512
Average Read Seek:	11ms
Average Latency:	5.8ms
Rotational Speed:	5200RPM
Data Transfer Rate:	16.6MB/s
Buffer:	256KB
MTBF (POH):	350,000
Warranty:	3 years

Retail Unit Price each (inc. VAT).

Order Code	Type 18271	Price each exc. VAT			inc. VAT each 1+
		1+	2+	5+	
KV48C	WD 2.5GB HD EIDE	£170.200			£199.990
KV49D	WD 3.0GB HD EIDE	£187.220			£219.990
KV70M	WD 4.0GB HD EIDE	£238.280			£279.990

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

## Backup Devices

### CD ROM Writer

Hewlett Packard



- ★ SCSI-II interface
- ★ Quad write
- ★ Six speed read
- ★ 1MB buffer
- ★ 650MB native disk capacity
- ★ One year express exchange warranty direct from HP

State-of-the-art CD technology for the production of in-house CD ROMs for data distribution. Ideal for the production of professional presentations, data distribution, back-ups and in-house software. Archive and retrieve data quickly and cost-effectively. This internal, SCSI-2 drive is shipped with a SCSI-2 cable, a blank HP Surestore recordable CD and a comprehensive software suite: Easy-CD Pro, a full featured authoring software which enables you to copy data or audio files to CD, conforming to Orange Book. Alchemy Personal, file archive software that allows you to archive documents and create image libraries.

PLEASE CALL FOR LATEST PRICE UPDATES

Retail Unit Price each (inc. VAT).

Order Code	Type 12228	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
LR97F 1	HP6020i CD Writer	£255.310			£289.990

## Recordable Compact Disk

TDK



- ★ Orange Book Part II Compliant
- ★ 74 minutes of Audio Recording
- ★ 650Mb Data Storage Capacity

TDK CD-Rs are manufactured using a proprietary metal-stabilised Cyanine recoring layer for increased light sensitivity and maximum compatibility with all hardware recording speeds. Also available is a printable CD-R suitable for use in specialist printers.

Retail Unit Price each (inc. VAT).

Order Code	Type 13718	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
JS21X	TDK 74 Min CD-R	£5.940	£4.750	£4.500	£6.990
LQ26D	TDK Printable CDR	£5.090			£5.990

## Recordable Compact Disk

Koch



- ★ 74 min Audio
- ★ 650Mb Data
- ★ Suitable for 1x, 2x and 4x Drives

A CD-R for use in multimedia authoring, archiving of data, distribution of presentations and many other tasks involving large amounts of electron c data.

Retail Unit Price each (inc. VAT).

Order Code	Type 17440	Price each exc. VAT	inc. VAT each
CK19V	Unbranded CD-R Media	£5.090 1+ £4.500 5+ £4.250 10+	£5.990 1+

## 1 Gb Iomega Jaz Drives

Iomega



1 Gb internal and external drives from Iomega which offer high performance storage suitable for backup of an entire system on one disk. Will hold upto 2 hours of CD quality sound or 56 minutes of MPEG video or 1000 colour photographs. Both drives offer SCSI connection and are easy to install and use. Supplied with Jaz Tools software. Seek time is 12ms with a sustained transfer rate of 6.62Mb/sec.

PLEASE CALL FOR LATEST PRICE UPDATES

Retail Unit Price each (inc. VAT).

Order Code	Type 12045	Price each exc. VAT	inc. VAT each
CD02C 1	Iomega Jaz Drive Ext	1+	POA
CD01B 1	Iomega Jaz Drive Int	1+	POA

## 100 Mb Zip Drives

Iomega



Iomega Zip drives offer 100Mb of storage on removable disks and are available in SCSI internal and external versions, a parallel port external version is also available. Suitable for the storage of backups, multimedia and games. External versions are supplied with one data cartridge containing Zip Tools software, mains power adapter and cables, the SCSI version is suitable for use with Apple Macintosh computers. The SCSI internal version is supplied with internal ISA adapter. The dedicated ZIP ZOOM SCSI card (JS33L) is available for external versions giving enhanced operation with PC's, this card requires one free ISA slot. Seek time is 29ms, data transfer rate is 1.25Mb/sec.

PLEASE CALL FOR LATEST PRICE UPDATES

Retail Unit Price each (inc. VAT).

Order Code	Type 12047	Price each exc. VAT	inc. VAT each
JS34M 1	Iomega Zip Par Port	1+	PCA
JS32K 1	Iomega Zip Div SCSI	1+	PCA
CK04E 1	Zip Internal & Card	£110.620	£129.990
JS33L 1	Iomega SCSI I/Face	£29.770	£34.990

## Ditto Tape Back-up Drives

Iomega



A range of tape drives that are available in internal and external, parallel port, versions. Two models are available: 3200Mb and 2Gb. Use them to back-up, restore and copy files. Parallel version features a printer through port and is easily installed and moved between computers. Internal version fits into any half-height drive bay.

Specification:

Ditto 3200  
Read/Write: TR-3, QIC 3010, QIC 3020  
Transfer rate: 1MBps internal  
2MBps parallel

Ditto 2Gb  
Read/Write: TR-1 to TR-3, QIC 80  
formats, QIC 30 formats  
Transfer rate: 1MBps internal  
1MBps parallel

200,000 hours MTBF

PLEASE CALL FOR LATEST PRICE UPDATES

Retail Unit Price each (inc. VAT).

Order Code	Type 12198	Price each exc. VAT	inc. VAT each
CD73Q 1	Iomega Ditto 3200 In	1+	POA
CD74R 1	Iomega Ditto 3200 PP	1+	POA
VL83E 1	Ditto 2GB Internal	1+	POA
VL56L 1	Ditto 2GB External	1+	POA

## Iomega Accessories

### PCMCIA Zip SCSI Card

Iomega



A Type II PCMCIA SCSI card for connecting a Zip drive to a laptop or other equipment with a PCMCIA port.

Retail Unit Price each (inc. VAT).

Order Code	Type 18180	Price each exc. VAT	inc. VAT each
LQ36P 1	Zip Card PCMCIA	£80.840	£94.990

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## Internal SCSI Zip Card

Iomega

An internal ISA card designed specifically for use with internal Zip drives to provide optimum throughput. This card is not suitable for use with external Zip drives.

Retail Unit Price each (inc. VAT).

Order Code	Type 18167	Price each exc. VAT	inc. VAT each
LQ37S 1	Zip Card Internal	£17.010	£19.990

## Zip Tools Software

Iomega



Zip Tools software on CD-ROM supporting the following OS versions: Windows 3.1x, 95 and NT, Mac OS, and OS/2 environments. Available on CD-ROM or Zip disk.

Retail Unit Price each (inc. VAT).

Order Code	Type 18188	Price each exc. VAT	inc. VAT each
LQ38R 1	Zip Tools CD-Rom	£5.940	£6.990
LQ39N 1	Zip Tools Disk	£21.260	£24.990

## Zip OS/2 Software

Iomega

Zip Tools software for OS/2, supplied on 3.5in floppy disk.

Retail Unit Price each (inc. VAT).

Order Code	Type 18170	Price each exc. VAT	inc. VAT each
LQ40T 1	Zip os/2 Software	£7.650	£8.990

## Windows NT Tools

Iomega

Zip Tools for Windows NT, supplied on 3.5in floppy disk.

Retail Unit Price each (inc. VAT).

Order Code	Type 18171	Price each exc. VAT	inc. VAT each
LQ41U 1	Windows NT Tools	£14.450	£16.990

## Zip Carry Case

Iomega

A protective case for transporting a Zip drive together with power supply, cable and Zip disks.



Retail Unit Price each (inc. VAT).

Order Code	Type 18173	Price each exc. VAT	inc. VAT each
LQ42V 1	Zip Carry Case	£21.260	£24.990

## Mini Zip Case

iomega



**NEW**

A protective case for transporting a Zip drive with a few Zip disks.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ43W	Zip Mini Carry Case	£11.050	£12.990

## Zip Powerbook Adapter

iomega



**NEW**

An adapter to connect your external SCSI Zip drive to an Apple Powerbook computer.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ46A	Zip Pbook Adapter	£16.160	£18.990

## Zip Disks

iomega



**NEW**

Zip 100Mb disks are available in both PC and MAC formats in packs of 1, 3 and 6.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM44X	iomega Zip Disk	£11.050	£12.990
LQ49D 1	Zip Disk 3	£32.330	£37.990
LQ50E	Zip Disk Mac	£11.050	£12.990
LQ51F 1	Zip Disk Mac 3	£32.330	£37.990
LQ52G 1	Zip Disk Mac 6	£59.560	£69.990

## Zip Disk Organiser

iomega



**NEW**

A disk organiser that holds 6 Zip disks for convenient storage. (6 pack of disks shown, disks not included)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ44X	Zip Disk Organiser	£5.940	£6.990

## Zip Centronics Adapter

iomega



**NEW**

An adapter for connecting your external SCSI Zip drive to a 50way centronics port using the original Zip cable.

Connectors: 25way D-Type female  
50way Centronics male

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ47B	Converter Cent 50 F	£4.240	£4.990

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JT45Y	iomega Zip Disk 6pk	£59.560	£69.990

## Jaz Carry Case

iomega



**NEW**

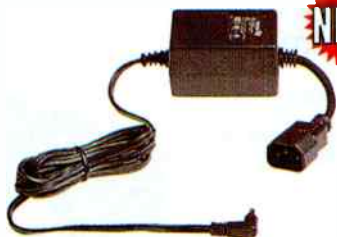
A protective case for transporting a Jaz drive together with power supply, cable and Jaz disks.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ63H	Jaz Carry Case	£25.520	£29.990

## Universal Zip Power Supply

iomega



**NEW**

An auto-switching power supply for use with your Zip drive worldwide.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ45Y 1	Zip Universal PSU	£27.220	£31.990

## Zip Mini-SCSI Adapter

iomega



**NEW**

An adapter for connecting your external SCSI Zip drive to a 50way micro-D port using a micro-D cable.

Connectors: 25way D-Type male  
50way Micro-D female

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ48C	Converter Mini SCSI	£8.500	£9.990

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**Jaz Tools Software**

iomega



Complete Jaz Tools software for the following environments: Windows 3.1x, 95 and NT, Mac OS and OS/2. Includes "One Step Back-up" and "Findit", available on CD-ROM.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO54J	Jaz Tools CD Rom	£6.800	£7.990

**Jaz OS/2 Software**

iomega

Allows you to run on OS/2, OS/2.11 and Warp. Supplied on 3.5in floppy disk.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO55K	Jaz OS/2 Software	£9.350	£11.990

**Jaz Tools Software**

iomega

Jaz Tools software supplied on a Jaz disk for use with Windows/DOS, Mac OS and OS/2. Please order a Jaz Welcome Pack as well to avoid compatibility issues.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO56L	Jaz Tools Software	£131.050	£153.990
LO57M	Jaz Welcome Ext	£2.540	£2.990
LO58N	Jaz Welcome Int	£2.540	£2.990

**Jaz Welcome Pack**

iomega

Installation disks for Jaz drives, available for external drives (Mac & PC) and internal drives.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO57M	Jaz Welcome Ext	£2.540	£2.990
LO58N	Jaz Welcome Int	£2.540	£2.990

**Jaz Cable**

iomega



The standard cable that ships with the Jaz drive, allows connection to fast SCSI II adapters. Connectors: 50way Micro-D

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO69P	50hd to 50hd cable	£18.710	£21.990

**Jaz Universal Power Supply**

iomega



An auto-switching universal power supply which allows you to use your Jaz drive worldwide.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO60Q	Jaz Universal PSU	£25.520	£29.990

**Jaz Centronics Cable**

iomega

SCSI cable for connecting your Jaz to 50way centronics devices.

Connectors: 50way Micro-D  
50way Centronics



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO61R	Jaz Centronics Cable	£25.520	£29.990

**Jaz Powerbook Cable**

iomega

Direct cable connection between your Jaz drive and an Apple Powerbook computer, approx. length 0.45m.

Connectors: 50way Micro-D  
30HDI



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO62S	Jaz Powerbook Cable	£25.520	£29.990

**Cross Platform Jaz Jet PCI Card**

iomega



32bit, PCI to SCSI II bus mastering host adapter for Jaz and Jaz Insider drives. Can be configured for use with PC and Apple Macintosh systems.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO63T	Cross Platform Jet	£97.860	£114.990

**Jaz Traveller**

iomega

Allows connection to any PC via the parallel port, for use with Jaz external drives.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO64U	Jaz Traveller	£46.800	£54.990

**Jaz Jet ISA Card**

iomega

16bit, ISA SCSI II bus mastering host adapter for Jaz and Jaz Insider Drives.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO65V	Jaz Jet ISA	£85.090	£99.990

**Jaz Card**

iomega

A PCMCIA to fast SCSI II adapter card for connecting your Jaz drive to laptops with PCMCIA ports.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO66W	Jaz Card	£125.090	£146.990

**Jaz Media**

iomega



Jaz 1Gb disks are available formatted for PC and Mac systems in packs of 1 and 3 disks.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO63D	1 Jaz Media PC 3 Pack	£72.330	£84.990
LO67X	1 Jaz Media MAC Single	£212.750	£249.990
LO68Y	1 Jaz Media MAC 3 Pack	£72.330	£84.990
LO69A	1 Jaz Media MAC 3 Pack	£212.750	£249.990



**We will deliver your order with no postal charge!**

Every order £30 or above will be sent with carriage paid.

Approved business account holders are not charged carriage for any order but still pay guaranteed next day delivery.

(Guaranteed next day delivery charges as stated in our Terms & Conditions at the back of the catalogue)

## Ditto Media

omega



Ditto tape cartridges are available for Ditto 800, Ditto 3200 and Ditto 2Gb drives. A 3 pack is available for Ditto 2Gb cartridges.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VR88V	1+ Omega 2Gb Tape	£12.750	£14.990
LQ70M 1	1+ Ditto 2GB Cart 3pack	£34.030	£39.990

## Ditto Cleaning Kit

omega

Head cleaning kit for 250, 420 and 800 drives.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ71N	1+ Ditto Cleaning Kit	£21.260	£24.990

## Ditto Dash Card

omega



2 Megabit per second tape drive controller for AT (ISA) bus systems.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ72P	1+ Ditto Dash	£25.520	£29.990

## 1-Step Backup Software

omega



Backup software for DOS, Windows 3.1x, and Windows '95.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ73Q	1-Step Backup	£25.520	£29.990

## Ditto NT Tools Software

omega

Backup software that includes One-Step, Simple Restore, Simple Copy, The Works, full compression and Windows '95 backward compatible.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ74R	1+ Ditto NT Tools	£18.710	£21.990

## Ditto OS/2 Backup Software

omega

Backup software for OS/2 operating system environments. Supports 800 and 3200 drives.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ75S 1	1+ Ditto OS/2 Backup	£37.430	£43.990

## Floppy Drives

### Floppy Disk Drives



A range of three different floppy disk drives to cater for all capacities and disk types. Type MF504C is a standard slide-in, half-height 133mm (5 1/4 in.) floppy drive which is able to handle both Double Density (DD, 360K) and High Density (HD, 1-2M) floppy disks.

The 3.5in drive is able to take DD (720K) and HD

(1-44M) disks. A slide-in adaptor frame is available to enable the 89mm (3 1/2 in.) type to be used in a half-height slot, see below.

The MD5501 is a versatile dual floppy drive with two disk slots, packing two disk drives into an unbelievable half-height standard sized unit. It is able to read and write both 133mm (5 1/4 in.) and 89mm (3 1/2 in.) disks of both DD and HD capacities, supporting 360K and 1-2M as well as 89mm (3 1/2 in.) 720K and 1-44M formats. It only utilises one half-height front panel slot and one power connector, leaving the other free.

Please note that this range of floppy drives is designed primarily to fit IBM compatible AT computers. Although it may be possible to fit these drives to some other computer types, we cannot provide support or configuration information for anything other than IBM AT compatibles. We are unable to support expansion of Amstrad PCs and do not recommend the use of these floppy drives in Amstrad machines.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZG44X 1	1+ 3.5inch Floppy Drive	£18.710	£21.990
ZG45Y 2	2+ MF504C 5.25 Drive	£43.390	£50.990
ZG46A 2	2+ MD5501 Dual Drive	£85.090	£99.990

## 3.5in Floppy Drive Lock



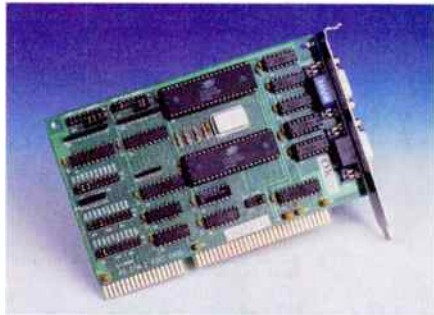
A floppy drive lock for preventing access to a 3.5in floppy drive, suitable for use with most 3.5in PC drives. Can be used to prevent unauthorised installation of software, unauthorised saving of software and protection against disks infected by viruses.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ15R	1+ Floppy Lock	£8.500	£9.990

## SCSI Interface Cards

### Dual Port 16550 Serial Card



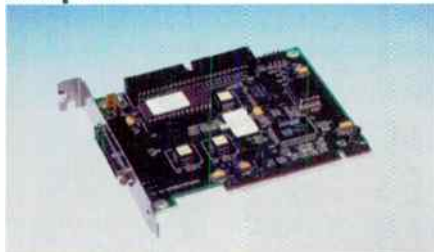
A high quality ISA serial card that has two serial ports equipt with 16550 compatible UARTS. The card can be fully configured using the jumpers supplied, full instructions are included for this. The card is particularly suited to use with high speed V34 modems at 28.8 Kbs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CH83E 1	1+ RS232 2 Port 16550	£38.280	£44.990

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**Adaptec 2920 AD**



The Adaptec 2920AD offer fast SCSI II performance with an excellent price/performance ratio. The Adaptec controller kit includes comprehensive SCSI software drivers for all well-known CD-ROM drives, hard drives, tapestreamers, flopticals, etc., and provides full support for MS-DOS, Windows, OS/2, UNIX, SCO UNIX, SCO ODT, Windows 95, Windows NT/Advanced Server and LAN Manager. A very comprehensive controller kit for easy use and installation on the PCI bus.

Retail Unit Price each (inc. VAT).

Order Code	Type 11106	Price each exc. VAT	inc. VAT each
CE40T 1	PCI Fast SCSI II Kit	£123.390	£144.990

**Adaptec PCI 2940 Wide SCSI III Kit**



The wide SCSI III kit for PCI provides full support for SCSI I, Fast and Wide SCSI II and the latest SCSI III. The Adaptec AHA 2940 has its own 32-bit Phase Engine RISC processor to control data traffic between the 2 SCSI II and PCI bus and can handle data at 133Mb/s via the 32-bit PCI bus, 10Mb/s for the Fast SCSI II in synchronous mode and 20Mb/s for the Wide SCSI II bus.

Adaptec is one of the largest manufacturers of SCSI controllers, so full support for OS/2, Windows NT, MS-DOS, Windows, Netware and UNIX operation systems is guaranteed. The EZ-SCSI software supports all tapestreamers, CD-ROM drives, scanners, hard drives, DATs, removable, magnetic, optical and floptical drives. CD-ROM software utilities are included plus a photo viewer and Back Basics is also included for backing up your network. A maximum of 15 individual devices can be connected to this Adaptec controller. A 50-pin Sub-D half-pitch connector is built-in. The kit is supplied complete with 8 and 16-bit SCSI cables and a comprehensive user manual.

Retail Unit Price each (inc. VAT).

Order Code	Type 11102	Price each exc. VAT	inc. VAT each
CE36P 1	Wide SCSI III Kit	£228.770	£269.990

**Adaptec PCI 2940 Fast SCSI II Kit**



The Adaptec 2940 Fast SCSI kit fully supports SCSI I and Fast SCSI II. The Adaptec AHA 2940 has its own 32-bit Phase Engine RISC processor to control data traffic between the 2 SCSI II and PCI bus and expected speeds are 133Mb/s via the 32-bit PCI bus and 10Mb/s for the Fast SCSI II in synchronous mode.

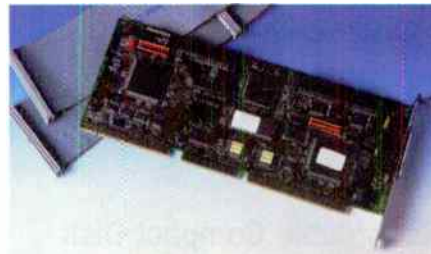
Adaptec is one of the biggest manufacturers of SCSI controllers so full support for OS/2, Windows NT, MS-DOS, Windows, Netware and UNIX operation systems is guaranteed. The EZ-SCSI software supports all tapestreamers, CD-ROM drives, scanners, hard drives, DATs, removable, magnetic, optical and floptical drives. CD-ROM software utilities are included plus a photo viewer and Back Basics is also included for backing up your network.

A maximum of 15 individual devices can be connected to this Adaptec controller. A 50-pin Sub-D half-pitch connector is built-in. The kit is supplied complete with 8 and 16-bit SCSI cables and a comprehensive user manual.

Retail Unit Price each (inc. VAT).

Order Code	Type 11103	Price each exc. VAT	inc. VAT each
CE37S 1	Fast SCSI II Kit	£178.710	£209.990

**Adaptec 2842 VLB SCSI II Kit**



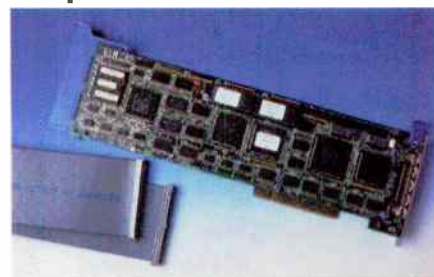
The Adaptec AHA 2842A, well-known as the VLB SCSI master, will get the most out of your VESA local bus. Its fast 32-bit Phase Engine RISC processor provides full multi-tasking at a speed of 40Mb/s between the VESA local bus and SCSI bus. In synchronous mode the maximum SCSI II speed is 10Mb/s and the SCSI bus supports simultaneous synchronous and asynchronous data transfer.

Adaptec is one of the biggest manufacturers of SCSI controllers so full support for OS/2, Windows NT, MS-DOS, Windows, Netware and UNIX operation systems is guaranteed. The EZ-SCSI software supports all tapestreamers, CD-ROM drives, scanners, hard drives, DATs, removable, magnetic, optical and floptical drives. CD-ROM software utilities are included plus a photo viewer and Back Basics is also included for backing up your network. A 50-pin Sub-D half-pitch connector is built-in and two floppy drives (2-88Mb) can be supported. The kit is supplied complete with SCSI cables and a clear user manual.

Retail Unit Price each (inc. VAT).

Order Code	Type 11104	Price each exc. VAT	inc. VAT each
CE38R 1	VLB SCSI II Kit	£170.200	£199.990

**Adaptec 1542 CP**



This high-speed ISA SCSI II controller will control up to 7 SCSI devices and, if using the optional EZ-SCSI 4.0 software, can be used to connect large capacity hard drives (one gigabyte plus), worm drives, tapestreamers, etc. Provides a DMA bus master controller for fast and clear data transfer at up to 5Mbps. Windows 95 Plug and Play compatible.

Retail Unit Price each (inc. VAT).

Order Code	Type 11108	Price each exc. VAT	inc. VAT each
CE45Y 1	Adaptec 1542CP	£170.200	£199.990

**Adaptec 1522 Controller Kit**



This Adaptec 16-bit ISA SCSI controller can be used to control all kinds of SCSI II devices. The controller provides a boot ROM for automatic start up, a maximum of 7 SCSI devices are supported and it fully supports MS-DOS and Windows. Complete with the latest ASPI drivers for CD-ROM drives, tapestreamers, removable drives, worm drives, etc. Very simple to install.

Retail Unit Price each (inc. VAT).

Order Code	Type 11107	Price each exc. VAT	inc. VAT each
CE41U 1	1522 Controller Kit	£127.650	£149.990

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## Adaptec 1640 MCA Kit



Now it is possible to use Fast SCSI II on your IBM (or IBM compatible) computer with MCA slots. The Adaptec 1640 is fully compatible with the well known Adaptec 1542 controller and provides internal and external SCSI connections. The kit provides automatic set up for (removable) hard drives and includes EZ-SCSI software to control SCSI devices such as tapestreamers, Kodak photo CD-ROM drives, scanners, printers, etc., and large capacity gigabyte hard drives. Works under MS-DOS, Windows, Windows NT, UNIX, Novell Netware and OS/2, and can be used with the following IBM PS/2 systems: 50, 55sx, 50z, 60, 70, 80, 90 and 95.

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
CE46A	Adaptec 1640 MCA Kit	£199.940	£234.940

## EZ-SCSI Driver



This pack contains Adaptec's most recent updates for its DOS and Windows SCSI drivers, providing full support for a comprehensive range of CD-ROM drives, tapestreamers, worm drives, hard drives, DAT streamers and more. With these drivers you'll be able to control the latest SCSI devices - even with an older Adaptec controller. The drivers are suitable for all Adaptec cards in the 1500, 1600, 1700, 2700, 2800, 6200 and 7700 series.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CE48C	Ez-SCSI Driver	£42.970	£50.490

## Media

### High Density Floppy Disks

TDK



- ★ Improved Shutter Design
- ★ Smoother Disk Rotation to Extend Notebook Battery Lifetime

### ★ Pre-formatted for Ease of Use

A range of high quality 3.5in floppy disks for use with either PC or MAC platforms, all disks are pre-formatted and are available in plastic or cardboard boxes. Supplied in boxes of 10 disks.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL600	10pk DSHD Formatted	£4.240	£4.990
VL62S	10pk MF2HD Disk 3.5	£4.240	£4.990
VL61R	10pk MF2HD MAC 3.5	£4.240	£4.990

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ32K	TDK 20PK DSHD Format	£7.650	£8.990
LQ33L	TDK 50PK DSHD Format	£16.160	£18.990

## Recordable Compact Disk

TDK



- ★ Orange Book Part II Compliant
- ★ 74 minutes of Audio Recording
- ★ 650Mb Data Storage Capacity

TDK CD-Rs are manufactured using a proprietary metal-stabilised Cyanine recording layer for increased light sensitivity and maximum compatibility with all hardware recording speeds. Also available is a printable CD-R suitable for use in specialist printers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JS21X	TDK 74 Min CD-R	£5.940	£6.990
LQ26D	TDK Printable CDR	£5.090	£5.990

## Recordable Compact Disk

Koch



- ★ 74 min Audio
- ★ 650Mb Data
- ★ Suitable for 1x, 2x and 4x Drives

A CD-R for use in multimedia authoring, archiving of data, distribution of presentations and many other tasks involving large amounts of electronic data.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK19V	Unbranded CD-R Media	£5.090	£5.990

## QIC Data Cartridges

TDK



★ High Performance Metal Particle Tape Technology Available in a range of formats and capacities for both 3.5in and 5.25in hardware. TDK TR1 Extra cartridges are 100% compatible with TRAVAN™ TR1 and offer 100Mb of additional storage. TDK DC-3020XL cartridges are compatible with both 3020-MC recording formats as well as TR3 hardware.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JT11M	QIC80 Data Cart 120	£5.940	£6.990
JT12N	QIC80 Data Cart 170	£10.200	£11.990
JT13P	QIC-3020 Data Cart	£23.820	£27.990
LQ27E	TR-3 QIC Data Cart	£19.560	£22.990
JT14Q	TR-1 QIC Data Cart	£19.560	£22.990
JT15R	QIC 5 Data Cart 150	£7.650	£8.990
JT16S	QIC 5 Data Cart 250	£10.200	£11.990
JT17T	QIC 5 Data Cart 525	£11.900	£13.990

## 4mm & 8mm Helical-Scan Data Cartridges

TDK

- ★ High Performance Super Finavinx Coated Tape Composition
- ★ Hermetically Sealed Cartridge Construction to Prevent Dust Contamination.
- ★ Available with Options for DDS and DDS-2 Recording Formats



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JT08J	8mm Data Cart 2.3GB	£5.940	£6.990
JT09K	4mm Data Cart 2GB	£5.090	£5.990
JT10L	4mm Data Cart 4GB	£14.450	£16.990



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## Magneto-Optical Disks

TDK



★ **Archival Lifetime of 30 Years**

★ **Tested 100% Error-free before Shipment**

TDK MO Disks are available in 3.5in and 5.25in size options with single, double and quadruple disk density formats.

Retail Unit Price each (inc. VAT).

Order Code	Type 13723	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
JT18U	Optical Disk 3 128mb	£10.200	£9.500	£9.250	£11.990
JT19V	Optical Disk 3 230mb	£11.900	£11.300	£11.050	£11.990
LQ28F	Optical Disk 3 540mb	£29.770	£27.500	£26.000	£34.990
LQ29G	Optical Disk 3 640mb	£29.770	£27.500	£26.000	£34.990
JT23W	Optical Disk 5 1.2gb	£39.990	£37.850	£37.000	£46.990
JT21X	Optical Disk 5 1.3gb	£39.990	£37.850	£37.000	£46.990
LQ30H	Optical Disk 5 2.3gb	£51.050	£47.000	£45.000	£59.990
LQ31J	Optical Disk 5 2.6gb	£51.050	£47.000	£45.000	£59.990

## Cables & Accessories

### Gender Changers

#### PC Serial Port



Converters for use with serial RS232 equipment to allow connection between devices using 9-way and 25-way D-type connectors, e.g., IBM AT series machines. Four versions are available.

Retail Unit Price each (inc. VAT).

Order Code	Type 10947	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
EL75S	9W/25M Gender Change	£3.390	£2.750	£2.000	£3.990
EL76H	9W/25F Gender Change	£3.390	£2.750	£2.000	£3.990
JM08J	9F/25M Changer	£4.240	£3.950	£3.500	£4.990
JM50E	9F/25F Changer	£3.390	£2.750	£2.000	£3.990

#### Gender Changers



Female 25-way D-type to a male 25-way D-type (M/M) or male 25-way D-type to female 25-way D-type (F/F), including 9-way D-type M/M and F/F

versions. These gender changers are extremely low profile, overall length 17.5mm (as opposed to 61mm for normal gender changers).

Retail Unit Price each (inc. VAT).

Order Code	Type 10944	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JM48C	L Prtl MM 25W Gend	£3.390	£3.250	£2.500	£3.990
JM49D	L Prtl F/F 25W Gend	£3.390	£3.250	£2.500	£3.990
JW57M	L Prtl MM 9W Gend	£2.970	£2.500	£2.000	£3.490
JW58N	L Prtl F/F 9W Gend	£2.970	£2.500	£2.000	£3.490

#### Port Savers



A range of port savers which are available in a number of different configurations. All port savers are male-female low profile units which are designed to be attached to the host computer port while maintaining the original profile to the connecting cable or equipment. By using these port savers expensive repairs can be avoided as repeated connection and dis-connection will wear the port saver as opposed to the port. The port saver can then be replaced at low cost when required. Port savers are especially useful for notebook and portable equipment users who may often connect to numerous devices at different locations. Available in 9 way D-type, 25 way D-type and 15 way high density D-type versions.

Retail Unit Price each (inc. VAT).

Order Code	Type 13448	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
VL40T	9Way Plg/Skt Svr MF	£4.240	£3.750	£3.000	£4.990
VL41U	15Way HDPlg/Skt Svr	£4.240	£3.750	£3.000	£4.990
VL39N	25Way Plg/Skt Svr MF	£4.240	£3.750	£3.000	£4.990

#### Gender Changers



Female 36-way Centronics to a male 36-way Centronics (M/M) or male 36-way Centronics to female 36-way Centronics (F/F).

Retail Unit Price each (inc. VAT).

Order Code	Type 10942	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JM51F	Centrix M/M Genchange	£4.240	£3.950	£3.500	£4.990
JM52G	Centrix F/F Genchange	£4.240	£3.950	£3.500	£4.990

#### Gender Changers



Female 25-way D-type socket to a male 25-way D-type plug (M/M type) or a male 25-way D-type plug to a female 25-way D-type socket (F/F type).

Retail Unit Price each (inc. VAT).

Order Code	Type 10938	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YP86T	GenChange F/F RS232	£5.090	£4.450	£3.500	£5.990
YP87U	GenChange MM RS232	£5.090	£4.450	£3.500	£5.990

#### PS/2 Gender Changer



PS/2 male plug <-> to 25-pin male D plug.

Retail Unit Price each (inc. VAT).

Order Code	Type 10937	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DG29G	PS2 Plg - 25DIN Plg	£4.240	£3.750	£3.450	£4.990

#### PS/2 Gender Changer



PS/2 male plug <-> to 9-pin male D plug. As DG28F with 10cm cable.

Retail Unit Price each (inc. VAT).

Order Code	Type 10941	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DG34M	PS2 Plg - 9p D Plg	£4.240	£3.000	£2.750	£4.990

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## PS/2 Gender Changer



PS/2 female connector<-> to 25-pin female D plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
DG38R	PS2 Skt to 25 D Skt	1+	10+	25+	1+
		£4.240	£4.050	£3.950	£4.990

## PS/2 Gender Changer



PS/2 female connector<-> to 25-pin female D plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
DG39N	PS2 Plg - 25p D Skt	1+	10+	25+	1+
		£4.240	£4.050	£3.950	£4.990

## Keyboard Adapters



A range of keyboard adapters, available either with or without cables, that allow keyboards with PS/2 (6 Pin Mini Din) or AT (5 Pin Din) type connectors to be used with systems that are equipped with the wrong socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
CD50E	PS2 M-F 5 Din Cable	1+	10+	25+	1+
		£5.090	£3.000	£2.250	£5.990
CD51F	PS2 F-M 5 Din Cable	£5.090	£3.000	£2.250	£5.990
CD69A	PS2 Male - 5Din Fem	£5.090	£3.000	£2.250	£5.990
CD70M	PS2 Fem - 5Din Male	£5.090	£3.000	£2.250	£5.990

## Apple Monitor Changer



Standard SVGA monitor to Apple Mac converter.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
DG30H	SVGA -Apple Mac	1+	5+	10+	1+
		£4.240	£3.750	£3.450	£4.990

## Null Modem Adaptor



May be connected directly to equipment ports or between two cables to enable communication where a modem is not required, but equipment will not operate without the control of the modem.

The unit has a 25-way D plug on one end and a 25-way D socket on the other. Pins 1 and 7 are connected straight through, pins 2 and 3 cross over, pin 4 is linked to pin 5 and crosses over with pin 8, and pins 6 and 20 cross over.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
YP65G	Null Modem RS232	1+	10+	25+	1+
		£5.090	£4.750	£3.450	£5.990

## Testers & Adapters

### RS-232 Break-Out Box



This portable, pocket sized test set offers complete control of your RS-232 interface. 10 interface signal powered LEDs allow permanent monitoring of TD, RD, CTS, DSR, CD, TC, RC, DTR, (E)TC and two spare LEDs. 24 switches enable the user to break-out circuits or reconfigure any or all of the 24 active positions. 20 jumper leads are included. The unit has one male and one female RS-232 connector, requires no power or batteries, and comes in a tough, black plastic case with hinged lid. Dimensions closed 92 x 84 x 24mm, excluding cables.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
JY40T	Break Out Box	1+	5+	10+	1+
		£25.520	£24.800	£20.600	£29.990

## Wiring Adaptor



A 25-pin D-type, male to female wiring adaptor, enabling any one or more connections on one side to be connected to any one or more connections on the other side of the adaptor. Each connection is terminated at a pin with which socket-ended jumper leads can be used. In addition, four commoning strips of pins are provided for tying up to four separate connections together, from either side. Supplied with 25 jumper leads 90mm long. The unit has a 25-way D-type plug at one end and a 25-way D-type socket at the other.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
JY39N	Wiring Box	1+	5+	10+	1+
		£9.350	£7.950	£5.800	£10.990

## Jumper Box



Contains a 25-way D plug at one end and a 25-way D socket at the other joined by a fibre glass PCB. Each line is connected to solder pads which may be linked together as required. Pin 1, protective ground, is connected to solder pads and linked through. 25 insulated wire links, each 50mm approx. long with stripped ends, are supplied. The unit is housed in a snap-shut plastic box.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
YP76K	RS232 Jumper Box	1+	5+	10+	1+
		£5.090	£4.600	£3.200	£5.990

## Mini RS-232 Tester



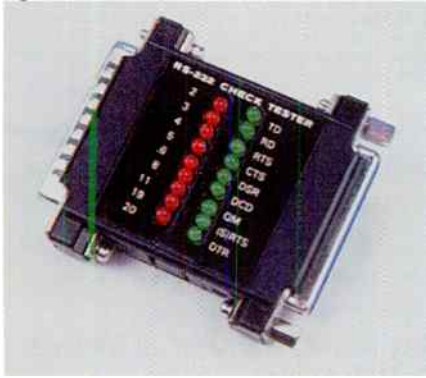
The tester has seven bicolour LEDs connected to pins 2, 3, 4, 5, 6, 8 and 20. They light to indicate the presence of positive or negative (or both) signals on each line. The unit has a 25-way D plug on one end and a 25-way D socket on the other.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
YP80B	RS232 Mini Tester	1+	5+	10+	1+
		£8.500	£6.800	£4.750	£9.990



**Quick Tester**



The tester has 9 red and 9 green LEDs. The LEDs light up red for positive and green for negative on each of 9 lines: pins 2, 3, 4, 5, 6, 8, 11, 19 and 20. Both LEDs light if data signals are passing. The unit has a 25-way D plug on one end and a 25-way D socket on the other.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YP61C	Quick Tester RS232	£12.750	£7.800	£6.250	£14.990

**Wiring Box**



The wiring adaptor permits any pin on one side to be connected to any pin on the other side of the adaptor (except protective ground, pin 1). The 48 patching sockets are gold-plated and 25 insulated wire links with stripped ends are supplied. The wire links are each approx. 50mm long. The unit has a 25-way D plug on one end and a 25-way D socket on the other.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YP79L	RS232 Wiring Box	£8.500	£6.800	£4.750	£9.990

**Loopback Tester**



A tester which links together pins 2 and 3, 4 and 5, 6 and 20, and 15 and 17. A bicolour LED is connected between each of the four loops and ground and they light to indicate the presence of

positive or negative (or both) signals on each loop. The unit has a 25-way D plug on one end and a 25-way D socket on the other.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YP83E	Loopback Testr RS232	£7.650	£5.500	£4.000	£8.990

**Data Switches & Extenders**

**Data Switches**

**Compact 2-Way Data Switch Boxes**



A pair of compact, quality, 2-way data switches housed in high impact plastic boxes. The switches allow either two computers to use one device or two devices to use one computer. A typical device may be a printer for instance. The boxes are available with either 25-pin D-type RS232 connectors or 36-pin Centronics connectors. All the connectors on either version are female. The switch boxes feature a high quality PCB, and the change-over switch has a life of more than 15,000 operations and includes a visible in-service indicator.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BZ39N 1	Switch RS232	£12.750	£10.760	£10.200	£14.990
BZ40T 1	Switch Centronic	£12.750	£11.220	£10.770	£14.990

**9 way D-Type Data Switches**



A range of 9 way D-type data switches for use with serial devices such as mice and modems. The devices are equip with 9 way female D-type sockets. 9 way male-female serial cables are normally used to connect to computers, 9-25 way male-male cables are used to connect to modems. Null-modem cables can be used to connect to other computers for direct cable communications. Available in two versions, 2-to-1 and 4-to-1, both versions can be used in reverse to provide 1-to-2 and 1-to-4 operation respectively.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
VC41U	Switch Box 9D 2 Way	£11.050	£9.050	£8.100	£12.990
VC42V	Switch Box 9D 4 Way	£12.750	£10.350	£9.250	£14.990

**25 way D-Type Data Switches**



A range of 25 way data switch boxes that can be used to connect a range of serial and parallel devices and computers. The units are available in three versions, 2-to-1, 4-to-1 and x-over. All connectors are 25 way D-type female sockets. Generally 25 way male-female cables are used to connect to serial ports on computers, male-male cables are used to connect to parallel ports for printers. Parallel printers can be connected using standard parallel printer cables. Devices requiring null-modem connections can be connected with standard null-modem cables. Modems can be connected using 25 way male-male serial cables. Other permutations are possible, the boxes can also be used as 1-to-2 switch boxes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
VC39N	Switch Box 25D 2 Way	£11.050	£9.050	£8.100	£12.990
VC40T	Switch Box 25D 4 Way	£12.750	£10.750	£9.950	£14.990
VC43W	Switch Box 25D Xover	£17.010	£13.950	£12.500	£19.990

**Centronics Data Switch**



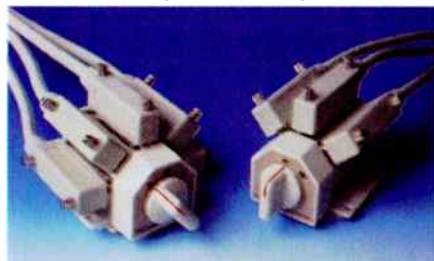
A centronics data switch which is equip with 36 way centronics female sockets for direct connection to computers using standard printer cables. Centronics male-male cables will be required to connect to printers. Three versions are available, 2-to-1, 4-to-1 and x-over for connecting two computers to one printer, four computers to one printer and two computers to two printers. Switch boxes can be used in both directions to supply 1-to-2 operation for connecting two printers to one computer and so on. 25 lines internally switched / connected.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
VC36P	Switch Box 36C 2 Way	£12.750	£10.500	£9.450	£14.990
VC37S	Switch Box 36C 4 Way	£17.010	£14.100	£12.750	£19.990
VC38R	Switch Box 36C Xover	£21.260	£17.250	£15.250	£24.990

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## Palm Printer Switches



This unique palm switch is one of the best in the world for connecting more than one PC to a printer. It uses a very high quality rotary switch. This pin to pin contact gives direct and noise free operation. Due to its very compact and round design, the palm switch can be easily secured to a printer desk or a computer. Comes complete with high quality moulded cables. Available in two types: 2 PCs to 1 Printer (CG62S) and 4 PCs to 1 Printer (CG63T).

Retail Unit Price each (inc. VAT).

Order Code	Type 10728	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
CG62S	Printer Switch 2way	£14.450	£13.000	£12.000	£16.990
CG63T	Printer Switch 4way	£23.820	£21.000	£19.750	£27.990

## Automatic Parallel and Serial Switch Boxes



Add a bidirectional two or four way switch box to your PC system to allow up to four users to share one printer or any other parallel or serial peripheral. Alternatively one user sends data to one of two or four different peripherals. The unit is designed to operate without a special external power supply in most cases, since it can draw power from the host PC's signal lines. A 6V power jack is also provided so that a mains adaptor can be connected in the event that the host computer or peripheral is unable to deliver enough power.

Various built-in functions are accessible via the function control panel at the end of the switch box case. The reset button allows you to reset the unit to its default state. The 'SEL' (SElect) button gives you the option to manually select the connection channel for the specific computer or peripheral (depending on how the box is connected and used), repeated operation of the button will 'poll' around the available ports. A DIP switch sets the basic operating modes. Printer time-out can be set to 5, 10, 20 or 40 seconds, and automatic form-feeding can be enabled or disabled. In addition the data direction can be determined as 2 or 4 PCs to 1 peripheral, or 1 computer to 2 or 4 peripherals. (In this latter mode time-out and form-feed functions are not available.) In auto mode operation the 'AUTO' indicator flashes, and any transmission request from any computer will be accepted following the rule of 'first come, first served'. As soon as one of the computers starts to send data, the control unit will lock into that channel and the corresponding in-service indicator will flash.

After the transmission stops and the time-out period elapses, the in-service indicator will go out and the switch will be ready to accept any other transmission request.

Manual selection mode operation is possible to temporarily lock into a specific input port. To select, the 'SEL' button is pressed repeatedly and the 'AUTO' indicator will go out and each in-service indicator will light in turn until the desired input port indicator is flashing. To return to 'AUTO' mode, the

process is repeated until the 'AUTO' indicator lights once more or the reset button is pressed. Data from each computer can be sent to the common peripheral in exactly the same manner as though the peripheral were directly connected to the PC. If the auto switch box is busy transferring another computer's data at the time a 'busy' signal will be received by the PC, causing it to wait or indicate a busy state if the supplied software is loaded. A 89mm (3 1/2 in.) floppy disk is supplied containing TSR and other programs to interrogate the printer channel to find out if the peripheral is free. Four types are available as 1 into 2-way and 1 into 4-way parallel port switching, and 1 into 2-way and 1 into 4-way serial port switching. Each type has the appropriate 25-way, D-range sockets for conventional serial or parallel connecting cables, and comes with user guide and software.

Retail Unit Price each (inc. VAT).

Order Code	Type 104	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
RT55K	2 Parallel 1-4 SwBox	£34.030	£28.000	£26.000	£39.990
RT56L	1 Serial 1-4 SwBox	£42.540	£35.500	£32.750	£49.990
RT53H	Parallel 1-2 SwBox	£25.520	£20.500	£19.000	£29.990
RT54J	1 Serial 1-2 SwBox	£30.620	£26.500	£25.000	£35.990

## Mega Buffer



A compact 1Mbyte parallel printer buffer designed to fit between the end of the printer cable and the printer. The unit plugs directly into the parallel port of the printer and comes with its own separate power supply. Priority is given to data coming from the computer, and the unit adapts itself to the speed of the incoming data and maximises the speed at which the computer can download the data. Data is passed to the printer only if there is no data arriving from the computer. The unit will continue to buffer data until full, whilst the printer is off-line.

Retail Unit Price each (inc. VAT).

Order Code	Type 11061	Price each exc. VAT		inc. VAT each
		1+	1+	1+
DN84F	1 MB Printer Buffer	£119.140		£139.990

## Keyboard & Monitor Switch Boxes



A range of switch boxes that allow the user to switch between a number of monitors and keyboards. This allows one CPU to be shared between a number of users with minimal signal loss. The units can also be used to share a number of CPUs with one monitor and keyboard, however this may result in some loss of signal quality. There are four versions available, 2-to-1 and 4-to-1 with either 5 pin DIN or PS/2 (6 pin Mini-DIN) keyboard connectors. Monitor and CPU connection is available using the 15 way high density female sockets. Monitors can be connected using their standard cables, or if the standard cable is too

short, male-male monitor cables are available, extension cables can be used for captive monitor leads. Male-male PS/2 or 5 pin DIN cables are required to connect the switch box to the CPU. Keyboard extension cables are available for longer cable runs.

Retail Unit Price each (inc. VAT).

Order Code	Type 13061	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
VC46A	Switch Box VDU 2 Way	£17.010	£13.850	£12.300	£19.990
VC47B	Switch Box VDU 4 Way	£21.260	£17.500	£15.750	£24.990
VC48C	Switch Box PS2 2 Way	£17.010	£13.950	£12.300	£19.990
VC49D	Switch Box PS2 4 Way	£21.260	£17.500	£15.750	£24.990

## Keyboard, Monitor & Mouse Switch Boxes



A range of switch boxes that have all the features of the Keyboard and Monitor switches with the added benefit of being able to switch between mice as well. The units are only available with 5 pin DIN sockets for keyboard connection, 9 way D-type sockets are available for mouse connection.

Retail Unit Price each (inc. VAT).

Order Code	Type 13062	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
VC44X	Switch Box CPU 2 Way	£21.260	£19.450	£17.750	£24.990
VC45Y	Switch Box CPU 4 Way	£25.520	£23.350	£21.250	£29.990

## Splitters

### Automatic VGA Monitor Splitter Box



This VGA Monitor Splitter Box is ideal for presentations and demonstrations. It makes it possible to connect 4 or 8 monitors to 1 computer at the same time without losing any signal quality and still retain a very sharp, clear image on every monitor, even in high resolutions. Maximum cable lengths are 60m from splitter box to monitor and 20m between the PC and splitter box.

Retail Unit Price each (inc. VAT).

Order Code	Type 11074	Price each exc. VAT		inc. VAT each
		1+	1+	1+
CE25C	1 4VGA Monitors/1 Comp	£85.090		£99.990
CE26D	1 8VGA Monitors/1 Comp	£170.200		£199.990

Maplin is opening new stores all the time. Call for latest details

**Extenders**

**SVGA Monitor Extender**



This compact SVGA active monitor extender allows you to extend the distance between your PC and its monitor beyond 100m without losing any image quality, even in high resolutions. The SVGA Monitor Extender is supplied in a fully shielded metal housing and with 2 HDD 15-pin female connectors. For the optimum quality monitor image we recommend high quality foiled monitor cables (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CE32K 1	Monitor SVGA Extend	£51.050	£149.990

**Keyboard Extender**



Using this compact active keyboard extender it is possible to use your keyboard up to 80m away from your PC (ideal for use in conjunction with the SVGA Monitor Extender). The metal housing is fully shielded and includes a DIN and PS/2 port.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CE33L 1	Keyboard Extender	£51.050 £49.980 £46.920	£149.990

**Cables & Accessories**

**Data Transfer Leads**

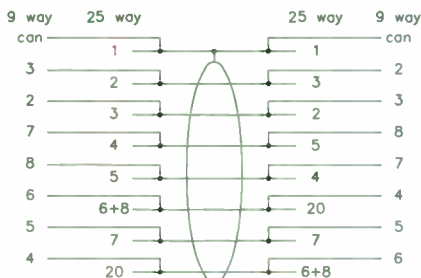
**Serial Transfer Cable**



A high quality serial lead for use with programs like Laplink, Interlink, FastLynx and other serial transfer programs. Follows the same configuration as a null modem cable and implements all control and handshaking lines. The lead consists of a 9-pin and a 25-pin female connector at each end of a screened cable. Connection to either COM1 or COM2 is possible, even on older machines that only

have two 25-way serial ports. Ideal for linking a laptop computer to a stand-alone machine. Also includes locking screws for secure connection to each serial port.

**Wiring diagram**



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS87U	Serial Transfer Cabl	£11.050 £7.700 £6.950	£12.990

**Parallel Link Cable**



A high quality, low cost parallel cable for use with data transfer programs like Laplink, Fastlynx and Interlink (supplied as standard with MSDOS 6!) Just connect two computers via the parallel ports and run your transfer program for a direct high speed link - ideal for data transfer between a portable and base computer. Supplied with locking connector to prevent accidental disconnection. A high quality solution at a budget price!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BJ27E	Parallel Trans Cable	£8.500 £7.000 £6.500	£9.990

**Windows 95 Comms Cable**



A high quality cable designed specifically for use with Windows 95 communication protocols. Fitted with two 25 pin D type male connectors for connection to the parallel ports of two computers. Allows fast file transfer between two computers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CH81C	Win 95 Comms Cable	£11.050 £10.000 £9.000	£12.990

**Keyboard Leads**

**AT Style 5 pin DIN Keyboard Extension Cables**



A 5 pin DIN keyboard extension cable for use with AT style computers. The cable is fully moulded and is 2m in length.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VD64U	5 Din K/B Cab M-F 2m	£4.240 £2.410 £2.010	£4.990

**PS/2 Style 6 pin mini-DIN Extension Cables**



A 6 pin mini-DIN extension cable for use with PS/2 style computers. The cable is fully moulded and is 2m in length.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VD65V	PS/2 K/B Ext M-F 2m	£4.240 £2.660 £2.300	£4.990

**5-Pin Keyboard Connection Cable**



Type of connectors: 5-pin DIN male/5-pin DIN male  
Number of pins connected: 6 (includes screen)  
Shielding: High quality foil - low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DD98G	MM Keybrd Cble 2m	£5.940 £5.250 £4.650	£6.990
DD98H	MM Keybrd Cble 3m	£7.650 £6.750 £5.450	£8.990
DG00A	MM Keybrd Cble 4m	£11.050 £9.950 £8.950	£12.990
DG01B	MM Keybrd Cble 7m	£16.160 £13.500 £11.950	£18.990
DG02C	MM Keybrd Cble 10m	£19.560 £17.950 £16.250	£22.990
DG03D	MM Keybrd Cble 15m	£25.520 £22.950 £20.500	£29.990

## 5 PIN Keyboard Extension Cable

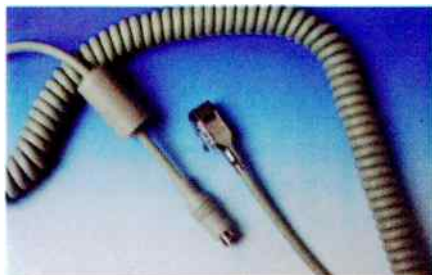


Type of connectors: 5 male/5 female  
 Number of pins connected: 6 (includes screen)  
 Shielding: High quality foil - low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type 10913	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DG04E	MF Keybrd Cble 2m	£5.940	£5.250	£4.650	£6.990
DG05F	MF Keybrd Cble 3m	£7.650	£6.750	£5.450	£8.990
DG06G	MF Keybrd Cble 4m	£11.050	£9.950	£8.950	£12.990
DG07H	MF Keybrd Cble 7m	£16.160	£13.500	£11.950	£18.990
DG08J	MF Keybrd Cble 10m	£19.560	£17.950	£16.250	£22.990

## IBM/AT Keyboard Connection Cable



Type of connectors: 5-pin DIN male/male  
 Pins connected: 5  
 Shielding: High quality foil low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type 10911	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DG09K	IBM/AT Keyboard Cble	£17.010	£15.500	£14.950	£19.990

## PS/2 Keyboard Connection Cable



Type of connectors: Mini 6-pin DIN/mini 6-pin DIN  
 Pins connected: 6 (includes screen)  
 Shielding: High quality foil - low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type 10914	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DG10L	PS/2 Keybrd Cble 2m	£5.940	£5.250	£4.650	£6.990
DG11M	PS/2 Keybrd Cble 3m	£7.650	£6.750	£5.450	£8.990
DG12N	PS/2 Keybrd Cble 5m	£11.050	£9.950	£8.950	£12.990

## PS/2 Keyboard Connection Cable



Type of connectors: Mini 6-pin DIN/male  
 Pins connected: 6 (includes screen)  
 Shielding: High quality foil low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type 10915	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DG16S	PS/2 Keybrd Con 2m	£5.940	£5.250	£4.650	£6.990
DG17T	PS/2 Keybrd Con 3m	£7.650	£6.750	£5.450	£8.990
DG18U	PS/2 Keybrd Con 5m	£11.050	£9.950	£8.950	£12.990

## Printer Leads

### Moulded 25 Line Parallel Printer Cables

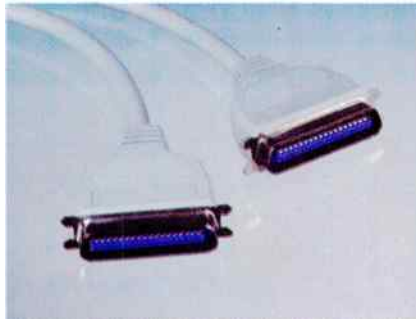


A 25 line parallel printer cable, suitable for use with printers that require a fully occupied cable for full functionality. The cable is fully moulded and shielded and features long thumb screws for ease of installation

Retail Unit Price each (inc. VAT).

Order Code	Type 13371	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
VD66W	Par Print Cable 2m	£4.240	£2.500	£2.000	£4.990
VD67X	Par Print Cable 5m	£6.800	£4.190	£3.000	£7.990

### Moulded 36 Line Centronics Cable Male-Male



A fully moulded 36 line centronics cable suitable for use with centronics switch boxes for connecting directly to parallel printers. The cable is fully shielded.

Retail Unit Price each (inc. VAT).

Order Code	Type 13376	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VD69A	Cent Cable M-M 2m	£5.090	£3.410	£3.030	£5.990

## Moulded 36 Line Centronics Cable Male-Female



A moulded 36 line centronics cable for use as an extension cable for parallel printers and any other equipment that is supplied with 36 way centronics connectors. The cable is fully shielded and is supplied with locking connectors on the female end.

Retail Unit Price each (inc. VAT).

Order Code	Type 13379	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VD68Y	Cent Cable M-F 2m	£5.090	£3.410	£3.030	£5.990

## IEEE-1284 Printer Cables



A range of IEEE-1284 printer cables designed specifically for use with IEEE-1284 compliant devices such as the latest laser printers. These cables are fully moulded and shielded and 2m in length.

Retail Unit Price each (inc. VAT).

Order Code	Type 13506	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VD70M	IEEE 1284 36 HPC 2m	£17.010	£8.840	£7.980	£19.990
VD71N	IEEE 1284 36 C 2m	£12.750	£11.830	£10.550	£14.990

## Standard PC Printer Cable



A top quality standard parallel PC printer cable. Moulded connectors with full foil shielding, used in places where there is a lot of interference. The cable is made of flexible material that easily bends. A partly connected printer cable that can be used for any type of matrix and ink jet printer.  
 Connectors: 25-way sub-D male to 36-way Centronics male.

Number of pins connected: 18.

Retail Unit Price each (inc. VAT).

Order Code	Type 13070	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
CV99H	Std Printer Cable	£6.800	£4.950	£4.250	£7.990
DD00A	Std Printer Cable 3m	£7.650	£6.250	£5.500	£8.990
DD01B	Std Printer Cable 5m	£11.050	£8.250	£7.100	£12.990
DD02C	Std Printer Cable 7m	£17.010	£10.950	£8.750	£19.990
DD03D	Std Print Cable 10m	£19.560	£14.250	£11.500	£22.990

**Fully Occupied Printer Cable**



Top quality, completely moulded printer cable. A printer cable that is fully connected, and is ideal for laser printers or plotters that generate a status report back to the PC. The cables connectors are moulded and fully shielded by foil. The cable is made from flexible material that easily bends. Perfect for use in areas with a lot of environmental noise present.

Retail Unit Price each (inc. VAT).

Order Code	Type 10871	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
CV94C	HQ Printer Cable 2m	£8.500	£6.850	£5.950	£9.490
CV95D	HQ Printer Cable 3m	£9.350	£7.050	£6.100	£10.990
CV96E	HQ Printer Cable 5m	£12.750	£8.750	£7.350	£14.990
CV97F	HQ Printer Cable 7m	£19.560	£14.250	£11.500	£22.990
CV98G	HQ Printer Cable 10m	£22.970	£18.250	£15.750	£26.990

**Angled Fully Occupied Printer Cable**



Angled connector ideal for use when there is lack of space behind your printer.



Low priced standard PC printer cables, where only the pins needed are connected. To be used with standard dot matrix printers.



Fully connected PC printer cables, for use with ink jet and laser printers which use handshaking.

Retail Unit Price each (inc. VAT).

Order Code	Type 10868	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
CV89W	HQ R/A Print Cable 2m	£9.350	£7.050	£6.100	£10.990
CV90X	HQ R/A Print Cable 3m	£11.050	£8.250	£7.100	£12.990
CV91Y	HQ R/A Print Cable 5m	£16.160	£10.850	£8.650	£18.990
CV92A	HQ R/A Print Cable 7m	£21.260	£14.950	£11.950	£24.990
CV93B	HQ R/A Print Cbl 10m	£24.670	£18.950	£16.250	£28.990

**Widoshi Male-Female Centronics Cables**



The female connector has 100% shielded connections. The connector is moulded and is protected by a silver foil screen, for use in places where there is a lot of interference. This cable is made from very flexible material that easily bends. Top quality moulded Centronics extension. Ideal for use when an existing cable is too short.

Type of connector: 36-pin Centronics male/  
36-pin Centronics female  
Construction: Moulded connectors, shielded cable  
Number of pins connected: 36  
Shielding: Foil, low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type 10874	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DD04E	M/F Cent Cable 2m	£7.650	£6.250	£5.500	£8.990
DD05F	M/F Cent Cable 3m	£11.050	£8.250	£7.100	£12.990
DD06G	M/F Cent Cable 5m	£12.750	£9.500	£7.750	£14.990
DD07H	M/F Cent Cable 7m	£17.010	£10.950	£8.750	£19.990
DD08J	M/F Cent Cable 10m	£19.560	£14.250	£11.500	£22.990

**Widoshi Male/Male Centronics Cables**



Top quality Centronics cables for use with printer switches or any other application requiring a male to male connection. The cable uses moulded connectors and is foil shielded. The cable construction makes it very flexible.

Type of connector: 36-pin Centronics male/  
36-pin Centronics female  
Construction: Moulded connectors, shielded cable  
Number of pins connected: 36  
Shielding: Foil, low capacitance

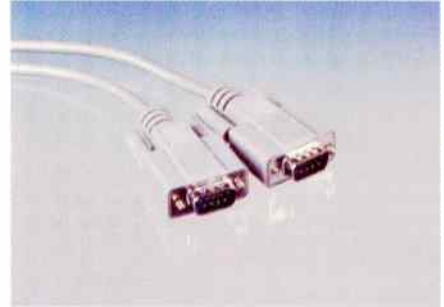
Retail Unit Price each (inc. VAT).

Order Code	Type 10882	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DD18U	MM Print Cable 2m	£7.650	£6.250	£5.500	£8.990
DD19V	MM Print Cable 3m	£11.050	£8.050	£6.500	£12.990
DD20W	MM Print Cable 5m	£12.750	£9.500	£7.750	£14.990
DD21X	MM Print Cable 7m	£17.010	£16.100	£15.200	£19.990
DD22Y	MM Print Cable 10m	£19.560	£16.500	£12.950	£22.990

**OFFICIAL  
IOMEGA  
ACCESSORIES  
SUPPLIER**

**Serial Leads**

**9 Way Serial Cable Male-Male**



A fully moulded, fully screened 9 way serial cable fitted with 9 way D-type male connectors at both ends. All lines are connected straight through.

Retail Unit Price each (inc. VAT).

Order Code	Type 13490	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
VD74R	Serial Cab 9W M-M 2m	£4.240	£2.630	£2.260	£4.990

**9 Way Serial Extension Cable Male-Female**

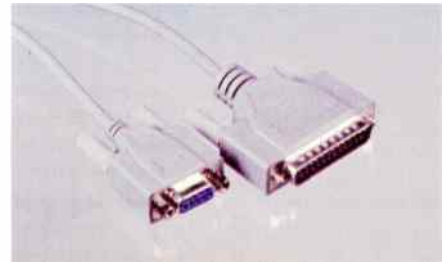


A fully moulded, fully screened 9 way serial extension cable fitted with a 9 way D-type male connector to one end and a female at the other. All lines are connected straight through. This cable is suitable for extending any 9 way cable such as mouse or keyboard.

Retail Unit Price each (inc. VAT).

Order Code	Type 13491	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
VD73Q	Serial Cab 9W M-F 2m	£4.240	£2.630	£2.260	£4.990

**Modem Cable**



A 9 way female to 25 way male D-type cable for use primarily with PC modems. This cable is designed to connect directly from a standard external modem to the 9 way serial port of a PC.

Retail Unit Price each (inc. VAT).

Order Code	Type 13507	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
VD72P	9-25 Modem Cable 2m	£4.240	£2.630	£2.260	£4.990

## RS232C to RS232C M/M



A fully screened 25-way computer cable having 25-way D-range plugs at both ends. Cable is 1.8m long. Pins are connected 1 to 1, 2 to 2 etc. All 25 pins are connected.

Retail Unit Price each (inc. VAT).

Order Code	Type 431	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JC12N	D25P/D25P Lead	£4.240	£2.500	£1.600	£4.990

## RS232C to RS232C M/F



A fully screened 25-way computer cable having 25-way D-range plug at one end and 25-way D-range socket at the other. Cable is 1.8m long. Pins are connected 1 to 1, 2 to 2 etc. All 25 pins are connected.

Retail Unit Price each (inc. VAT).

Order Code	Type 433	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JC13P	D25P/D25S Lead	£4.240	£2.500	£1.600	£4.990

## RS232C to RS232C M/F IDC



A flat 25-way IDC ribbon cable having a polyester 25-way D-range plug at one end and a polyester 25-way D-range socket at the other. Cable is 1.8m long.

Retail Unit Price each (inc. VAT).

Order Code	Type 434	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JC17T	IDC D25P/D25S Lead	£4.240	£3.250	£3.000	£4.990

### Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## Widoshi 25 Pins V.24 Serial Cable Male/Male



Connector types: DB-25 male/DB-25 male  
Number of pins connected: 25  
Shielding: High quality foil – low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type 10805	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DD23A	MM 25p V24 Cbl 2m	£5.940	£4.550	£3.750	£6.990
DD24B	MM 25p V24 Cbl 3m	£7.650	£6.250	£5.500	£8.990
DD25C	MM 25p V24 Cbl 5m	£11.050	£8.050	£6.500	£12.990
DD26D	MM 25p V24 Cbl 7m	£16.160	£10.850	£8.650	£18.990
DD27E	MM 25p V24 Cbl 10m	£19.560	£14.250	£11.500	£22.990

## Widoshi 9 Pins V.24 Serial Cable Male/Female



Connector types: DB-9 male/DB-9 female  
Number of pins connected: 9  
Shielding: High quality foil – low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type 10806	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DD28F	MF 9p V24 Cbl 2m	£5.940	£4.550	£3.750	£6.990
DD29G	MF 9p V24 Cbl 3m	£7.650	£7.250	£6.950	£8.990
DD30H	MF 9p V24 Cbl 5m	£11.050	£8.050	£6.500	£12.990
DD31J	MF 9p V24 Cbl 7m	£16.160	£12.950	£11.200	£18.990
DD32K	MF 9p V24 Cbl 10m	£19.560	£14.250	£11.500	£22.990

## Widoshi 25 Pins V.24 Serial Cable Male/Female



Connector types: DB-25 male/DB-25 female  
Number of pins connected: 25  
Shielding: High quality foil – low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type 10830	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DD33L	MF 25p V24 Cbl 3m	£7.650	£6.250	£5.500	£8.990
DD34M	MF 25p V24 Cbl 5m	£11.050	£8.050	£6.500	£12.990
DD35Q	MF 25p V24 Cbl 7m	£16.160	£10.850	£8.650	£18.990
DD36P	MF 25p V24 Cbl 10m	£19.560	£14.250	£11.500	£22.990
DD37S 1	MF 25p V24 Cbl 15m	£31.480	£28.250	£25.950	£36.990

## Widoshi 25 Pins V.24 Serial Cables Female/Female



Connector types: DB-25 female/DB-25 female  
Number of pins connected: 25  
Shielding: High quality foil – low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type 10831	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DD38R	FF 25p V24 Cbl 2m	£5.940	£4.800	£4.380	£6.990
DD39N	FF 25p V24 Cbl 3m	£7.650	£6.340	£5.840	£8.990
DD40T	FF 25p V24 Cbl 5m	£11.050	£8.500	£7.500	£12.990
DD41U	FF 25p V24 Cbl 7m	£16.160	£12.550	£11.190	£18.990
DD42V	FF 25p V24 Cbl 10m	£19.560	£14.600	£12.500	£22.990

## Widoshi 9 Pins V.24 Serial Cable Male/Male



Connector types: DB-9 male/DB-9 male  
Pins connected: 9  
Shielding: High quality foil – low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type 10833	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DD43W	MM 9p V24 Cbl 2m	£5.940	£4.800	£4.380	£6.990
DD44X	MM 9p V24 Cbl 3m	£7.650	£6.340	£5.840	£8.990
DD45Y	MM 9p V24 Cbl 5m	£11.050	£8.500	£7.500	£12.990
DD46A	MM 9p V24 Cbl 7m	£16.160	£12.550	£11.190	£18.990
DD47B	MM 9p V24 Cbl 10m	£19.560	£14.600	£12.500	£22.990

## Widoshi 9 Pins V.24 Serial Cable Female/Female



Connector types: DB-9 female/DB-9 female  
Pins connected: 9  
Shielding: High quality foil – low capacitance

Retail Unit Price each (inc. VAT).

Order Code	Type 10834	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DD48C	FF 9p V24 Cbl 2m	£5.940	£4.800	£4.380	£6.990
DD49D	FF 9p V24 Cbl 3m	£7.650	£6.340	£5.840	£8.990
DD50E	FF 9p V24 Cbl 5m	£11.050	£8.500	£7.500	£12.990
DD51F	FF 9p V24 Cbl 7m	£16.160	£12.550	£11.190	£18.990
DD52G	FF 9p V24 Cbl 10m	£19.560	£14.600	£12.500	£22.990



**Null Modem Leads**

**9 Way Null Modem Cable Female-Female**



A fully functional 2m null modem cable for connecting two devices together via their serial ports to facilitate communications between them.

Retail Unit Price each (inc. VAT).

Order Code	Type 1332H	Price each exc. VAT	inc. VAT each
VD76H	9 Way Null F-F 2m	1+ £5.090 10+ £3.750 25+ £3.150	1+ £5.990

**9-25 Way Null Modem Cable Female-Female**



A fully functional 2m null modem cable for connecting two devices together via their serial ports to facilitate communications between them.

Retail Unit Price each (inc. VAT).

Order Code	Type 13310	Price each exc. VAT	inc. VAT each
VD77J	Null Cab 9-25 F-F 2m	1+ £5.090 10+ £3.750 25+ £3.150	1+ £5.990

**25 Way Null Modem Cable Female-Female**



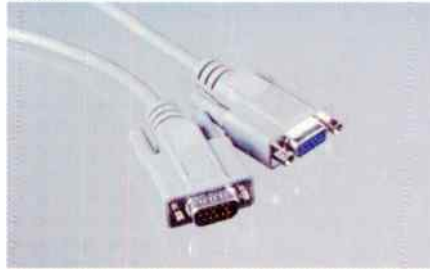
A fully functional 2m null modem cable for connecting two devices together via their serial ports to facilitate communications between them.

Retail Unit Price each (inc. VAT).

Order Code	Type 1332B	Price each exc. VAT	inc. VAT each
VD75S	Null 25 F-F Cable 2m	1+ £5.090 10+ £3.750 25+ £3.150	1+ £5.990

**Monitor Leads**

**Monitor Extension Cable Male-Female**

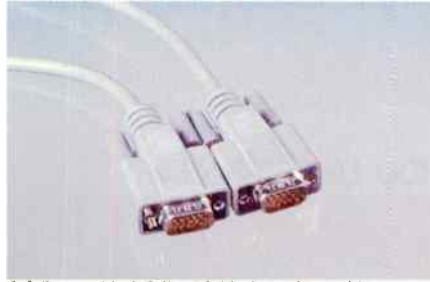


A fully moulded, fully shielded monitor cable featuring a male 15 way high density D-type connector to one end and female to the other. Suitable for extending existing cabling for example where CPUs are stored remotely from the monitor for security. This lead is 2m in length.

Retail Unit Price each (inc. VAT).

Order Code	Type 13483	Price each exc. VAT	inc. VAT each
VD78L	Monitor Cable M-F 2m	1+ £4.240 10+ £2.330 25+ £1.880	1+ £4.990

**Monitor Cable Male-Male**



A fully moulded, fully shielded monitor cable featuring male 15 way high density D-type connectors to both ends. Suitable for connecting monitors to CPUs and for connecting monitors to switch boxes. This lead is 2m in length.

Retail Unit Price each (inc. VAT).

Order Code	Type 13483	Price each exc. VAT	inc. VAT each
VD79L	Monitor Cable M-M 2m	1+ £4.240 5+ £2.670 10+ £2.310	1+ £4.990

**High Quality Super VGA Monitor Cables Male-Male**



A high quality SVGA monitor cable manufactured using shielded coax cable and terminated with 15 way high density D-Type connectors on both ends. The design minimises near end cross talk and other distortion, even over long distance cable runs. Available in 2m and 5m lengths. (Male-Female shown)

Retail Unit Price each (inc. VAT).

Order Code	Type 13374	Price each exc. VAT	inc. VAT each
VC00A	HQ Mon Cable M-M 2m	1+ £17.010 5+ £11.600 10+ £10.270	1+ £19.990
VC01B	HQ Mon Cable M-M 5m	1+ £25.520 5+ £16.510 10+ £14.300	1+ £29.990

**High Quality Super VGA Monitor Cables Male-Female**

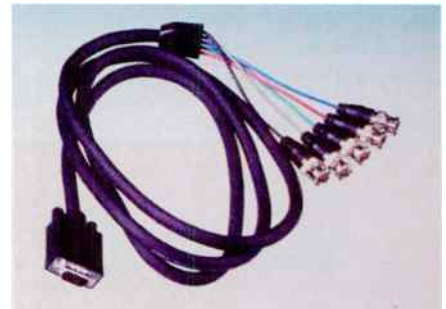


A high quality SVGA monitor extension, cable manufactured using shielded coax cable and terminated with 15 way high density D-Type connectors on both ends. The design minimises near end cross talk and other distortion, even over long distance cable runs. Available in 2m, 5m, 10m and 15m lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 13340	Price each exc. VAT	inc. VAT each
VC02C	HQ Mon Cable M-F 2m	1+ £17.010 5+ £11.230 10+ £9.800	1+ £19.990
VL77J	HQ Mon Cable M-F 5m	1+ £25.520 5+ £21.500 10+ £18.000	1+ £29.990
VL78K	HQ Mon Cable M-F 10m	1+ £34.030 5+ £29.000 10+ £25.000	1+ £39.990
VL79L	HQ Mon Cable M-F 15m	1+ £42.540 5+ £38.000 10+ £33.500	1+ £49.990

**BNC Monitor Cables**



A pair of BNC monitor cables which feature 15 way high density D-type connectors to one end, to the other are either five or four BNC connectors attached to high quality coax cable. Particularly suitable for larger DTP or CAD monitors. (Supplied in white)

Retail Unit Price each (inc. VAT).

Order Code	Type 13373	Price each exc. VAT	inc. VAT each
VC03D	15 Way HDD - 5 BNC	1+ £17.010 5+ £11.830 10+ £10.550	1+ £19.990
VC04E	15 Way HDD - 4 BNC	1+ £17.010 5+ £11.670 10+ £10.350	1+ £19.990



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## HDD 15 VGA Monitor Connection Cable



Type of connectors: HDD 15 male/  
HDD 15 female  
Cover type: Moulded and shielded  
Number of pins connected: 11  
Shielding: High quality foil – low capacitance  
Maximum picture frequency: 100Hz (non-interlaced)  
Video bandwidth: 200MHz  
Maximum resolution: 1280 x 1024

Retail Unit Price each (inc. VAT).

Order Code	Type 10307	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DD85G	15p MM VGA Cble 2m	£5.940	£5.250	£4.650	£6.990
DD86T	15p MM VGA Cble 3m	£7.650	£6.750	£5.450	£8.990
DD87U	15p MM VGA Cble 4m	£11.050	£9.500	£8.250	£12.990
DD88V	15p MM VGA Cble 7m	£16.160	£14.500	£12.750	£18.990
DD89W	15p MM VGA Cble 10m	£19.560	£16.500	£13.750	£22.990
DD90X	15p MM VGA Cble 15m	£25.520			£29.990

## HDD 15 VGA Monitor Extension Cable

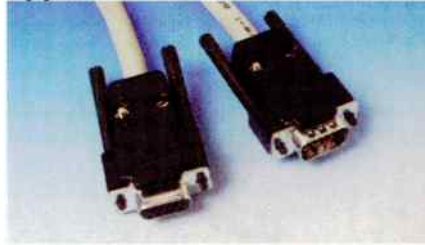


Type of connectors: HDD 15 male/HDD 15 female  
Cover type: Moulded and shielded  
Number of pins connected: 11  
Shielding: High quality foil – low capacitance  
Maximum picture frequency: 100Hz (non-interlaced)  
Video bandwidth: 200MHz  
Maximum resolution: 1280 x 1024

Retail Unit Price each (inc. VAT).

Order Code	Type 10308	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DD91Y	15p MF VGA Cble 2m	£5.940	£5.250	£4.650	£6.990
DD92A	15p MF VGA Cble 3m	£7.650	£6.750	£5.450	£8.990
DD93B	15p MF VGA Cble 4m	£11.050	£9.500	£8.250	£12.990
DD94C	15p MF VGA Cble 7m	£16.160	£13.500	£11.950	£18.990
DD95D	15p MF VGA Cble 10m	£28.920	£26.250	£24.500	£33.990

## Double Shielded VGA Cable for High Quality Monitor Applications



This cable is ideal for high quality DTP, CAD and multi-media applications. This top quality cable can be used over long distances without using an extender.

Type of connectors: HDD 15 male/  
HDD 15 female  
Cover type: 2 part housing and shielded  
Pins connected: 11  
Shielding: Double Mylar/aluminum

Maximum picture frequency: 200Hz (non-interlaced)  
Video bandwidth: 300MHz  
Maximum resolution: 1536 x 1024

Retail Unit Price each (inc. VAT).

Order Code	Type 10309	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DD96E	T/Pair VGA Cable 4m	£42.540	£41.500	£40.500	£49.990
DD97F	T/Pair VGA Cable 12m	£68.070	£66.950	£65.500	£79.990

## HDD 15 RGB 5 x BNC



Monitor cable with two separate syncs and three separate RGB connectors. Ideal for high end graphic monitors. The cable is fully shielded to reduce EM/RFI interference.

Type of connectors: BNC male/  
HDD 15 male  
Number of pins connected: 5  
Length: 2m approx.  
Shielding: High quality foil – low capacitance  
Maximum picture frequency: 200Hz (non-interlaced)  
Video bandwidth: 300MHz  
Maximum resolution: 1536 x 1200

Retail Unit Price each (inc. VAT).

Order Code	Type 10912	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
DG15R	Hdd 15 Rgb 5 X BNC	£19.560	£19.500	£19.000	£22.990

## Monitor Changers



9 way D type male to 15 way HD type female adapter for connecting monitors with incompatible cables or connectors. Available in two types, either with or without approximately 10cm of cable.

Retail Unit Price each (inc. VAT).

Order Code	Type 10242	Price each exc. VAT			inc. VAT each 1+
		1+	3+	10+	
CD67X	9 D Male - 15 HD Fem	£5.090	£3.000	£2.250	£5.990
CD68Y	9 D Fem - 15 HD Male	£5.090	£3.000	£2.250	£5.990
CD08K	15 HD M-9D F Cable	£5.090	£3.000	£2.250	£5.990
CD10L	15 HD F-9D M Cable	£5.090	£3.000	£2.250	£5.990

## Apple Monitor Changer



Standard SVGA monitor to Apple Mac converter.

Retail Unit Price each (inc. VAT).

Order Code	Type 10340	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DG30H	SVGA -Apple Mac	£4.240	£3.750	£3.450	£4.990

## SCSI Leads

### SCSI Internal Cables



A range of standard 50 way flat cables suitable for use with narrow, 8 bit SCSI I and SCSI II internal drives. Cables are available with 3, 5 or 8 connectors for connecting 2, 4 and 7 devices respectively.

Retail Unit Price each (inc. VAT).

Order Code	Type 10343	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VC05F	Int SCSI Cable 3 Con	£3.390			£3.990
VC06G	Int SCSI Cable 5 Con	£6.800			£7.990
VC07H	Int SCSI Cable 8 Con	£11.050			£12.990

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**SCSI II-III Internal Adapter**



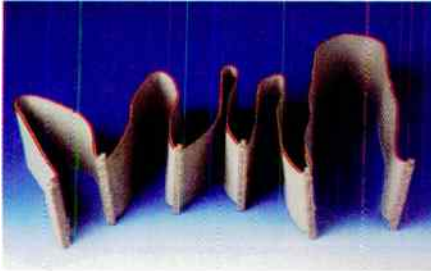
A 50 way to 68 way adapter for attaching SCSI III devices with 68 way micro D-type connectors to an internal 50 way IDC cable.

**Connectors:** 68 way micro D-type female  
50 way female IDC(keyed)

*Retail Unit Price each (inc. VAT).*

Order Code	Type 12991	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
KX13P	SCSI 50-68 Int	£12.750	£9.400	£8.600	£14.990

**SCSI I Flat Cable**



This internal SCSI cable can connect up to five SCSI devices. The flat cable guarantees a faultless data transmission to the connected SCSI devices.

**Connector type:** Flat cable with six 50-pin AMP IDC connectors  
**Length:** 1.4m approx  
**Data transfer rate:** 1.5Mbps - 10Mbps

*Retail Unit Price each (inc. VAT).*

Order Code	Type 10960	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DG51F	SCSI I Flat Cbl 1.4m	£23.820	£20.750	£18.250	£27.990

**SCSI II Flat Cable**



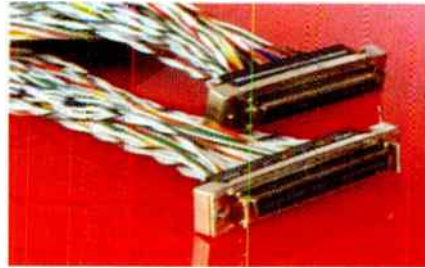
This flat cable is for high-speed and high capacity fast and wide SCSI II use. Due to the special assembly of this cable, Near End Cross Talk and capacitance are kept to a minimum.

**Connector type:** IDC 50-pin  
**Length:** 0.35m approx.  
**Data transfer rate:** 1.5 Mbps - 40 Mbps

*Retail Unit Price each (inc. VAT).*

Order Code	Type 10957	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DG48C	SCSI II FLT CBL 4m	£21.260	£18.950	£16.250	£24.990

**SCSI Wide III Flat Cable**



With this flat cable the internal connections of the fast SCSI card can easily be brought to the outside of the computer. This cable is provided with two 68-pin Sub-D half pitch connectors and 1 IDC 50-pin connector. Because of the special assembling of the flat cable on the side of the external connectors, near end cross talk and capacitance are minimised. This flat cable can be used for high speed and high capacity fast and wide SCSI II devices.

**Data transfer rate:** 1.5Mops-40Mbps.  
**Type:** Flat cable with 2 x 50-pin IDC-connector and 2 x 68-pin sub-D half pitch connector.

**Material of connectors:** Finished in metal  
**Length:** 1.0m approx.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 10954	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DG45Y 1	SCSI WIDE III CABLE	£42.540	£38.500	£36.250	£49.990

**Internal SCSI III Cable**

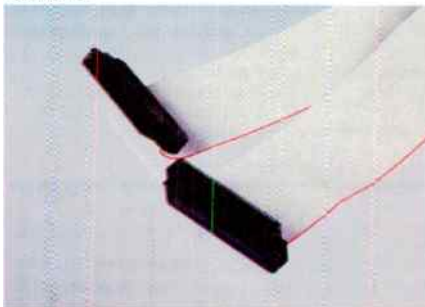


An internal fast wide SCSI III cable featuring four male 68 way half pitch connectors for connecting internal fast wide SCSI devices.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13500	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VC33L	SCSI III Int Cable	£34.030	£30.750	£28.950	£39.990

**Internal/External SCSI III Cable**

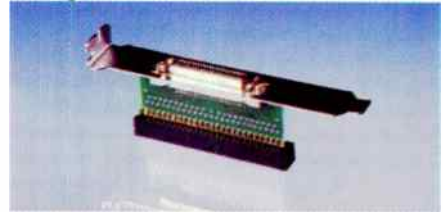


An internal/external SCSI III cable featuring 2 internal 68 way half pitch D-type connectors and a single external 68 way half pitch D-type socket.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13495	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VC32K	SCSI III Int/Ext Cab	£25.520	£20.500	£22.200	£29.990

**Internal/External SCSI II Adapter**



An internal/external SCSI adapter mounted to a PC backplate which features a SCSI II 50 way half pitch D-type female connector. This allows external SCSI connections to be made using an internal 50 way IDC internal drive connector, this is especially useful when no external connector is available on the SCSI host adapter.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13495	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VC35Q	SCSI Int/Ext 50 HPC	£17.010	£13.850	£12.500	£19.990

**Internal/External SCSI I Adapter**

An internal/external SCSI I adapter that features a 50 way centronics female connector mounted to a PC backplate. This adapter provides an external SCSI outlet using an internal 50 way IDC connector, especially useful when no external connector is provided on the host adapter.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13496	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VC34M	SCSI Int/Ext 50 Cent	£17.010	£16.210	£15.890	£19.990

**SCSI I Cable Apple Wiring**



**Type of connector:** Centronics 50-way male to DB 25 way male  
Apple wiring

**Construction:** Moulded plastic  
**Length:** 1.5m  
**Pins connected:** 25  
**Data transfer rate:** 1.5Mbps-5Mbps

*Retail Unit Price each (inc. VAT).*

Order Code	Type 10964	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DG54J	SCSI I Apple Cable	£12.750	£11.500	£10.750	£14.990

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## SCSI I Cable with Hooked Connectors



Type of connector: Centronics 50-way male to Centronics 50-way male  
 Construction: Moulded plastic  
 Shielding: Shielded foil, low capacitance  
 Length: 1.5m or 5m  
 Data transfer rate: 1.5Mbps-5Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type 10955	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DG56L	1† SCSI I Cbl Hookd 5m	£34.030	£30.950	£28.500	£39.990
DG55K	SCSI I Cbl Hookd 1.5	£15.310	£12.750	£10.950	£17.990

## SCSI I Cable with IBM Wiring



Type of connector: Centronics 50-way male to DB 25-way male. IBM wiring  
 Construction: Moulded plastic  
 Length: 1.5m  
 Data transfer rate: 1.5Mbps-5Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type 10967	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DG57M	SCSI I IBM Cable	£17.010	£15.200	£12.950	£19.990

## SCSI I Connection Cable



Type of connector: Centronics 50-way male to Centronics 50-way male.  
 Construction: Right-angled moulded plastic  
 Length: 1.3m  
 Data transfer rate: 1.5Mbps-5Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type 10963	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DG53H	R/A SCSI I Cable	£21.260	£19.200	£17.950	£24.990

## SCSI I Extension Cable



Type of connector: Centronics 50-way male to Centronics 50-way female  
 Construction: Moulded plastic  
 Shielding: Shielded foil, low capacitance  
 Length: 1.5m  
 Data transfer rate: 1.5Mbps-5Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type 10969	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DG58N	SCSI I Ext. M/F Cable	£15.310	£12.750	£10.950	£17.990

## SCSI I Extension Cable



Type of connector: Centronics 50-way female to Centronics 50-way female  
 Construction: Moulded plastic  
 Shielding: Shielded foil, low capacitance  
 Length: 2.0m  
 Data transfer rate: 1.5Mbps-5Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type 10970	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DG59P	SCSI I Ext. F/F Cable	£17.010	£16.100	£15.200	£19.990

## SCSI II Cable with Hooked Connectors



Type of connector: Centronics half pitch 50-way male to half pitch Centronics 50-way male (DG60Q); DB50 half pitch to DB50 half pitch (DG61R).  
 Construction: Plated metal  
 Shielding: Shielded foil, low capacitance  
 Length: 1.5m (DG60Q); 5m (DG61R)  
 Data transfer rate: 1.5Mbps-20Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type 10972	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DG60Q	1 SCSI II Cbl Hook 1.5	£28.070	£26.200	£24.950	£32.990
DG61R	1 SCSI II Hkd Cbl 1.5m	£32.330	£29.500	£27.500	£37.990

## SCSI III Cable



Type of connector: DB 68-way half pitch male to DB 68-way half pitch female  
 Construction: Plated metal  
 Length: 1.5m  
 Data transfer rate: 1.5Mbps-40Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type 10977	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DG62S	1 SCSI III Cable	£38.280	£37.500	£37.000	£44.990

## Adaptor Cable for SCSI I to II

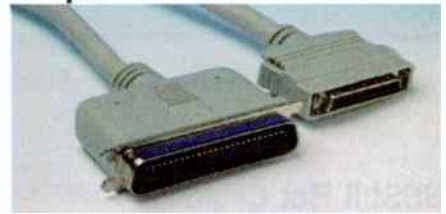


Type of connector: Centronics 50-way male to DB 50-way half pitch male  
 Material connector: Plated metal  
 Length: 1.5m  
 Data transfer rate: 1.5Mbps-10Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type 10974	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DG63T	1 SCSI I To II Cable 1	£34.030	£32.000	£31.200	£39.990

## Adaptor Cable for SCSI I to II



Type of connector: Centronics 50-way male to Centronics 50-way half pitch male  
 Construction: Moulded plastic  
 Length: 1.5m  
 Data transfer rate: 1.5Mbps-10Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type 10976	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DG64U	1 SCSI I To II Cable 2	£39.990	£37.500	£37.000	£46.990

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**SCSI II-III Adapter**



A SCSI II-III adapter for converting between 50 way micro D-type and 68 way micro D-type cabling or devices. Housed in a durable fully moulded plastic housing with gold plated contacts.

**Connectors:** 50 way micro D-type female (latching)  
68 way micro D-type male (screw type)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX12N	SCSI II-III Adapter	£12.750	£14.990

**SCSI II-III Backplane**



A SCSI backplane fitted with an internal 50 way IDC connector, to connect to internal cabling, and a 68 way external micro D-type connector, for external SCSI III cabling.

**Connectors:** 50way IDC male header (keyed)  
68 way micro D-type female (screw type)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX11M	SCSI III 50-68 Back	£12.750	£14.990

**SCSI III to SCSI II Adaptor Cable**



This cable is suitable for connecting the standard SCSI II peripheral devices to the latest WIDE SCSI III devices.

**Type of connector:** Sub-D 68-way half pitch to Sub-D 50-way half pitch

**Construction:** Plated metal  
**Length:** 1.5m  
**Data transfer rate:** 1.5Mbps-20Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG65V 1	SCSI III To II Cable	£34.030	£39.990

**SCSI III to SCSI I Adaptor Cable**



This cable is suitable for connecting the standard SCSI I peripheral devices to the latest WIDE SCSI III devices.

**Type of connector:** Centronics 50-way male to Sub-D 68-way half pitch male.

**Construction:** Plated metal.  
**Length:** 0.9m.  
**Data transfer rate:** 1.5Mbps-20Mbps.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG66W	SCSI III To I Cable	£38.280	£44.990

**SCSI III Cable**



**Type of connector:** DB 68-way half pitch male to DB 68-way half pitch male

**Construction:** This connector is made of high quality material and has a squeeze to release coupling

**Length:** 1.5m  
**Data transfer rate:** 1.5Mbps-40Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG67X 1	SCSI III Cable 1	£34.030	£39.990

**SCSI III Cable**



**Type of connector:** DB 68-way half pitch male to DB 68-way half pitch male

**Construction:** Cast metal, screw connection  
**Length:** 1.5m  
**Data transfer rate:** 1.5Mbps-40Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG68Y 1	SCSI III Cable 2	£34.030	£39.990

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**Apple Powerbook SCSI Cables**



A range of Apple Powerbook cables that allow you to connect your Powerbook to any suitable SCSI device. Available in a number of different configurations. Length approximately 0.5m.

- Type 1** HDI 30 Pin male to 25 Way D male
- Type 2** HDI 30 Pin male to 50 Way Centronics male
- Type 3** HDI 30 Pin male to 50 Way Micro-D male

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CD13P	Apple HDI 30-25DM	£21.260	£24.990
CD14W	Apple HDI 30-50CM	£21.260	£24.990
CD15R	Apple HDI 30-50MD M	£21.260	£24.990

**External SCSI Casing**



This stylish case can accommodate an internal SCSI device such as a hard drive, CD-ROM drive, back-up device, etc., and can also be used for 5.25in. and 3.5in. floppy drives. It is ideal for portable computers or devices used at more than one location. Easy to install, it can be used with any SCSI controller and is even more versatile when used in conjunction with the Bridge 777 Adaptor (see below). The case comes complete with internal power supply, leads, device id select, audio outlet and 2 SCSI inlet/outlets. The power supply is multi-voltage and can be connected to 230V or 110V AC.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CE34M 1	External SCSI Case	£51.050	£59.990

## Gender Changers & Testers

### SCSI Sniffer



This diagnostic terminator provides testing of Fast and Wide SCSI II and SCSI I SCSI Networks. Using the SCSI Sniffer, you can solve all the problems in the SCSI Network by active voltage and impedance control. Problems with the impedance are unavoidable when you use more SCSI devices. The Sniffer saves you a lot of time while troubleshooting by indicating what is wrong. Also EMI & RFI interference on the Network, which is coming from monitors, TL light, electric motors, portable telephones, etc. will be eliminated by the SCSI Sniffer. Because the SCSI Sniffer eliminates all interference and controls the optimal impedance the data transport reaches optimal speed.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG85G 1	SCSI Sniffer Cent	1+ 10+ 25+ £51.050 £48.500 £46.000	1+ £59.990

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG84F 1	SCSI Sniffer Sub D	1+ 5+ 10+ £59.560 £56.500 £52.950	1+ £69.990

### SCSI I & II T-Adaptor



With the SCSI T-Adaptor it is easy to arrange another SCSI outlet. This T-Adaptor can be easily connected to the SCSI port, so SCSI devices with one SCSI socket can be connected to two SCSI cables. No special installation is required, and the adaptor provides optimal data transfer.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG88T	SCSI T Adaptor	1+ 10+ 25+ £12.750 £11.500 £10.750	1+ £14.990

### SCSI II-III Adapter



A SCSI II-III adapter for converting between 50 way micro D-type and 68 way micro D-type cabling or devices. Housed in a durable fully moulded plastic housing with gold plated contacts.

Connectors: 50 way micro D-type female

(latching)  
68 way micro D-type male  
(screw type)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX12N	SCSI II-III Adapter	1+ £12.750	1+ £14.990

### SCSI I to SCSI II Gender Changer



Fully shielded gender changer to be used between SCSI I and SCSI II protocols.

Connectors: DB 25-pin female and 50-pin Centronics half-pitch male

Data transfer rate: 10Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG87U	SCSI III DB25-Cent	1+ 5+ 10+ £17.010 £15.950 £15.250	1+ £19.990

### SCSI I to SCSI II Gender Changer



Fully shielded gender changer for connection between SCSI I and SCSI II.

Connectors: DB 25-pin female and DB 50-pin half-pitch male.

Data transfer rate: 10Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG88V	SCSI III DB25-DB50	1+ 5+ 10+ £17.010 £15.950 £15.250	1+ £19.990

### SCSI I to SCSI II Gender Changer



Fully shielded gender changer for connection between SCSI I and SCSI II.

Connectors: 50-pin Centronics female and DB 50-pin half-pitch male

Data transfer rate: 10Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG89W	SCSI III Cent-DB50	1+ 5+ 10+ £17.010 £15.950 £15.250	1+ £19.990

### SCSI I to SCSI II Gender Changer



Fully shielded gender changer for connection between SCSI I and SCSI II.

Connectors: 50-pin Centronics male to 50-pin Centronics half pitch female.

Data transfer rate: 10Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG90X	SCSI III Cent-Cent1	1+ 5+ 10+ £17.010 £15.950 £15.250	1+ £19.990

### SCSI I to SCSI II Gender Changer



Fully shielded gender changer for connection between SCSI I and SCSI II.

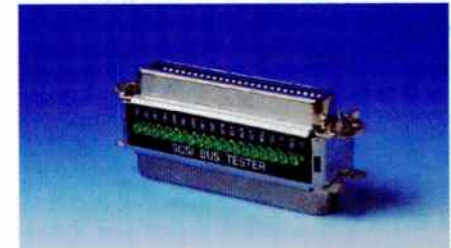
Connectors: 50-pin Centronics female and 50-pin Centronics half-pitch male.

Data transfer rate: 10Mbps

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG91Y	SCSI III Cent-Cent2	1+ 5+ 10+ £17.010 £15.950 £15.250	1+ £19.990

### SCSI Tester



This SCSI Tester is especially designed for testing SCSI signals, especially for cable shorts and connection problems. Seventeen LEDs show the exact status of data, MSG, Request In/Output, etc. The Tester has a 50-pin Centronics male/female connector so it can easily be connected between the SCSI cable and the device. No specialised installation is required.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG92A	SCSI Tester	1+ 5+ 10+ £17.010 £15.950 £15.250	1+ £19.990

See Stock Code Index  
For More Price Breaks

**SCSI Terminators**

**Active Differential SCSI III Terminator**



This active differential SCSI III terminator is for the WIDE SCSI network and is assembled with a DB68-pin half-pitch connector.

Retail Unit Price each (inc. VAT).

Order Code	Type 11023	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DG93B 1	Differential Term	£29.770	£28.500	£27.250	£34.990

**AMP Differential SCSI II Terminator**



This high end AMP Differential SCSI II Terminator is assembled with a D-range 50-pin, gold-plated half-pitch connector. The metal housing provides full shielding.

Retail Unit Price each (inc. VAT).

Order Code	Type 11028	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DG76H	Diff SCSI II Term	£22.970	£22.250	£21.750	£26.990

**Active Single-Ended SCSI III Terminator**

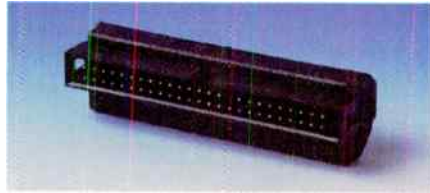


This active single-ended terminator is for WIDE SCSI networks and is assembled with a DB68-pin half-pitch connector. A passive terminator version is also available.

Retail Unit Price each (inc. VAT).

Order Code	Type 11024	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DG94C 1	Single Ended Term	£25.520	£24.750	£24.250	£29.990
DG95D 1	Act Sgl End SCSI Term	£29.770	£28.500	£27.250	£34.990

**Internal Active Terminator**

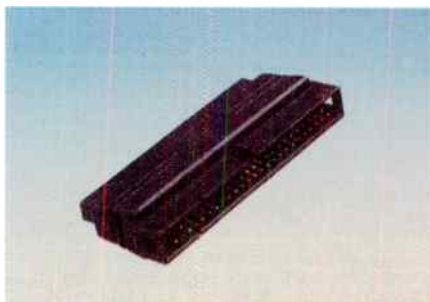


This internal active terminator is for SCSI cards or internal SCSI devices.  
Connector type: IDC 50-pin male.

Retail Unit Price each (inc. VAT).

Order Code	Type 11025	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DG96E	Internal Active Term	£17.010	£15.950	£15.250	£19.990

**Internal Through Active Terminator**



This internal active terminator has a 50-pin IDC through connector so that it can be easily installed between the SCSI cable and SCSI cards and devices.

Connector type: IDC 50-pin male/female.

Retail Unit Price each (inc. VAT).

Order Code	Type 11029	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DG97F	Int Thru Active Term	£21.260	£18.950	£16.750	£24.990

**SCSI Internal/External Adapter**

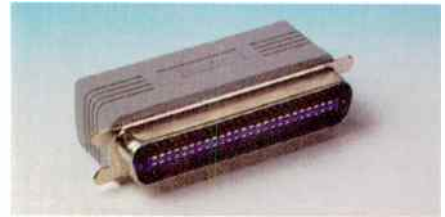


An internal/external SCSI adapter mounted to a PC backplate which features a SCSI III 68 way half pitch female socket on both sides. This allows external SCSI connections to be made to internal cables, this is especially useful when the host adapter has no external connectors available.

Retail Unit Price each (inc. VAT).

Order Code	Type 11430	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
KX00A	SCSI III Backplane	£12.750		£14.990

**SCSI I Single-Ended Active Terminator**



This active terminator has a signal detection LED and a 50-pin Centronics male connector.

Retail Unit Price each (inc. VAT).

Order Code	Type 11026	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DG98G	Sngl End Active Term	£14.450	£11.950	£10.750	£16.990

**SCSI I Single-Ended Passive Terminator**



This single-ended passive SCSI terminator has a 50-pin Centronics connector and is fully shielded.

Retail Unit Price each (inc. VAT).

Order Code	Type 11030	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DG99H	Sngl End Pas Term	£11.050	£9.500	£8.500	£12.990

**SCSI I Single-Ended Terminator**



A fully shielded passive single ended terminator with a D25-pin male connector.

Retail Unit Price each (inc. VAT).

Order Code	Type 11027	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CE00A	Single End Term I	£12.750	£11.500	£10.250	£14.990

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## SCSI II Single-Ended Terminator



This high quality single-ended passive SCSI II terminator has a D50-pin half-pitch connector. The metal housing (also available in plastic) has full shielding against interference.

Retail Unit Price each (inc. VAT).

Order Code	Type 11001	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CE02C	Single End Term Plas	£12.750	£11.500	£10.750	£14.990

Retail Unit Price each (inc. VAT).

Order Code	Type 11021	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CE01B	Single End Term Mt	£19.560	£18.700	£17.650	£22.990

## SCSI II Active Terminator

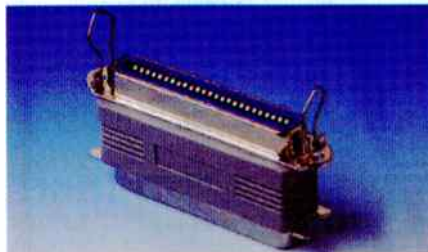


A 50 way half-pitch D-type SCSI II terminator, designed to provide active termination to the fast SCSI bus.

Retail Unit Price each (inc. VAT).

Order Code	Type 11013	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VLR2D	SCSI II Active Term	£12.750	£11.500	£10.500	£14.990

## SCSI Double-Ended Terminator



A double-ended passive terminator for SCSI I that can also be used on an Apple SCSI network. It's easy to install between the cable and the SCSI device and is fully shielded.

Retail Unit Price each (inc. VAT).

Order Code	Type 11028	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CE03D	Dbi Ended Terminator	£12.750	£11.500	£10.750	£14.990

## AMP SCSI II Terminator



A high quality AMP SCSI II single-ended terminator, assembled with a high end D-range, 50-pin, gold-plated half-pitch connector. Metal housing provides full shielding.

Retail Unit Price each (inc. VAT).

Order Code	Type 11001	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DG74R 1	SCSI II Terminator	£34.030	£33.000	£32.150	£39.990

## AMP Active SCSI II Terminator



This high end AMP Active SCSI II Terminator is assembled with a D-range 50-pin, gold-plated half-pitch connector. Metal housing provides full shielding.

Retail Unit Price each (inc. VAT).

Order Code	Type 11003	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DG76S 1	Active SCSI II Term	£28.070	£27.500	£27.000	£32.990

## SCSI III Internal Through Active Terminator



This internal active terminator has a 68 pin half pitch D-type connector at each end so that it can be installed between SCSI devices and SCSI cabling.

Connector type: 68 way half pitch D-type male/female

Retail Unit Price each (inc. VAT).

Order Code	Type 11434	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
LQ15R	SCSI III Active Int	£21.260	£18.500	£17.500	£24.990

## AMP SCSI III Terminator



This high end AMP Active SCSI III Terminator is assembled with a D-range 68-pin, gold-plated half-pitch connector. The metal housing provides full shielding. DG78K is differential type.

Retail Unit Price each (inc. VAT).

Order Code	Type 11004	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DG77J	SCSI III Terminator	£23.820	£22.950	£22.250	£27.990
DG78K	Diff SCSI III Term	£20.840	£20.500	£20.000	£24.490

## SCSI III Differential Terminator

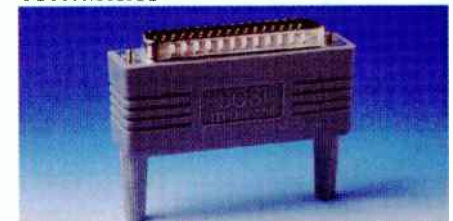


A moulded plastic SCSI III differential terminator fitted with a 68 way half pitch male connector.

Retail Unit Price each (inc. VAT).

Order Code	Type 11437	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
KX01B	SCSI III Ext Term	£12.750			£14.990

## Single-Ended IBM SCSI Terminator



This single-ended SCSI I terminator is for IBM SCSI networks. It provides a 50-pin 1-27 R pitch connector and is fully shielded.

Retail Unit Price each (inc. VAT).

Order Code	Type 11032	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CE04E	Snj End IBM Term	£19.560	£16.600	£14.850	£22.990

## SCSI Printer Port Adaptor



With the Bridge 777 Adaptor it is now possible to connect SCSI equipment to any PC or notebook quickly and easily via the parallel printer port (while still retaining the use of your printer).

The Bridge 777 has a data transfer rate of 800Kbps and operates under MS-DOS, PC-DOS, DR-DOS, Windows and OS/2 and includes ASPI drivers for

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CD-ROM, optical drives, removal hard drives, tapestreamers, etc. Its power supply is taken via the keyboard port. The adaptor is supplied complete with user manual and cables for 5-pin DIN and PS/2 keyboard ports.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CE35Q 1	11581 Prnt Port SCSI Adapt	1+ 4+ 10+ £114.880 £106.000 £95.000	1+ £134.990

**Miscellaneous Cables**

**Floppy Cable**



This flat cable is used to connect a floppy disk drive to a floppy controller card. This cable can be used for high and extra density drives and is provided with high quality 34pin IDC crimp connectors and 34 way edge connectors. The twisted cable allows for 2 drives to be connected.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG41U	10346 Floppy Cable	1+ 10+ 25+ £3.390 £3.000 £2.500	1+ £3.990

**IDE Hard Disk Cable**

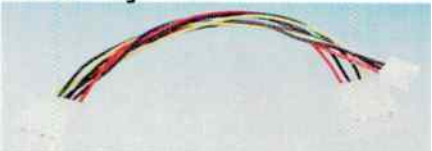


This flat cable offers a perfect connection between a controller card and a hard disk and is suitable for standard and high speed enhanced protocols. Supplied with three high quality 40-pin IDC crimp connectors. It also provides a connector for a second hard disk.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG40T	10345 IDE Hard Disk Cable	1+ 10+ 25+ £3.390 £3.000 £2.500	1+ £3.990

**Power Supply Adaptor Cable Assembly**

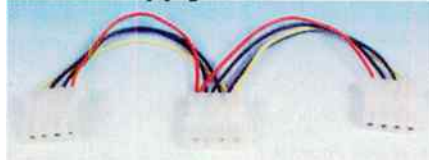


Modern devices like 3.5in. drives, tape streamers and flopticals are provided with a small plug for the power supply. This cable is designed to make use of the existing power supply cables in a computer so that the number of connections can be increased.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG42V	10350 Y Cable 3.5in Drive	1+ 10+ 25+ £2.540 £1.500 £1.250	1+ £2.990

**Power Supply Y-Cable**

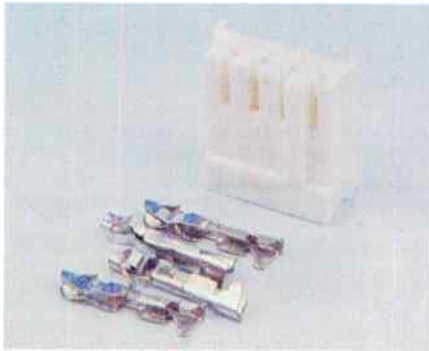


This cable provides the solution if you need another power supply connection in your computer. It converts one single power supply connection into a double connection.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DG43WY	10351 Cable 5.25in Drive	1+ 10+ 25+ £2.540 £1.500 £1.250	1+ £2.990

**4-pin 2.54mm (0.1in.) Spacing Polarised Power Connector**



Commonly used on 89mm (3 1/2in.) floppy disk drives. Supplied complete with connector housing and crimp/solder terminals. Available in female only.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JW63T	1315 0.1in Power Conn F	1+ 25+ 100+ £0.510 £0.357 £0.260	1+ £0.600

**4-pin 5.08mm (0.2in.) Spacing Polarised Power Connector**



Commonly used on 133mm (5 1/4in.) floppy and hard disk drives. Supplied complete with connector housing and four crimp/solder terminals. Available in male and female types.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JW64U	1317 0.2in Power Conn M	1+ 25+ 100+ £0.587 £0.440 £0.300	1+ £0.690
JW65V	0.2in Power Conn F	£0.502 £0.390 £0.280	£0.590

**AMP IEEE-488 Bus Cable**



This professional AMP IEEE GPIB cable is assembled with moulded aluminium connectors and manufactured to the latest technology. The lead is available in 1.2, 2, 3, 4, 6, 8, 10, 15 and 20m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CE24B 1	11089 IEEE-488 Bus Cable	1+ £42.540	1+ £49.990

**MIDI Lead**



5-pin 180° 'A' DIN plug to 5-pin 180° 'A' plug non-reversed (pin 1 connects to pin 1, 2 to 2, etc.). Available in lengths of 1m and 6.5m approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YZ26D	10349 MIDI Cable 1m	1+ 25+ 100+ £2.540 £1.550 £1.330	1+ £2.990
YZ27E	MIDI Cable 6.5m	£4.240 £3.140 £2.650	£4.990

**Multimedia Cable**



A multimedia cable for use with sound cards to provide MIDI IN and MIDI OUT functions via 5 pin DIN connectors. The cable is equipt with a 15 pin D-type male connector for connecting to the MIDI/joystick port of the soundcard, a joystick can still be used as the cable has a 15 way D-type female through-connector.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL80B	10351 Multimedia MIDI Lead	1+ 5+ 10+ £12.750 £11.500 £10.500	1+ £14.990

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## Midi Interface

Competition Pro



- ★ Two Joystick Ports
- ★ Soundblaster Compatible
- ★ 2 metre extension cable
- ★ MIDI-IN and MIDI-OUT ports

A midi interface for connecting a MIDI device and two joysticks to most PC soundcards including Soundblaster and compatibles. Features opto-isolated circuits, two joystick ports, 2 metre extension cable and MIDI in and MIDI out ports.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ14Q	Midi Interface	£17.010	£19.990

## MIDI Adaptor



This MIDI adaptor is designed to link any MIDI equipped device to any PC sound card which has a standard 15-pin 'D' connector and uses the standard MIDI UART (MPU-401 'dumb' mode) operation. This includes Creative Labs, Media Vision and of course Gravis Ultrasound MAX sound cards. The adaptor directs MIDI messages, e.g., files that go in, out through the adaptor to your sound card. MIDI activity indicator LEDs are included for MIDI IN and OUT. Two 15-pin joystick connectors are provided to allow you to use joysticks to play games. The adaptor is connected via approximately 1m of cable to the sound cards joystick/MIDI port. A 2m (approximately) MIDI lead is also included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DP19V 1	Gravis MIDI IFace	£34.030 £31.500 £29.250	£39.990

## Gold Soundcard Audio Cable



This gold phono cable can be used for a number of multimedia applications including connecting external speakers to your soundcard, connecting

external recording and playback equipment and connecting video equipment.

Connectors: 3.5mm stereo jack plug  
2 male phono plugs

Length: 1.2m

A 2.5m version is also available. (Code VL42V)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL42V	3.5-2 Phono Plg Gld	£2.540 £1.750	£1.450 £2.990
KQ12N	Gold Phono Jack 1.2m	£2.110	£1.500 £1.400 £2.490

## 3.5 to 3.5mm Stereo Jack Lead



Approximately 1.2m stereo jack lead with 3.5mm stereo jack plugs at each end.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK27E	3.5mm Stereo Ext Ld	£1.430 £0.790	£0.620 £1.690

## European Plug and Socket Cordset



Moulded, high quality, BEAB approved non-rewirable European style shrouded plug and socket cable assembly, 2m long at 250V 10A. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MK24B	Euro Mains Cord Set	£4.670 £4.250	£3.750 £5.490

## Euro Socket To 13A Plug Lead



Moulded, high quality plug and socket non-rewirable cable assembly 2m long and rated at 250V 5A.

The plug is supplied with a 5A fuse. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MK41U	Euro-3Pin Lead	£3.390 £2.830	£2.420 £3.990

## BBC Micro 26-way Printer Cable



A 26-way ribbon cable, connected to a 26-way (2 x 13)-way IDC socket at one end and a Centronics type plug at the other. Ideal for use with the BBC Micro. Length 1m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FG30H	Printer Cable 1	£5.090 £3.850	£3.150 £5.990

## Computer Lead 7-Pin DIN



7-pin DIN plug to 2 x 3.5mm jack plugs and a 2.5mm jack plug. Length: 1m (approx.).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FG18U	DIN 7 Lead	£2.540	£2.250 £2.100 £2.990

## Computer Lead 5-Pin DIN



5-pin DIN plug to 2 x 3.5mm jack plugs and 2.5mm jack plug. Length: 1m (approx.).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FG21X	DIN 5 Lead	£1.690	£1.600 £1.500 £1.990

## Digital Imaging

### Cameras

#### Digital Camera

Mustek



- ★ Up to 24-bit colour scanning
- ★ Maximum 640 x 480 pixel resolution
- ★ Built in memory stores up to 20 full colour images
- ★ TWAIN compliant
- ★ Macro focus
- ★ LCD indicator
- ★ Power saving automatic shut-off function

The VDC-100 digital camera offers 24-bit colour photo imaging at a realistic price. Images can be taken in low or high resolution and transferred to a PC using the supplied cable. For managing the digital images, the VDC-100 includes iPhotoPlus PC software that allows image editing and photo cataloguing. Supplied with power adaptor, batteries, carry pouch, transfer cable, TWAIN driver, Mustek Photomaster, and iPhotoPlus.

#### Product Specification:

Image Resolution	Standard 320 x 240 High 640 x 480
Colour	24-bit
Image Storage	Standard 20 images High 10 images
Lens	Focus free
Focus distance	9.5cm to infinity
Exposure	Automatic
Shutter Speed	1/60 to 1/16,000 second
Aperture	f8 and f2
Power	4 x AA batteries
Weight	125 grams (without batteries)
Dimensions	132 x 68 x 38 mm
CCD Sensor	250k pixels
Compression Method	JPEG

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV47B	Mustek VDC100 Camera	£127.650	£149.990

## Colour Scanners

#### ScanExpress 6000P

Mustek



The ScanExpress 6000P is an affordable 30-bit flatbed scanner with integrated document management functions. No interface card or disassembly of your PC is necessary. Parallel Port (EPP) technology advances the user interface and makes 30-bit colour scanning easier than ever. The bundled scanning solution comes with a complete set of professional tools for image enhancement and retouching, and an accurate OCR solution to transform papers into editable text.

#### Specification

Scan method:	Single Pass
Scan mode:	30-bit True Colour (1 1 billion colours) B-bit

Grey/Text

Max. scan area:	21.6 x 29.1 cm
Interface:	Parallel Port (EPP)/SPP
Resolution	
optical:	300 x 600 dpi
maximum:	4800 x 4800 dpi
S/W driver:	TWAIN compliant Data Source

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LR82D 1	6000P ScanExpress	£110.620	£129.990

## Video Hardware

#### Aver FunTV

AverMedia



The Aver FunTV-Lite allows you to watch TV or Video on your computer screen. The card is suitable for use with VHF/UHF, cable TV channels, VCRs and any other video source. Video is displayed full-screen in full-motion and full-colour. The Aver FunTV is easy to install with no jumper settings or feature connector required (ISA Adaptor card).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL13P	Aver FunTV	£85.090	£99.990

#### Aver TV Box

AverMedia



The Aver TV Box is an external television tuner with a remote control facility. It only requires the use of a PC monitor, has no software drivers and is ideal for home use where it can be connected up for viewing. The unit also provides the user with an on-screen display facility, alarm and sleep function.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ11M1	AverTV Box	£110.620	£129.990

#### Aver TV-Phone (Video Conference)

AverMedia



The Aver TV-Phone provides real-time video and audio communications over the phone line, LAN/WAN, or internet service provider. Consisting of a PCI TV, FM tuner, capture board, desktop microphone and software the package allows the user to use video conferencing or watch television on a computer monitor. listen to FM radio and capture high quality images or video (Television display function is re-sizeable). Supplied with remote control.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KM90X	AVER TV-PHONE	£170.200	£199.990

#### AverKey 3

AverMedia



The AverKey 3 is a cost effective plug and play solution for PC/MAC to TV conversion without the need for software drivers. The AverKey 3 is compatible with all computers and operating systems including Windows, Windows 95, OS/2, UNIX and Mac OS. A remote control is used to access the functions of the unit from up to 50 feet away. Super VGA compatibility allows conversion of pictures up to 800 x 600 pixels in 16.7 million colours. Features include underscan/overscan, freeze frame, zoom, pan, positioning control and brightness control, a save button allows customised setting to be kept. The device has two outputs allowing simultaneous use of the computer's monitor and the TV output.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL16S	Averkey 3	£246.800	£289.990

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## AVerKey 5

AverMedia



The AVerKey 5 boasts all the features of the AVerKey 3 with a number of added features. The AVerKey 5 uses advanced decoding circuitry to clarify text display and extend colour depth to true 24-bit levels. The remote control includes a mouse function to give the user complete control from one handset. A second set of controls are located on the unit itself in the event of losing the remote control function. The AVerKey 5 features a video switching function which allows the user to select between the AVerKey 5 and another permanently connected source such as a VCR to remove the need for recabling the TV every time an alternative source is required. Three types of zoom are incorporated into the unit, Normal Zoom & Pan with a zoom of 200% and free panning, Area Zoom with 9 areas to select from on the screen and Cursor Position Zoom where the picture is magnified 200% and the panning is controlled by the mouse position.

Available only as a PC version.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
VL17T	AverKey 5	£340.410	£335.000	£326.000	£399.990

## Aver Overlay Box

AverMedia



The Overlay Box for the PC combines VGA graphics and titles with live external video which provides genlock functionality with the flexibility of an external device. Supports both composite and S-video formats with broadcast quality output. Suitable for a range of applications such as home videography, school and corporate video projects, hotel information display and medical diagnostic systems.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
KM92A	Aver Overlay Box	£255.310			£299.990

## AVer VideoEditor

AverMedia



An external video device that opens up the world of video editing and titling to the general market. Supplied with Video Director and Curtain Call software the VideoEditor allows you to cut, copy, drag and drop and title your videos easily and quickly. Even though the unit is easy to use it does not scrimp on features or performance. The VideoEditor features high quality composite and S-Video input/output. If you own a camcorder, VCR, TV set and computer you have all the tools required to use the AVer VideoEditor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
VL18U	Aver Video Editor	£340.410	£335.000	£326.000	£399.990

## Motion Picture Video Capture

ATM

- ★ Captures stills from any video source
- ★ Three different resolution grades up to 1600 x 1040 pix.
- ★ Compatible with Windows 3.1x and Win 95
- ★ True Colour 24 bit per pixel
- ★ 16 bit ISA internal card or external Printer Port version
- ★ Universal PAL video input
- ★ Comprehensive manual and Windows applications
- ★ Compatible with Internet video-conferencing packages
- ★ Can be used in remote camera security and surveillance

Motion Picture and PIC Pocket can run on the following minimum specification; 386DX, 256 colours, Windows, 8Mb RAM (16Mb for 1040-24) with one free 16 bit ISA port (standard or enhanced printer port for PIC Pocket)

## PIC Pocket 1040-24

ATM



The PIC Pocket 1040-24 has all of the superb still image features of its big brother the Motion Picture 1040-24 except that instead of having to install it internally in one PC it can be easily transported between desktop computers and laptops. The PIC Pocket comes in a miniature external casing which plugs directly into the printer port on the back of the PC and derives its power from an adaptor on the keyboard socket.

The PIC Pocket is not supplied with the AVI movie capture application or driver and is not suitable for video conferencing.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
KM80B	PIC Pocket 1040	£99.000			£116.330

## Motion Picture 1040-24

ATM

Motion Picture 1040-24 is the top of the range card whose output is an amazing 1600 x 1040 in 24 bit colour. This incredible resolution is attained by using multi-frame averaging and horizontal oversampling of the PAL video signal. This has the effect of removing any unwanted noise and PAL artifacts to produce stunning images. An example of the output has been printed below. The quality and resolution of this card make it ideal for high quality ink jet printing as well as at medium scale in professional print jobs, such as this catalogue.



The Motion Picture 1040-24 is best used with high quality video cameras and camcorders including the new digital variety. The card allows the user access to the 260 and 520 line resolution modes for situations where this is more appropriate.

Motion Picture 1040-24 is shipped as standard with the AVI capture driver which as well as allowing you to experiment with black and white AVI capture allows you to hook into video conferencing packages on the internet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
KM75L	Motion Pict 1040 Int	£99.000			£116.330

## Motion Picture 260-24

ATM

Motion Picture 260-24 can capture images at a resolution of 800x260 (800x520 with interpolation) in 24 bit true colour. It is ideal as a cost effective introduction into video capture. The 16 bit ISA card can be upgraded to the higher resolution 520 and 1040 standard at a later date. Images are suitable for electronic publishing on CD-ROM, the world wide web or for sending postcard e-mail.

Motion Picture 260 is shipped as standard with the AVI capture driver which as well as allowing you to experiment with black and white AVI capture allows you to hook into video conferencing packages on the internet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
VC14Q	MOTION PICT 260 COL	£89.000			£104.580

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## Motion Picture 520-24

ATM

Motion Picture 520-24 is a full double interlace capture card producing an image of 800 x 520 in true colour 24 bit without any interpolation. This card is equivalent to the higher specification digital cameras and its output is suitable for printing on inkjet printers and for small scale images on professional printing jobs.

The 16 bit ISA card which forms the basis of the Motion Picture 520-24 package is equipped with 512K of VRAM. This card can be upgraded to the 1040 resolution at a later date.

Motion Picture 520 is shipped as standard with the AVI capture driver which as well as allowing you to experiment with black and white AVI capture allows you to hook into video conferencing packages on the internet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC15R	MOTION PICT 520 COL	£118.000	£138.650

## Motion Picture Upgrades

ATM

The Motion Picture 260 and 520 cards can be upgraded to increase the resolution of captured images.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ21X 1	Motion Pict 260-520	£29.000	£34.080
LQ22Y 1	Motion Pict 520-1040	£29.000	£34.080

## Remote Surveillance Using ATM Video Capture Cards

ATM

Motion Picture and PIC Pocket can be used to provide remote surveillance using standard telephone modems and two computers.

At the camera end you will need a video camera connected to a Motion Picture or PIC Pocket in a low specification PC fitted with a modem. Using a second computer and modem you can take control of the camera PC using communications software such as PC Anywhere. Because the Motion Picture and PIC Pocket cards produce the preview window in the DIB and do not simply overlay it as other cards do you will be able to preview images from the camera remotely.

You are also able to download a special compressed raw file from Motion Picture and PIC Pocket called RVF. This will enable you to process a full resolution 24 bit colour image from the camera on a local PC running a copy of the Motion Picture or PIC Pocket application.

This application is ideal for second homes or workplace security and surveillance.

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## Soundblaster TV Coder External

Creative Labs



- ★ Ideal for presentations
- ★ Output from your PC to a TV or Video
- ★ Create marketing /training videos
- ★ External design for ease of installation
- ★ Drivers supplied for Windows 3.x and Windows 95
- ★ Connects to RCA phono plugs on your video equipment.

The Creative Labs TV Coder offers affordable output to a TV or VCR for viewing or recording. This allows computer based pictures, films or even games to be watched by people who do not have access to the computer equipment. The external design means that it is easy to move from one computer to another, including laptops.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JN16S 1	SBTV Coder External	£119.140	£139.990

## Soundblaster Videoblaster RT300

Creative Labs



- ★ Capture and edit video
- ★ Up to 30 frames per second capture rate
- ★ Scaleable viewing
- ★ INDEO compression
- ★ Drivers for Windows 3.x and Windows 95

The Creative labs RT300 is the ultimate in PC video capture for home or business letting you capture up to 30 fps using INDEO compression. The RT300 gives compact high quality video that is scaleable, the more powerful the computer the better the quality of video.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JN14Q 1	SB Video-B RT300	£221.269	£259.990

Account Enquiries: 01702 554187

## Industrial Cards

### Serial Communications

#### AT Velocity RS232 FIFO Card

Brain Boxes

- ★ Speeds of upto 1 MEGAUAUD - 921,600 BPS.
- ★ Half sized card
- ★ Two independent 9 way D connector RS232 serial ports.
- ★ Full 16 bit address decode for Windows 95.



The very latest UART - the 16C750, allows speeds of upto 1 MEGAUAUD - 921,600 BPS.

Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x, OS/2 Warp and DOS.

Supplied with Serial Solutions for Windows and DOS driver software, utility disks, sample programs, source code and comprehensive manual including sample wiring diagrams.

Selectable as COM1 - COM8  
Interrupts 2 - 7, 10 - 12, 14 & 15.  
Data Bits: 5, 6, 7 or 8.  
Stop Bits: 1 or 2.  
Parity: Odd, even, mark, none or space.  
CE marked and UL manufactured PCB.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT71N 1	Velocity RS232 AT	£119.140	£139.990

#### AT Velocity RS422/485 FIFO

Brain Boxes

- ★ Speeds of upto 1 MEGAUAUD - 921,600 bps.
- ★ Half sized card
- ★ Two independent 9 way D connector RS422 / 485 serial ports.
- ★ Full 16 bit address decode for Windows 95.



The very latest UART - the 16C750, allows speeds of upto 1 MEGAUAUD - 921,600 bps.

Automatic transmit enable - ideal for multitasking Operating Systems.

Independently configurable as RS422 with and without handshaking or RS485 full or half duplex. RS485 mode configuration of one talker, many listeners and many talkers / listeners are allowed. The RTS line may be set to act as talk enable to prevent bus contention in party line applications.

Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x and OS/2 Warp and DOS.

Supplied with Serial Solutions for Windows and DOS driver software, utility disks, sample programs, source code and comprehensive manual including sample wiring diagrams.

COM1 - COM8 & Interrupts 2 - 7, 10 - 12, 14 & 15.  
Data Bits: 5, 6, 7 or 8.  
Stop Bits: 1 or 2.  
Parity: Odd, even, mark, none or space.  
CE marked and UL manufactured PCB.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT73Q 1	Velocity RS422/485 F	£144.670	£169.990

## 2 Port RS232 Serial Card

Brain Boxes



- ★ Twin Fast 16550 Serial Ports
- ★ Half sized card
- ★ 2 Independent RS232 serial ports
- ★ 9 pin male D connectors.

Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x and OS/2 Warp and DOS. Supplied with utility disk and comprehensive manual including sample wiring diagrams.

16C550 buffered UARTS  
Optional LPT port, configurable as LPT 1, 2, or 3 with IRQ 5 or 7, selectable as bidirectional or unidirectional.

Selectable as: COM1 - COM8  
Interrupts: 2 - 7, 10 - 12, 14 & 15.  
Data Bits: 5, 6, 7 or 8.  
Stop Bits: 1 or 2.  
Parity: Odd, even, mark, none or space.  
CE marked and UL manufactured PCB.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT76H	Dual RS232 FIFO 2x9	£68.070	£79.990

## AT Parallel Port/RS232 Card

Brain Boxes



- ★ Speeds up to 115,200 baud.
- ★ Half sized card
- ★ One Independent RS232 serial port
- ★ One Centronics parallel port.
- ★ 25 way D-Type Parallel Port.
- ★ 9 way D-Type Serial Port

LPT port, configurable as LPT 1, 2, or 3 with IRQ 5 or 7, selectable as bidirectional or unidirectional. For improved performance a 16C550 buffered UART is present - a 16 byte FIFO input and 16 byte FIFO output for each port.

Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x and OS/2 Warp and DOS.

Optional COM port, available via serial adapter cable (included).  
Supplied with utility disk and comprehensive manual including sample wiring diagrams.

Selectable as COM1 - COM8

Interrupts 2 - 7, 10 - 12, 14 & 15.  
Data Bits: 5, 6, 7 or 8.  
Stop Bits: 1 or 2.  
Parity: Odd, even, mark, none or space.  
CE marked and UL manufactured PCB.

Retail Unit Price each (inc. VAT).

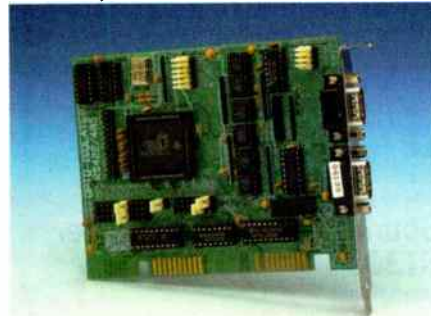
Order Code	Type	Price each exc. VAT	inc. VAT each
KT60Q	Parallel RS232 FIFO	£68.070	£79.990

## 2 Port RS422/485 Serial Cards

Brain Boxes  
KT72P - FIFO



KT74R - Opto Isolated FIFO



- ★ Speeds up to 115,200 baud.
- ★ Half sized card
- ★ 2 Independent 9 way D connector RS422/485 serial ports.

16C550 buffered UART (automatically detected and utilised by windows).  
Automatic transmit enable - ideal for multitasking Operating Systems.  
Independently configurable as RS422 with and without handshaking or RS485 full or half duplex. RS485 mode configuration of one talker, many listeners and many talkers / listeners are allowed. The RTS line may be set to act as talk enable to prevent bus contention in party line applications.  
Opto Isolated versions available (KT74R), with: DC Isolation: +/- 1500 Volts DC  
AC Isolation: 1000 Volts AC  
Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x and OS/2 Warp and DOS.

Optional LPT port (opto isolated only), configurable as LPT 1, 2, or 3 with IRQ 5 or 7, (LPT adapter cable required).  
Supplied with utility disk and comprehensive manual including sample wiring diagrams.

COM1 - COM8 & Interrupts 2 - 7, 10 - 12, 14 & 15.  
Data Bits: 5, 6, 7 or 8.  
Stop Bits: 1 or 2.  
Parity: Odd, even, mark, none or space.  
CE marked and UL manufactured PCB.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT72P	Dual RS422/485 FIFO	£110.620	£129.990
KT74R	Opt Dual RS422/485 F	£187.220	£219.990

## 3 Port RS232 Card

Brain Boxes



- ★ Speeds up to 115,200 baud.
- ★ A half sized card
- ★ 3 Independent RS232 serial ports.
- ★ 9 pin D connectors

16C550 buffered UART (automatically detected and utilised by windows). Full 16 bit address decode for Windows 95. Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x and OS/2 Warp and DOS. Supplied with utility disk and comprehensive manual including sample wiring diagrams.

Selectable as COM1 - COM8  
Interrupts 2 - 7, 10 - 12, 14 & 15.  
Data Bits: 5, 6, 7 or 8.  
Stop Bits: 1 or 2.  
Parity: Odd, even, mark, none or space.  
CE marked and UL manufactured PCB.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT69A	AT 3 Port RS232 FIFO	£110.620	£129.990

## 4 Port RS232 Serial Cards

Brain Boxes



- ★ Speeds up to 115,200 baud.
- ★ Half sized PC card
- ★ Four Independent RS232 serial ports
- ★ 4 male 9 pin D connectors on a quad cable (included).

Optional 16C550 buffered UART (automatically detected and utilised by windows).  
Digiboard PC/4 compatible.  
Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x, OS/2 Warp, DOS and SCO UNIX / XENIX.  
Supplied with Serial Solutions for Windows and DOS driver software, utility disk, cables and comprehensive manual including sample wiring diagrams.

COM1 - COM4 and approximately 100 other bank options.  
Interrupts 2 - 7, 10 - 12 & 15.  
Flexible port address scheme (100h - 3f8h) and shared interrupt mechanism.  
Data Bits: 5, 6, 7 or 8.  
Stop Bits: 1 or 2.  
Parity: Odd, even, mark, none or space.

CE marked and UL manufactured PCB.

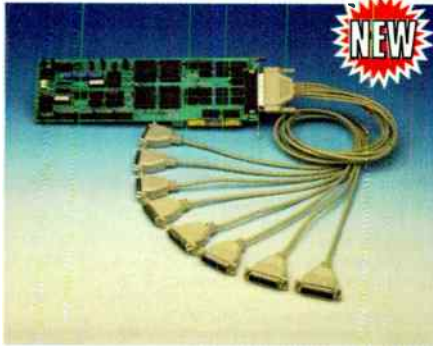
Two versions are available: Standard (KT63T)  
FIFO (KT65V)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT63T 1	AT Quad RS232 DOS	£170.200	£199.990
KT65V 1	Quad RS232 DOS FIFO	£212.750	£249.990

## 8 Port RS232 Serial Card

Brain Boxes



Photograph shows cable with 25way D-type connectors, product supplied with 9way D-type connectors.

- ★ **Speeds up to 115,200 baud.**
- ★ **Full sized PC card**
- ★ **Eight independent RS232 serial ports**
- ★ **8 male 9 pin D connectors on an "octopus" cable (included).**

Optional 16C550 buffered UART (automatically detected and utilised by windows). Digiboard PC/8 compatible. Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x, OS/2 Warp and DOS and SCO UNIX / XENIX. Supplied with Serial Solutions for Windows and DOS driver software, utility disk, cables and comprehensive manual including sample wiring diagrams.

Selectable as COM1 - COM4 and approximately 100 other bank options. Interrupts 2 - 7, 10 - 12 & 15. Shared interrupt mechanism. Flexible port address scheme (100h - 3f8h). Data Bits: 5, 6, 7 or 8. Stop Bits: 1 or 2. Parity: Odd, even, mark, none or space. CE marked and UL manufactured PCB. Two versions available: Standard (KT67X) FIFO (KT68Y)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT67X 1	AT LYNX RS232 DOS	£297.860	£349.990
KT68Y 1	LYNX RS232 DOS FIFO	£340.410	£399.990

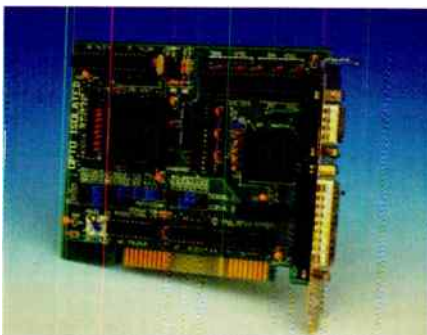
## Dual RS232 Serial Card

Brain Boxes

KT61R - 16550 UARTS



KT62S - Buffered OPTO Isolated



- ★ **Speeds up to 115,200 baud.**
- ★ **Half sized card**
- ★ **2 independent RS232 serial ports.**
- ★ **25 way and 9 way D connector.**

Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x and OS/2 Warp and DOS.

Optional LPT port, configurable as LPT 1, 2, or 3 with IRQ 5 or 7, selectable as bidirectional or unidirectional.

Supplied with utility disk and comprehensive manual including sample wiring diagrams.

Optional 16C550 buffered UARTS (automatically detected and utilised by windows). (KT61R) Opto Isolated version (KT62S) available, with: DC Isolation: +/- 1500 Volts DC AC Isolation: 1000 Volts AC CE marked and UL manufactured PCB.

Selectable as COM1 - COM8 Interrupts 2 - 7, 10 - 12, 14 & 15. Data Bits: 5, 6, 7 or 8. Stop Bits: 1 or 2. Parity: Odd, even, mark, none or space.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT61R 1	AT Dual RS232 FIFO	£68.070	£79.990
KT62S 1	Opto Dual RS232 FIFO	£127.650	£149.990

## 2 Port PCI RS232 Card

Brain Boxes



4 port version shown-

- ★ **A half sized PC card**
- ★ **Two independent RS232 serial ports via 2 male 9 pin D connectors.**
- ★ **CE marked and UL manufactured PCB.**
- ★ **Full PCI bus - auto configuring interrupts and addressing.**
- ★ **Plug and play compatible.**

Flexible port address scheme - any port can be assigned to any COM port number. Data Bits: 5, 6, 7 or 8. Stop Bits: 1 or 2. Parity: Odd, even, mark, none or space. Speeds up to 115,200 baud. 16C550 buffered UART (automatically detected and utilised by windows) - 16 byte FIFO input and 16 byte FIFO output for each port. Compatible with Windows 3.x, Windows 95, Windows NT, DOS and Greenleaf Comms and Blaise Async Plus. Supplied with Serial Solutions for Windows and DOS driver software, utility disk, comprehensive manual including sample wiring diagrams.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX39N 1	RS232 2 Port PCI	£127.650	£149.990

## 4 Port PCI RS232 Card

Brain Boxes

- ★ **A half sized PC card**
- ★ **Four independent RS232 serial ports via 4 male 9 pin D connectors on a quad cable (included).**
- ★ **CE marked and UL manufactured PCB.**
- ★ **Full PCI bus - auto configuring interrupts and addressing.**
- ★ **Plug and play compatible.**

Flexible port address scheme - any port can be assigned to any COM port number. Data Bits: 5, 6, 7 or 8. Stop Bits: 1 or 2. Parity: Odd, even, mark, none or space. Speeds up to 115,200 baud. 16C550 buffered UARTS (automatically detected and utilised by windows) - 16 byte FIFO input and 16 byte FIFO output for each port. Compatible with Windows 3.x, Windows 95, Windows NT, DOS, Greenleaf Comms and Blaise Async Plus. Supplied with Serial Solutions for Windows and DOS driver software, utility disk, cables and comprehensive manual including sample wiring diagrams.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX40T 1	RS232 4 Port PCI	£263.820	£309.990



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Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System



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## 8 Port PCI RS232 Card

Brain Boxes



4 port version shown-

- ★ Half size card
- ★ Eight Independent RS232 serial ports via 8 male 9 pin D connectors on an "octopus" cable (included).
- ★ Full PCI bus - auto configuring interrupts and addressing.
- ★ Plug and play compatible.

16C550 buffered UARTS (automatically detected and utilised by windows) - 16 byte FIFO input and 16 byte FIFO output for each port. Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x and OS/2 Warp, DOS, Greenleaf Comms and Blaise Async Plus. Supplied with Serial Solutions for Windows and DOS driver software, utility disk, cables and comprehensive manual including sample wiring diagrams.

Flexible port address scheme - any port can be assigned to any COM port number.  
Data Bits: 5, 6, 7 or 8.  
Stop Bits: 1 or 2.  
Parity: Odd, even, mark, none or space.  
Speeds up to 115,200 baud.  
CE marked and UL manufactured PCB.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX41U 1	RS232 8 Port PCI	£408.500	£479.990

## AT RS232/422/485 Card

Brain Boxes



- ★ Half sized card
- ★ One independent RS232 serial port
- ★ One independent RS422/485 serial port
- ★ 9 pin male D connectors.

Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x and OS/2 Warp and DOS.  
16C550 buffered UART (automatically detected and utilised by windows)  
Independently configurable as RS422 with and without handshaking or RS485 full or half duplex. RS485 mode configuration of one talker, many listeners and many talkers / listeners are allowed. The RTS line may be set to act as talk enable to prevent bus contention in party line applications. On board terminating resistors with full fail safe open/short circuit detector.

Optional LPT port, configurable as LPT 1, 2, or 3 with IRQ 5 or 7, selectable as bidirectional or unidirectional. Supplied with utility disk and comprehensive manual including sample wiring diagrams.

Selectable as COM1 - COM8  
Interrupts 2 - 7, 10 - 12, 14 & 15.  
Data Bits: 5, 6, 7 or 8.  
Stop Bits: 1 or 2.  
Parity: Odd, even, mark, none or space.  
CE marked and UL manufactured PCB.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT64U 1	RS232/422/485 FIFO	£110.620	£129.990

## AT 1 Port RS232 FIFO

Brain Boxes



- ★ Fast 16550 Serial Port
- ★ Half sized card
- ★ Independent RS232 serial port
- ★ 9 pin male D connector

Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x and OS/2 Warp and DOS.  
Supplied with utility disk and comprehensive manual including sample wiring diagrams.

16C550 buffered UART (automatically detected and utilised by windows).

Selectable as COM1 - COM8  
Interrupts 2 - 7, 10 - 12, 14 & 15.  
Data Bits: 5, 6, 7 or 8.  
Stop Bits: 1 or 2.  
Parity: Odd, even, mark, none or space.  
CE marked and UL manufactured PCB.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT70M 1	AT 1 Port RS232 FIFO	£44.990	£49.990

## 4 Port RS422/485 Serial Card

Brain Boxes



- ★ Speeds up to 115,200 baud.
- ★ Half sized PC card
- ★ Four independent RS422 / 485 serial ports
- ★ 4 male 9 pin D connectors on a quad cable (Included).

Independently configurable as RS422 with and without handshaking or RS485 full or half duplex. RS485 mode configuration of one talker, many listeners and many talkers / listeners are allowed. The RTS line may be set to act as talk enable to prevent bus contention in party line applications. On board terminating resistors with full fail safe open/shut circuit detector.

16C550 buffered UART (automatically detected and utilised by windows).  
Automatic transmit enable - ideal for multitasking Operating Systems.  
Compatible with Windows 3.x, Windows 95, Windows NT, OS/2 Version 2.x and OS/2 Warp, and DOS.  
Digiboard PC/4 compatible.  
Supplied with Serial Solutions for Windows and DOS driver software, utility disk, cables and comprehensive manual including sample wiring diagrams.

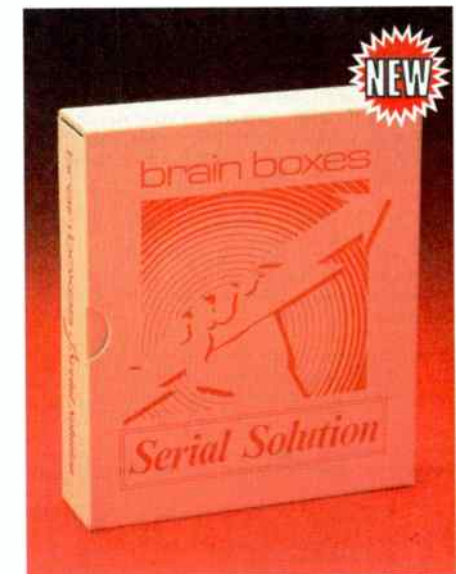
Selectable as COM1 - COM4 and approximately 100 other bank options.  
Interrupts 2 - 7, 10 - 12 & 15.  
Flexible port address scheme (100h - 3f8h) and shared interrupt mechanisms.  
Data Bits: 5, 6, 7 or 8.  
Stop Bits: 1 or 2.  
Parity: Odd, even, mark, none or space.  
CE marked and UL manufactured PCB.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT66W 1	Quad RS422/485 FIFO	£238.280	£279.990

## Serial Solutions - Utility Software for Serial Ports

Brain Boxes



Drivers for Windows 3.x, Windows 95, Windows NT and DOS, all with the following features:

- ★ Drivers for standard PC UARTs e.g. 8250, 16450.
- ★ Drivers for PC FIFO UARTs e.g. 16550, 16650, 16750.
- ★ Support for all Brain Boxes shared interrupt cards.
- ★ Supports any mix of RS232, RS422 and RS485 handshake schemes.
- ★ Suite of utility programs for use with RS232 / RS422 / RS485 serial communication ports.
- ★ Supported Baud Rates 50 to 115,200.
- ★ Data Bits: 5, 6, 7 or 8.
- ★ Stop Bits: 1 or 2.
- ★ Parity: Odd, even, mark, none or space.

### SERIAL SOLUTIONS FOR DOS

This allows DOS to support up to 32 serial ports, and includes an interrupt handler for enhanced performance with user definable buffer sizes. Extensive sup-port for hardware and software handshaking. Serials Solutions for DOS is



accessible from all DOS languages.

**SERIAL SOLUTIONS FOR WINDOWS 3.X**

This works for Windows 3.0, 3.1, 3.11 and Windows for Workgroups. This allows support for up to 255 ports and easy configuration of these extra serial ports via the Windows control panel. It also supports single as well as multiport cards using shared interrupts. Fully commented C source code is supplied as reference for programmers.

**SERIAL SOLUTIONS FOR WINDOWS 95**

Windows 95 has an improved communication API and directly supports up to 255 ports. This driver supports single as well as multiport cards using shared interrupts. Also includes fully commented C source code, which is Windows NT compatible, as reference for programmers.

**SERIAL SOLUTIONS FOR WINDOWS NT**

Windows NT has an improved communication API and directly supports up to 255 ports. No extra driver is required to drive multiport cards, but a handy setup wizard is supplied for ease of installation. Also includes fully commented C source code.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT75S	Serial Solutions	£68.070	£79.990

**IEEE 488 Cards**

**High Performance IEEE488 Interface**

Brain Boxes  
KT86T - Board Only



- ★ NEC 7210 Intelligent GPIB controller chip.
- ★ Three DMA channels.
- ★ 10 Interrupt lines, 13 Interrupt sources.
- ★ 400 kilo bytes per second DMA transfer.

Easy to program from Windows and ALL DOS languages via PRO488. Allows the PC to manage an IEEE bus controlling up to 14 instruments.

Compatible with Windows 3.x, LOTUS measure, Asyst / Asystant GPIB, all software written for IBM, NI PC2a cards using GPIB.COM driver, all DOS languages and IEEE488.2.

This card enables the best IEEE 488.2 performance to be achieved from a PC. This card is totally IEEE 488.2 compatible and supports many third party data capture and analysis software packages.

**KT87U - Board & Software**

PRO 488 DOS and Windows 3.x DLL's software included allows PCs to manage an IEEE bus controlling up to 14 instruments.

The PRO 488 DLL's included in the hardware and software packages enables high IEEE performance from Windows environments. CE marked and UL manufactured PCB.

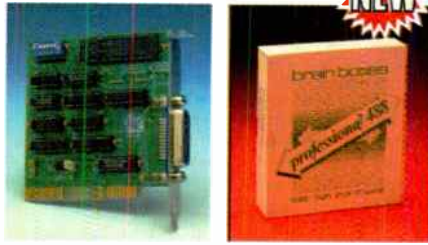


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT86T	PC ELITE Only	£170.200	£199.990
KT87U	PC ELITE with PRO488	£297.960	£349.990

**IEEE488 Interface with PRO488 Software**

Brain Boxes



- ★ Half sized card.
- ★ Low cost control of IEEE 488 bus Instruments.
- ★ No extra modules or language drivers needed.
- ★ Serial / Parallel redirection.

PRO488 Driver Software and Windows 3.x DLL's supplied.

Worked examples provided in: BASIC, C, Pascal, Assembler, FORTRAN, Visual Basic, Visual C++, C for Windows and Turbo Pascal for Windows. Compatible with Windows 3.x, all DOS languages and IEEE488.2.

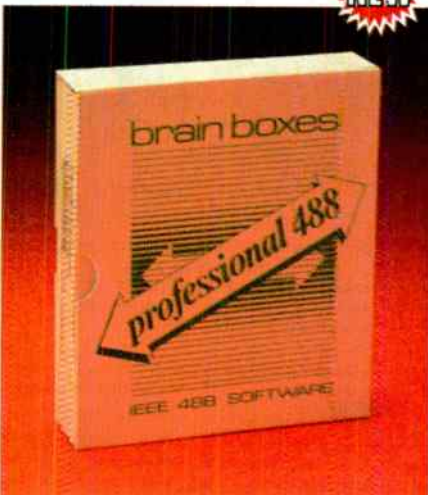
CE marked and UL manufactured PCB.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT88V	PC-IEEE with PRO488	£238.280	£279.990

**PRO 488 Software**

Brain Boxes



PRO 488 software allows a PC to manage an IEEE bus controlling up to 14 instruments.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT85G	PRO488 (PC ELITE)	£153.180	£179.990

**GPIB.COM Driver**

The 100% compatible GPIB.COM driver allows you to maintain and run existing applications developed for use with any NI GPIB card.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT89W	GPIB.COM DOS Driver	£42.540	£49.990

**Business Account Holders**  
No Delivery Charges for any order

**Converter Boxes**

**PSI BOX & PSI BOX +**

Brain Boxes



A flexible 3 way interface, that converts between IEEE488, RS232 and Centronics Parallel. The PSI Box + (KV38S) allows any computer with an RS232 serial port to become an IEEE bus controller with complete control of a bus up to 14 IEEE instruments, otherwise it is identical to the PSI BOX (KV37R) (functions listed below).

Data may be passed in any combination through the different ports. Acts as an IEEE device or as an IEEE bus controller depending on the operational mode selected.

16 dip switches and 7 LED's allow the user to easily select options and monitor data transfer progress. Dip switch enabled / disabled 32k buffer.

The IEEE port, fully bidirectional uses an industry standard IEEE488 connector, and has an address definable by front panel dip switches in the range of 0 - 15. Listen and Talk Only operation can also be selected for modes 1 & 2 and 5 & 6 respectively. The Centronics Parallel port, using a standard 25 way female D connector, is identical to the standard PC printer port LPT1, and may be set as an input or output port by a front panel dip switch.

The RS232 port, using a standard 25 pin male D screw lock connector, is identical to the standard PC serial port with industry standard +/- 12Volt RS232 signal. Data is exchanged using either DSR, CTS, DCD, DTS and RTS pins (hardware handshake) or by the XON-XOFF software protocol.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV37S	PSI Box	£255.310	£299.990
KV38R	PSI Box Plus+	£340.410	£399.990

**Digital Input / Output Cards**

**PC DIO 24**

Brain Boxes

- ★ Half sized card
- ★ 24 high speed, high current TTL compatible digital input output lines.
- ★ Interrupts on IRQ's 2-7.
- ★ CE marked and UL manufactured PCB.



Fast TTL buffers and drivers provide 3 eight bit ports, arranged as an emulation of mode 0 of the 8255 programmable interface chip.

Twenty four i/o lines with active low interrupt enable and interrupt lines, 6 grounds, two +5 volts and one of each of -5volts, -12volts and +12volts are accessible from the 37 way connector.

Each port can be pulled high or low by optional on board resistor networks.

Choice of 192 i/o base addresses, which are dip switch selectable on an 4 byte boundary in the range of 100h - 3FFh

Interrupt lines accessible from the 37 way connector.

100% Keithley / Metrabyte PIO-24 compatible.

Windows 3.x DLL's, sample software Windows 95 and NT drivers available.

Supplied with comprehensive manual, utility disk, example circuits, fully commented and debugged sample software and 100 page interfacing guide.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT78K	PC DIO24	£68.070	£79.990

## PC DIO 48

Brain Boxes



- ★ Half sized card
- ★ 48 TTL digital input / output lines.
- ★ Interrupts on IRQ's 2 -7, 10 - 12 & 15.
- ★ CE marked and UL manufactured PCB.

Two 8255 programmable interface chips give 6 eight bit ports.

The 48 i/o lines have 1 ground and one +5v / ground selectable output line and are accessible from 50 way D connector / 50 way IDC connector. Each port can be pulled high or low by optional on board resistor networks.

The ports can be programmed in many i/o combinations, with interrupt capability. 64 i/o addresses selectable via dip switches on an 8 byte boundary in the range of 200h - 3FFh.

Windows 3.x DLLs, sample software Windows 95 and NT drivers available

Supplied with comprehensive manual, utility disk, example circuits, fully commented and debugged sample software and 100 page interfacing guide.

All 8255 modes are fully supported.

Modes supported: 0 Simple input / output.

- 1 Strobed input / output with interrupts.
- 2 Strobed bi-directional bus input / output with interrupts.

IDC version shown (KT79L), also available with 50W D-Type Connector (KT80B)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT79L	PC DIO48	£76.540	£89.990
KT80B	PC DIO 48D	£102.110	£119.990

## PC DIO 192

Brain Boxes



Picture shows D-type connector, board supplied with 50way IDC connector.

- ★ A full sized card
- ★ 192 TTL digital output lines.
- ★ Interrupts on IRQ's 2 -7.
- ★ CE marked and UL manufactured PCB.

Eight 8255 programmable interface chips, arranged in 4 pairs, provide 192 i/o lines.

Each 8255 pair has 6 eight bit ports with their own set of IRQ selection circuitry.

The 48 i/o lines have 1 ground and one +5v / ground selectable output line and are accessible from a 50 pin i/o connector.

One connector is accessible from the card edge bracket, the rest from 50 pin headers. Each port can be pulled high or low by optional on board resistor net works.

The ports can be programmed in many i/o combinations, with interrupt capability. All 8255 modes are fully supported.

16 i/o addresses selectable via dip switches on a 32 byte boundary in the range of 200h - 3FFh.

Each pair of 8255's may have up to 4 software enabled interrupt sources, and the combined interrupt from each pair can be separately gated onto any of the IRQ 2 - 7 lines.

Flexible interrupts make this card ideal for critical response, asynchronous i/o or handshaking applications.

Windows 3.x DLLs, sample software Windows 95 and NT drivers available

Supplied with comprehensive manual, utility disk, example circuits, fully commented and debugged sample software and 100 page interfacing guide.

Modes supported: 0 Simple input / output.

- 1 Strobed input / output with interrupts.
- 2 Strobed bi-directional bus input / output with interrupts.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT81C	PC DIO 192	£170.200	£199.990

## PC Timer DIO

Brain Boxes



- ★ Half sized card adding 24 TTL compatible digital input / output lines.

- ★ Interrupts on IRQ's 2 -7, 10 - 12 & 15.
- ★ CE marked and UL manufactured PCB.
- ★ 5 channel 16 bit counter timer.

An 8255 programmable peripheral interface provides 3 eight bit i/o ports, programmable in many i/o combinations.

All 8255 modes fully supported.

Onboard AMD9513A timer provides: 5 counter inputs

10 gates for start / stop counting

5 TTL counter outputs

1 programmable frequency o/p

Optional master base frequency input.

Cascadable 5 x 16 bit counters can provide 16, 32, 48, 64 or 80 bit wide counters.

All lines selectable from either a 50 way IDC connector or 50 way D connector for greater shielding.

Each i/o line can be pulled high or low by optional on board resistor net works.

The master base frequency input (FIN) can be connected to the users own TTL compatible clock signal.

64 i/o addresses selectable via dip switches on an 8 byte boundary in the range of 200h - 3FFh.

Windows 3.x DLL's, sample software Windows 95 and NT drivers available

Supplied with comprehensive manual, utility disk, example circuits, fully commented and debugged sample software and 100 page interfacing guide.

Available with IDC connector shown (KT82D) or 50way D-type connector (KT83E)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT82D	PC Timer DIO	£136.160	£159.990
KT83E	PC Timer DIO 50D	£153.180	£179.990

## DIO Screw Terminal Board

Brain Boxes



The Screw Terminal Board is the neat and tidy way of wiring up inputs for the DIO range.

Dual 50 way input.

Optional LED logic level indication.

Fused +/-5Volt line.

Power-on LED.

56 screw terminals each taking cable up to 0.1 inch / .254 cm diameter

Screw terminal clearly identified in large type by its IDC pin number and its DIO and Timer-DIO function.

Optional LED and resistor attachment points on screw terminals.

I/O port lines logically grouped.

Each terminal row has +/- 5volt rail provided by the DIO range.

50 way IDC connector or 50 way D connector for greater shielding. The product is now supplied with an additional 37way D-type connector for use with DIO24 (KT78K)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT84F	Screw Term Board	£42.540	£49.990

## OPTO Isolated DIO Cards

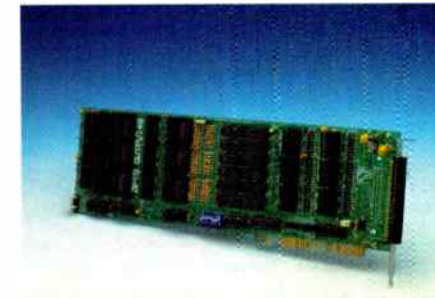
### PC OPTO OUT 24 and 48

BrainBoxes

KT92A - D-type connector shown



KV31J - IDC connector shown



Two cards providing 24 and 48 high voltage, high current output lines with +/-2500Volts optical isolation. The output lines with external power input lines are accessible from either a 50 way IDC connector or 50 way D connector for greater

shielding. These Opto isolated cards require an external power input to supply the isolated part of the Opto circuit. On board regulation allows the use of external unregulated power sources with a range of 17.5 - 35 volts, the input is reverse polarity protected and fused.

Both the PC OPTO OUT 24 and 48 use "Watchdog Timers", these are a fail safe way to ensure that the users program is running correctly. On power up the watchdog is disabled. If the users program enables the watchdog, a interrupt or reset signal refreshes the timer, postponing time-out for another 50 ms. A watch-dog output is available from inside the PC, selectable active high / low or pulsed high / low. DOS Windows 3.x DLL's, sample software Windows 95 and NT drivers available Supplied with comprehensive manual, utility disk, example circuits, fully commented and debugged sample software.

Source drivers: UDN2984.  
Eight source driver outputs per chip.  
Sink drivers: ULN2804  
Max. current : 3A per chip / 0.5A any 1 input.

### PC OPTO OUT 24

24 output lines, arranged as 3 eight bit read / write port registers.  
One read / write watchdog register which occupies one i/o locations at base address in the range of 200-3FFh.

### PC OPTO OUT 48

48 output lines, arranged as 6 eight bit read / write port registers.  
One read / write watchdog register which occupies two i/o locations at base address in the range of 200-3FFh.

Retail Unit Price each (inc. VAT).

Order Code	Type 17833	Price each exc. VAT 1+	inc. VAT each 1+
KT94C	PC OPTO OUT 24D	£161.690	£189.990
KT92A	PC OPTO OUT 24	£161.690	£189.990
KT95D	OPTO OUT 24 D SINK	£161.690	£189.990
KT93B	PC OPTO OUT 24 SINK	£161.690	£189.990
KV31J	PC OPTO OUT 48 SINK	£340.410	£399.990
KV29G	PC OPTO OUT 48D SINK	£340.410	£399.990
KV30H	PC OPTO OUT 48	£340.410	£399.990
KV28F	PC OPTO OUT 48D	£340.410	£399.990

## PC Opto DIO 16

Brain Boxes



A half sized card providing 8 input and 8 output high current, high volt-age lines with +/-2500Volts Opto isolation.

The 16 i/o lines, with isolated ground and external power input lines are accessible from the edge connector, either a 50 way D connector (for greater shielding) / 50 way IDC connector.

Fast TTL buffers and Opto isolators allow a maximum throughput of 150KHz. Each input line is current limited and reverse connection protected -ensuring long term use in an industrial environment.

Requires an external power input to supply the isolated side of the Opto circuit range, 17.5 - 35Volts.

The 16 i/o lines, arranged as 2 eight bit port registers occupy 2 i/o locations at base address in the range of 200h - 3FFh. Windows 3.x DLL's, sample software Windows 95 and NT drivers available.

Supplied with comprehensive manual, utility disk, example circuits, fully commented and debugged sample software.

Retail Unit Price each (inc. VAT).

Order Code	Type 17835	Price each exc. VAT 1+	inc. VAT each 1+
KT97F	PC OPTO DIO16 SINK	£144.670	£169.990
KT98G	PC OPTO DIO 16D	£144.670	£169.990
KT99H	PC OPTO DIO16D SINK	£144.670	£169.990
KT90X	PC OPTO DIO16	£144.670	£169.990

## Opto DIO 48

Brain Boxes



A full sized card providing 24 input and 48 output high current, high voltage lines with +/-2500Volts Opto isolation.

The 48 i/o lines, with isolated ground and external power input lines are accessible from the edge connector, either a 50 way D connector (for greater shielding) / 50 way IDC connector.

Fast TTL buffers and Opto isolators allow a maximum throughput of 150KHz. Each input line is current limited and reverse connection protected - ensuring long term use in an industrial environment.

Requires an external power input to supply the isolated side of the Opto circuit range, 17.5 - 35Volts.

The 48 i/o lines, arranged as 6 eight bit port registers with one read / write watchdog register, occupy 8 i/o locations at base address in the range of 200h - 3FFh. Watchdog Timers are a fail safe way to ensure that the users program is running correctly. On power up the watchdog is enabled. If the users program enables the watchdog, a interrupt or reset signal refreshes the timer, postponing time-out for another 50 ms. A watchdog output is available from inside the PC, selectable active high / low or pulsed high / low, available inside the PC or output via Port A bit 0, may control external hardware.

Software enabled interrupts on input lines port C#2 bits 0 and 3.

DOS Windows 3.x DLL's and sample software.

Supplied with comprehensive manual, utility disk, example circuits, fully commented and debugged sample software.

Source drivers: UDN2984.  
Eight source driver outputs per chip.  
Sink drivers: ULN2804  
max. current : 3A per chip / 0.5A any 1 input.

Retail Unit Price each (inc. VAT).

Order Code	Type 17835	Price each exc. VAT 1+	inc. VAT each 1+
KV33L	PC OPTO DIO48D	£323.390	£379.990
KV34M	PC OPTO DIO48 SINK	£323.390	£379.990
KV27E	PC OPTO DIO48	£314.890	£369.990
KV32K	PC OPTO D 48D SINK	£323.390	£379.990

## Call and Collect

At all our stores nationwide.  
See the maps at the front of the catalogue for the nearest one to you.

## PC Opto Input 24

Brain Boxes



### KT96E - D-type connector shown

A two third size card providing 24 high voltage, high current input lines with +/-2500Volts Opto isolation. Each input line is current limited and reverse connection protected. The 24 input lines, with isolated ground and +12Volt power output lines are accessible from the edge connector, either a 50 way D connector (for greater shielding) / 50 way IDC connector. The 24 input lines, arranged as 3 eight bit read only input port registers with one read / write watchdog register, occupy 4 i/o locations at base address in the range 200-3FFh. Software enabled interrupts on input lines port C bits 0 and 3.

The Watchdog Timer is a fail safe way to ensure that the users program is running correctly. On power up the watchdog is enabled. If the users program disables the watchdog, a interrupt or reset signal refreshes the timer, postponing time-out for another 50 ms. A watchdog output is available from inside the PC, selectable active high / low or pulsed high / low.

Retail Unit Price each (inc. VAT).

Order Code	Type 17836	Price each exc. VAT 1+	inc. VAT each 1+
KT96E	PC OPTO IN 24	£161.690	£189.990
KT91Y	PC OPTO IN 24D	£161.690	£189.990

## Relay 16 Board

Brain Boxes



★ This is a half sized card able to switch 16 loads of 0.5 AMP at 150Volts DC.  
★ Fully isolated from the PC.

16 independently controlled single pole, single throw dry reed relays. Relay contact rated at 10Watts maximum. Breakdown voltage between open contacts is 250Volts DC. Breakdown voltage between contact and coil is 2500Volts DC minimum. Maximum operating time is 0.5ms.

The card arrangement is of two 8 bit write only registers, occupying 2 i/o registers in the range 200h - 3FFh.

The first 8 bit port, port 1, controls relays 1 - 8, and the second 8 bit port, port 2, controls relays 9 - 16. Straight forward mapping techniques mean that a relay is closed by writing 1 to that port bit, and to open it a 0 is written to that bit.

Relay lines with +5Volt and ground pins are all accessible from the 37 way female D type edge connector.

Supplied complete with manual, sample circuits, working programs and fully commented source code.

Retail Unit Price each (inc. VAT).

Order Code	Type 17821	Price each exc. VAT 1+	inc. VAT each 1+
KT77J	Relay 16	£170.200	£199.990

## Analogue / Digital Cards

### 12 bit Data Acquisition Cards - AD1200 Series

#### Brain Boxes

The AD1200 series is a range of data acquisition cards for IBM compatible PC's. The analogue input section can be configured as either 16 channels of single ended input, 16 channels of pseudo differential input or 8 channels of differential input. Input voltage is selectable from +/-2.5v & +/-5v & +/-10v bipolar, 0v to +5v and 0v to 10v unipolar. The input channel is software selectable. Cards with a Programmable Gain Amplifier (PGA) have software selectable gains of 1, 2, 4 and 8. (HOR 1-1000(L)).

The analogue section has two independent 12 bit digital to analogue converters. Each output voltage range is selectable from +/-2.5v, +/-5v and +/-10v bipolar, 0v to +5v and 0v to 10v unipolar. D/A throughput is up to 100kHz.

The digital I/O section has one 8 bit TTL input port and one 8 bit TTL output port. Data can be written to these ports at any time. Digital throughput is 1MHz.

The pacer clock is a programmable timer that ensures conversions can take place at precise time intervals. A timer register allows Pacer IRQ's, selecting frequencies of 0.005Hz to 600kHz from an onboard crystal clock or via the users supplied internal clock. A/D and D/A conversion or digital I/O interrupts may take place from 0.005Hz up to 100kHz.

AD1200 series cards are compatible with a wide range of data capture and analysis software packages including ASYST, ASYSTANT, LabTech, Notebook, SIGNALYSIS and others. For those writing their own routines the 250+ page manual describes 30+ routines to drive the cards. Included free with all AD1200 series cards is QUANTA, data acquisition and display software, including Windows 3.x DLL's. Fully debugged and explained sample programs are given in BASIC, Compiled BASIC, Turbo Pascal, C, FORTRAN and Assembler. Card features are as follows:

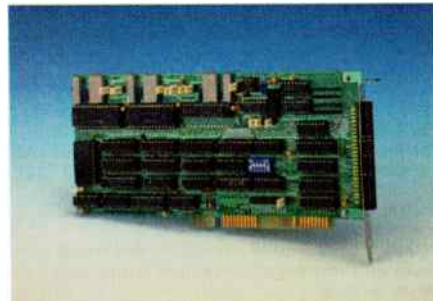
#### AD1221 - AD1220



AD1221: 30KHZ 12-bit A/D converter. Interrupt on A/D conversion complete.

AD1220: 100KHZ 12-bit A/D converter.

#### AD1211 - AD1210



AD1211: 30KHZ 12-bit A/D converter with PGA. Interrupt on A/D conversion complete.

AD1211H: Programmable gain on A/D input in steps of 1, 2, 4 and 8.

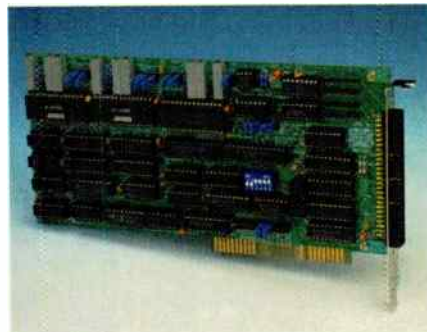
AD1211L: Programmable gain on A/D input in steps of 1, 10, 100, 1000.

AD1210: 100KHZ 12-bit A/D converter with PGA. Interrupt on A/D conversion complete.

AD1210H: (KT55K) Programmable gain on A/D input in steps of 1, 2, 4 and 8.

AD1210L: (KT54J) Programmable gain on A/D input in steps of 1, 10, 100, 1000

#### AD1200



100KHZ 12-bit A/D converter.

2k x 12 bit FIFO on A/D input.  
DMA on A/D in, both DAC outputs and TTL i/o ports.  
DMA to either D/A converter.  
DMA from 8-bit digital input port / output port.  
Programmed interrupt on A/D, DAC0/1 and TTL.  
External clock and trigger interrupts.

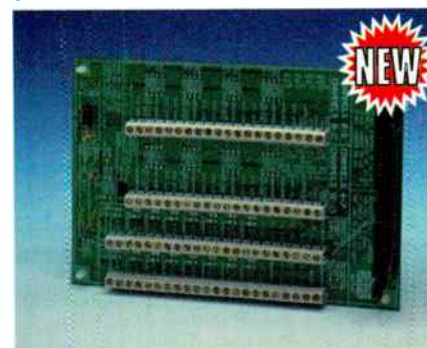
AD1200H: Programmable gain on A/D input in steps of 1, 2, 4 and 8.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT51F	PC AD 1221	£297.860	£349.990
KT56L	PC AD 1220	£340.410	£399.990
KT53H	PC AD 1211H	£382.970	£449.990
KT52G	PC AD 1211L	£382.970	£449.990
KT55K	PC AD 1210H	£493.600	£579.990
KT54J	PC AD 1210L	£493.600	£579.990
KQ19V	PC AD 1200H	£595.730	£699.990

### Analogue Screw Terminal Board

#### Brain Boxes



★ For use with the AD1200 series cards.

Easily accessible, clearly labelled terminals, grouped according to function.  
85 screw terminals, capable of taking cable up to 0.1 inch / 0.254 cm diameter.  
Clearly identified signal adjacent to each terminal.  
The board is divided into 4 distinct areas showing the position of the analogue / digital positions.  
Provision for bias / shunt resistors - necessary when the AD cards are used in differential or single ended input mode.  
Space for LED's to show the logic state of the digital i/o lines.  
Up to 8 differential channels, with the industrial 4-20mA current loop, are permitted.  
On board thermocouple support - cold junction compensation circuits, open circuit detection to guard against breaks in the thermocouple.  
50 way IDC ribbon connector.  
Available in 3 versions:

Standard Analogue Terminal Board KT57M  
ATB 4 - 20 mA KT59P  
ATB Cold Junction Compensation Board KT58N

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KT57M	Analogue Term Board	£68.070	£79.990
KT59P	ATB 4-20 MA Input	£85.090	£99.990
KT58N	ATB Cold Junc Comp	£85.090	£99.990

## Drivers & Converters

### RS-232 Driver/Converter



An RS232 via RS422 converter and driver that can operate in two modes. Data Only Mode requires just two twisted pairs in the link cable, and Data and Handshake Mode requires four twisted pairs. The GW232 line driver is a full duplex line driver which communicates RS232 signals. The unit operates up to 2km over economical twisted pair cables. At lower signalling speeds (e.g. up to 2400bits/s) it may be possible to communicate over 2km, depending on the quality of the link cable and the local environment. All RS422 signals are internally terminated, and any unused lines may be left unconnected. DCE/DTE switching on the GW232 allows the unit to be configured to match most asynchronous RS232 equipment, including PCs, printers, plotters, etc., without having to make special crossover wiring configurations in the RS232 cables. Hardware handshakes must be used where data flow control is required. Unit supplied with suitable mains adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN87U	RS-232 Data Converter	£59.560	£69.990

### RS-232/IEEE488 Bidirectional Converter



A switchable bidirectional RS-232/IEEE488 converter with baud rates selectable between 150 and 19200 and switchable DCE/DTE. The device is designed to plug into a single IEEE488 device capable of 'Talk Only' or 'Listen Only' and is fitted with a 25-way D-type female connector. Supplied with suitable power supply adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN86T	Data Converter	£68.070	£79.990

See Stock Code Index For More Price Breaks

## RS-232/Centronics Bidirectional Converter



A switchable bidirectional RS-232/Centronics converter with baud rates selectable between 150 and 19200 and switchable DCE/DTE. The parallel port uses standard STROBE, ACK and BUSY and is fitted with a 25-way D-type female connector. Supplied with suitable power supply adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN85G 1	IEEE Data Converter	£68.070	£79.990

## RS-232 Fibre-Optic Modem



For interference free, 'secure' communications, this fibre-optic modem provides a low cost, easy solution with the benefit of no radiation. The GO232 is a full duplex to 19200 baud fibre-optic RS232 modem that can link over distances up to 100m using twin core 1mm plastic fibre-optic cable. It supports software handshakes (Xon/Xoff) and is fitted with a standard female 25-way D-type connector. DCE or DTE configuration is switch selectable. Supplied with suitable mains power supply.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN80X 1	GO232F Data Converter	£51.050	£59.990

## Plastic Fibre-Optic Cable



A thin, very flexible, twin plastic fibre-optic cable for use with the RS232 fibre optic modem GO232. The cable can easily be cut with a knife and the pair is marked for easy identification during installation. Finished in black and sold by the metre.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN91Y	Fibre Optic Cable	£1.690	£1.990

## RS-232 to RS-422/RS-485 Interface Converters



Two interface converters which individually provide full duplex interface conversion from RS232 to RS422 or RS485 standards respectively. All baud rates from 1200 up to 115 500 are also supported. Very low power, surface-mount CMOS circuitry is used and is powered entirely from the RS232 (host) interface. An external power supply is not required in most situations.

In use, each unit provides full-duplex (bidirectional) conversion between the conventional RS232 interface on one side, and the RS422 or RS485 interface on the other. Both RS422 and RS485 conventions use a twisted-pair of wires for each signal.

RS422 provides full-duplex communication using two separate twisted pairs. This means that data can flow in both directions simultaneously. However, it is strictly intended for point-to-point communication only and cannot in general be used for interconnecting more than two devices.

RS485 however, makes it possible to interconnect up to 32 devices, but it supports half-duplex communication only, i.e. data can flow in either direction, but only one direction can be used at any instant. It requires only one twisted pair and, to avoid contention, the driver of an RS485 interface must be specially designed to ensure that the driver can be enabled to transmit, or disabled to listen. Any apparatus which controls an RS485 interface must be able to enable the driver only at the correct time.

Conversion between RS232 and RS485 is straightforward with this converter but requires the correct use of the RS232 RTS signal to control the RS485 driver. This means that, in order to properly use the RS485 converter unit, you must have a means of controlling the RTS output signal of your RS232 device.

Each unit will plug directly into an IBM PC 25-way serial port, and presents a 9-way, D-range male socket at the other end for the RS422/RS485 connection. Each unit is no larger than any other gender changer or adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RC06G 1	RS232-RS422 Convtr	£51.050 £49.000 £47.000	£59.990
RC07H 1	RS232-RS485 Convtr	£51.050 £49.000 £47.000	£59.990

## Mega Buffer



A compact 1Mbyte parallel printer buffer designed to fit between the end of the printer cable and the printer. The unit plugs directly into the parallel port of the printer and comes with its own separate power supply. Priority is given to data coming from the computer, and the unit adapts itself to the speed of the incoming data and maximises the speed at which the computer can download the data. Data is passed to the printer only if there is no data arriving

from the computer. The unit will continue to buffer data until full, whilst the printer is off-line.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN84F 1	1 MB Printer Buffer	£119.140	£139.990

## Pocket Computing

## Personal Digital Assistants

## Pilot Organiser

US Robotics



The US Robotics Pilot offers users a wealth of features that have not been available in one unit until now. The Pilot is supplied with a docking station for easy updating and leveling of information with the desktop machine allowing the user to carry all their information in their pocket. Not only does the Pilot allow fast input of data using a desktop PC but it also features handwriting recognition for input on the move. Built-in software includes calculator, diary/scheduler, address book, alarm and notepad. This product is the perfect companion to a desktop machine for those that do not need a cumbersome laptop computer for their personal information.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB93B	USR Pilot 5000	£170.200	£199.990

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**Fax: 01702 554001**

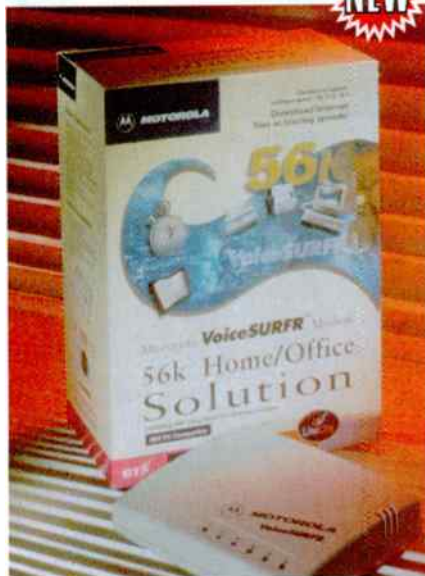
**e-mail: Sales@maplin.co.uk**

## Communications

### Modems & Accessories

#### 56K Modems

Motorola



Utilising K56 technology, the Motorola 56k modem is a voice/data/fax solution designed for home and office use. Both internal and external versions provide a powerful integrated PC communications toolbox by combining voice and data technology which provide voicemail / answering machine, fax machine and speaker phone capability in a single package.



#### Specification

**Standards:** ITU-T V.34, V.32bis, V32, V23, V.22bis, V22, V.21; Bell 212 & 103  
**Data rates:** Up to 56 Kbps receive only  
 Up to 33.6 Kbps transmit and receive  
**Fax Modes:** Up to 230.4 Kbps with data compression (desktop version)  
 ITU V.17, V.29, V.27ter, V.21  
 Channel 2, ITU Group III, Class 1 fax software compatible  
**Autorate:** Fall-back / forward from 33,600 bps to 4800 bps  
**Data Compression:** ITU V.42bis  
**Error Correction:** V.42, MNP class 2-4; T.30 fax error correction compatible

To achieve 56K, you must connect to an internet service provider or service that supports K56.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ16S 1	Motorola 56K Ext	£153.180	£179.990
KQ17T 1	Motorola 56K Int	£136.160	£159.990

#### ISDN Terminal Adapter

Motorola



- ★ 128,000 bps digital connections
- ★ Two analogue device ports
- ★ Simultaneous data and voice on one ISDN line
- ★ Ultra high speed internet connections
- ★ Windows 95 compatible

The BitSURFER Pro ISDN terminal adapter solution provides all the items required to connect to an ISDN line. Supplied with data comms software, internet access software, advanced windows drivers, ISDN cable, interactive instruction disk, power supply, computer cable, two local telephone adapters and file transfer software. **ISDN LINE REQUIRED.**

Price each shown, but sold only in multiples of 0.

Order Code	Type	Price each exc. VAT	inc. VAT each
CK14W	ISDN Terminal Adapt	£297.860	£349.990

#### PCMCIA Modem

Motorola



- ★ PC and Apple Macintosh compatible in one box
- ★ Easy installation
- ★ Type II PCMCIA card
- ★ 300bps-33.6Kbps V.34 transmission speed
- ★ Group III Fax compatible, 14.4Kbps V.17
- ★ Fax/Comms software for PC/Mac included
- ★ 5 Year Warranty

The Motorola PCMCIA Fax Modem offers Mac and PC compatibility from one box, complete with software. With this PC card in your notebook computer it is possible to fax, e-mail or browse the Internet from anywhere with access to a land-line telephone connection.

Order Code	Type	Price each exc. VAT	inc. VAT each
VB67X 1	PCMCIA 33.6 Modem	£127.690 5+ £126.000 10+ £125.000	£149.990



#### PCMCIA Modem

US Robotics



- ★ V34 28.8Kbps data transmission
- ★ V17 14.4Kbps fax transmission
- ★ Auto data/fax selection
- ★ Auto power-down when idle
- ★ Free Lifetime technical support
- ★ Quicklink II software supplied

The US Robotics XJACK PCMCIA modem offers a new solution to the problem of PCMCIA cabling on the move. The unique XJACK connector allows the use of a standard telephone cord for connection to the line. Surf the Internet, send faxes and e-mail from your laptop computer while in the office or at home. The PCMCIA XJACK modem offers the perfect solution for notebook users on the move.

Order Code	Type	Price each exc. VAT	inc. VAT each
VB94C 1	XJack V34 PCMCIA	£144.670	£169.990

#### Internet Blaster

Creative Labs

Internet Blaster - Master the Internet instantly with this high speed 28.8/V.34 data/fax internal modem. This Plug-n-Play card is a snap to install and the complete suite of Internet software will have you sending data/faxes and even publishing your own web pages.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VD61R 1	SB INTERNET BLASTER	£76.580	£79.990

#### Internet Remote Control

LinterAct



The internet remote control is available in either corded or infra-red versions, designed specifically for use with internet browsers for direct access to the internet. The unit features programmable buttons for quick access to your favourite features.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC51F	Internet Remote Cord	£25.520	£29.990
VC52G	Internet Remote IR	£34.030	£39.990

**Internet Phone**

Spectravideo



- \* Handset allows for conventional operation
- \* Hands-free / Conference mode
- \* Magnetically shielded
- \* Microsoft Explorer 3.0 & Net Meeting 1.0 included

The Internet Phone was designed to allow users to use the Internet for communication with each other using a handset that resembled a standard telephone. Supplied with software it offers a complete solution for Internet communication with another person using compatible software and hardware.

Requires duplex sound card for full operation, for exclusive use with the Internet

Retail Unit Price each (inc. VAT).

Order Code	Type 13832	Price each exc. VAT	inc. VAT each
VCE5H	Internet Phone	£25.520	£29.990

**International Modem Connector Kits**

Avro Pacific



A range of modem connectors for use overseas to allow you to connect communications equipment to international lines while overseas. This will allow you to send your e-mails and faxes from hotels and other buildings around the world. Available in two kits, one containing 6 of the most commonly required adapters for France, Germany, Holland, Italy, Belgium, Spain, USA, Canada, and others. The second kit contains 11 adapters that allow you to connect in over 150 foreign countries.

Retail Unit Price each (inc. VAT).

Order Code	Type 12112	Price each exc. VAT	inc. VAT each
CD04E	Int Modem Conn Kit	£42.540	£49.990
CD05F	Euro Modem Conn Kit	£21.260	£24.990

**Business Account Holders**  
No Delivery Charges for any order

**International Modem Adapters**



A range of individual modem adapters for specific countries around the world. All adapters are of the duplex design to provide a second connection for a telephone, this is especially useful in hotels where specialised exchanges are often used. These adapters allow the international business traveller to connect their communications equipment to the telecommunications system of the country that they are visiting. Now you can send faxes, collect e-mail and connect to their computers while abroad so that you never need be out of touch with your home or office.

Adapters are available for the following countries:

- Austria
- Belgium
- Denmark/Portugal
- Finland/Norway
- France
- Germany
- Italy
- Holland
- South Africa
- Sweden
- Switzerland

Retail Unit Price each (inc. VAT).

Order Code	Type 13336	Price each exc. VAT	inc. VAT each
VL22Y	Austria Adapter	£12.750	£14.990
VL23A	Belgium Adapter	£12.750	£14.990
VL24B	Denmark/Portugl Adapter	£12.750	£14.990
VL25C	Fin/Norway Adapter	£12.750	£14.990
VL26D	France Adapter	£12.750	£14.990
VL27E	Germany Adapter	£12.750	£14.990
VL28F	Italy Adapter	£12.750	£14.990
VL29G	Holland Adapter	£12.750	£14.990
VL30H	South Africa Adapter	£12.750	£14.990
VL31J	Sweden Adapter	£12.750	£14.990
VL32K	Swiss Adapter	£12.750	£14.990

**International Modem Adapter Kits**



A range of modem adapter kits that are tailored to the needs of travellers in specific areas around the world. The kits are supplied with duplex or simplex adapters depending upon location.

Kits available include:

**The Americas**

- USA, Canada, Chile, Guatemala, Nicaragua, Panama, Argentina, Columbia, Ecuador, Honduras, Paraguay, Uruguay, Brazil, Bolivia, El Salvador, Mexico, Peru, Venezuela.

**Western Europe**

France, Italy (New Type), Switzerland (New Type), Belgium, Portugal, Ireland, Germany (New Type), Holland, Austria, Denmark, Spain.

**Eastern Europe**

- Bulgaria, C.I.S., Greece, Latvia, Romania, Slovak Republic, Czech Republic, Estonia, Hungary, Poland, Russia, Turkey.

**Far East and Australia**

- Australia (and surrounding area), Brunei, Cambodia, China, Indonesia, Japan, Laos, Nepal, Pakistan, Thailand, Burma, Borneo, Hong Kong, India, South Korea, Malasia, Philippines, Taiwan, Vietnam.

**Middle East**

- Abu Dhabi, Iran, Israel, Jordan, Libya, Qatar, Syria, Iraq, Yemen, Kuwait, Oman, Saudi Arabia, UAE.

**Germany**

This kit contains all the adapters required to cover the whole of Germany and contains the following: Germany Old Type 1, Germany Old Type 2, Germany New Type, Germany East, Germany VD04, UK RJ11 adapter and carry case

A manufacturer's helpline is available should you require any further information or have any problems connecting to telecommunications systems abroad.

Retail Unit Price each (inc. VAT).

Order Code	Type 13337	Price each exc. VAT	inc. VAT each
VL33L	Americas Adapter Kit	£42.540	£49.990
VL34M	W.Europe Adapter Kit	£42.540	£49.990
VL35Q	E.Europe Adapter Kit	£59.560	£69.990
VL36P	Far East Adapter Kit	£42.540	£49.990
VL37S	Mid East Adapter Kit	£42.540	£49.990
VL38R	Germany Adapter Kit	£42.540	£49.990

**UK to US Telephone Plug Extension Cord**



This telephone extension line cord has a length of approximately 3m and has a UK type telephone plug at one end and a US type telephone plug at the other.

Retail Unit Price each (inc. VAT).

Order Code	Type 4106	Price each exc. VAT	inc. VAT each
RZ75S	UK/US Ext Line Cord	£2.970	£3.490

**BT/US Adaptor**



This adaptor consists of a BT style socket to a US style plug, enabling you to plug a standard BT telephone into a US type socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 1462	Price each exc. VAT	inc. VAT each
RZ79L	BT/US Socket Adaptor	£3.820	£4.490

## US/BT Adaptor



This adaptor consists of a US Style socket to a BT style plug, enabling you to connect US type connectors to BT type sockets.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AR34M	US To BT Adaptor	£3.820	£2.770	£2.160	£4.490

## Fax Scanning Unit

Avro Pacific



The Scanafax unit allows you to use your fax machine as a scanner without the need for any complicated wiring or the use of a telephone line. Simply plug the unit into your fax machine and into the fax modem in your computer, the unit will simulate a call to your fax modem and allow you to capture the fax as a scan using your standard fax software (not supplied). Supplied with a manufacturers 3 year warranty.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CD06G 1	Scanafax Unit	£28.070	£26.650	£25.500	£32.990

## Upgrades

## Midi Keyboard

## MIDI Slave Keyboard

Quickshot



- ★ 49 key full size slave keyboard (C2-C6)
- ★ Initial key touch sensitivity
- ★ Pitch bend and modulation wheel
- ★ Octave up/down and data entry slider
- ★ 3-digit multi purpose LED display
- ★ Sustain pedal included

The MIDI Composer is a full size MIDI slave keyboard with built-in SoundBlaster compatible interface. Powered directly by a PC sound card joystick/MIDI port, AC adaptor or batteries, the MIDI composer allow the user to learn, play and compose music using Cakewalk Home Studio software bundled with MIDI Composer. The MIDI OUT port enables the keyboard to interface with

other MIDI equipment. Programme change options of CC-00, CC-32 according to GS format, General MIDI. MIDI compatible sound card required.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	
KV46A	Midi Keyboard	£68.070		£79.990

## Multimedia

## Sound Blaster Family Pack

Creative Labs



Sound Blaster Family 32 8X combines quality hardware from Creative Labs and top titles from Microsoft - this kit contains the very best of multimedia for the whole family. The Sound Blaster 32 includes real instrument sounds and the 8X CD-ROM drive produces high speed performance.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	
VCS6L	SB FAMILY 32 8X PNP	£170.200		£199.990

## 3D Soundcard



- ★ Microsoft Plug and Play compatible
- ★ Compatible with Sound Blaster Pro, Adlib and
- ★ Microsoft Sound System
- ★ OPL3 Synthesizer, Wavetable upgradeable
- ★ 22-voice, 52 operator OPTIFM
- ★ 3D sound support
- ★ Full Duplex
- ★ Sample rate to 48KHz
- ★ Game Port / MIDI

Based on the OPTi 82C931 chipset, the Pro 16 3D sound card is a feature rich yet affordable 16-bit sound card. Based on the Panasonic AN-7322 sound processor, the card is ideal as an entry-level solution being MPU-401, OPL4 and Wavetable upgradeable. . Package includes Audio Rack application software, 3.5in disk driver and comprehensive user manual

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
KV39N	3D SoundCard	£21.260	£19.450	£17.300	£24.990

## Galaxy Pro 16 III 3D PnP

Aztech



- ★ Plug and Play operation
- ★ CD-Quality play and record
- ★ Built-in 3D effect
- ★ 20 FM voices using Yamaha OPL3
- ★ Full Duplex operation
- ★ Free headphones and software

The Sound Galaxy Pro III-3D PnP offers the best audio realism with 3D sound effects equivalent to expensive high-end solutions. With Plug and Play feature you can now enjoy an unparalleled audio experience from your PC, hassle free. Bringing CD-quality stereo audio to your desktop to enhance games, multimedia applications and Windows 95.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	
KX03D	Sound Galaxy Pro 16	£21.260		£24.990

## Sound Galaxy WaveRider Pro 32-3D PnP

Aztech



- ★ 32 Voice Wavetable synthesis
- ★ 20 built-in voices using Yamaha OPL3
- ★ Realistic reproduction using 128 instrumental and 132 percussion sounds
- ★ Built-in 3D sound effects
- ★ CD-quality reproduction and recording at 48KHz

The WaveRider 32 features 32 voice wavetable synthesis for realistic sound reproduction. The WaveRider 32 offers full compatibility with major sound standards for wide variety of games, educational and multimedia applications. Supplied with a suite of 13 free software titles and a pair of stereo headphones.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	
KX04E 1	Waverider Pro 32	£38.280		£44.990

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## Soundblaster Accessories

Creative Labs



Creative Labs offer a range of Soundblaster accessories to compliment their range of sound cards and multimedia upgrades. Creative offer a MIDI cable, a multimedia microphone and a joystick Y-cable for use with Soundblaster soundcards. Please check with the manufacturer of your equipment if you wish to use these products with products not made by Creative Labs

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JN22Y	SB MIDI Cable	£21.280	£24.990
JN20W	SB Telex Microphone	£17.010	£19.990
JN21X	SB Joystick Cable	£8.500	£9.990

## Multimedia Desk Microphone

Ross



Omni-directional condenser microphone with a flexible stem for accurate and comfortable positioning. Ideal for use with PC or Macintosh multimedia applications.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX45Y	Multimedia Desk Mic	£5.940	£6.990

## Clip-on Multimedia Microphone

Ross



Clip-on, compact microphone can be attached to a computer or clothing for hands-free operation. Suitable for PC or Macintosh multimedia applications.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX44X	Multimedia Mic	£3.390	£3.990

## Multimedia Boom Microphone Headset

Ross



Lightweight adjustable stereo headset with flexible boom microphone stem for accurate positioning. Suitable for PC / Macintosh multimedia applications. MIC IN and LINE OUT/SPKR OUT facilities required for full operation.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX43W	Multimedia Boom Mic	£6.820	£7.990

## Multimedia Stereo Headphones

Ross



Lightweight stereo headphones with adjustable headband suitable for use with PC or Macintosh multimedia applications. Can also be used with personal stereos, compact disc players, Hi-fi etc.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX42V	Computer Headphones	£2.540	£2.990

## Video Boost

ATI

The Video Boost is a powerful, extendable 64-bit multimedia accelerator board. The entry level 1Mb DRAM board features enhanced Windows 95 utilities giving enhanced graphics capability of up to 75 frames per second. MPEG and Indeo playback of up to 30 frames per second on all Pentium-class systems. With the addition of the TV Tuner Upgrade (KX35) a UHF/VHF TV with full motion, full screen video is available. Supports Windows 3.1/NT/95 and OS/2.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX31J	Video Boost 1mb	£25.520	£29.990
KX35Q	TV Tuner Upgrade	£72.330	£84.990

## 3D Charger

ATI

The 3D Charger is a 2Mb EDO card based on the 3D Rage II+ chipset. Improving both 2D and 3D rendering performance, resolution of up to 1280 x 1024 at 24-bit colour, with

true colour performance makes the 3D Charger the best accelerator in its class for photo-realistic applications. 1600 x 1200 resolution is ideal for serious desktop and demanding CAD applications. 3D gaming features include perspective correction, texture filtering, mip-mapping, Gourard shading, Z-buffering and alpha blending using a palette of 65,000 colours. 26 million perspective correct texture mapped pixels per second and Microsoft Direct3D compatibility. 2D acceleration of 40 million WinMarks under WinBench96 along with the support of full-screen, full-motion MPEG and MPEG-2 (DVD) movies (MMX required for MPEG-2 playback). Supports Windows 3.1x/NT/95, OS/2 WARP and CAD.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX32L	3D Charger 2mb	£42.540	£49.990

## 3D Xpression + PC2TV

ATI



The 3D Xpression + PC2TV is a powerful 3D, 2D and video accelerator with PC or TV display.

Graphics Processor	ATI RAGE II
Accelerator (H/W)	2D, VIDEO, 3D
Memory	2MB SDRAM (Upgrade to 4MB)
DAC Frequency (MHz)	170
Resolution (max)	1600 x 1200
24bpp (max)	1280 x 1024
2MB (16bpp)	1152 x 864
4MB (16bpp)	1600 x 1200
Max Refresh Rate	200
3D Resolution / Colours	800 x 600
Feature Connector	AMC
Bus	PCI, 64-bit
Software Included	Actua Soccer, MechWarrior, Wipe Out, PhotoSuite
Extras Included	Composite cable for PC2TV, SCART/Composite adapter, audio cable

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX33L	3D Xpression PCTV	£85.090	£99.990

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## 3D Pro Turbo PC2TV

ATM



**NEW**

The 3D Pro Turbo PC2TV is aimed at the professional marketplace offering 3D, 2D and video acceleration with PC or TV display.

Graphics Processor ATI RAGE II  
Accelerator (H/W) 2D, VIDEO, 3D  
Memory 4MB SGRAM  
(Upgrade to 6/8MB)

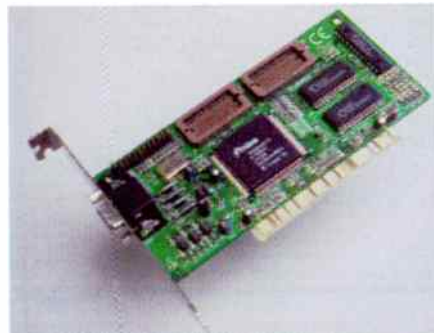
DAC Frequency (MHz) 200  
Resolution (max) 1600 x 1200  
24bpp (max) 1280 x 1024  
4MB (16bpp) 1600 x 1200  
8MB (16bpp) 1280 x 1024  
Max Refresh Rate 200  
3D Resolution / Colours 1152 x 864  
Feature Connector AMC  
Bus PCI, 64-bit  
Software Included Actua Soccer, Extreme 3D, PhotoSuite

Extras Included Composite cable for PC2TV, SCART/  
Composite adapter, audio cable

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX34M 1	3D Pro Turbo PCTV	£114.880	£134.990

## Trident Videocard



- ★ Trident 9440 Chipset
- ★ PCI bus compatible
- ★ 1Mb of RAM

This 1Mb PCI graphics card offers cost a effective solution for high resolution or high colour graphics. The Trident chipset offers high performance and compatibility levels. The card is compatible with DOS, Windows 3.1x and Windows 95 and is supplied with driver software for the above.

Order Code	Type	Price each exc. VAT	inc. VAT each
JT25C	Trident 1mb-FVGA PCI	£25.520   £24.500	£29.000   £29.990

## S3 Videocard



- ★ 64bit S3 Trident TR1064+ Chipset
- ★ PCI bus compatible
- ★ 1Mb and 2Mb versions available

These fast S3 graphics cards are suitable for use in 486 and Pentium systems that feature PCI bus architecture. The PCI bus coupled with a Trident S3 chipset gives fast performance for games, graphics or general use. The 2Mb version is advised for more demanding graphics applications

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JT26D	S3 1mb 64-Bit PCI	£18.710	£21.990
JT27E	S3 2mb 64-Bit PCI	£22.110	£25.990

## 3D Blaster

Creative Labs



3D Blaster PCI - This electrifying graphic accelerator takes 3D game play to a new level of excitement. No more blocky graphics or jerky frames and with 4 MB of memory the 3D imagery is smooth and true-to-life with highly detailed textures.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC58N	SB 3D BLASTER	£161.690	£149.990

## PIC Pocket 1040-24

ATM



The PIC Pocket 1040-24 has all of the superb still image features of its big brother the Motion Picture 1040-24 except that instead of having to install it internally in one PC it can be easily transported between desktop computers and laptops. The PIC Pocket comes in a miniature external casing which plugs directly into the printer port on the back of the PC and derives it's power from an adaptor on the keyboard socket.

The PIC Pocket is not supplied with the AVI movie capture application or driver and is not suitable for video conferencing.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KM80B	PIC Pocket 1040	£99.000	£116.330

## Motion Picture 1040-24

ATM

Motion Picture 1040-24 is the top of the range card whose output is an amazing 1600 x 1040 in 24 bit colour. This incredible resolution is attained by using multi-frame averaging and horizontal oversampling of the PAL video signal. This has the effect of removing any unwanted noise and PAL artifacts to produce stunning images. An example of the output has been printed below. The quality and resolution of this card make it ideal for high quality ink jet printing as well as at medium scale in professional print jobs, such as this catalogue.



The Motion Picture 1040-24 is best used with high quality video cameras and camcorders including the new digital variety. The card allows the user access to the 260 and 520 line resolution modes for situations where this is more appropriate. Motion Picture 1040-24 is shipped as standard with the AVI capture driver which as well as allowing you to experiment with black and white AVI capture allows you to hook into video conferencing packages on the internet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KM79L	Motion Pict 1040 Int.	£99.000	£116.330

## Motion Picture 260-24

ATM

Motion Picture 260-24 can capture images at a resolution of 800x260 (800x520 with interpolation) in 24 bit true colour. It is ideal as a cost effective introduction into video capture. The 16 bit ISA card can be upgraded to the higher resolution 520 and 1040 standard at a later date. Images are suitable for electronic publishing on CD-ROM, the world wide web or for sending postcard e-mail. Motion Picture 260 is shipped as standard with the AVI capture driver which as well as allowing you to experiment with black and white AVI capture allows you to hook into video conferencing packages on the internet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC14Q	MOTION PICT 260 COL	£99.000	£104.580

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<http://www.maplin.co.uk>

## Motion Picture 520-24



**ATM**

Motion Picture 520-24 is a full double interlace capture card producing an image of 800 x 520 in true colour 24 bit without any interpolation. This card is equivalent to the higher specification digital cameras and it's output is suitable for printing on inkjet printers and for small scale images on professional printing jobs.

The 16 bit ISA card which forms the basis of the Motion Picture 520-24 package is equipped with 512K of VRAM. This card can be upgraded to the 1040 resolution at a later date.

Motion Picture 520 is shipped as standard with the AVI capture driver which as well as allowing you to experiment with black and white AVI capture allows you to hook into video conferencing packages on the internet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC15R	MOTION PICT 520 COL	£118.000	£138.650

## Motion Picture Upgrades

**ATM**

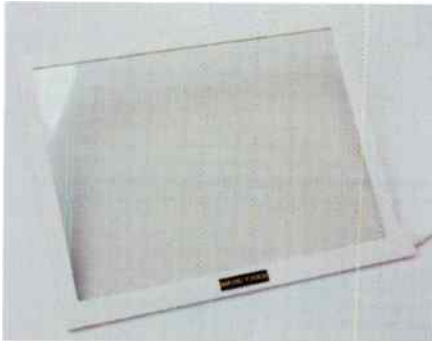
The Motion Picture 260 and 520 cards can be upgraded to increase the resolution of captured images.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ21X	Motion Pict 260-520	£29.000	£34.080
LQ22Y	Motion Pict 520-1040	£29.000	£34.080

## Touchscreen



A cost effective method of adding touchscreen capabilities to your monitor, simply overlay the touch screen over your monitor using the velcro fastenings supplied. The touchscreen is powered from the keyboard connector on your system so that no power adapter is required. The touchscreen interfaces with the comms port of the PC and can be used with or without an additional mouse for direct control of windows applications. Suitable for use where other forms of input may not be suitable or for interactive presentations.

Order Code	Type	Price each exc. VAT	inc. VAT each
JT29G	Touchscreen	£170.200	£199.990

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## Quickcam Cameras

Connectix



A range of cameras that are designed to connect to the parallel port of a PC to allow the user to take still and moving pictures using a PC. Everything you need is in the box, including software. The B&W version offers a resolution of 320 x 240 pixels in 64 shades of gray. Focus is fixed to give operation from 18in to infinity. The Colour Quickcam offers a resolution of 640 x 480 pixel resolution in millions of colours. The fast, adjustable focus lens provides sharp images from less than 1 in to infinity. Connectix has developed VIDEAC (Video Digitally Enhanced Compression) for the Quickcam to provide faster frame rates at larger frame sizes. There are thousands of uses for the Quickcam, be it at work, at home or on the Internet.

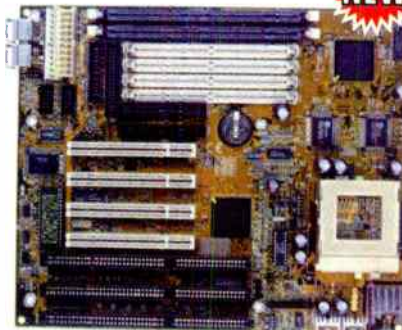
Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
VB89W	Quickcam: B&W	£85.090	£99.900
VB90X	Quickcam: Colour	£170.200	£199.990
VB91Y	Quickcam: B&W + Video	£127.650	£149.990
VB92A	Videophone	£51.050	£59.990

## Motherboards

### 82430TX Pentium Motherboard

ChainTech



Full feature Pentium motherboard based on the Intel 82430TX two chip PC1set

- ★ Intel 430TX Chipset
- ★ Baby AT Form Factor
- ★ MMX / AMD CPU support with switching power module for true 233MHz
- ★ SeePU jumperless CPU setting
- ★ Supports EDO & SDRAM up to 256MB
- ★ 512KB pipeline Cache
- ★ Dual channel USB header
- ★ Active processor temperature control

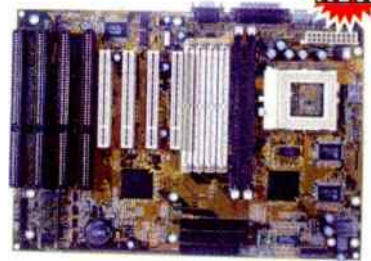
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LR14F	TX AT Motherboard	£72.330	£84.990

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No Delivery Charges for any order**

## ATX 82430TX Pentium Motherboard

ChainTech



Full feature Pentium motherboard based on the Intel 82430TX two chip PC1set

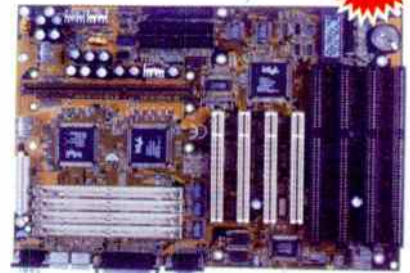
- ★ Intel 430TX Chipset
- ★ ATX Form Factor
- ★ MMX / AMD CPU support with switching power module for true 233MHz
- ★ SeePU jumperless CPU setting
- ★ Supports EDO & SDRAM up to 256MB
- ★ 512KB pipeline Cache
- ★ Dual channel USB header
- ★ Active processor temperature control

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LR85G	TX ATX Motherboard	£76.580	£99.990

## 82440FX Pentium II Motherboard

ChainTech



Full feature Pentium II motherboard based on the Intel 82440FX three chip PC1set

- ★ Intel 440FX Chipset
- ★ ATX form factor
- ★ Supports up to 266MHz Intel Pentium II
- ★ SeePU jumperless CPU setting
- ★ Supports EDO & SDRAM up to 256KB
- ★ Dual channel USB header
- ★ Active processor temperature control

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LR86T	Pent II Motherboard	£144.670	£169.990

## Processors

### Cyrix 6x86 CPUs

Cyrix

CPUs offering Pentium class performance. Available in two versions 150MHz and 166MHz.



Please call for latest pricing update.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL68Y	Cyrix P150 CPU	£51.050	£59.990
VL69A	Cyrix P166 CPU	£59.560	£69.990

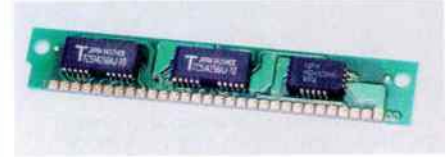
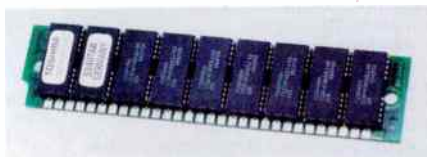
## Memory

Type	Size (bits)	Speed (ns)	Organisation	Package	Manufacturer	Order Code	Price each exc. VAT			Price each inc. VAT
							1+	25+	100+	1+
4164	64K	150	64K x 1-bit words	16 pin DIL	SAM, TI, TOSH	QQ06G	£4.240	£2.070	£1.930	£4.990
4464	256K	100	64K x 4-bit words	18 pin DIL	SAM, TI, TOSH	UH93B	£4.920	£3.710	£3.460	£5.790
41256	256K	100	256K x 1-bit words	16 pin DIL	SAM, TI, TOSH	QY74R	£3.220	£2.140	£2.000	£3.790
511000	1M	70	1M x 1-bit words	18 pin DIL	SAM, TI, TOSH	AD05F	£5.190			£6.100
511000	1M	70	1M x 1-bit words	ZIP & SOJ	SAM, TI, TOSH	AD06G	£5.190			£6.100
514256	1M	70	256K x 4-bit words	20 pin DIL	SAM, TI, TOSH	AD04E	£5.400			£6.350
514256	1M	70	256K x 4-bit words	SOJ	SAM, TI, TOSH	AD03D	£7.480			£8.790
514100	4M	70	4M x 1-bit words	SOJ	SAM, TI, TOSH	AD13P	£15.310			£17.990
514400	4M	70	1M x 4-bit words	ZIP	SAM, TI, TOSH	AD09K	£15.000			£17.630
514400	4M	70	1M x 4-bit words	SOJ	SAM, TI, TOSH	AD10L	£17.010			£19.990
514800	4M	70	4M x 1-bit words	SOJ	SAM, TI, TOSH	AD16S	£15.310			£17.990
44100	4M	80	4M x 1-bit words	20 pin ZIGZAG	SAM, TI, TOSH	UM68Y	£29.770	£22.250	£20.650	£34.990
FPM	4M	60	4M x 1-bit words	SOJ	SAM, TI, TOSH	NT08J	£3.060			£3.600
EDO	4M	60	4M X 1-Bit words	SOJ	SAM, TI, TOSH	NT09K	£3.060			£3.600
FPM	4M	60	1M x 4-bit words	SOJ	SAM, TI, TOSH	NT10L	£3.060			£3.600
EDO	4M	60	1M x 4-bit words	SOJ	SAM, TI, TOSH	NT11M	£3.060			£3.600
FPM	4M	60	256k x 16-bit words	SOJ	SAM, TI, TOSH	NT12N	£3.060			£3.600
EDO	4M	60	256k x 16-bit words	SOJ	SAM, TI, TOSH	NT13P	£3.060			£3.600
FPM	4M	60	512k x 8-bit words	SOJ	SAM, TI, TOSH	NT14Q	£3.060			£3.600
FPM	16M	60	16M x 1-bit words	SOJ	SAM, TI, TOSH	NT15R	£9.200			£10.810
EDO	16M	60	16M x 1-bit words	SOJ	SAM, TI, TOSH	NT16S	£9.200			£10.810
FPM	16M	60	4M x 4-bit words	SOJ	SAM, TI, TOSH	NT17T	£9.200			£10.810
EDO	16M	60	4M x 4-bit words	SOJ	SAM, TI, TOSH	NT18U	£9.200			£10.810
FPM	16M	60	1M x 16-bit words	SOJ	SAM, TI, TOSH	NT19V	£9.200			£10.810
EDO	16M	60	1M x 16-bit words	SOJ	SAM, TI, TOSH	NT20W	£9.200			£10.810

All parts supplied are original and unused from one of the following manufacturers: Samsung (Sam), Texas Instruments (TI), Toshiba (Tosh), Micron (Mic), Alliance (All), Goldstar (LG)

## Memory Modules

A range of DRAM modules for use as memory expansion in computers, including PCs, Apple MAC, Amiga, etc. The range offers the latest high speed technology at the lowest possible cost. SIMMs supplied by Maplin will be original (branded) manufacturers chips on selected third party boards. Modules are available in SIMM (edge connector type) only. The following types are available:



Please note that most modern motherboards require that each memory bank in use is completely filled with SIMMs. Memory banks are usually configured in blocks of one, two or four SIMM sockets. It is not usually possible to fit a single 9-pin SIMM, or an odd number of 9-pin SIMMs, to a motherboard. Many modern motherboards will only accept 72-pin SIMMs, although some of them will also accept the older SIMMs, which have 30 pads on the edge connector. It is advisable to use faster SIMM modules on PCs running at 50MHz or above. Please check your motherboard booklet before ordering SIMMs for memory expansion as various restrictions usually apply to combining SIMM types and sizes on a motherboard.

767

Type	Size (bits)	Speed (ns)	Organisation	Package	Manufacturer	Order Code	Price each exc. VAT			Price each inc. VAT
							1+	25+	100+	1+
SIMM 1M x9	1M	60	1048576 x 9-bit words	SIMM	-	ZG53H	£17.012	POA	POA	£19.990
SIMM 1M x9	1M	70	1048576 x 9-bit words	SIMM	-	JR58N	£9.940	POA	POA	£11.690
SIMM 4M x9	4M	60	4194304 x 9-bit words	SIMM	-	ZG55K	£17.012	POA	POA	£19.990
SIMM 4M x9	4M	70	4194304 x 9-bit words	SIMM	-	JR65V	£32.332	POA	POA	£37.990
SIMM 1M x32	4M	70	1048576 x 32-bit words	SIMM	-	AR19V	£12.757	POA	POA	£14.990
SIMM 1M x36	4M	70	1048576 x 36-bit words	SIMM	-	AD98G	£29.779	POA	POA	£34.990
SIMM 2M x32	8M	70	2097152 x 32-bit words	SIMM	-	AR20W	£21.268	POA	POA	£24.990
SIMM 2M x36	8M	60	2097152 x 36-bit words	SIMM	-	AR17T	£49.000	POA	POA	£57.580
SIMM 4M x36	16M	70	4194304 x 36-bit words	SIMM	-	AR18U	£68.077	POA	POA	£79.990

Our memory prices are regularly updated. Please phone for our best price.

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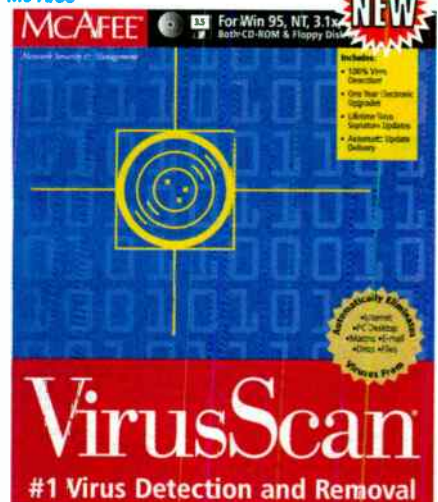
Export carriage charges (1,2 etc.) and price information see back of catalogue. † symbol in price block indicates While Stocks Last.

**Software**

**Utility**

**Virus Scan**

McAfee



McAfee VirusScan for Windows 95 runs as a true 32-bit, native 95 solution to offer real-time virus protection - before an infected file can be transferred or launched, it is automatically scanned and stopped. Comprehensive features include: NCSA certification, McAfee's award-winning Code Trace and Code Matrix scanning engine for pinpoint detection of file, boot, stealth, polymorphic, encrypted and macro viruses, an intuitive explorer interface for point and click scan configuration, automated virus logging, alerting, cleaning or deleting, immediate and scheduled scanning of all system areas and file types, as well as a host of flexible scanning options to support any needs.

Available in three versions: Electronic, Quarterly and Deluxe.

VirusScan v3.0 Multiplatform for DOS, Windows 3.1 and Windows 95, NT and OS/2 (CD Rom & 3.5 diskettes included) provides the ultimate virus protection for all five popular operating systems, in one box. Available in two packs - Electronic Edition with electronic support only, or Quarterly Edition with quarterly disks by post and electronic support. All McAfee users can download monthly electronic data file updates from the McAfee Website. In addition, McAfee's new SecureCast Web service provides these updates automatically.

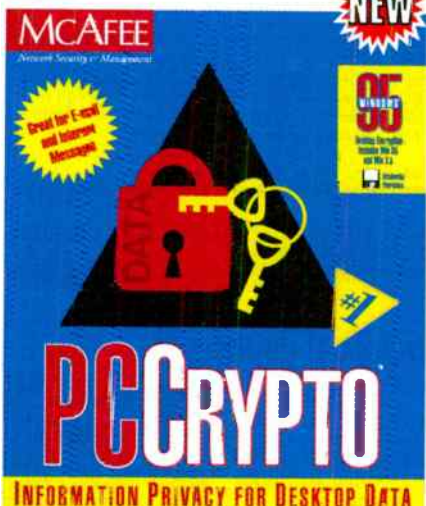
VirusScan Deluxe features McAfee's multiplatform CD with versions of VirusScan for DOS, Windows 3.1x, Windows 95, NT and OS/2 (5-in-1) along with QuickBackup - McAfee's innovative and easy to use personal backup utility for Windows 95 and NT.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KM81C	Virus Scan V3 Elec	£25.520	£29.990
KM81CQ	Virus Scan V3 Qtr	£42.540	£49.990
KM81E	Virus Scan Deluxe	£59.560	£69.990

**PCCrypto**

McAfee



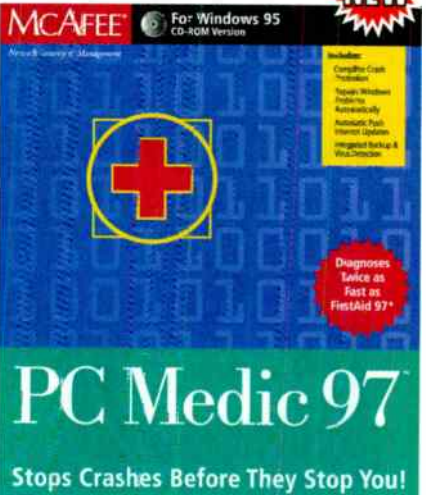
PCCrypto provides undefeatable information privacy for desktop and laptop data. Based in an easy to use Windows interface, users can encrypt and decrypt files or clipboard information to copy and paste into messages and documents. Users can also create secure self-extracting files to send to anyone. PCCrypto is not required on the receiving end. Using encryption with 160-bit and 40-bit keys, users can secure important information to avoid theft, snooping and espionage on their desktop. PCCrypto comes with an optional logfile to audit activity and passwords. The logfile itself has a master pass-phrase for security on the desktop.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KM84F	PC-Crypto	£42.540	£49.990

**PC Medic**

McAfee



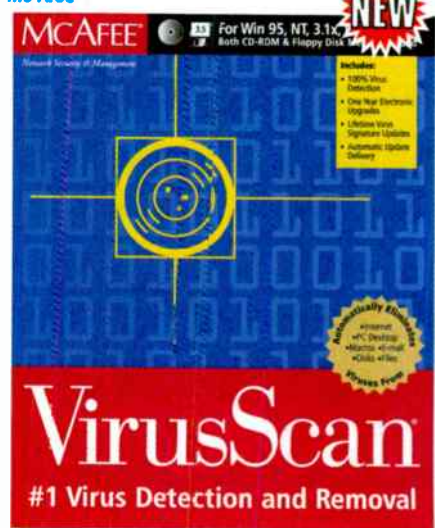
PC Medic 97 is a Windows 95 diagnostic utility which empowers the user with automated crash protection and powerful Windows 95 repair utilities. PC Medic continuously monitors your PC's health to ensure that your system performs optimally, and prevent data loss in the event of a system error. The product is automatically updated by SecureCast an Internet broadcast which pushes Medic updates to your PC to keep the software up to date.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KM85G	PC Medic	£42.540	£49.990

**Web Scan**

McAfee



WebScan is a great companion product to add breadth to your anti-virus product armoury to automatically repel electronically distributed viruses. WebScan provides security for internet users, by preventing virus infections that may be hidden inside files transferred from Web or FTP sites, or attached to Email messages. WebScan's document scanning capability supports Pegasus, cc-Mail and NetScape Mail.

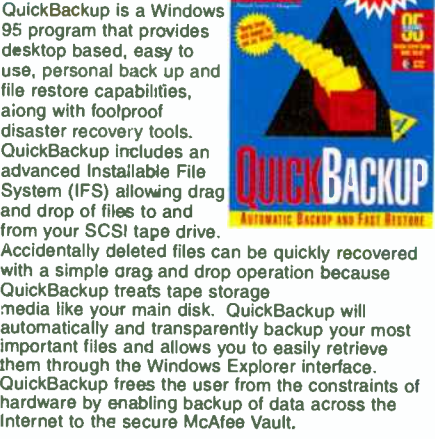
WebScan v2.0 on CD ships with Pegasus Mail (eMail-it!) and includes Microsoft's Internet Explorer browser absolutely free.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KM86T	Web Scan	£25.520	£29.990

**Quick Backup**

McAfee



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KM87U	Quick Backup	£42.540	£49.990

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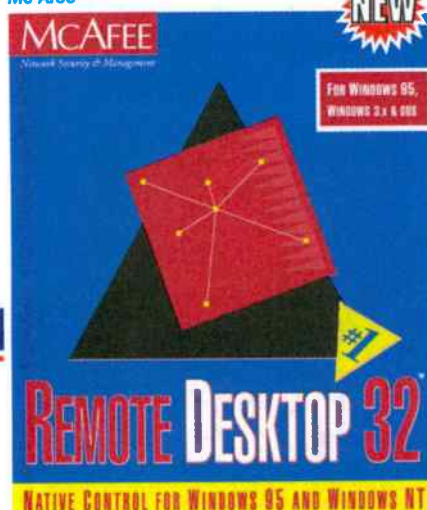
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## Remote Desktop

Mc Afee



Remote Desktop/32 is a robust remote control product for Windows NT and Windows 95 systems. Remote Desktop/32 allows network administrators to remotely manage distributed 32-bit Windows NT and Windows 95 client or server systems running on Intel based systems. By leveraging the native operating system services, Remote Desktop 32 provides dramatically higher performance and compatibility than traditional remote control products.

While traditional remote control products rely on external software for their remote administration capabilities, Remote Desktop/32 leverages the 32-bit operating system services of Windows NT and Windows 95. These services include native protocol support for TCP/IP and ISDN; native security; and asynchronous RAS (Remote Access Services) for communications over LANs, WANs, asynchronous phone lines and the Internet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KM88V	Remote Desktop	£68.070	£79.990

## Personal Navigator

Softwaix



Uses Ordnance Survey raster maps of Great Britain (1997 update)  
Route planning using Ordnance Survey (1996 update) database of 140,000 miles of Britain's roads  
Comprehensive place name gazetteer containing more than 220,000 locations  
Royal Mail Postcode database containing more than 1.6 million Postcodes and 800,000 street names  
The Good Pub Guide 1997  
The Good Guide to Britain 1997  
Egon Ronay's 1997 guides: Hotels & Restaurants, Pubs & Inns and Bars, Bistros and Cafes  
With the addition of a GPS receiver your position can be displayed anywhere in the country to within 25m

Personal Navigator offers route planning, satellite navigation, high quality raster maps and a postcode/street and location finder in one package. Calculate either the shortest, quickest, cheapest or

'delivery road' route with up to 30 stopovers. Print out your itinerary and maps to take with you OR connect a GPS receiver to your portable computer and you will never be lost!  
The unique postcode/street finder means that every address in Great Britain can be found. Alternatively use the only electronic form of Ordnance Survey's place name gazetteer to find any town, village or hamlet in Britain. Requires Windows 95 or Windows NT, CD version only.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV44X	Personal Navigator	£97.860	£114.990

## Labels Unlimited

Softkey

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- ★ 100 fonts included
- ★ 2600 clip art images included
- ★ 500 pre-defined label formats
- ★ Database function including sort for merge printing
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Labels Unlimited is a professional labelling system ideal for both professional and home use. Perfect for bar code printing, ticketing, address labels and ad-hoc applications. Supports all major industry and postal bar codes, including ISBN, EAN-8, EAN-13, Code 39, UPC-A, UPC-E, Codabar, Code 128, Interleaved 2 of 5, POSTNET and FIM. Requires Windows 3.x or Windows 95, 386 IBM-compatible PC, 8MB RAM and CD ROM drive

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV43W	Labels Unlimited CD	£34.030	£39.990

## Productivity

### Dragon Dictate Solo

Dragon Systems



- ★ Dictate to your PC
- ★ Control your PC
- ★ Includes a high quality noise-cancelling microphone
- ★ Large 120,000 word UK vocabulary
- ★ 10,000 word active customisable dictionary

Dragon Dictate Solo is a speech recognition software package that allows the user to dictate to and control a PC by voice alone. The highly accurate system will adapt to your speaking style and recognise user-defined keywords to dramatically improve productivity. Minimum requirement 486/66 MHz IBM-compatible PC. Pentium processor recommended. Windows 95, Windows 3.1 or above. Industry standard 16-bit sound card or built in audio systems on desktops

and portables, including the Soundblaster 16 (recommended). Minimum 16MB RAM (20MB recommended). 37MB free disk space required. CD only.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV42V	Dragon Dictate Solo	£59.560	£69.990

## PCMCIA

### PCMCIA Cards & Accessories

### PCMCIA Card Readers

Portable Add-ons



Portable Add-ons family of Card Master PC Card adapters are ideal for the mobile professional using both notebook and office based desktop PCs during the course of the working day. Card Master is designed to facilitate the rapid and seamless interchange of PC Cards between the mobile and office environment. Available in two versions, a single forward facing slot (VL54J) and a double version with a slot front and rear (VL47B).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL54J	Single Slot PCMCIA	£85.090	£99.990
VL47B	Double Slot PCMCIA	£136.160	£159.990

### PCMCIA Card Read/Writer

Greenwich



A high quality PCMCIA card read/writer that can read and write to many standard PCMCIA peripherals. Especially suited to transferring files to and from a laptop using either RAM cards or PCMCIA hard drives. Allows you to use many PCMCIA devices on both your laptop and your desktop machine. The unit can be mounted internally or externally, an external stand is supplied as standard, mounts into any standard 3.5 in floppy drive bay. Supports one Type 3 card or two Type 2 cards which are automatically detected when inserted. Supports 'hot' insertion and removal. Windows 95 card driver compatible.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK16S 1	PCMCIA Read/Writer	£136.160	£159.990

See Stock Code Index For More Price Breaks

**Portable CD ROM**

Portable Add-ons



- ★ **Lightweight, rugged CD-ROM & CD Audio player**
  - ★ **Everything included: - CD-ROM, PC Card and Cable**
  - ★ **No External Power required**
  - ★ **6 Speed CD-ROM Drive**
- The Portable Add-ons external CD-ROM offers users of portable equipment the opportunity of adding an advanced 6 speed CD-ROM to their notebook computer using a PCMCIA card slot.

Order Code	Type	Price each exc. VAT	inc. VAT each
VL46A	CD Mobile 6	£255.310	£299.990

**BASICS GamePort**

New Media



New Media's BASICS Game Port is an extended PC Card with an integral 15 pin joystick connector. The card is Plug and Play and runs under Windows 3.11, DOS and Windows 95.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JT35Q	PCMCIA Game Port	£88.070 154.850 163.000	£79.940

**GAMEJammer**

New Media



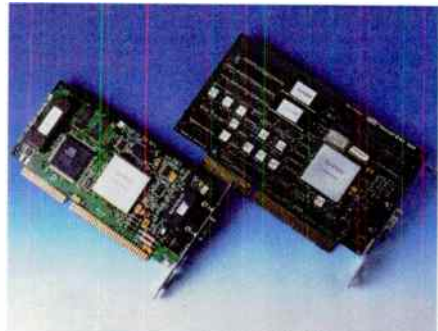
New Media's Game Jammer is the first PC Card to feature a built-in speaker, a joystick port and MIDI in, out and through capability. Supplied with Midisoft Audio Works software.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL49D	PCMCIA Game Jammer	£170.200	£199.990

**WavJammer Sound Card**

New Media



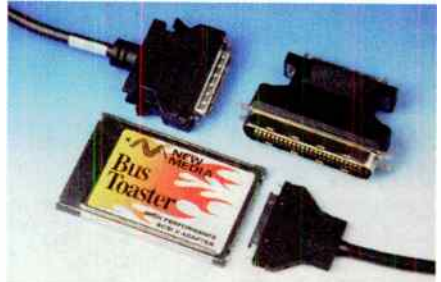
The New Media award winning WavJammer PC Card provides CD quality, 16-bit stereo sound for your portable computer. Includes MIDisoft Audio Works software, a headset and a microphone.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CV72P 1	PCMCIA WavJammer	£229.770	£269.990

**PCMCIA SCSI Bus Toaster**

New Media



A PCMCIA (type II) SCSI II controller card. Data transfer rate: 10Mbps. This card is used to control fast SCSI II devices like high-speed CD-ROM players, fast SCSI II hard disks, etc. A maximum of 7 SCSI devices can be connected. Complete with automatic installation software, Corel SCSI and a SCSI cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CV75S 1	PCMCIA SCSI Toaster	£170.200	£199.990

**'Toast n' Jam' SCSI & Sound Card Combo**

New Media



New Media's Toast 'n Jam combines a high speed SCSI II interface with a 16-bit stereo sound module on one card. Features Midisoft Audio Works and Corel SCSI software.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL52G	Newmedia Combo Card	£340.410	£399.990

**Net Mobile Combined Modem & Ethernet Card**

Portable Add-ons



The Portable Add-ons Net Mobile PC Card is a powerful combination of Ethernet and V.34 modem and, because of the seamless integration of both technologies on one card, there are no compatibility problems. The Net Mobile offers the mobile professional fast, reliable access to corporate networks, E-mail, the Internet, On-line services and fax facilities, as well as full compatibility with Windows 95.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL51F	PCMCIA Netmobile	£255.310	£299.990



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## Freespirit - V.34 & GSM Modem

Portable Add-ons



The Portable Add-ons PCMCIA Freespirit modem offers all the advantages of a standard PCMCIA modem with the added benefits of a GSM capable card. The Freespirit card will allow you to connect to e-mail, fax machines, the Internet and other computers using a GSM phone or a conventional land line. Three different versions are available to cover the most popular GSM phones.

**VL48C:**

For Ericsson GH337/GH338/GF337, Ascum Discovery, Mannesmann MMO D-4046, Vodaphone Digital, Sharp TG400, Lisa 9242, Beocom 9500

**VL53H:**

For Nokia 2110 & 2140

**VL81C:**

Freespirit V.34 modem and Panasonic connector pack.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL48C	Ericsson Data Card	£340.410	£399.990
VL53H	Nokia Data Card	£408.500	£479.990
VL81C	Freespirit V34/GSM	£331.900	£389.990

## PCMCIA Modem

Motorola



- ★ PC and Apple Macintosh compatible in one box
  - ★ Easy installation
  - ★ Type II PCMCIA card
  - ★ 300bps-33.6Kbps V.34 transmission speed
  - ★ Group III Fax compatible, 14.4Kbps V.17
  - ★ Fax/Comms software for PC/Mac included
  - ★ 5 Year Warranty
- The Motorola PCMCIA Fax Modem offers Mac and PC compatibility from one box, complete with software. With this PC card in your notebook computer it is possible to fax, e-mail or browse the Internet from anywhere with access to a land-line telephone connection.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB67X	PCMCIA 33.6 Modem	1+ 2+ 5+	1+ 1+
		£127.690 £126.000 £1252.000	£149.990

## PCMCIA Modem

US Robotics



- ★ V34 28.8Kbps data transmission
- ★ V17 14.4Kbps fax transmission
- ★ Auto data/fax selection
- ★ Auto power-down when idle
- ★ Free Lifetime technical support
- ★ Quicklink II software supplied

The US Robotics XJACK PCMCIA modem offers a new solution to the problem of PCMCIA cabling on the move. The unique XJACK connector allows the use of a standard telephone cord for connection to the line. Surf the Internet, send faxes and e-mail from your laptop computer while in the office or at home. The PCMCIA XJACK modem offers the perfect solution for notebook users on the move

Order Code	Type	Price each exc. VAT	inc. VAT each
VB94C 1	X-Jack V34 PCMCIA	1+	1+
		£144.670	£169.990

## PCMCIA High-Speed RS-232 Card



This high-speed PCMCIA (type II) card contains a special UART 16550 chip. It supports a maximum speed of 115,200 bps when operating under Windows and is outstanding for control of high-speed devices. For example: a bar-code reader, high-speed fax modem, etc. Adjustable comports 1, 2, 3 and 4. Comes complete with connection cable, software drivers and installation software. Works with MS-DOS 5.0 or higher and Windows 3.1 and higher. Simple installation.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CV71N 1	PCMCIA HiSpeed RS232	1+	1+
		£153.160	£179.990

## 3Com PCMCIA Token Link III UTP/STP Adaptor



16/4 16-bit PCMCIA adaptor. This NIC (Network Interface Card) is ideal for token ring networks and completely IBM compatible. The adaptor supports 4 and 16Mbps network speeds and is compatible with shielded STP, unshielded UTP and UTP level III cables.

Software auto-configuration makes installation easy (no technical knowledge is necessary) and the

adaptor is ready to log in to the network immediately after installation. For 100% IBM compatibility the adaptor is equipped with a token ring chipset compatible with IBM's most recent adaptor drivers. Plug and play.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CU73Q 1	PCMCIA TLLink Adapt	1+	1+
		£340.410	£399.990

## 3Com PCMCIA Etherlink III



3Com Etherlink III PCMCIA (type II) Ethernet card. This card is ideal for 10Base2 (BNC) and 10BaseT (RJ45) and, due to its parallel tasking technology is 110% faster than existing adaptors. Automatic software configuration. Works according to Ethernet 802.3 protocol. Data transfer rate 10Mbps. Comes complete with software drivers for the following networks: Novell Personal Netware, Netware Client Server, Netware OD Client, Netware 386 Server, Netware 4.0 Lanworkplace for MS-DOS, UNIX ware, Microsoft Windows for workgroups, LAN manager, Windows NT, DEC Pathworks, SUN pc-nfs. Intercon: tcp/connect, IBM OS/2 LAN server. FTP: PC/TCP, WRQ reflections. ARTISOFT Lantastic, BANYAN: Vines client. Easy PCMCIA installation.

Retail Unit Price each (inc. VAT).

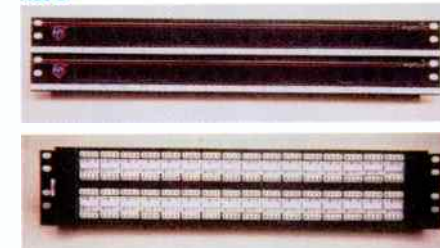
Order Code	Type	Price each exc. VAT	inc. VAT each
CU74R 1	PCMCIA Etherlink	1+	1+
		£161.690	£189.990

## Networks

### Cabling & Installation

## Cat5 UTP Patch Panels

Net 5



A range of high quality Category 5 UTP patch panels available in 16, 32 and 48 port versions, manufactured in the UK and constructed using Stewart RJ45 connectors and Krone IDCs for guaranteed performance and reliability. Every panel is equipt with cable saddles and hook and loop fasteners for effective cable management. All the panels are designed for use in 19 inch rack systems. A label channel is incorporated into the front panel of each unit and labels can be supplied free of charge to your requirements by the manufacturer. The module and panel PCBs are certified to TSB40A, DIS11801 and pREN50173. These products carry a 15 year manufacturer's warranty.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CD41U 1	16 Port Cat 5 Panel	1+ 5+ 10+	1+
		£73.180 £69.250 £65.250	£85.990
CD42V 1	Cat 5 32 Port Patch	£123.390	£118.500
CD43W 1	Cat 5 48 Port Patch	£165.940	£160.750
		£154.000	£194.990



## Cat 5 High Density UTP Patch Panels

Net 5



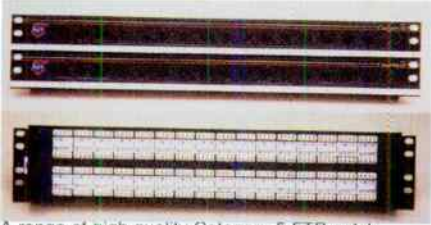
A pair of cost effective high density patch panels for use where cabinet space is at a premium. Assembled in the UK using high quality USA made sockets and KATT IDC's. Supplied with manufacturer's 15 year warranty as standard.

Retail Unit Price each (inc. VAT).

Order Code	Type 13367	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
VB51F	24 HD UTP Pch Panel	£76.580	£74.900	£72.800	£89.990
VB52G	48 HD UTP Pch Panel	£127.650	£125.000	£122.000	£149.990

## Cat5 FTP Patch Panels

Net 5



A range of high quality Category 5 FTP patch panels available in 16, 32 and 48 port versions, manufactured in the UK and constructed using Stewart or amp RJ45 connectors and KAT IDCs for guaranteed performance and reliability. Every panel is equipt with cable saddles and hook and loop fasteners for effective cable management. All the panels are designed for use in 19 inch rack systems. A label channel is incorporated into the front panel of each unit and labels can be supplied free of charge to your requirements by the manufacturer. The module and panel PCBs are certified to TSB40A, DIS11801 and prEN50173. These products carry a 15 year manufacturer's warranty.

Retail Unit Price each (inc. VAT).

Order Code	Type 13334	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
VB58P	STP 16 Patch Panel	£85.090	£74.900	£72.800	£99.990
VB60Q	STP 32 Patch Panel	£153.180	£149.500	£145.000	£179.990
VB61R	STP 48 Patch Panel	£212.750	£209.000	£205.000	£249.990

## CAT5 UTP Patch Cables

Net 5



A range of high quality Category 5 unshielded twisted pair patch cables assembled in the UK using Draka Cardinal stranded UTP cable with AMP RJ45 connectors and boots. These cables are approved by BASEC to EIA/TIA 568 and are available in a range of colours and lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 12043	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CD16S	Green UTP Patch 0.5m	£3.390	£2.630	£2.400	£3.990
CD17T	Green UTP Patch 1.0m	£3.820	£2.950	£2.650	£4.490
CD18U	Green UTP Patch 2.0m	£4.240	£3.300	£3.000	£4.990
CD19V	Green UTP Patch 3.0m	£4.670	£3.670	£3.350	£5.490
CD20W	Green UTP Patch 5.0m	£5.940	£4.650	£4.250	£6.990
CD21X	Blue UTP Patch 0.5m	£3.390	£2.630	£2.400	£3.990
CD22Y	Blue UTP Patch 1.0m	£3.820	£2.950	£2.650	£4.490
CD23A	Blue UTP Patch 2.0m	£4.240	£3.300	£3.000	£4.990
CD24B	Blue UTP Patch 3.0m	£4.670	£3.670	£3.350	£5.490
CD25C	Blue UTP Patch 5.0m	£5.940	£4.650	£4.250	£6.990
CD26D	Red UTP Patch 0.5m	£3.390	£2.630	£2.400	£3.990
CD27E	Red UTP Patch 1.0m	£3.820	£2.950	£2.650	£4.490
CD28F	Red UTP Patch 2.0m	£4.240	£3.300	£3.000	£4.990
CD29G	Red UTP Patch 3.0m	£4.670	£3.670	£3.350	£5.490
CD30H	Red UTP Patch 5.0m	£5.940	£4.650	£4.250	£6.990
CD31J	Yellow UTP Patch 0.5m	£3.390	£2.630	£2.400	£3.990
CD32K	Yellow UTP Patch 1m	£3.820	£2.950	£2.650	£4.490
CD33L	Yellow UTP Patch 2m	£4.240	£3.300	£3.000	£4.990
CD34M	Yellow UTP Patch 3m	£4.670	£3.670	£3.350	£5.490
CD35Q	Yellow UTP Patch 5m	£5.940	£4.650	£4.250	£6.990
CD36P	Grey UTP Patch 0.5m	£3.390	£2.630	£2.400	£3.990
CD37S	Grey UTP Patch 1.0m	£3.820	£2.950	£2.650	£4.490
CD38R	Grey UTP Patch 2.0m	£4.240	£3.300	£3.000	£4.990
CD39N	Grey UTP Patch 3.0m	£4.670	£3.670	£3.350	£5.490
CD40T	Grey UTP Patch 5.0m	£5.940	£4.650	£4.250	£6.990

## Cat5 FTP Patch Cables

Net 5



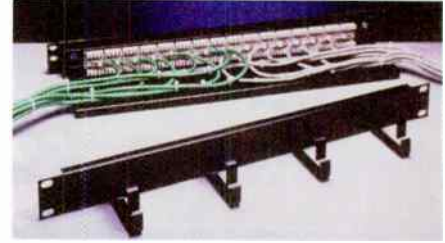
A range of high quality Category 5 foiled twisted pair patch cables assembled in the UK using Draka Cardinal stranded FTP cable with AMP RJ45 connectors and boots. These cables are approved by BASEC to EIA/TIA 568 and are available in a range of colours and lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 13333	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VB25C	STP Cable Green 0.5m	£4.670	£3.810	£3.490	£5.490
VB26D	STP Cable Green 1m	£5.090	£4.150	£3.800	£5.990
VB27E	STP Cable Green 2m	£5.940	£4.780	£4.350	£6.990
VB28F	STP Cable Green 3m	£6.800	£5.500	£4.900	£7.990
VB29G	STP Cable Green 5m	£8.500	£6.850	£6.050	£9.990
VB30H	STP Cable Blue 0.5m	£4.670	£3.810	£3.490	£5.490
VB31J	STP Cable Blue 1m	£5.090	£4.150	£3.800	£5.990
VB32K	STP Cable Blue 2m	£5.940	£4.780	£4.350	£6.990
VB33L	STP Cable Blue 3m	£6.800	£5.500	£4.900	£7.990
VB34M	STP Cable Blue 5m	£8.500	£6.850	£6.050	£9.990
VB35Q	STP Cable Red 0.5m	£4.670	£3.810	£3.490	£5.490
VB36P	STP Cable Red 1m	£5.090	£4.150	£3.800	£5.990
VB37S	STP Cable Red 2m	£5.940	£4.780	£4.350	£6.990
VB38R	STP Cable Red 3m	£6.800	£5.500	£4.900	£7.990
VB39N	STP Cable Red 5m	£8.500	£6.850	£6.050	£9.990
VB40T	STP Cable Yellow 0.5m	£4.670	£3.810	£3.490	£5.490
VB41U	STP Cable Yellow 1m	£5.090	£4.150	£3.800	£5.990
VB42V	STP Cable Yellow 2m	£5.940	£4.780	£4.350	£6.990
VB43W	STP Cable Yellow 3m	£6.800	£5.500	£4.900	£7.990
VB44X	STP Cable Yellow 5m	£8.500	£6.850	£6.050	£9.990
VB45Y	STP Cable Grey 0.5m	£4.670	£3.810	£3.490	£5.490
VB46A	STP Cable Grey 1m	£5.090	£4.150	£3.800	£5.990
VB47B	STP Cable Grey 2m	£5.940	£4.780	£4.350	£6.990
VB48C	STP Cable Grey 3m	£6.800	£5.500	£4.900	£7.990
VB49D	STP Cable Grey 5m	£8.500	£6.850	£6.050	£9.990

## Cable Tidy

Net 5



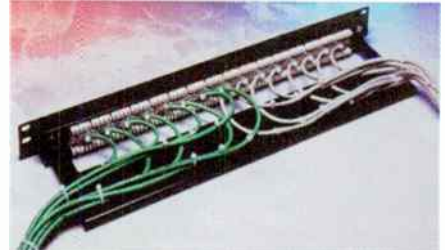
A cable tidy suitable for use with 19 inch racks which allows you to organise your structured cabling quickly and easily. (Cable Management Tray in background not included)

Retail Unit Price each (inc. VAT).

Order Code	Type 12123	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CD48C	19 In Cable Tidy	£12.750	£12.150	£11.800	£14.990

## Cable Management Tray

Net 5



A cable management tray suitable for use with all Net 5 patch panels. The tray simply attaches to the rear of the panel to provide a surface for the support and securing of cables.

Retail Unit Price each (inc. VAT).

Order Code	Type 13368	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VB50E	Cable Management Tray	£10.200	£9.650	£9.600	£11.990

## Cat5 Modular Wall Plates

Net 5

A range of single and dual gang modular wall plates for structured wiring systems. The Cat 5 modules are constructed using Stewart or AMP RJ45 sockets and Krone or Katt IDC's for guaranteed performance and reliability.

The single gang wall plate will accept two Cat 5 UTP or STP modules or one module and two blanks, which are available separately. The wall plates are designed to give a suitable mounting depth for easy installation when used with all standard 86mm x 86mm UK wall boxes. Modules feature a label carrier for easy marking and identification.

This product carries a 15 year manufacturers warranty as standard.

Retail Unit Price each (inc. VAT).

Order Code	Type 13114	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CD44X	Single Modular Plate	£0.842	£0.780	£0.750	£0.990
CD45Y	Dual Modular Plate	£1.250	£1.140	£1.100	£1.470
CD46A	Cat 5 Module	£3.390	£3.300	£3.200	£3.990
CD47B	1/4 Modular Blank	£0.246	£0.200	£0.175	£0.290
VB53H	Net 5 STP Module	£4.240	£4.080	£4.020	£4.990

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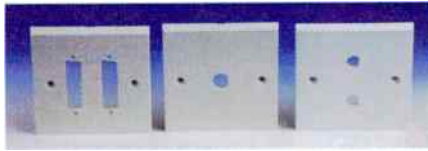
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## Unloaded Faceplates



A range of unloaded faceplates manufactured white ABS to fit all standard 86mm x 86mm UK wall boxes. Available with either one or two cut outs.

Retail Unit Price each (inc. VAT).

Order Code	Type 12087	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CD52G	Plate for 1 x 25D	£1.350	£1.180	£1.110	£1.590
CD53H	Faceplate 2x25 D	£1.490	£1.250	£1.150	£1.760
CD54J	Faceplate 1xBNC 13mm	£1.350	£1.250	£1.150	£1.590
CD55K	Faceplate 2xBNC 13mm	£1.490	£1.250	£1.150	£1.760
CD56L	Faceplate 1xBNC 10mm	£1.350	£1.250	£1.150	£1.590
CD57M	Faceplate 2xBNC 10mm	£1.490	£1.250	£1.150	£1.760

## UTP Modular Wall Outlets



A range of unscreened, flush mounting modular wall boxes with either one or two ports. The wall box is available with a standard 90° outlet or a 45° outlet which offers improved protection against damage and requires less space. Termination is via colour coded IDC according to EIA/TIA 568 standards and incorporates a dual function metal clip which not only retains the cable but also terminates the screening braid.

Retail Unit Price each (inc. VAT).

Order Code	Type 10754	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DP28F	90Deg UTP O/Let Sgl	£7.650	£7.250	£7.000	£8.990
DP28G	90Deg UTP O/Let Dbl	£9.350	£9.000	£8.500	£10.990
DP30H	45Deg UTP O/Let Sgl	£9.350	£8.930	£8.110	£10.990
DP31J	45Deg UTP O/Let Dbl	£12.750	£11.990	£10.970	£14.990

## STP Modular Wall Outlets



A range of screened, flush mounting modular wall boxes with either one or two ports. The wall box is available with a standard 90° outlet or a 45° outlet which offers improved protection against damage and requires less space. Termination is via colour coded IDC according to EIA/TIA 568 standards and incorporates a dual function metal clip which not only retains the cable but also terminates the screening braid. The outlets comply with the EMC Directive EN 55022 Class B.

Retail Unit Price each (inc. VAT).

Order Code	Type 10758	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DP38R	90Deg STP Outlet Sgl	£8.500	£7.650	£6.630	£9.990
DP38N	90Deg STP Outlet Dbl	£11.900	£10.710	£9.690	£13.990
DP40T	45Deg STP Outlet Sgl	£9.350	£8.720	£7.910	£10.990
DP41U	45Deg STP Outlet Dbl	£14.450	£13.260	£11.730	£16.990

## BNC Y-Cable



This high quality, high reliability cable is for use in Thin-Net/FG58 cabling systems. The Y-Cable is assembled from dual coax cable which is connected to two high quality insulated BNC plugs at one end and the other end is connected to a single high quality insulated BNC plug. This system eliminates the need for a 'T'-adaptor when connecting computer equipment to wall outlets thus improving reliability and simplifying cable management.

Retail Unit Price each (inc. VAT).

Order Code	Type 10610	Price each exc. VAT		inc. VAT each
		1+	10+	
CF27E	BNC Y-Cable 1.8m	£34.030		£39.990
CF28F	BNC Y-Cable 6m	£42.540		£49.990

## 10Base2 Patch Leads

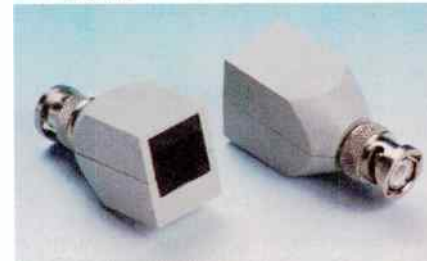


These Widoshi BNC to BNC patch leads are assembled with high quality BNC crimp connectors and MIL-17 coax cable. Fitted with strain relieving boots. Available in the following lengths:

Retail Unit Price each (inc. VAT).

Order Code	Type 11085	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CV43W	10-B-2 Patch Cble 2m	£5.090	£3.810	£3.500	£5.990
CV44X	10-B-2 Pch Cble 5m	£7.650	£6.960	£6.700	£8.990
CV45Y	10-B-2 Pch Cble 10m	£11.900	£11.480	£11.310	£13.990
CV46A	10-B-2 Pch Cble 15m	£14.450	£12.070	£11.220	£16.990
CV47B	10-B-2 Pch Cble 25m	£17.010	£13.630	£12.460	£19.990
CV48C	10-B-2 Pch Cble 30m	£19.560	£15.610	£14.250	£22.990

## 10 Base 2 Ethernet Baluns

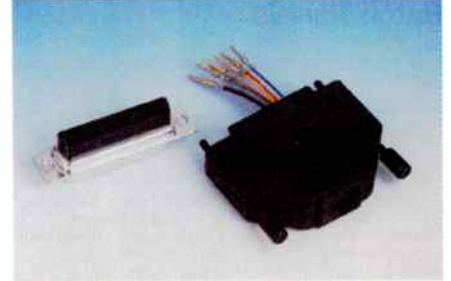


A pair of 10 Base 2 ethernet baluns for use in IEEE 802.3 (10 Base 2) networks that allow data signals to be carried on data grade twisted pair cable. Available with active pins 1,2,3 & 6 (CD62S) and active pins 3,4,5, & 6 (CD63T)

Retail Unit Price each (inc. VAT).

Order Code	Type 12230	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CD63T	10B2 Balun 3,4,5,6	£14.450	£13.900	£12.850	£16.990
CD62S	10B2 Balun 1,2,3,6	£14.450	£13.900	£12.850	£16.990

## Modular Jack Adapters



A range of high quality modular jack adapters manufactured in the UK. The design incorporates a one-piece snap-together assembly with full length metal turned thumbscrews, supplied complete with connector. Available in 9 way and 25 way versions both with RJ45 8 way sockets.

Retail Unit Price each (inc. VAT).

Order Code	Type 12048	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CD60Q	Mod Jack Adapt 9DM	£2.540	£2.000	£1.750	£2.990
CD61R	Mod Jack Adapt 9DF	£2.540	£2.000	£1.750	£2.990
CD68N	Mod Jack Adapt 25DM	£2.540	£2.000	£1.750	£2.990
CD69P	Mod Jack Adapt 25DF	£2.540	£2.000	£1.750	£2.990

## AMP AUI Transceiver Cable



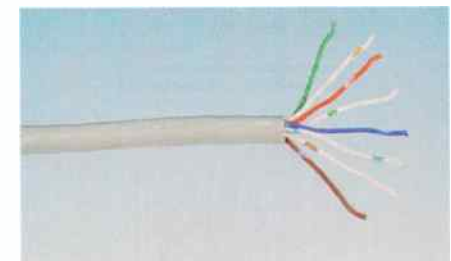
This high-end original AMP transceiver cable is assembled with high quality connectors which guarantees an optimal connection. The AMP transceiver cable can be used for Ethernet Concentrators or Transceivers. Length 6m.

Retail Unit Price each (inc. VAT).

Order Code	Type 10534	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CF70M	AUI Transcvr Cble MF	£96.160	£93.840	£88.740	£112.990
CF71N	AUI Transceiver Cble	£96.160	£93.840	£88.740	£112.990

## Category 5 FTP Patch Cable

Draka Cardinal



★ Stranded FTP Patch Cable

★ Category 5 compliant

High specification PVC jacketed FTP Category 5 patch cable for use with Ethernet, Fast Ethernet, Token Ring or ATM. Stranded conductors for maximum flexibility.

Specification:

Inner Conductor: 7 x 0.16mm Plain Copper  
Construction: 4 Twisted Pairs wrapped with PETP PVC  
Jacket: PVC  
Overall Dimensions: 5.70mm ± 0.10mm  
Weight: 35 kg/km  
Temp Range: -20° to +80°  
Min Bending Radius: 50mm

Impedance: 100Ω ± 15Ω  
 Capacitance: 46 pF/m  
 Inner Conductor: 133 Ω/km  
 Velocity Ratio: 66%

Retail Unit Price each (inc. VAT).

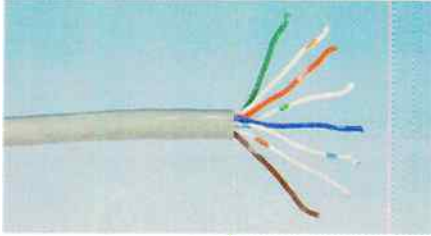
Order Code	Type	Price each exc. VAT	inc. VAT each
VB07H	STP Patch Cat 5 1m	1+ 10+ 50+ £0.553 £0.510 £0.470	1+ £0.650

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB08J	STP Patch Cat 5 305m	1+ 3+ 5+ £136.160 £132.000 £125.000	1+ £159.190

## Category 5 FTP Solid Cable

Draka Cardinal



- ★ Solid FTP Cable
- ★ Category 5 compliant

High specification PVC jacketed FTP Category 5 solid cable for use with Ethernet, Fast Ethernet, Token Ring or ATM.

**Specification:**  
 Inner Conductor: 0.52mm Plain Copper  
 Construction: 4 Twisted Pairs wrapped with PETP  
 Jacket: PVC to BS 6746 Type 6  
 Overall Dimensions: 5.80mm ± 0.30mm  
 Weight: 38 kg/km  
 Temp Range: -20° to +70°  
 Impedance: 100Ω ± 15Ω  
 Capacitance: 46 pF/m  
 Inner Conductor: 94 Ω/km  
 Velocity Ratio: 76%

Retail Unit Price each (inc. VAT).

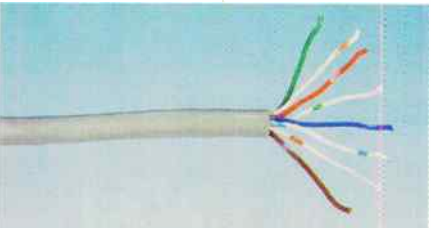
Order Code	Type	Price each exc. VAT	inc. VAT each
VB22Y	STP Cable 1m Solid	1+ 10+ 50+ £0.502 £0.460 £0.415	1+ £0.550

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB21X	STP Cable 305m Solid	1+ 3+ 5+ £110.620 £107.500 £102.500	1+ £129.990

## Category 5 UTP Patch Cable

Draka Cardinal



- ★ Highly flexible UTP Patch Cable
- ★ Category 5 compliant
- ★ Available in Grey, Red, Green, Blue and Yellow

High specification PVC jacketed UTP Category 5 patch cable for use with Ethernet, Fast Ethernet, Token Ring or ATM. Stranded conductors for maximum flexibility.

**Specification:**

Inner Conductor: 7 x 0.20mm Plain Copper  
 Construction: 4 Twisted Pairs  
 Jacket: PVC  
 Overall Dimensions: 5.25mm ± 0.30mm  
 Weight: 34 kg/km  
 Temp Range: -20° to +80°  
 Min Bending Radius: 50mm  
 Impedance: 100Ω ± 15Ω  
 Capacitance: 44 pF/m  
 Inner Conductor: 89 Ω/km  
 Velocity Ratio: 77%

Retail Unit Price each (inc. VAT).

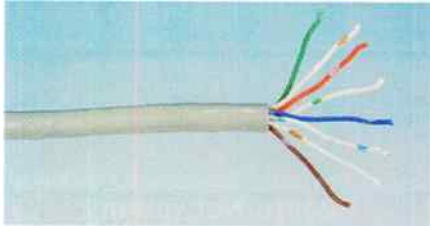
Order Code	Type	Price each exc. VAT	inc. VAT each
VB10L	UTP Patch 1m Grey	1+ 10+ 50+ £0.502 £0.455 £0.405	£0.590
VB12N	UTP Patch 1m Red	£0.502 £0.455 £0.405	£0.590
VB14Q	UTP Patch 1m Blue	£0.502 £0.455 £0.405	£0.590
VB16S	UTP Patch 1m Green	£0.502 £0.455 £0.405	£0.590
VB18U	UTP Patch 1m Yellow	£0.502 £0.455 £0.405	£0.590

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB09K	UTP Patch 305m Grey	1+ 3+ 5+ £110.620 £106.000 £100.000	£129.990
VB11M	UTP Patch 305m Red	£110.620 £106.000 £100.000	£129.990
VB13P	UTP Patch 305m Blue	£110.620 £106.000 £100.000	£129.990
VB15R	UTP Patch 305m Green	£110.620 £106.000 £100.000	£129.990
VB17T	UTP Patch 305m Yellow	£110.620 £106.000 £100.000	£129.990

## Category 5 UTP Solid Cable

Draka Cardinal



- ★ Category 5 compliant
- ★ Solid conductors

High specification PVC jacketed UTP Category 5 solid cable for use with Ethernet, Fast Ethernet, Token Ring or ATM.

**Specification:**  
 Inner Conductor: 0.52mm Plain Copper  
 Construction: 4 Twisted Pairs  
 Jacket: PVC to BS6746 Type TM2  
 Overall Dimensions: 4.90mm ± 0.20mm  
 Weight: 28 kg/km  
 Temp Range: -20° to +70°  
 Min Bending Radius: 50mm  
 Impedance: 100Ω ± 15Ω  
 Capacitance: 46 pF/m  
 Inner Conductor: 94 Ω/km  
 Velocity Ratio: 66%

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VB24B	UTP Cable 1m Solid	1+ 10+ 50+ £0.331 £0.280 £0.250	£0.390

Retail Unit Price each (inc. VAT).

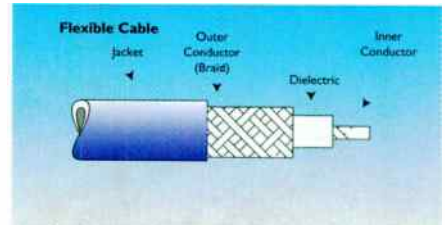
Order Code	Type	Price each exc. VAT	inc. VAT each
VB23A	UTP Cable 305m Solid	1+ 3+ 5+ £63.820 £60.000 £58.000	£74.990

FOR TECHNICAL ADVICE  
ON ALL PRODUCTS

01702 556001

e-mail: Technical@maplin.co.uk

## Ethernet Coax Cable



Maplin offers a wide range of coax network cable to suit all types of network installations. Commercial quality: high quality coax Ethernet network cable which is fully approved by the IEEE 802.3. Military quality: fully approved to the most stringent US Defense (MIL-17) specifications. This cable is particularly suitable for large networks. Shielding 94%, impedance 50Ω capacitance 101pF per metre.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF09K	RG58 AU Cble 1m	1+ £0.348	£0.410
CF10L	RG58 AU Cble 100m	£21.260	£24.990
CF11M	RG58 AU Mil-17 1m	£0.595	£0.700
CF12N	RG58 AU Mil-17 200m	£96.800	£101.990

## RG58 BNC Patch Cables



A range of RG58 BNC patch cables for use in local area networks for connection between computers and/or wall plates. All cables are assembled using MIL17 specification cable with strain relief boots. Available in 2m, 3m, 5m, 7m and 10m lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX17T	RG58 Patch Cable 2m	1+ 5+ 10+ £4.240 £3.350 £3.150	£4.990
KX18U	RG58 Patch Cable 3m	£5.090 £3.950 £3.650	£5.990
KX19V	RG58 Patch Cable 5m	£6.370 £4.850 £4.500	£7.490
KX20W	RG58 Patch Cable 7m	£8.500 £6.200 £5.650	£9.990
KX21X	RG58 Patch Cable 10m	£10.200 £7.450 £6.750	£11.990

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## 9907' BNC Patch Cables

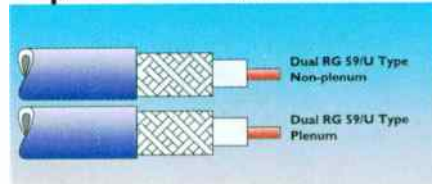


A range of '9907' equivalent BNC patch cables for use in local area networks for connection between computers and/or wall plates. All cables are assembled using cable that complies to the 'Belden 9907' specification with strain relief boots. Available in 2m, 3m, 5m, 7m and 10m lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 1790	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
KX22Y	9907 Patch Cable 2m	£5.090	£3.900	£3.650	£5.990
KX23A	9907 Patch Cable 3m	£5.940	£4.550	£4.200	£6.990
KX24B	9907 Patch Cable 5m	£7.220	£5.550	£5.150	£8.490
KX25C	9907 Patch Cable 7m	£9.350	£7.000	£6.400	£10.990
KX26F	9907 Patch Cable 10m	£11.050	£8.350	£7.700	£12.990

## Duplex Coax Cable



This duplex coax cable is fully approved to the Military MIL-17 specifications. 2 x RG58, shielding 94%, impedance 50Ω, capacitance 101pF per metre.

Retail Unit Price each (inc. VAT).

Order Code	Type 10958	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CF13P	Dup Coax Cable 1m	£1.690			£1.990
CF14Q	Dup Coax Cable 100m	£125.090			£146.990

## RS232 Multi-Pair Network Cable

NEK Cables



A range of flexible (stranded), multi-pair cables that are suitable for the interconnection of peripheral equipment and host computers, where local area networks are not in use, e.g., low-speed data transfer.

### Electrical Properties at 20°C

Pair conductance: 98pF/m @ 1kHz  
 Capacitance @ 1kHz: 164pF/m (between 1 cond. and other cond. connected to screen)  
 Attenuation 100kHz: 1.3dB/100m  
 Attenuation 1MHz: 7.3dB/100m

### Mechanical Properties

Conductors stranded: 0.22mm<sup>2</sup> TC  
 Insulation type: SR-PVC  
 Overall screening: Foil  
 Drainwire stranded: 0.22mm<sup>2</sup> TC  
 Jacket type: PVC  
 Temperature range: -20°C to +80°C  
 Minimum bending radius: 8 x ODmm

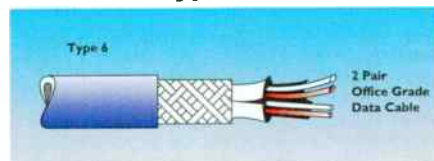
Manufacturer's Code	No. of pairs	OD (mm)	Length	Order Code
49520	2	5.5	Metre	CW41U
49520	2	5.5	Reel	PB82D
49530	3	5.8	Metre	CW42V
49530	3	5.8	Reel	PB72P
49540	4	6.5	Metre	CW43W
49540	4	6.5	Reel	PB73Q

Available per metre or on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 77	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CW41U	2 Pair RS232 Metre	£0.774	£0.600	£0.559	£0.910
PB82D	2 Pair RS232 100m	£51.060	£46.000	£41.200	£59.990
CW42V	3 Pair RS232 Metre	£1.200	£0.895	£0.821	£1.420
PB72P	3 Pair RS232 100m	£76.380	£69.000	£62.000	£89.750
CW43W	4 Pair RS232 Metre	£1.290	£0.983	£0.910	£1.520
PB73Q	4 Pair RS232 100m	£85.090	£79.000	£72.000	£99.990

## ICS Cable Type 6



IBM type 6 office cabling system is mostly used with the AMP 4-position data connectors. This high quality cable is fully shielded by a foil and braid. The cable contains two twisted-pairs. This type 6 cable is fully IBM approved. The cable is highly flexible making it very easy to install.

Retail Unit Price each (inc. VAT).

Order Code	Type 10006	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CF07H	ICS Cable Type 6 1m	£1.290			£1.520
CF08J	ICS Cable Type 6 100m	£69.430			£81.590

## Secure Networking

### Saferkit



Saferkit is the simple solution to connecting and disconnecting Thinwire Ethernet networks without disruption and promises a cost effective and convenient way to install or upgrade network systems using BNC connectors. Each kit is supplied with a Safeconnect cable assembly (either 2.5m or 5m) for even greater protection and a Safertap wall socket, either flush or wall mounted. The high specification of both products ensures that every installation is successful and secure and guarantees network integrity.

Retail Unit Price each (inc. VAT).

Order Code	Type 10086	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DN98G	Surf Mount Saferkit	£34.030			£39.990
DP22Y	5m SMT SAFERKIT	£34.030			£39.990
DP23A	2.5m Flush Saferkit	£29.770			£34.990
DP24B	5m Flush SAFERKIT	£32.330			£37.990



**All orders over £30.00  
FREE DELIVERY.**

(All orders free delivery for Business Account Customers)

## Safertap 4-Way Extension Port



This 4-way extension port provides a quick and easy solution for LAN systems with insufficient ports or for computer installations that are not conveniently situated to an existing port. Supplied with 5m of twin cable and BNC plugs.

Retail Unit Price each (inc. VAT).

Order Code	Type 10672	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DN94C	Safer Tap 4 User Out	£134.450			£157.990

## Safeconnect Access Leads



Safeconnect is an economical and easy to install BNC adaptor that provides a completely secure and tamper-proof uninterrupted signal path. Not only does it end the danger of Thinwire Ethernet crashes caused by accidental disconnection, its unique design actually helps to make the back of each PC less congested. Safeconnect leads are precision engineered with gold plated contacts.

Retail Unit Price each (inc. VAT).

Order Code	Type 10673	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DN85D	Access Lead 2.5m	£15.310			£17.990
DP20W	5m SafeConn Lead	£17.010			£19.990
DN86E	Right Angle Lead	£25.520			£29.990
DP21X	5m SafeConn R/A Lead	£28.070			£32.990

## Connectors

### Safeconnect BNC Crimp Plug (9907/Ethernet)



Insulated BNC crimp plug for RG58, 141, Belden 9907, URM 43, 76 cables. Available in black or grey.

Retail Unit Price each (inc. VAT).

Order Code	Type 10675	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DN98H	BNC Crimp Plug Black	£1.690	£1.330	£1.160	£1.990
DP00A	BNC Crimp Plug Grey	£1.690	£1.330	£1.160	£1.990

**See Stock Code Index  
For More Price Breaks**

**BNC 'T' Adaptor**



BNC plug to two jacks, available either partially or fully insulated.

Retail Unit Price each (inc. VAT).

Order Code	Type 10676	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DP01B	Part Ins BNC T Adaptor	£4.240	£3.180	£2.730	£4.990
DP02C	VBI109 BNC T Adaptor	£4.240	£3.180	£2.730	£4.990

**BNC Crimp Plug (9907/Ethernet)**



BNC crimp plug for RG 58, 141, URM 43, 76, Belden 9907, PSF-1/6M cables.

Retail Unit Price each (inc. VAT).

Order Code	Type 10678	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DP06G	BNC Crimp Plug	£1.080	£0.860	£0.720	£1.280

**BNC Jack/Jack Adaptor**



Jack to jack BNC adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type 10679	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DP07H	BNC Jack To Jack Ad	£2.110	£1.630	£1.390	£2.490

**BNC 'T' Adaptor**



BNC plug to two jacks.

Retail Unit Price each (inc. VAT).

Order Code	Type 10681	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DP08J	BNC T Adaptor	£3.650	£2.750	£2.350	£4.240

**BNC 'Goalpost' Adaptor**



BNC plug to two jacks.

Retail Unit Price each (inc. VAT).

Order Code	Type 10682	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DP09K	BNC Goal Post Adaptor	£7.050	£5.200	£4.390	£8.290

**BNC 50Ω Terminator**



BNC terminator with built-in 50Ω (±1%) resistor.

Retail Unit Price each (inc. VAT).

Order Code	Type 10683	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DP10L	BNC 50Ωhm Terminator	£2.800	£2.140	£1.840	£3.290

**Insulated BNC Jack/Jack Adaptor**



Insulated BNC jack to jack adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type 10684	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DP03D	BNC Jack/Jack Adaptor	£2.110	£1.680	£1.490	£2.490

**Safernet BNC Crimp Adaptor**



A Safernet BNC (crimp) adaptor suitable for the following cables: RG58 C/U, Belden 9907, BICC H9590, NEK 62310, NEK 64330, DEC 17-01248-0-0.

Retail Unit Price each (inc. VAT).

Order Code	Type 10685	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DN97F	BNC Crimp Adaptor	£8.500	£6.380	£5.200	£9.960

**AMP BNC Crimp Connector**



A high quality BNC crimp connector with a gold plated contact pin.

Retail Unit Price each (inc. VAT).

Order Code	Type 10614	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CF37S	BNC Crimp Connector	£0.987	£0.890	£0.840	£1.160

**AMP BNC Connector 2X Female**



A high quality BNC connector with gold plated centre contacts. With gold plated pins.

Retail Unit Price each (inc. VAT).

Order Code	Type 10617	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CF38R	BNC Dbl Ski Adaptor	£3.390			£3.990

**AMP BNC Right-Angle Crimp Connector**

A high quality BNC right-angle plug with gold plated contact pin.



Retail Unit Price each (inc. VAT).

Order Code	Type 10621	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CF39N	BNC R/Angle Crimp Con	£3.020			£3.560

**AMP T-Connector 2x Female 1x Male**



A high quality BNC T-connector with gold plated contact pin.

Retail Unit Price each (inc. VAT).

Order Code	Type 10625	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CF40T	BNC T Adaptor	£3.090			£4.580

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## Safety Cover



This safety cover is especially useful in protecting T-connectors in busy offices to prevent accidental disconnection of the network. This safety cover can also be used in dusty and damp environments.

Price each shown, but sold only in multiples of 5.

Order Code	Type	Price each exc. VAT	inc. VAT each
CF33L	Insulation Cover	£0.340	£0.400

## Insulated Dust Free BNC Terminators and T-Connectors



These dust free T-connectors and terminators are especially recommended for use in harsh environments. Available in black or grey. The short cover is required when mating the terminator with the T-adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF34M	Ins BNC Terminator	£8.500	£9.990
CF35Q	Ins BNC Term Long	£7.650	£9.990
CF36P	Ins BNC Term T Piece	£9.350	£10.990

## AMP BNC Chassis Socket



A high quality BNC crimp connector for chassis mounting. With gold plated pins.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF41U	BNC Chassis Plug	£1.990	£2.340

## AMP Coloured BNC Strain-Reliefs



Strain-reliefs used to cover the crimp and provide colour coding on AMP standard crimp plugs. Available in the following colours: Yellow, Green, Grey, White, Brown, Orange, Black, Red and Blue.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF42V	BNC Ins Boot Yellow	£0.170	£0.200
CF43W	BNC Ins Boot Green	£0.170	£0.200
CF44X	BNC Ins Boot Grey	£0.170	£0.200
CF45Y	BNC Ins Boot White	£0.170	£0.200
CF46A	BNC Ins Boot Brown	£0.170	£0.200
CF47B	BNC Ins Boot Orange	£0.170	£0.200
CF48C	BNC Ins Boot Black	£0.170	£0.200
CF49D	BNC Ins Boot Red	£0.170	£0.200
CF50E	BNC Ins Boot Blue	£0.170	£0.200

## AMP 1W BNC Terminator



A high quality 50Ω BNC plug with integral resistor for termination of thinnet network segments. With gold plated pins.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF51F	BNC 1 watt Terminator	£2.160	£2.540

## BNC Terminator



A termination plug fitted with an encapsulated 50Ω resistor, and gold-plated centre pin. Suitably for end termination on network computer installations.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK06G	BNC Terminator Plug	£1.370	£1.620

## Crimp Plug



Nickel plated brass plug with gold-plated centre pin. The plug is suitable for use with any 50Ω cable where the outside diameter of the sheath of the inner conductor is approx. 3mm and the outside diameter of the outer sheath is 5mm, e.g., UR76, RG58. See Tools section of this catalogue for suitable crimp tool.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JC23A	BNC Crimp Plug 50	£0.842	£0.990

## BNC Boot



An insulating boot for use with crimp plug 71661. The boot is cut to suit the diameter of the cable if necessary, and then pushed on to the cable, before crimping. The hood is then forced over the crimp, and with the matching hood, the plug is now insulated. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK06J	BNC Boot	£0.167	£0.220

## N-Series Terminator



10Base5 N-series male terminator which can be attached directly to the jack-to-jack in-line splice, 1W, 50Ω. With gold plated pins.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF56L	N Series Term Male	£5.940	£6.990

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**'T' Adaptor**



Two plugs may be connected to one socket with this adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YW03D	BNC T Adaptor	£2.540 25+ £1.150 100+ £2.990 1+	£2.990 1+

**N-Series Connector**



10Base5 N-series crimp connector with gold plated pins.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF53H	N Series Connector	£3.390 1+	£3.990 1+

**RJ45 Connectors**

COB



A pair of RJ45 connectors suitable for use on stranded twisted pair cable for the production of patch cables for Category 5 networks. Available in two versions for UTP and STP patch cables. Sold in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JT48C	COB RJ45 Shield Con	£5.940 1+ £5.550 10+ £5.270 25+ £6.990 1+	£6.990 1+
JT49D	COB RJ45 Unshield Con	£1.690 1+ £1.350 10+ £1.250 25+ £1.990 1+	£1.990 1+

**N-Series Terminator**



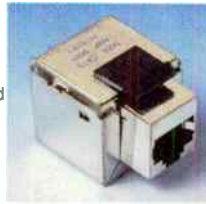
10Base5 N-Series female terminator 1W, 50Ω. With gold plated pins.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF54J	N Series Term Fem	£5.090 1+	£5.990 1+

**RJ45 Cat-5 Shielded Connector**

A high reliability RJ45 crimp connector with gold-plated contacts. UL verified for Cat-5 applications. Maximum frequency: 100MHz. Attenuation: 0-1/0-4dB. Easy to crimp on STP Cat-5 cable.



Available in two types:-

Type 1. For assembly to solid core wire.  
Type 2. For assembly to stranded core wires.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF93B	RJ-45 Shielded Con	£7.650 1+	£8.990 1+
ZE65V	RJ-45 UTP Stranded	£7.650 1+	£8.990 1+

**N-Series Jack-to-Jack In-Line Splice**



10Base5 N-series jack-to-jack in-line splice. With gold plated pins.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF55K	N Series Coupler	£3.390 1+	£3.990 1+

**Coloured Boots for RJ45 Connectors**

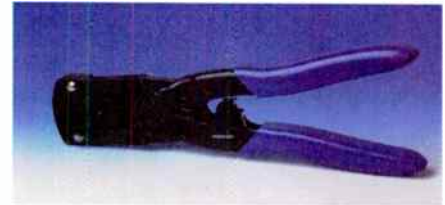


These coloured boots give a clear visual indication of the structure of interconnections from patch panels and wall outlets to workstations. Available in the following colours: Red, Grey, Green, Blue, Black and Yellow.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF96E	RJ-45 Hood Red	£0.153 10+	£0.180 10+
CF97F	RJ-45 Hood Grey	£0.153	£0.180
CF98G	RJ-45 Hood Green	£0.153	£0.180
CF99H	RJ-45 Hood Blue	£0.153	£0.180
CG00A	RJ-45 Hood Black	£0.153	£0.180
CG01B	RJ-45 Hood Yellow	£0.153	£0.180

**AMP Modular RJ45 Crimping Tool**



The AMP modular RJ45 crimping tool has been specially designed for crimping RJ45 crimp connectors. This high quality tool guarantees a fast assembly time with just the right crimp force. Compact construction aids use in confined spaces. Durable, precision construction for years of reliable service.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG15R 1	RJ45 Crimp Tool	£76.580 1+	£89.990 1+

**DEC Modular Crimping Tool**



The AMP modular DEC crimping tool is especially designed for DEC crimp connectors. This tool produces a fast high quality crimp assembly. Features compact design and precision construction.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG18U 1	Modular Crimp Tool	£76.580 1+	£89.990 1+

**RJ45 Cat-5 STP Jack**



These Cat-5 RJ45 shielded jacks are for mounting in patch panels or the net connect open wiring system. Also available for UTP.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG24B	RJ-45 Cat 5 Skt	£5.090 1+	£5.990 1+
CG25C	RJ45 Cat 5 UPT Skt	£4.240 1+	£4.990 1+

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## Plastic D-Type Hood with Thumbscrews



AMP has a large range of universal packages for the speedy assembly of connectors and cables – just click-in and go!

These packages are made of high quality plastic with a straight cable outlet (with cable clamps suitable for a range of cable diameters). The thumbscrews ensure a firm contact while making the plug easily removable and ideal for mobile assembly.

Retail Unit Price each (inc. VAT).

Order Code	Type 10763	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
CU03D	9way D Hood	£5.090	£5.000	£5.990
CU04E	25way D Hood	£4.070	£3.880	£4.790

## Locking Metal Hoods, Completely Protected Against EMI/RFI Interference



High quality with crack resistant chromium plating, ideal for using in offices or places prone to EMI/RFI interference. The hoods guarantee 100% protection when used in combination with double shielded cable. Available as a straight connector or right-angled.

Retail Unit Price each (inc. VAT).

Order Code	Type 10764	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
CU05F	Hood 15p Straight	£4.070	£3.880	£4.790
CU06G	Hood 15p Right	£8.920	£8.670	£10.490
CU07H	Hood 25p Straight	£4.070	£3.880	£4.790
CU08J	Hood 25p Right	£10.200	£9.590	£11.990

## HDD 22 (SVGA) Crimp Connector and Shell



With this type of connector you can make quick and easy high quality 15-pin SVGA connections. These connectors are available in plug (male) or shell (female).

Retail Unit Price each (inc. VAT).

Order Code	Type 10765	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
CU09K	HDD 22 Plug	£1.010	£0.940	£1.190
CU10L	HDD 22 Shell	£1.010	£0.940	£1.190

## HD 20 Connector and Shell

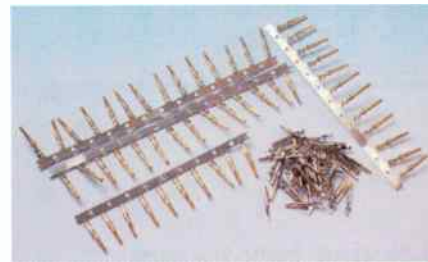


These sub-D AMP HD 20 connector housings for the HD 20 Snap In contacts are available in 9, 15, 25, 37 and 50-pin formats. Secure assembly (and removal) of the Snap In contacts is very easy using an insert tool.

Retail Unit Price each (inc. VAT).

Order Code	Type 10767	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
CU11M	HD20 9w Crmp Plug	£1.940	£1.840	£2.290
CU12N	HD20 15w Crmp Plug	£1.940	£1.840	£2.290
CU13P	HD20 25w Crmp Plug	£1.940	£1.840	£2.290
CU14Q	HD20 37w Crmp Plug	£2.280	£2.090	£2.690
CU16S	HD20 9w Crmp Skt	£1.690	£1.580	£1.990
CU17T	HD20 15w Crmp Skt	£1.940	£1.840	£2.290
CU18U	HD20 25w Crmp Skt	£1.940	£1.840	£2.290
CU19V	HD20 37w Crmp Skt	£1.940	£1.840	£2.290

## Crimp Contacts



HD 20 (standard Sub-D connector) & HDD 22 (SVGA connector) Crimp Snap In contacts. These high quality crimp contacts make it easy and fast to achieve safe connections.

Gold plating ensures very high conductivity and protection from corrosion, so all AMP connector contacts are gold plated. These contacts are available in pin & socket types in packs of 50.

Retail Unit Price each (inc. VAT).

Order Code	Type 10771	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
CU33L	HD 20 Pin	£4.240	£4.170	£4.990
CU34M	HD20 Socket	£5.090	£4.900	£5.990
CU35Q	HDD22 Pin	£4.240	£4.170	£4.990
CU36P	HDD22 Socket	£5.090	£4.900	£5.990

## HD 20 (Sub-D) Solder Connectors



Where high quality soldered connections are essential AMP offers a range of reliable and long lasting Sub-D solder connectors, equipped with a solder cup for optimum performance.

Retail Unit Price each (inc. VAT).

Order Code	Type 10768	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
CU23A	HD20 9p Solder Plug	£0.842	£0.730	£0.990
CU24B	HD20 9p Solder Skt	£0.842	£0.730	£0.990
CU25C	HD20 15p Solder Plug	£1.010	£0.940	£1.190
CU26D	HD20 15p Solder Skt	£1.180	£1.040	£1.390
CU27E	HD20 25p Solder Plug	£1.520	£1.380	£1.790
CU28F	HD20 25w Solder Skt	£1.600	£1.490	£1.890

## Plastic Hood With Standard Jack Screws



AMP's Quick Snap Kits allow the fast assembly of connectors to cables in a large assortment of universal Quick Snap housings. Just click in and go! The housings are made of heavy-duty plastic and the cable outlet is adjustable between straight through and 45 degrees. A secure cable clamp is connected to the housing with screws. The standard jack screws ensure a secure connection – a screwdriver is necessary.

Retail Unit Price each (inc. VAT).

Order Code	Type 10769	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
CU29G	9way Plastic Hood	£1.260	£1.220	£1.490
CU30H	15way Plastic Hood	£1.260		£1.490
CU31J	25way Plastic Hood	£1.430	£1.380	£1.690
CU32K	37way Plastic Hood	£1.690	£1.610	£1.990

## 300MHz EMC Connector



New! This AMP 300MHz EMC Shielded Four-Position Data Connector is suitable for STP-A IBM Cable System types 1A, 2A and 6A. The connector is made with a special shielding which shields every wire in the ICS cable independently in the connector. By using this technique it is possible to transmit data at 300MHz. Prepare your network for the high-speed data transmission of tomorrow. (Equivalent to IBM part No. 73G7500.)

Retail Unit Price each (inc. VAT).

Order Code	Type 10002	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
CF01B	300 Mhz EMC Con	£5.020		£5.910

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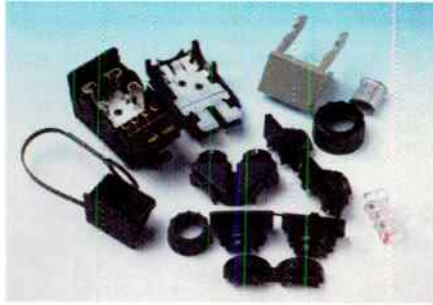
**Tel: 01702 554000**

**Fax: 01702 554001**

**e-mail: Sales@maplin.co.uk**



## Tokenring Four-Position Data Connector



The AMP 4-position data connector is designed for use in Tokenring local area network applications. The connector is designed to connect to twisted-pair cables and features easy assembly without the use of special tools. The connector is fully shielded and selective gold plating is used on critical components for optimum data transmission. Internal connections are colour coded for easy identification. The connector is provided with self shorting contacts which make contact after releasing the connector from the wall outlet or patch panel.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG29G	10604 TR 4-Pos DataCon	£4.160	£4.890

## Safertap Access Ports



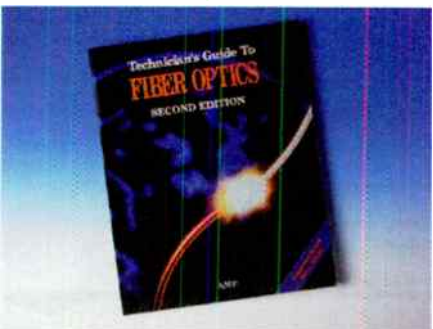
Safertap (Thin-Ethernet Access Port) has been developed for LAN users and provides a cost effective method of adding or removing workstations without disrupting the network. Each access port is manufactured to the highest standards and complies with the requirements of IEEE 802.3. The ports are very simple to install or retrofit and are available in surface mount or flush versions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN92A	10671 Surf Mount Acces Prt	£20.410	£23.990
DN93B	Twin Access Port	£20.410	£23.990

## Fibre Optic Networks

### Technical Guide to Fibre Optics



An excellent introductory and intermediate level fibre-optic text, this informative book covers the fundamentals of data transmission, fibre theory, fibre characteristics, sources and detectors,

connectors and splice products and other fibre-optic components. An essential text for any network installer or technician

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
CG29G	10603 Tech's Gde For Optics	£15.990	£15.990 NV

## Lightcrimp XTC No-Epoxy Fibre Connectors

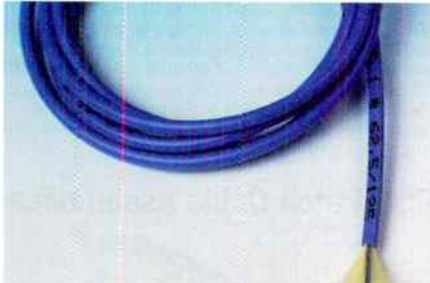


The AMP light crimp connectors are ST compatible and very easy to connect. They can be used for both loose tube cables and strength membered cables. The fibre and buffer are connected to the connector by a special crimp process which eliminates the need for epoxy. The light crimp XTC connector has a very high temperature range and has a rust-proof, ceramic ferrule for multi-mode and single-mode use. Manufactured under quality control to ISO9001.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG32K	10607 ST-Active Device Mnt	£5.940	£6.990

## Widoshi Fibre Optic Cable



The high quality Widoshi 62.5/125 micron graded-index, fibre-optic cable has a high bandwidth, high capacity and low signal loss. The graded index core provides a high light speed in the outer layers to give a low modal dispersion of the order of one nanosecond per km (0.212dB). This multi-mode fibre-optic cable is suitable for crimp as well as epoxy glue assemblies.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG34M	11616 Fibre Optic Cable	£1.090	£1.290



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## AMP Inspection Microscope Kit



This Inspection Microscope is designed specifically for visual inspection of terminated or cleaved ends of single-mode and multi-mode fibres, in both field and workshop applications.

The portable, hand-held unit provides x100 magnification for optimum detection of flaws, dust and grooves. The unit operates from either an AC adaptor or battery power.

The complete microscope kit includes a handy carrying case, tripod stand, AC adaptor and all adaptors needed to inspect the following connectors: FSMA, FSD, ST, D4 and SC. Full instructions are supplied. Suitable for professional laboratory inspection of glass fibre connections. Manufactured under quality control to ISO9001.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG35Q	10701 Inspect Microscope	£1,011.310	£1,188.300

## Complete ST Style Fibre Optical Lead



High quality, complete, assembled simplex fibre optical cable with both ends terminated in booted ST style connectors. Length: 3m. ISO9001 certified.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG37S	10702 ST/ST Cable Assembly	£34.030	£39.990

## Epoxy Fibre Optic Oven



Suitable for all kinds of epoxy connectors. The oven temperature is variable, and can be precisely controlled between 60 and 120°C. Up to 4 FSD/RSD and 12 single connectors can be heated at the same time. Complete with cable holder and thermometer. ISO9001 certified.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG40T	10707 Epoxy Glass Fibre Oven	£578.710	£679.990

## EFSMA I & II Epoxy Termination Kit



The AMP FSMA I & II Epoxy Termination Kit contains all the materials and tools which are needed to terminate FSMA type I & II fibre-optic connectors. The kit is supplied in a handy case, complete with high quality FSMA I & II crimping tool, polish and enough materials for 60 connectors. ISO9001 certified.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG41U 1	FSMA EpoxyTerm Kit	£646.800	£759.990

## AMP SC Epoxy Termination Kit



The AMP SC termination kit contains all the materials and tools which are needed to connect SC fibre-optic connectors. The kit is supplied in a handy case, complete with SC crimping tool, polish and sufficient materials for 60 connectors. ISO9001 certified.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG42V 1	AMPSC Epoxy Term Kit	£646.800	£759.990

## AMP FSD Epoxy Termination Kit



This termination kit contains all the materials and tools which are needed to connect FSD connectors. The kit is supplied in a handy case and comes complete with FSD crimping tool, polish and sufficient termination materials for 60 connectors. ISO9001 certified.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG43W1	FSD Epoxy Term Kit	£861.050	£999.990

## AMP Hand-Held Microscope



This neat, compact microscope is ideal for simple and fast checking of fibre-optic connectors. The microscope has a built-in light source and has a magnifying power of x100. With optional adaptors, the microscope can be used for FSMA, ST style, FC, D-4, Mini-BNC, Bare fibre, etc. Battery operated. Ideal for use in the field. CG44X is the microscope; ZE66W is the FSMA adaptor and ZE67X is the ST adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG44X 1	Handheld Microscope	£86.800	£101.990
ZE66W	FSMA Adaptor	£25.520	£29.990
ZE67X	ST Adaptor	£25.520	£29.990

## FSD Patch Cable Assemblies



Using these cables allows you to directly connect FDDI equipment which is supplied with FSD outlets. AMP FSD cable assemblies have a low insertion loss of 5dB maximum, and are fully compatible with IBM systems. The connectors have a removable housing for easy cleaning of the connectors, and can be used with 62-5/125 micron fibre-optic cable. Length 3m. Order code CG46A.

## RSD Patch Cable Assemblies



Using these cables allows you to directly connect FDDI equipment which is supplied with RSD outlets. AMP RSD cable assemblies have a low insertion loss of 5dB maximum, and are fully compatible with IBM systems. The connectors have a removable housing for easy cleaning of the connectors, and can be used with 62-5/125 micron fibre-optic cable. Length 3m. Order code CG47B.

## AMP Complete Cable Assembly FSD to ST



This cable assembly allows you to connect an FSD network to an ST network. The cable has one FSD connector and two ST style connectors and allows

FDDI equipment to be connected to an ST network system. Uses 62-5/125 micron fibre cable. Length 3m. Order code CG45Y.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG45Y 1	FSD/ST Cable Assem	£168.500	£197.990
CG46A 1	FSD/FSD Cable Assem	£125.080	£146.990
CG47B 1	RSD/RSD Cable Assem	£108.070	£126.990

## RSD Connector System



This duplex connector is retractable, ensuring a secure connection. Suitable for 62-5/125 micron multi-mode fibre-optic cable, and fully compatible with IBM fibre optic systems. Ideal for use in the field.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG48C	RSD Retract Shroud	£21.260	£24.990

## FSMA Connector



The FSMA connector is one of the most widely used network connectors. It can be terminated by crimping or by using an epoxy glue process. The body material of the connector is nickelled copper, and the connector is fully compatible with the industry 905 (FSMA-1) standard. For use with 125 micron fibre-optic cable. Connectors are also available for 140, 230, 500 and 1000 micron fibre-optic cables. Complete with boot.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG49D	FSMA Connector	£8.500	£9.990

## FDDI Standard Connector

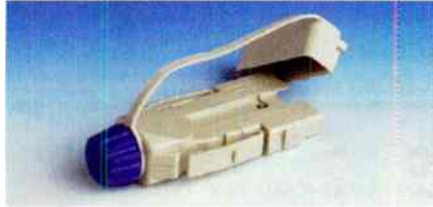


This AMP standard FDDI connector is supplied with a ceramic tip and an FSD glue connector (2-5mm). The assembly has a dust cover, a colour-coded connector lock, force reduction and is supplied with an installation sheet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG50E	FDDI Stand Connector	£18.710	£21.990

## FSD Low Loss Loopback Connector



The AMP Low Loss Loopback Connector (1.5Mb max.) connects the transmitting side to the receiving side of the FDDI channel. With this loopback connector it is easy to check the fibre-optic cables and connectors, patch panels, wall outlets and wiring.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG51F 1	FSD LL Loop Back Con	£76.580	£89.990

## Surface Mounted Outlet



This surface mounted outlet is ideal for FSD applications. It has a full metal insert and polarised connector. The outlet has a dust cover to prevent dust and dirt from reaching the fibre contact.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG52G 1	FDDI Outlet	£40.840	£47.990

## Hirschman Fibre RS-232 Fibre Extender



These Hirschmann extenders are fully duplexed and using the RS-232 interface are perfect for high-speed (20Kbps) on line data transmission. Some practical applications are: computer to printer, computer to computer, computer to data terminal or computer to measurement equipment. The kit uses a contact transmitter and receiver which are easily connected to the RS-232 port. The 2451G (CG58N) has a data distance of 2,000m perfect for use with portable computers as it works without a mains adaptor. Operate asynchronous in full duplex mode and has a software handshake (Xon/Xoff). OZDV2451G has a DCE/DTE switch and has one 25-pin D male connector and two ST style outlets for connecting the fibre-optic cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CG58N 1	G/Fbr RS232 Ext 02	£265.940	£335.990

## Hubs

### 5 Port STP Hub



- ★ 5 UTP/STP ports
- ★ 10MB per second speed
- ★ Supports all types of ethernet frames
- ★ Faulty segments will be switched off automatically
- ★ LEDs for status information
- ★ Daisy-chain port

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO96E 1	5 Port Hub	£42.540	£49.990

### 8 Port STP Hub

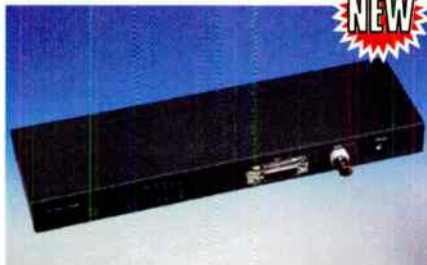


- ★ 8 UTP/STP ports
- ★ 10MB per second speed
- ★ Supports all types of ethernet frames
- ★ Faulty segments will be switched off automatically
- ★ LEDs for status information
- ★ Daisy-chain port

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO97F 1	8 Port Hub	£59.560	£69.990

### 16 Port STP Hub



- ★ Coax BNC, AUI and 16 UTP/STP ports
- ★ 10MB per second speed
- ★ Supports all types of ethernet frames
- ★ Faulty segments will be switched off automatically
- ★ LEDs for status information
- ★ Daisy-chain port

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LO98G 1	16 Port Hub	£110.620	£129.990

## 5 Port 'Hubby'

D-Link

- ★ Pocket Size
- ★ Light Weight
- ★ 5 Ports for 5 Users
- ★ No AC Adapter Required
- ★ Optional AC Adapter Available
- ★ Per-Port Diagnostic LEDs

A portable 5 port hub for connecting 5 users together. Small enough to slip into a pocket the hub can be placed anywhere. 'Hubby' is supplied with a power connection cable for connecting to the keyboard outlet on your computer to negate the need for an external power supply, some users may find the optional mains adapter useful, especially if using a notebook computer. Expansion beyond 5 ports is possible using the flexible uplink port.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL91Y	Hubby - 5 Port Hub	£51.050	£59.990
JT03D	Hubby - AC Adapter	£12.750	£14.990

## 'Hubby' Bundle

D-Link

- ★ Ideal for Small or Home Offices
- ★ Everything in one Box
- ★ Plug and Play Installation
- ★ Free Lifetime Customer Support

This kit includes everything you need to set up a network for up to 5 users. All you have to do is plug in the cables and run your network software.

Specifications:

10Base-T Hub:

- ★ 5 Twisted Pair Ports
- ★ Pocket Size, Light Weight
- ★ Uses Power from Keyboard Connector

Ethernet Cards:

- ★ Fully Complies with Plug and Play Standard V1.0
- ★ Shielded RJ-45 Connector
- ★ Auto-sense 8 and 16-bit Slots
- ★ Run Windows NT, '95, Netware, IBM LAN Server, TCP/IP and others.
- ★ Compatible with NE-2000 cards

Drivers Supported:

- ★ NE-2000 drivers
- ★ Netware 3.x, 4.x Server
- ★ Netware ODI DOS Client, OS/2 ODI Requester
- ★ Netware Lite, Personal
- ★ Windows NT 3.5 Workstation, Server
- ★ Windows for Workgroups
- ★ Windows 95
- ★ Lan Manager 2.x
- ★ OS/2 LAN Server 3.0, 4.0
- ★ IBM LAN Server
- ★ IBM PC LAN Support Program
- ★ FTP PC/TCP
- ★ SCO TCP/IP for UNIX 1.1x, 1.2x
- ★ AT&T UNIX
- ★ Sun PC-NFS
- ★ WIN/TCP Pathway Access
- ★ Banyan VINES
- ★ DEC Pathworks 4.0, 5.x, 6.x
- ★ Artisoft LANtastic
- ★ D-Link LANsmart
- ★ D-Link TCP/IP for DOS
- ★ NDIS 2.01, NDIS 3.1
- ★ Packet Driver
- ★ 3Com 3+Open

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL92A	Hubby Starter Bundle	£85.090	£99.990

## 9 Port Desktop Hub

D-Link



- ★ **Compact Size**
- ★ **BNC Port for Backbone Connection**
- ★ **Automatic Port Partition and Collision Detection**
- ★ **Desktop or Wall Mounting**
- ★ **Diagnostic LED's**
- ★ **External AC Power Adapter**

Ideal for connecting a local group of users or a cluster of stations stemming from a central network. The hub can be placed in tight desktop space or can be wall mounted.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL93B	9 Port Hub	£68.070	£79.990

## Rack Mount Hubs

D-Link

- ★ **Available with 16 or 24 UTP Ports**
  - ★ **Built-in BNC and AUI Ports**
  - ★ **Auto-Partition for each Port**
  - ★ **Data Collision Detection, Jabber Handling**
  - ★ **Extensive Front Panel Diagnostic LED's**
  - ★ **Uplink Port for Expansion**
  - ★ **Auto-Correction of Reverse Polarity for each Port**
- Suitable for growing departmental workgroups where complex security and managements are not required. Designed for fitting into 19in rack enclosures.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL94C	16 Port Rack Mt Hub	£144.670	£169.990
JT01B	24Pt Rack Mount Hub	£212.750	£249.990

## 12 Port Fast Ethernet Hub

D-Link



- ★ **100BaseTX Operation**
- ★ **Rack Mountable**
- ★ **Stackable**
- ★ **72 Ports per Stack**
- ★ **Internal Power Supply**
- ★ **UTP & STP Support**
- ★ **Utilization %, Collision and Unit LEDs**

A high speed Fast Ethernet hub that offers 12 ports in a 19in rack mountable, stackable enclosure. Suitable for use in situations where high bandwidth is required by demanding applications, or where network bottlenecks need to be removed. Designed for the simpler network where no statistical information is required.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VL95D	12 Pt FEthernet Hub	£565.730	£699.990

Account Enquiries: 01702 554187

## Personal Hubs



A pair of hubs suitable for small networks, equip with RJ45 STP ports to the front panel and a 10base2 port to the rear to allow easy connection to a coax segment if required. The top plate houses indicator lights that show the status of the 10baseT ports, the 10base2 port, collisions, jams and power. The first version is equip with 5 STP ports, the fifth port is a daisy chain port that allows the connection of another hub to expand the network. The second version is similar but is equip with 9 STP ports, the ninth being the daisy chain port. Supplied with mains power adapter, instructions and T-piece.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CH88V1	5 Port Personal Hub	£49.350	£57.990
CH89W1	9 Port Personal Hub	£74.880	£87.990

## Multi-Protocol Print Server

D-Link



- ★ **Three Printer Ports: 2 Parallel and 1 Serial**
- ★ **1 LAN Port with BNC and 10BaseT RJ45**
- ★ **Supports IPX and IP Protocols**
- ★ **Support for Netware and Unix**
- ★ **Simultaneous use of all Printer Ports**
- ★ **Frame Type User Enabled/Disabled**
- ★ **Frame Type Auto-Detection**
- ★ **Easy to Install**
- ★ **Fully Compatible with Netware PCONSOLE**

This print server offers a flexible, cost-effective solution for sharing printers and serial communication devices on a network. Easy to set-up on Netware and Unix networks without the need to buy any PC-based print servers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JT00A	Dlink Print Server	£255.310	£299.990

## Time Date ARC Receiver

Galleon Systems



- ★ **Accurate and auditable event logging**
- ★ **Battery back-up for continued operation**
- ★ **Automatic correction for Summer/Winter time**
- ★ **Easy installation & setup**
- ★ **Software for MS-DOS, Windows 3.1(1) & Win 95**

This simple and robust device receives the Atomic Rugby Clock signal to automatically update your system clock and simply plugs into a 9 pin D type serial port on the back of your computer. Installation takes only minutes using the software supplied, a signal strength indicator allows for quick and accurate installation

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CH52G1	Time-Date ARC Clock	£59.560	£69.990

## Desktop ARC Clock

Galleon Systems



- ★ **Accurate and auditable event logging**
- ★ **Battery back-up for continued operation**
- ★ **Automatic correction for Summer/Winter time**
- ★ **Easy installation & setup**
- ★ **Software for MS-DOS, Windows 3.1(1) & Windows 95**
- ★ **Time, date & signal display**
- ★ **Alarm functions**

This simple and robust device receives the Atomic Rugby Clock signal to automatically update your system clock and simply plugs into a 9 pin D type serial port on the back of your computer. Installation takes only minutes using the software supplied, the signal strength indicator allows for quick and accurate installation

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CH53H1	Desktop ARC Clock	£85.090	£99.990

## Network Desktop ARC Clock

Galleon Systems



- ★ **Choice of software drivers for Novell, Windows NT, DEC or Unix**
- ★ **Accurate and auditable event logging for your computer network**
- ★ **Battery back-up for continued operation**
- ★ **Automatic correction for Summer/Winter time**
- ★ **Easy installation & setup**
- ★ **Time, date & signal display**
- ★ **Alarm functions**

This simple and robust device receives the Atomic Rugby Clock signal to automatically update your

system clock and simply plugs into a 9 pin D type serial port on the back of your computer. Installation takes only minutes using the software supplied, the signal strength indicator allows for quick and accurate installation

Price each shown, but sold only in multiples of 0.

Order Code	Type 13335	Price each exc. VAT 1+	inc. VAT each 1+
VB85V	Desk ARC Clock DEC	£382.970	£449.990
VB86W	Desk ARC Clock Nov	£212.750	£249.990
VB87X	Desk ARC Clock Unix	£212.750	£249.990
VB88Y	Desk ARC Clock NTC	£212.750	£249.990

## CAT5 UTP Patch Cables

Net 5



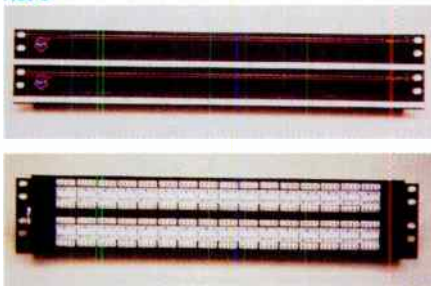
A range of high quality Category 5 unshielded twisted pair patch cables assembled in the UK using Draka Cardinal stranded UTP cable with AMP RJ45 connectors and boots. These cables are approved by BASEC to EIA/TIA 568 and are available in a range of colours and lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 13102	Price each exc. VAT 1+	10+	25+	inc. VAT each 1+
CD16S	Green UTP Patch 0.5m	£3.390	£2.630	£2.400	£3.990
CD17T	Green UTP Patch 1.0m	£3.820	£2.950	£2.650	£4.490
CD18U	Green UTP Patch 2.0m	£4.240	£3.300	£3.000	£4.990
CD19V	Green UTP Patch 3.0m	£4.670	£3.670	£3.350	£5.490
CD20W	Green UTP Patch 5.0m	£5.940	£4.650	£4.250	£6.990
CD21X	Blue UTP Patch 0.5m	£3.390	£2.630	£2.400	£3.990
CD22Y	Blue UTP Patch 1.0m	£3.820	£2.950	£2.650	£4.490
CD23A	Blue UTP Patch 2.0m	£4.240	£3.300	£3.000	£4.990
CD24B	Blue UTP Patch 3.0m	£4.670	£3.670	£3.350	£5.490
CD25C	Blue UTP Patch 5.0m	£5.940	£4.650	£4.250	£6.990
CD26D	Red UTP Patch 0.5m	£3.390	£2.630	£2.400	£3.990
CD27E	Red UTP Patch 1.0m	£3.820	£2.950	£2.650	£4.490
CD28F	Red UTP Patch 2.0m	£4.240	£3.300	£3.000	£4.990
CD29G	Red UTP Patch 3.0m	£4.670	£3.670	£3.350	£5.490
CD30H	Red UTP Patch 5.0m	£5.940	£4.650	£4.250	£6.990
CD31J	Yellow UTP Patch 5m	£3.390	£2.630	£2.400	£3.990
CD32K	Yellow UTP Patch 1m	£3.820	£2.950	£2.650	£4.490
CD33L	Yellow UTP Patch 2m	£4.240	£3.300	£3.000	£4.990
CD34M	Yellow UTP Patch 3m	£4.670	£3.670	£3.350	£5.490
CD35Q	Yellow UTP Patch 5m	£5.940	£4.650	£4.250	£6.990
CD36P	Grey UTP Patch 0.5m	£3.390	£2.630	£2.400	£3.990
CD37S	Grey UTP Patch 1.0m	£3.820	£2.950	£2.650	£4.490
CD38R	Grey UTP Patch 2.0m	£4.240	£3.300	£3.000	£4.990
CD39N	Grey UTP Patch 3.0m	£4.670	£3.670	£3.350	£5.490
CD40T	Grey UTP Patch 5.0m	£5.940	£4.650	£4.250	£6.990

## Cat5 UTP Patch Panels

Net 5



A range of high quality Category 5 UTP patch panels available in 16, 32 and 48 port versions, manufactured in the UK and constructed using Stewart RJ45 connectors and Krone IDCs for guaranteed performance and reliability. Every panel is equipt with cable saddles and hook and loop fasteners for effective cable management. All the panels are designed for use in 19 inch rack systems. A label channel is incorporated into the front panel of each unit and labels can be supplied

free of charge to your requirements by the manufacturer. The module and panel PCBs are certified to TSB40A, DIS11801 and prEN50173. These products carry a 15 year manufacturer's warranty.

Retail Unit Price each (inc. VAT).

Order Code	Type 12109	Price each exc. VAT 1+	5+	10+	inc. VAT each 1+
CD41U	16 Port Cat 5 Panel	£73.180	£69.250	£65.250	£85.990
CD42V	Cat 5 32 Port Patch	£123.390	£118.500	£115.000	£144.990
CD43W	Cat 5 48 Port Patch	£165.940	£160.750	£154.000	£194.990

## Cat5 Modular Wall Plates

Net 5



A range of single and dual gang modular wall plates for structured wiring systems. The Cat 5 modules are constructed using Stewart or AMP RJ45 sockets and Krone or Katt IDC's for guaranteed performance and reliability. The single gang wall plate will accept two Cat 5 UTP or STP modules or one module and two blanks, which are available separately. The wall plates are designed to give a suitable mounting depth for easy installation when used with all standard 86mm x 86mm UK wall boxes. Modules feature a label carrier for easy imarking and identification.

This product carries a 15 year manufacturers warranty as standard.

Retail Unit Price each (inc. VAT).

Order Code	Type 12114	Price each exc. VAT 1+	5+	10+	inc. VAT each 1+
CD44X	Single Modular Plate	£0.842	£0.780	£0.750	£0.990
CD45Y	Dual Modular Plate	£1.250	£1.140	£1.100	£1.470
CD46A	Cat 5 Module	£3.390	£3.300	£3.200	£3.990
CD47B	1/4 Modular Blank	£0.246	£0.200	£0.175	£0.290
VB53H	Net 5 STP Module	£4.240	£4.080	£4.020	£4.990

## AMP Netconnect Concentrators



AMP LAN-line professional Ethernet concentrator. Stands up to the IEEE 802.3 10BASE-T, ECMA80, 81, 82 protocols. Offers maximum flexibility by using 8 UTP unshielded twisted pair ports, each consisting of a cross connection so that the connections to the patch panel or workplace are easy to realise with 1:1 cables. The concentrator can be simply connected to an existing network by using the cascade port. The concentrators are available with a AUJ, COAX twisted pair or fibre optics connection. The ports of the concentrator are tested every 18 milliseconds for correct link connections, collisions, etc. When a link failure occurs, the port is automatically reconnected after the failure is fixed. This offers a minimum LAN downtime. In such a case, only one port is

disconnected, the other users remain on-line. Suitable for mounting in a 19 inch rack. Operates from 230V supply. The LEDs on the concentrator front panel indicate, in turn: transceiver, power, SQE, RX, TX, collision and link.

Retail Unit Price each (inc. VAT).

Order Code	Type 11627	Price each exc. VAT 1+	inc. VAT each 1+
CJ99H	Net Concentrator COAX	£407.130	£478.380
CV01B	Net Concentrator UTP	£255.310	£299.990

## Network Surge Protectors

Bowthorpe



A range of network surge protectors designed for use as either standalone units or for use with DIN rail mountings for modular installation. Available in BNC (10 Base 2), RJ45 (10 Base T) and Cat 5 RJ45 versions, CH72P, CH73Q and VC25C respectively. Designed to protect your network segment against surges caused by lightning, nearby power systems, power-cross faults, electrical machinery and electro-static discharge.

Retail Unit Price each (inc. VAT).

Order Code	Type 11254	Price each exc. VAT 1+	5+	10+	inc. VAT each 1+
CH72P	BNC Surge Protector	£74.880	£67.000	£64.500	£87.990
CH73Q	RJ45 Surge Protector	£74.880	£67.000	£64.500	£87.990
VC25C	Cat5 Surge Protector	£85.090			£99.990

## Network Interface Cards

### Network Cards



- ★ Coax and STP/UTP suitable
- ★ Full NE2000 compatibility
- ★ Jumperless Installation
- ★ T-adaptor included
- ★ Extended driver set

**NEW**

A pair of jumperless NE2000 compatible cards for use in local area networks. Available in two versions, 16bit ISA and 32bit PCI.

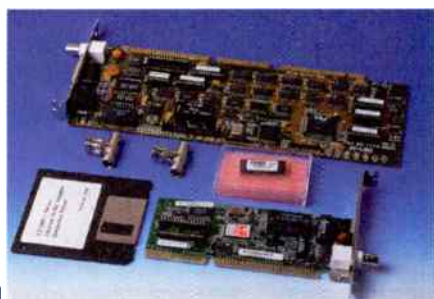
Retail Unit Price each (inc. VAT).

Order Code	Type 10305	Price each exc. VAT 1+	5+	10+	inc. VAT each 1+
KX36P	ISA Network Card	£15.310	£13.550	£12.850	£17.990
KX37S	PCI Network Card	£17.010	£15.300	£14.700	£19.990

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QUALITY & SERVICE**

## Ethernet 16 Series Combo Network Card



High-end ISA combo Ethernet card, faster than existing technology using the newest chipsets and a 16Kb buffer. Can be configured without the aid of jumpers for connection to 10BASE2 BNC and 10BASE-T RJ45. Suitable for connection to 8 and 16-bit computers. Includes software drivers for Netware 386, Netware Lite, LANtastic, MS-LAN Manager, FTP/TCP/IP, Windows for workgroups, SCO unix.

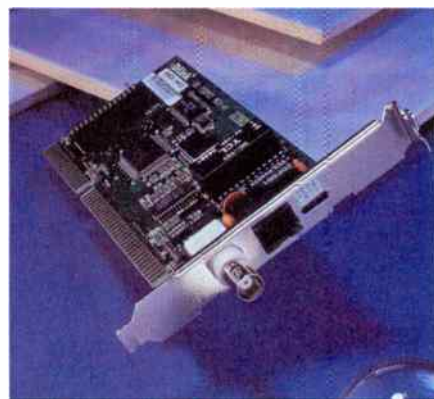
An optional boot ROM (CU84F) for automatic connection to the network is also available. CU85G is Vesa Local Bus model: Connections for AUI, BNC and RJ-45 complete with drivers for Novell Netware, Lan Manager and OS/2.

Retail Unit Price each (inc. VAT).

Order Code	Type 10B16	Price each exc. VAT	inc. VAT each
CU83E	Network Card	£29.770	£34.990
CU85G	Local Bus Net Card	£35.090	£39.990
CU84F	Boot ROM	£8.500	£9.990

## DE-220ECT ISA Combo Card

D-Link



- ★ Jumperless Installation
  - ★ Simple Set-up Program
  - ★ Network Diagnostic Function Included
  - ★ Multiple Ethernet Media Supported
  - ★ Auto-detection of Connected Media
  - ★ Compatible with Netware and Windows
  - ★ Remote Boot Supported
  - ★ Compatible with ISA NE-2000
  - ★ LEDs for Tx, Link, Rx, Collision and Jabber Report
- A high quality cost effective solution for connecting workstations to Ethernet networks. Supplied with a user-friendly menu-driven set-up program for total ease of installation. The adapters are compatible with both 8 and 16-bit ISA slots and auto-detects the slot type. Optional boot roms are available for remote boot from Netware, IBM LAN Server and Microsoft LAN Manager file servers. Support for all major O.S. types is provided, the card can be run directly using NE-2000 drivers if required.

Retail Unit Price each (inc. VAT).

Order Code	Type 13A0E	Price each exc. VAT	inc. VAT each
JT02C	16k Boot Rom	£8.500	£9.990
VL85G	ISA Combo Card	£25.520	£29.990

## DE-220PCT P'n'P ISA Combo Card

D-Link



- ★ Plug-and-Play Installation
  - ★ Complies to P'n'P ISA Specifications v.1.0a
  - ★ On-board EPROM for Configuration Storage
  - ★ Network Diagnostic Function Included
  - ★ Auto-detection of Connected Media
  - ★ Remote Boot Supported
  - ★ Compatible with ISA NE-2000
  - ★ LEDs for Tx, Link, Rx, Collision and Jabber Report
- A cost effective Plug-and-Play solution for connecting workstations to Ethernet networks. Plug-and-Play computers will configure the card without the need for user intervention, older, non P'n'P, systems are catered for with a menu-driven configuration program. Support for most major O.S. types is provided, the card can be run directly using NE-2000 drivers if required.

Retail Unit Price each (inc. VAT).

Order Code	Type 13A07	Price each exc. VAT	inc. VAT each
VL86T	ISA Combo Card PnP	£28.770	£34.990

## DE-530CT+ PCI Combo Card

D-Link



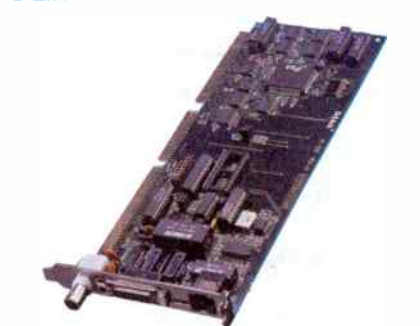
- ★ PCI Local Bus ver. 2.0 Specifications
  - ★ Alleviate Network Bottlenecks
  - ★ High Performance, Direct I/O with Host's Memory
  - ★ Bus Master Operation, Burst Mode Supported
  - ★ Full Duplex Supported
  - ★ Ideal for Servers or DTP/CAD/Multimedia Stations
  - ★ Jumperless Design for Easy Installation
  - ★ Auto-detection of Connected Media Type
  - ★ Diagnostic LED Report
  - ★ Extensive O.S. Support
  - ★ Directly Run DEC's Driver Programs
  - ★ Certified Driver for Windows 95, Windows NT
  - ★ Remote Boot Supported
- This network card is engineered to to unlock the power of systems equip with PCI expansion slots, operating in 32-bit Bus Master mode to reduce CPU utilisation. At 20Mhz full duplex this card provides robust performance for high through-put environments.

Retail Unit Price each (inc. VAT).

Order Code	Type 13A0E	Price each exc. VAT	inc. VAT each
VL87U	PCI Combo Card	£42.540	£49.990

## DFE-500TX PCI Fast 10/100 Network Adapter

D-Link



- ★ Plug and Play Installation
  - ★ EEE 802.3u 100BaseTX, IEEE 802.3 10BaseT
  - ★ NWay Dual Auto-sensing Interface for 10 & 100 Mbs Networks
  - ★ Single RJ45 Socket
  - ★ Complies with PCI Local Bus 2.1 Specs
  - ★ Supports 32-bit Bus Master Operation
  - ★ Supports Full Duplex in both 10 & 100Mbps
  - ★ 4k Receive and 2k Transmit FIFO Buffers
  - ★ 5 Diagnostic LEDs
  - ★ Remote Boot ROM Supported (Not Supplied)
  - ★ Full Driver Support
- This fast PCI adapter features a single RJ45 socket for connection to the network and automatically senses network speed and adjusts to the type of network connected. As a PCI 2.1 compliant device the DFE-500TX features Plug and Play installation. A single set of drivers is supplied to support both 100BaseTX and 10BaseT modes. This adapter uses the bus master burst mode to directly transfer network data between card and the host's memory, by-passing the CPU to reduce workload. An ideal card for demanding servers, graphics stations and CAD stations.

Retail Unit Price each (inc. VAT).

Order Code	Type 13A11	Price each exc. VAT	inc. VAT each
VL88V	100MHz 10-Base-T PCI	£51.050	£59.990

## 3Com Etherlink III Adaptors



With Etherlink III parallel tasking technology – the unique parallel tasking technology makes data transfer 25% faster. Automatic configuration settings. Works according to the Ethernet IEEE 802.3 protocol. Data transfer 10Mbps.

3Com Ethernet cards come complete with software drivers for Novell Personal netware, Netware client server, Netware ODI client, Netware 386 server, Netware 4.X Lanworkplace for DOS, Unixware, Microsoft Windows for workgroups, LAN manager, Windows NT, DEC Pathworks, Sun PC-NFS. Intercon: tcp/connect. IBM: OS/2 LAN server. FTP: PC/TCP: WRQ: Reflections. ARTISOFT: LanTastic, BANYAN: Vines client.

Retail Unit Price each (inc. VAT).

Order Code	Type 10B15	Price each exc. VAT	inc. VAT each
CU75S	ELink Adapt 16 ISA	£32.450	£36.890
CU76H	ELink Adapt 32 MCA	£144.670	£169.990
CU77J	ELink Adapt 32 EISA	£144.670	£169.990
CU78K	ELink Adapt PCI	£212.750	£249.990

### 3Com PCMCIA Etherlink III



3Com Etherlink III PCMCIA (type II) Ethernet card. This card is ideal for 10Base2 (BNC) and 10BaseT (RJ45) and, due to its parallel tasking technology is 110% faster than existing adaptors. Automatic software configuration. Works according to Ethernet 802.3 protocol. Data transfer rate 10Mbps. Comes complete with software drivers for the following networks: Novell Personal Netware, Netware Client Server, Netware OD Client, Netware 386 Server, Netware 4.0 Lanworkplace for MS-DOS, UNIX ware, Microsoft Windows for workgroups, LAN manager, Windows NT, DEC Pathworks, SUN pc-nfs. Intercon: tcp/connect, IBM OS/2 LAN server. FTP: PC/TCP, WRQ reflections. ARTISOFT Lantastic, BANYAN: Vines client. Easy PCMCIA installation.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CU74R 1	PCMCIA Etherlink	£161.690	£189.990

### 3Com Token Link III UTP/STP Adaptors



Token Link III 16/4 16-bit ISA and EISA Token Ring Adaptors.

This NIC (network interface card) is ideal for token ring networks and completely IBM compatible. The adaptor supports 4 and 16Mbps network speeds and is compatible with shielded (STP), unshielded (UTP), and UTP level III cables.

Software auto-configuration makes installation easy (no technical knowledge is necessary) and supports enhanced configuration options such as 8 x IRQ and 32 I/O base addresses. The adaptor is ready to log in to the network immediately after installation.

For 100% IBM compatibility the adaptor is equipped with a token ring chipset compatible with IBM's most recent adaptor drivers. Plug and play.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CU71N 1	T/Link III Adapt ISA	£182.280	£214.190
CU72P 1	T/Link III Adpt EISA	£217.010	£254.990

### 3Com PCMCIA Token Link III UTP/STP Adaptor



16/4 16-bit PCMCIA adaptor. This NIC (Network Interface Card) is ideal for token ring networks and completely IBM compatible. The adaptor supports 4 and 16Mbps network speeds and is compatible with shielded STP, unshielded UTP and UTP level III cables.

Software auto-configuration makes installation easy (no technical knowledge is necessary) and the adaptor is ready to log in to the network immediately after installation.

For 100% IBM compatibility the adaptor is equipped with a token ring chipset compatible with IBM's most recent adaptor drivers. Plug and play.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CU73Q 1	PCMCIA T/Link Adapt	£140.410	£399.990

### PC-ZEN Pocket Adaptor



Simply connect your notebook or laptop computer to the network with this fast, compact PC-ZEN Ethernet adaptor. Simply connect the adaptor to your printer port. No special installation required, thanks to the self configuration capability. Operates according to Ethernet IEEE 802.3 protocol. Has connections for 10BASE-T, RJ45, and 10BASE2. Includes 8Kb S-RAM buffer for very fast internal processing of your data. Data transfer rate 10Mbps. Comes complete with software for Novell, Lansmart, Windows for Workgroups and Netware Lite.

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
CU96E 1	PC-ZEN Pocket Adapt	£53.560	£69.990

### IBM ISA Token Ring NIC



The 16/4 Busmaster ISA is a high performance token ring adaptor. 4 and 16 Mbps data transfer speeds are supported. This card also supports PCs with RAM memory above 16Mb. Due to this, the card is excellent for servers as well as workstations. The controller operates under the

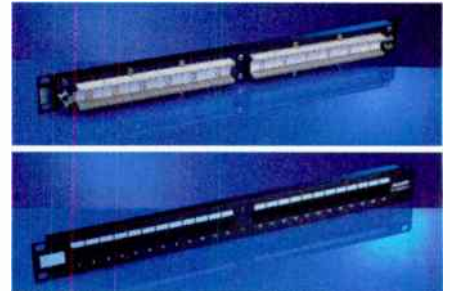
strict IEEE 802.5/ECMA 89 standard and comes with drivers for 3270, OS/2, Novell, IBM Netware, NDIS and ODI. This card can be used in different network environments, and can be connected to unshielded or shielded twisted pair cables. Easy installation is achieved by using the fully automatic installation software.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZE63T 1	IBM ISA T/Ring Adapt	£225.690	£265.190

### AMP Patch Panels

#### AMP Cat-5 24 Port Patch Panel



The AMP CAT-5 24 precision patch panel is used to centralise CAT-5 cables. This patch panel has 24 RJ45 outlets for connecting 4 twisted pairs per connector. The connectors on the patch panel are fully approved by the CAT-5 100Mbps norm. The cables can be easily connected in the 110 cable positions which are colour-coded. Insertion of the pins into their positions is easily carried out by using the AMP 110 insertion tool. For easy installation of the cable, tie wraps are supplied as standard. The patch panel also has cable notice points on the front and rear of each panel. This patch panel is supplied complete with the AMP 110 cable inserts.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CV19V 1	24 Port Patch Panel	£94.620	£111.180

### Testers

#### Ethernet BNC Cable Tester



High quality Ethernet coax cable tester for use with BNC and TNC connectors. The tester checks the cable for shorting (LED shows red) and between shielding and inner cores (a green LED shows if the inside wiring and the shielding are connected on both sides). Power supplied by 9V battery. Includes a luxury case.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CU68Y 1	Ether-BNC Cble Test	£40.790	£47.930

**MPS**  
MAPLIN PROFESSIONAL

**KEY CALL**

**01702 556751**

## Twisted Pair Cable Tester

High quality tester for checking and measuring twisted pair cables with RJ-45 connectors. The tester indicates by LEDs whether the cable is 1:1 (green), cross connected (red) or broken (no LEDs lit). It is also possible to make connections via the break out function. Power supplied by a 9V battery. Includes a luxury cover.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CU67X 1	T.Pair Cable Tester	£43.390	£50.990

## Twisted Pair Cable Tester

This high quality RJ-45 cable-tester for twisted pair cables can check pin connections and show by LEDs the type of cable you are using (10 Base T, 356A, 258A). Usable for RJ-45 connectors. Power supplied by a 9V battery. Includes a luxury cover.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CU66W 1	T.Pair Mod Cable Test	£30.370	£35.690

## AMP 110 Punch Down Tool



With this tool you can easily crimp the cable in the 110 inserts. It also directly cuts the cable ends after crimping the cable in the connector. The impact can be changed between light and heavy, and for cable systems with solid cores this tool guarantees a highly reliable connection.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CV23A 1	Punch Down Tool	£86.800	£101.990

## AMP Coax Crimping Tool



A professional quality crimping tool for BNC and N Connectors. This tool helps guarantee a high quality crimp first time, every time. Easy to use, compact design can be used in confined spaces. Complete with detailed instruction manual.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF72P 1	Coax Crimp Tool	£61.260	£71.990

## AMP Coax Stripper



Professional high quality coax stripper from AMP. Strips the following types of coax: RG58/59/62, RG74/188/360, RG6 and RG195/180. Complete with detailed instruction manual and 5 different strip height adaptors.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF73Q 1	Coax Stripper	£35.730	£41.990

## Complete LAN BNC Kit



The complete AMP BNC crimp tool kit is designed for use by the professional network engineer. The kit is recommended for fast and secure crimping of 10Base2 BNC connectors. The kit is supplied complete with AMP PRO crimp tool and BNC connectors (58/59/62), T-connectors, and straight socket-to-socket connectors. All connectors feature Teflon insulation between contacts and gold plated centre contacts. Supplied in a convenient carrying case.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF68Y 1	LAN BNC Kit	£204.240	£239.990

## AMP Termination Tool Kit



This termination tool kit is perfect to crimp almost any kind of crimp connector, including fibre-optic connectors. The kit is complete with RJ-45 crimping tool which uses interchangeable die sets. Using the die sets included, the unique Pro-Crimper can crimp XTC, FSMA, FSD, BNC and N-series connectors.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF67X 1	Termination Tool Kit	£561.690	£659.990

## Data Cable Stripper



An effective and easy to use single step stripper that safely removes the outer sheath (PVC and Plenum types) from all twisted pair (UTP and STP) and multicore cables up to 11mm in diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CW34M	Sheath Stripper	1+ 4+ 20+	1+
		£9.670 £8.170 £7.600	£10.190

## Maxim Cable Stripper



A quality, universal stripper ideal for any round or flat data cable – once the length of cut is set no further adjustment is needed, making it very easy to use.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN61R 1	Maxim Cable Stripper	1+ 4+ 20+	1+
		£35.280	£41.990

### Urgent Requirement?

Call and collect from your local Maplin store.



## Coaxial Cable Stripping Tools



A choice of two dedicated coaxial cable preparation tools capable of performing 2- and 3-level strips on the dielectric, braid and outer insulations. The tools require no adjustment, and incorporate a unique measuring device to determine the correct strip length to suit a particular connector. The suitable tool for each cable type is shown below.

Toggle Tools Code	Cable Type	Maplin Code
10030	RG58	CW36P
10040	RG59	CW38R

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CW36P	Stripper RG58	£10.030	£11.790
CW38R	Stripper RG59	£11.880	£13.950

## Thinnet Stripper



A simple and effective two/three stage stripper for sheath, braid and dielectric on typical Thinnet cables. The stripper is factory set to ensure accurate cutting every time.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DNS9P	Thinnet Cable Strip	£11.050	£12.990

## Ethernet Stripper



A simple and effective two/three stage stripper for sheath, braid and dielectric on typical Ethernet cables. The stripper is factory set to ensure accurate cutting every time.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN60Q	Ethernet Cable Strip	£11.050	£12.990

## AMP Sub-D HD 20 Kit



This complete kit offers you a fast way to assemble HD 20 connectors and includes HD 20 pins, sockets, connector and shell crimp, Snap In housings and Quick Snap hoods. The high quality crimp tool for HD 20 contacts (it firmly attaches the HD pin or socket contacts to the cable with the right crimp-force) completes the kit. It's adjustable for different type of cable - from AWG 32 to 20 (0.03 to 0.5) - is easy to calibrate and very durable. The kit comes complete with a handy case

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CU48C	AMP Sub-D HD20 Kit	£199.650	£234.600

## Sub-D HD 20 Crimp Tool



This tool makes HD 20 (standard Sub-D) contacts quick and easy to install - the HD pin or socket contacts are firmly tightened onto the cable with the right crimp force, resulting in a pull resistance of 2kg. The crimp tool is adjustable for different types of cable from 0.03 to 0.5 and is easy to calibrate.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CU46A	Sub D HD20 Crimp Tool	£101.550	£119.330

## HDD 22 Crimp Tool



This tool makes HD 22 (SVGA) contacts quick and easy to install - the HD pin or socket contacts are firmly tightened onto the cable with the right crimp force, resulting in a pull resistance of 2kg. The crimp tool is adjustable for different types of cable from 0.09 to 0.08 and is easy to calibrate.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CU47B	HDD22 Crimp Tool	£108.500	£127.490

**Business Account Holders**  
No Delivery Charges for any order

## AMP Coaxial Tap Tool



An application tool and hex wrench for use with Low Profile Coaxial Tap.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF68A	Coaxial Tap Tool	£13.600	£15.990

## Compression Tool



This compression tool is specially designed for crimping the AMP Four-Position Data Connector, AMP Communication Outlet and Keystone Modular Jack products. This is a precision tool which will provide improved termination of IDC contacts compared to standard pliers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CF00A	AMP Compression Tool	£33.160	£38.990

## AMP Cat-3 Crimp Tool



This crimping tool is especially designed to quickly and securely crimp RJ45 and RJ12 Cat-3 jacks.

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
CG26D	AMP Cat 3 Crimp Tool	£19.080	£22.430

## Extraction Tool



This extraction tool removes the contacts of the HDD 22 (CU21X) and HD 20 (CU22Y) from the connector housing so that you can change the pin configuration. Available in two different types.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CU21X	Extract Tool HDD22	£3.890	£4.580
CU22Y	Extract Tool HD20	£3.890	£4.580

See Stock Code Index For More Price Breaks

## Transceivers

### Transceivers

D-Link



A range of transceivers that are designed to connect directly to the host system's AUI connectors without the need for extra transceiver cables. D-Link's transceivers are compact in size and offer a cost effective solution to your connectivity needs. SQE is supported with a user selectable switch to match operation to the host system. Diagnostic LEDs are supplied for diagnostic monitoring. There are 4 versions available:

- BNC to AUI Transceiver for Thin Coax
- RJ45 to AUI Transceiver for UTP
- ST to AUI Transceiver for Fibre Optics
- RJ45 to BNC Transceiver for Media Conversion.

Retail Unit Price each (inc. VAT).

Order Code	Type (3301)	Price each exc. VAT			inc. VAT each 1+
		1+	2+	5+	
VL97F	RJ45 Transceiver	£17.010	£16.250	£15.950	£19.990
VL96E	BNC Transceiver	£17.010	£16.250	£15.950	£19.990
VL98G	ST Transceiver	£110.620	£107.000	£105.500	£129.990
VL99H	Media Converter	£76.580	£74.000	£72.000	£89.990

## Projects

### Projects & Modules

#### Programmable PC I/O Card 1



- ★ For use with IBM PC, PC-XT, PC-AT and compatible clones
- ★ 24 programmable input/output lines
- ★ Fully programmable from BASIC
- ★ Base address selectable
- ★ Uses industry standard 8255 PPI IC

A 24-line digital I/O (Input/Output) card for use on many IBM PCs and clones. The card is based around the industry standard 8255 PPI (Programmable Peripheral Interface) IC. A 37-pin D-type connector is integral to the card and protrudes from the expansion board. The 8255 PPI IC provides the necessary control, latching, buffering and handshaking of data to and from the card. A number of TTL chips provide access to the 8255 from the host computer. Both CMOS and TTL logic can be read, but only TTL +5V can be written. Extensions to the card can enable the device to write to CMOS levels. This card is not able to handle large current devices directly, however, circuits supporting the card are shown in the magazine. A GW BASIC program is supplied in the

article for testing the card, producing a square wave at all the ports. Full operating procedures using GW BASIC commands are also shown in the leaflet.

#### Optional Items

The following items, not included in the kit, may also be required.

D-Connector Jack Post	1 Pr	(FP31J)
8255 Data Book	1	(XK97F)

#### Kit and Special Parts

A complete kit is available and the pcb is also available separately, as well as the 8255 Data Book. Full construction details may be found in Maplin Magazine/Projects Book 43 XA43W, and instruction leaflet XK29G.

A ready assembled version is also available.

PCB dimensions: 286 x 40mm.

#### Applications Information

Further applications information on using the Programmable PC I/O Card may be found in the following issues of *Electronics - The Maplin Magazine*:

*Using Temperature Modules - Issue 71 (XA71N):* Gives details of how to measure temperature.

*Requires Temperature Module Expansion Converter Kit (LM36P) and Temperature Module (FE33L) - article includes BASIC program listing.*

*IBM PC Centronics Input Port - Issue 77 (XA77J):* Gives details of how to receive data from another computer's centronics parallel printer port - useful when transferring data from an old computer system where disc or file formats, etc., are incompatible - article includes BASIC program listing.

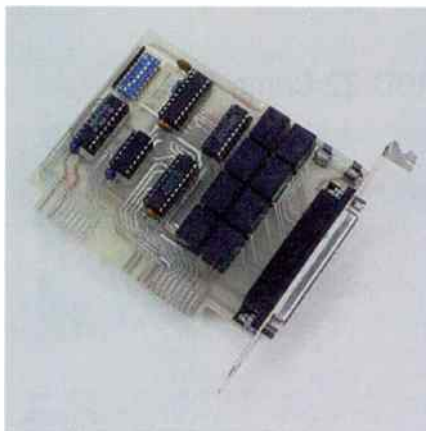
*Rugby Clock Receiver - Issue 47 (XA47A):* Gives details of how to receive and decode Rugby MSF Clock data. Requires Rugby Clock Receiver Kit (LP70M) - article includes BASIC program listing.

*Practical Robotics - Issues 42 (XA42V), 43 (XA43W), 44 1991 (XA44X), 59 (XA59P):* Gives details of how to build and control robots from a computer - Issue 59 gives specific information relating to the Programmable PC I/O Card which can be directly applied to the articles in Issues 42 to 44 - articles include BASIC program listings.

Retail Unit Price each (inc. VAT).

Order Code	Type (3307)	Price each exc. VAT		inc. VAT each 1+
		1+	1+	
LP12N	IBM Expansion Kit	£23.820		£27.990
GE31J	IBM Expansion PCB	£14.450		£16.990
XK97F	8255 Leaflet	£0.990		£0.990 NV
AM111I	Expansion Card Assm	£29.770		£34.990
XK29G	IBM Exp Leaflet	£1.000		£1.000 NV

#### PC Relay Card 2



#### Features

- ★ For use with IBM PC, PC-XT, PC-AT and compatible clones
- ★ Eight relay changeover contacts
- ★ Switches up to 24V DC/50V AC @ 2A resistive/1A inductive
- ★ Fused 5V output to power external circuits
- ★ Base address selectable
- ★ Multiple cards can be used
- ★ Fully programmable from BASIC

#### Applications

- ★ Robotics
- ★ Process control
- ★ Time control
- ★ Home automation
- ★ Controlling lamps, motors, solenoids

This project is a versatile relay card for use with the IBM PC, PC-XT, PC-AT and compatible clones. Each relay, of which there are eight on the card, has one set of change-over contacts. The relay contacts are able to switch 'moderate' loads, such as low voltage lamps, motors and solenoids. The card slots into any one of the vacant expansion slots provided on the host computer. Power, control, address and data signals are obtained from the computer's expansion bus. The relays' contacts are brought out, together with a fuse-protected +5V supply, on a 37-way female D-type connector. The D-type connector protrudes through the expansion card slot facilitating easy connection with the outside world.

The card is based around discrete logic, as opposed to a fully programmable input/output IC, this has the advantage that the card does not need to be configured or initialised before use. Data can simply be written to the appropriate address to set or reset the relevant relays. To simplify programming, it is possible to 'read back' from the card which relay outputs are set or reset, this avoids having to set or reset software flags to keep track of the current relay states. A further advantage is that a self-diagnostic routine could be written into the software to check the presence of the card at the correct input/output map location and whether the card is functioning correctly. Details are given in the kit on how to access the PC Relay Card using GW-BASIC.

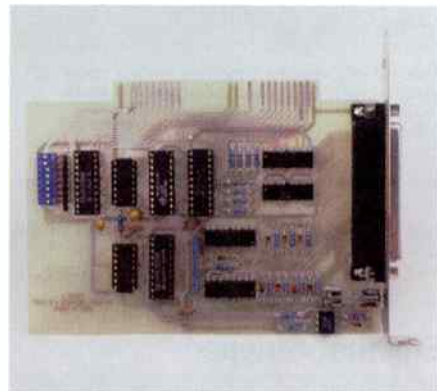
#### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available. The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 65 XA65V, and instruction leaflet XT88V.

Retail Unit Price each (inc. VAT).

Order Code	Type (3303)	Price each exc. VAT		inc. VAT each 1+
		1+	1+	
LT16S	PC Relay O/P Card	£25.520		£29.990
GH22Y	PC Relay O/P PCB	£8.500		£9.990
XT88V	PC Relay Card Lft	£0.400		£0.400 NV

#### PC Opto-Isolator Card 2



#### Features

- ★ For use with IBM PC, PC-XT, PC-AT and compatible clones
- ★ 100% galvanic isolation
- ★ Eight 'double buffered', opto-isolated inputs with strobe
- ★ Eight opto-isolated transistor switch outputs
- ★ High isolation voltage
- ★ Fused 5V output to power external circuits
- ★ Selectable base address

#### Applications

- ★ Isolated data links
- ★ Connection of switches, tachos, pulse devices and detectors
- ★ Robotics
- ★ Process control
- ★ Timer control
- ★ Home automation
- ★ Control of lamps, motors, solenoids

This project is a versatile interface card for use with the IBM PC, PC-XT, PC-AT and compatible clones, featuring electrical isolation of both inputs and outputs using opto-coupling techniques. There are separate, 8-bit parallel input and output connections on the card, with an additional strobe input being provided for the 8-bit parallel input. This strobe can be disabled if required, improving

the flexibility of the card.

The card slots into any one of the vacant expansion slots provided on the host PC, and the power, control, address and data signals are obtained from the computer's expansion bus. The opto-isolated inputs and outputs are brought out to a rear panel mounted, 37-way, female D-range connector, together with a fuse-protected +5V supply, allowing easy connection with the outside world.

The card uses discrete logic, as opposed to a fully programmable input/output IC, and therefore has the advantage that it does not need to be configured or initialised before use. Data can simply be written and read to, and from, the appropriate address. A further advantage is that a simple self-diagnostic function could be included in the software to check the presence of the card at the correct input/output map location, and whether the card is functioning correctly.

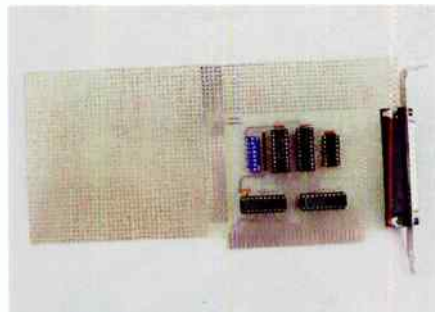
### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available. The PCB and 37-way D-Type bracket are available separately. Full construction details may be found in Maplin Magazine/Projects Book 66 XA66W, and instruction leaflet XT87U.

Retail Unit Price each (inc. VAT).

Order Code	Type 3334	Price each exc. VAT	inc. VAT each
LT177	PC Opto-Iso I/O Card	£28.070	£32.990
GH23A	Opto-isolate I/O PCB	£10.200	£11.990
CR45Y	PC Bracket 37 Way D	£2.540	£2.960
XT87U	PC Opto-Iso Card Lft	£0.500	£0.500 NV

## PC Prototyping Card



### Features

- ★ For use with IBM PC, PC-XT, PC-AT and compatible clones
- ★ Matrix of DIL IC spaced solder pads and power rails
- ★ Buffered address and data lines
- ★ On-board address decoder
- ★ Selectable base address

### Applications

- ★ Prototype development of PC I/O cards
- ★ Constructing custom 'one-off' adaptor cards

This versatile project is an interface card for use with the IBM PC, PC-XT, PC-AT and compatible clones, specifically designed to allow the home constructor and experimenter to develop a custom-built expansion card for his or her PC, to perform a specific hardware interfacing task which is not catered for by any normally available cards. It will be particularly useful in the field of electronics where some special interface is needed, and equivalent industrial I/O cards are expensive. The card plugs into any one of the vacant expansion slots provided on the host PC's motherboard, and the power, control, address and data signals are made available from the computer's expansion bus. External connections can be brought out to a rear panel mounted, 37-way, female D-range connector. This connector is optional however, and other more specific connectors can be used instead if the application demands.

Flexibility is also increased from the software point of view, by the provision of the MEMR and MEMW lines, allowing configuration of the card as memory (therefore addressed in the memory map), or alternatively the IOR and IOW lines are available, allowing the card to be configured as an I/O device of some sort, as are all the IRQ lines.

The remainder of open space over the rest of the component side of the card has matrices of plated through holes organised to a 2.54mm (0.1in.) grid.

Those above the buffering circuitry have pads interconnected in favour of transistor circuits and resistor networks, while those occupying the front half are essentially configured for DIL ICs. Five bus bars are provided down the centre of the card carrying 0V, +5V, -5V, +12V and -12V supply rails. If the 37-way, rear panel connector is used, then all the connections (which are open-ended, i.e. not connected to anything) are brought to separate pads, contained in the rectangular legend marked 'SK1', with pin identification.

### Optional Items

The following items, not included in the kit, may also be required.

RA Socket 37-Way D-Range	1	(JB38R)
PC Bracket 37-Way D-Type	1	(CR45Y)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 67 XA67X, and instruction leaflet XU20W.

Retail Unit Price each (inc. VAT).

Order Code	Type 3328	Price each exc. VAT	inc. VAT each
LT14Q	PC Proto Card Kit	£29.770	£34.990
GH39N	PC Prototyping Card	£25.520	£29.990
XU20W	PC Proto Card Lft	£0.400	£0.400 NV

## Video Digitiser



### Features

- ★ Black and white (monochrome) or colour digitising
  - ★ Simple to construct and operate
- ### Applications
- ★ Home video storage and processing
  - ★ Closed circuit TV (CCTV) security camera systems
  - ★ Presentations

This superb project is a real time Video Digitiser card intended for use with IBM compatible PCs fitted with a VGA or higher grade monitor. The system converts video signals into digital data that can be processed by the PC. Therefore you can view and store pictures sourced from either a video camera, composite black and white (monochrome) video, or a colour RGB signal, on a PC. This then allows you to use or modify the stored images as you require. Software is included in the kit, which operates under Windows 3.1 or higher operating systems. The software incorporates operating and construction details for the kit, in a choice of four languages - English, Dutch, French, and German, and in addition, conventional written instructions are provided. Pictures may be digitised in black and white or RGB colour from either TV, camera, or tape sources. The Video Digitiser card is capable of capturing frames from live composite video signals with 256 grey levels, and 24-bit full colour pictures from still image RGB signals. The output file is in the form of TIFF (Tagged Image File Format) files. The output files may be processed further by almost any graphics program that runs under MS-DOSTM or WindowsTM, the recommended graphics program being 'Paint Shop Pro', which is shareware. You can then print out a hardcopy onto paper if a suitable printer is connected to your PC. The project can have more serious uses, such as in security monitoring systems. The project will work with the Maplin range of charge-coupled device (CCD) subminiature video cameras. In the case of the monochrome version (AY16S/DN48C), images

can be seen in the dark, thanks to the camera being infra-red sensitive and incorporating built-in infra-red illumination of the scene. Video Processor K4600 (VF74R) can be used to provide RGB signals for colour digitising.

### Specification

System requirements: IBM-compatible PC with 286 or higher processor  
VGA or higher video card  
Spare expansion slot  
Windows 3.1TM or higher

### Black and white images

Resolution: 512 x 512 pixels  
Grey levels: 256  
Sampling rate: 10MHz  
Input signal: Composite PAL video (15.625kHz line frequency)

### Video input level:

1V pk-to-pk

### Output file format:

TIFF (8-bit)

### Colour images

Resolution: 512 x 512 pixels  
Colour input signal: RGB (1V pk-to-pk)

### Number of colours:

16.7 million

### Output file format:

TIFF (24-bit)

### Kit and Special Parts

A complete kit of parts is available, including the PCB. Full constructional details may be found in Maplin Magazine/Projects Book 96 XA96E, and instruction leaflet XV84F.

Retail Unit Price each (inc. VAT).

Order Code	Type 11405	Price each exc. VAT	inc. VAT each
VF71N	K8100 Video Dig Kit	£123.390	£144.990
VF74R	K4600 Vid/RGB Proc	£106.370	£124.990
XV84F	K8100 Vid Digitiser	£0.500	£0.500 NV



RS12750

BS EN ISO 9002

Stockholding and Supply

Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System



Stockist of Assessed Capability

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## RS232 Serial Line Tester 3

### Features

- ★ Easy to build
- ★ Versatile, pocket-sized unit
- ★ Multiple function
- ★ Four different baud rates
- ★ 8-bit PIC microcontroller-based
- ★ Low current consumption

### Applications

- ★ Terminals
- ★ Printers
- ★ Modems
- ★ Multiplexers
- ★ RS232 cabling



The RS232 Serial Line Tester is an extremely handy, pocket-sized device for rapidly testing serial terminals, printers and other communications equipment using RS232 data cabling. For example, where a multi-user computer system has a large number of terminals and printers distributed around one or more sites, they are often connected via simple asynchronous RS232 data cabling for a cost-effective and flexible installation. However, when a device fails to operate correctly, usually at the furthest point of the system (!), a way of testing the equipment quickly and independently of the host system can save a great deal of time in isolating the fault. This tester is a low-cost, portable, and easy to use instrument, based on the PIC16C84 Microcontroller and is capable of providing several useful test functions to enable rapid troubleshooting. It also provides a painless introduction to the world of PIC microcontroller-based projects, as no programming is required.

### Specification

DC Power Supply: 9V PP3 cell  
 Supply current: 14mA  
 Typical battery life: >30 hours  
 Visual indicators: Two miniature LEDs

provide power on/battery state and data flow indication

Test facilities: 80- and 132-column test modes  
 Choice of three test patterns  
 1200, 2400, 4800, and 9600 BAUD rate  
 7-bit Odd/Even/Mark/Space, 8-bit None data formats  
 Visible confirmation of software flow control (X-on/X-off)  
 Printer carriage mechanism tabbing test

### Optional Items

The following items, not included in the kit, may also be required.

Alkaline PP3 Battery	1	(ZB52G)
4prs 1in Velcro Sqrs	1	(FE45Y)
RS232 Mini Tester	1	(YP80B)
Null Modem RS232	1	(YP85G)
25W M-M Gender Changer	1	(JM48C)
25W F-F Gender Changer	1	(JM49D)
25-way M-F Serial Cable	1	(JC13P)
9-way F to 25-way M Adaptor	1	(JM08J)
Carrying Case B	1	(ZF04E)

### Kit and Special Parts

A complete kit if parts (including the PCB and front panel label) is available (excluding optional items). The PCB, front panel label, and pre-programmed microcontroller are available separately. Full constructional details may be found in Maplin Magazine/Projects Book 100 XD00A, and instruction leaflet XV93B.

### Retail Unit Price each (inc. VAT).

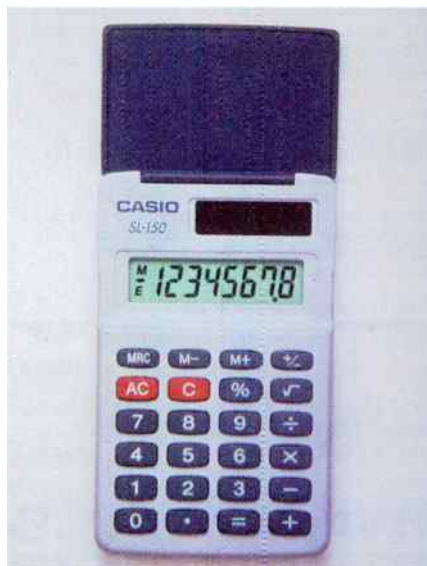
Order Code	Type	Price each exc. VAT	inc. VAT each
LU28F	RS232 Line Tester	£34.030	£39.990
GJ54J	Serial Line Tstr PCB	£3.390	£3.990
KV12N	Serial Line Tstr Lbl	£2.110	£2.490
LF30H	PIC16C84 MS07	£11.480	£13.490
XV93B	Serial Line Tstr Ltr	£0.500	£0.500 NV

## Calculators

### Calculators

## Compact Flip Top LC150S

Casio



- ★ Flip top screen protector
- ★ Compact, Light weight design
- ★ Percentage key
- ★ 3 Key memory
- ★ 8 Digit Display

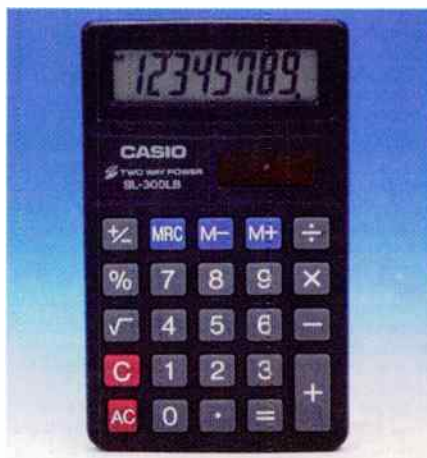
This light weight compact model has a flip top to protect the screen and is battery powered. Full 8 digit display and memory facility.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PE46A	Flip Top Calculator	£2.540	£2.990

## Pocket Solar

Casio



A large 8-digit LCD, solar powered basic three function calculator. Includes three key independent memory, percentages, square roots and a large + key. Complete with a handy wallet.

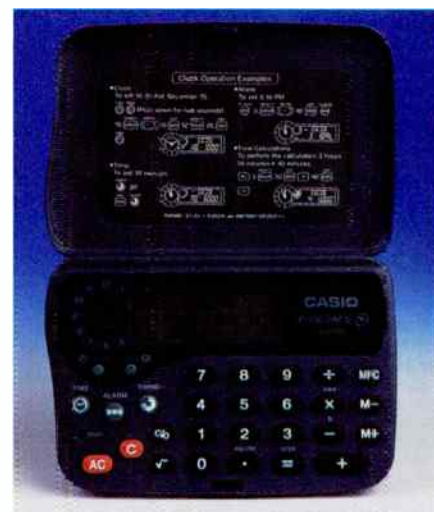
Size: 109.4 x 66.4 x 6.9mm  
 Weight: 35g

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BT11M	Casio SL300L	£4.500	£5.290

## Time Face Calculator QA-700

Casio



- ★ Large 8 digit display
- ★ Built-in analogue clock function
- ★ Alarm, timer signal and daily alarm
- ★ Analogue time function

### Time calculations

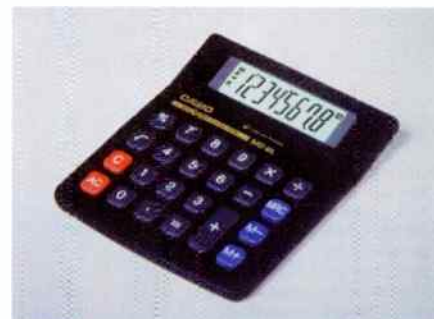
This calculator has a built-in analogue clock and alarm with a permanent time face display. It is incorporated in a folding hard case for protection.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CN25C	Casio QA700	£6.800	£7.990

## Solar Desktop MS8LS

Casio



- ★ Angled best view display
- ★ Plastic Keys
- ★ Two way power
- ★ 8 Digit display

This desktop model is solar powered but, if there is not enough available light, the battery automatically takes over to ensure operation at all times. The 8 digit screen is angled to give the best view.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PE36P	Desktop Solar Calc.	£8.500	£9.990

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**12 Digit D-20A**

Casio



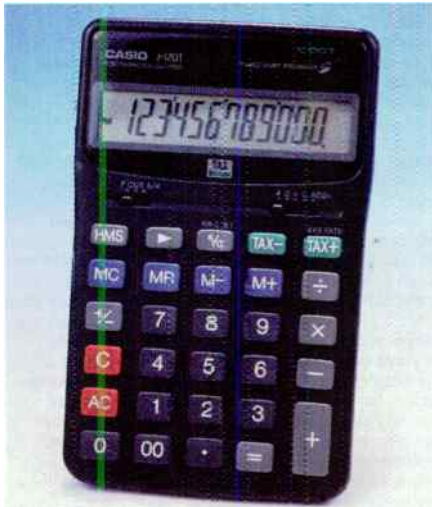
This desktop calculator has a large 12-digit display. It is solar or battery powered, depending on lighting conditions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CN27E †	Casio DC20A Desk Top	£10.200	£9.450	£9.180	£11.950

**J120-T Desktop Tax & VAT Calculator**

Casio



Basic four function calculator with square root, percentage key and memory function plus tax and time functions. Large keys and a 12 digit display make this calculator ideal for desk-top use. In addition, there is a 'week' and 'date' calculation function. The calculator operates from a solar cell, which can power the calculator in normal room light. Should the available light level fall, then an internal battery provides sufficient power, and maintains the memory.

Memory: Independent and Tax Rate Memory  
 Power: Solar cell, with back-up battery (LR44)  
 Auto power-off: After approx 6 mins  
 Dimensions: 167 x 106 x 13mm  
 Weight: 132g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AG05F	J120-T Calculator	£11.710	£16.850	£16.170	£21.990

**Printing Portable HR8-L**

Casio



A compact printing calculator with a 10-digit LCD display. In addition to the four basic functions the calculator has a memory and percentage key for add-ons, discounts, mark-ups etc. There is a switch for floating decimal point, cut off or round off at 2 decimal places. The calculator has a flip-out print roll which enables you to switch from internal to external roll, and uses standard 58mm plain paper rolls and operates from an AC adaptor 4.5V DC, available separately, or four AA cells (supplied).  
 Size: 188 x 98 x 40mm excluding roll holder.  
 Weight: 298g including batteries.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YT53H	Casio HR-8B	£18.710	£16.850	£16.170	£21.990
YT56L	Print Calc Adaptor	£5.940	£5.530	£5.370	£6.990

**Scientific FX-82 SX**

Casio



A 78-function scientific calculator with true algebraic logic (i.e. the formula can be entered in the same sequence as it is written) and up to six levels of parentheses. Other features include a single key for display of kilo, mega, micro etc, fluent conversion between polar and rectangular coordinates, easy statistics through standard deviation function, and 3- mode angular measurements (degree, radian and grad). The calculator can perform fraction calculations, has keys for trigonometric and hyperbolic functions, logarithms, square and cube roots, squares, reciprocals and factorials, and there is a random number generator. There are 6 constant memories as well as the normal memory. The liquid crystal display shows 8 digits with a

2 digit exponent. The calculator gives 9000 hours continuous operation from two alkaline AA cells supplied.

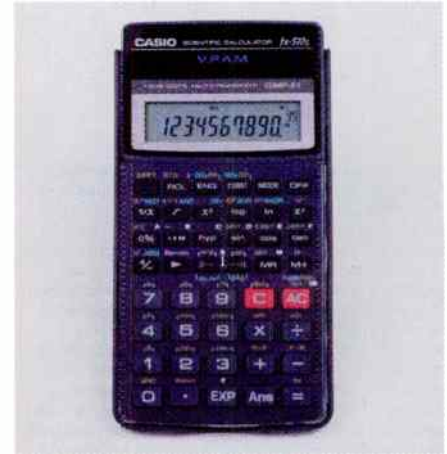
Size: 153 x 76 x 21.5mm  
 Weight: 121g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JK57M	Casio FX-82SX	£7.220	£6.700	£6.510	£8.490

**Scientific C-Power FX-570HB**

Casio



A 129-function scientific calculator with true algebraic logic (i.e. the formula can be entered in the same sequence as it is written) and up to six levels of parentheses. Other features include a single key for display of kilo, mega, micro etc, fluent conversion between polar and rectangular coordinates, easy statistics through standard deviation and regression analysis, and 3-mode angular measurements (degree, radian and grad). The calculator can perform fraction calculations, has trigonometric and hyperbolic functions, logarithms, square and cube roots, squares, reciprocals and factorials, and there is a random number generator. There are 6 constant memories as well as the normal memory. The liquid crystal display shows 8 digits with a 2 digit exponent. The C-Power system combines solar power with battery back-up, allowing full operation (including memory retention) in any lighting conditions. Battery life is around 7 years in normal use (lithium battery GR927 included).

Size: 140 x 73 x 17.5mm  
 Weight: 64g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JK58N	Casio FX-570S	£14.030	£13.050	£12.690	£16.490

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## Scientific C-Power FX115HB

Casio



The latest version of this 252 function, scientific calculator operates at speeds up to 2.5 times faster than previous models. Binary, octal and hexadecimal calculations and conversions can be performed. The calculator uses true algebraic logic, where the formula can be entered in the same sequence as it would be written. Recall is possible from an independent memory and six constant memories, plus fast compounding and direct acceptance of all four basic functions. Parenthesis calculations up to six levels can be handled with ease. Also possible is fluent calculation between polar and rectangular co-ordinates, statistics from standard deviation function and regression analysis, and 3-mode angular measurements in degrees, radians and grads. The calculator can also produce a display in kilo, mega, micro etc. Unlike conventional solar calculators, C-Power models can be used even in total darkness. While solar powered in sunlight, a 6-year lithium battery GR927 is used where light is insufficient.

Size: 24 x 77 x 153mm  
Weight: 114g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JK59P	Casio FX-115S	£14.030	£13.050	£2.690	£16.490

## Scientific Calculators FX-992S

Casio



- ★ 12-digit display
- ★ 383 functions
- ★ Base N operations
- ★ Logic functions
- ★ Standard deviation and linear regression functions
- ★ 18 levels of parentheses

- ★ Memory retention with power off
- ★ Solar/battery operation

A high specification scientific calculator designed for office, home and college use. Ideal for use up to and beyond 'A' level standards. Packed with functions, this unit is able to handle almost all the problems you're likely to need for everyday problems. A large, clear 12-digit display provides a high level of accuracy while facilitating viewing in most lighting conditions. Standard deviation and linear regression functions are provided for data analysis.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZE87U	Casio FX-992S	£17.010	£15.630	£15.130	£19.990

## Programmable Scientific Calculator FX-3900P

Casio



The FX-3900P is a powerful programmable scientific calculator that allows the user to perform calculations many times over with a range of values, by recording the keystrokes that are necessary to make up the calculation. The calculator has a two line dot matrix screen that allows programming, and editing of previously entered programs, to be viewed. Thus, previously entered formulae, stored in the six constant memories, can be recalled after execution for viewing and editing and re-used at any time or programmed to be repeated over and over as often as is required. This is a full function unit with operators shown on the display and will calculate averages and standard deviation, logarithms, polar and rectangular conversions and register exchange, using engineering notation to display results. All trigonometric functions are supported, including hyperbolic and arc of all functions, operating in degrees, radians or gradients. The results can be converted to and from decimal, degrees, minutes and seconds. The unit supports calculations using up to 18 sets of parentheses over six levels with permutations and combinations; maths functions include square, square root, cube root, reciprocal, sign change, factorial and powers with  $P_i(p)$  held as a constant. Other features include: Linear regression; numerical integration using Simpson's rule; conditional jumps; memory retention when power is switched off; generation of random numbers; a rounding function that allows the fixing of the number of significant digits.

Specification  
Power supply: 1 x CR2025 lithium battery (supplied)  
Battery life: 6,000 hours average  
Dimensions: 141 x 74 x 8.2mm  
Weight: 65g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RZ17T	Casio FX-3900P	£18.710	£17.450	£16.980	£21.990

## Student Graphic Scientific Calculator FX-6300G

Casio



This model contains basic scientific functions and graphing capabilities that were selected to meet the needs of students. It provides students with the means to view actual graphs of formulas and equations, and additionally comes with fraction, Base-n and statistical capabilities. The calculator can be programmed to perform complex calculations at the touch of a key and once a calculation is performed, it can be recalled at the press of a key for modification or for input of new values. Formulas and functions can be entered just as they are written - the calculator automatically assigns priority according to the locations of arithmetic operations, exponents, functions and parentheses. The calculator comes complete with 20 built-in scientific graphs that can be drawn at the touch of a key and user generated graphs can be drawn simply by entering the function (formula) after pressing the 'graph' key. Four graphic analysis tools (trace, zoom, plot/line and graph scroll), help to pinpoint exactly the required information, right on the graph itself. Bar graphs and normal distribution curves for single-variable statistical calculations, and regression lines for paired-variable statistical can also be displayed. A 400-step program area provides plenty of room for storage of often repeated programs. Formulas are input just as they are written, without any special programming language. Up to 10 programs can be stored in memory simultaneously. The basic functions include negative numbers, exponents, parenthetical additional/subtraction/multiplication/division, trigonometric/inverse trigonometric functions (units of angular measurement: degrees, radians, grads), hyperbolic/inverse hyperbolic functions, logarithmic/exponential functions, reciprocals, factorials, square roots, cube roots, powers, roots, squares, decimal-sexagesimal,  $\pi$  random numbers, absolute values, integers and fractions.

### General Specification

Power supply: 2 x lithium batteries (CR2032)  
Battery life: 350 hours approx.  
Auto power off: 6 mins approx. after last key operation  
Dimensions: 142 x 73 x 10mm  
Weight: 84g  
Supplied with a slide-on hard case that fits over the back or front, for protection.

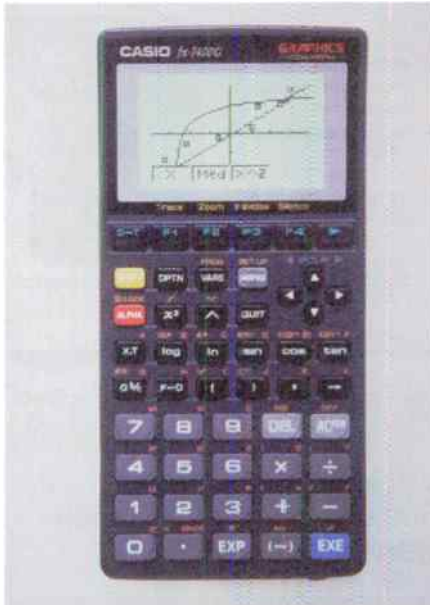
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BT18U	FX-6300G	£28.920	£25.370	£24.194	£33.990

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by 5pm  
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FAX: 01702 554001

## Graphic FX7400G

Casio



- ★ Advanced graphic functions
- ★ Zoom in facility
- ★ Fraction Key
- ★ 13 Character, 6 line display
- ★ On screen icon driven menu
- ★ 4 way scrolling

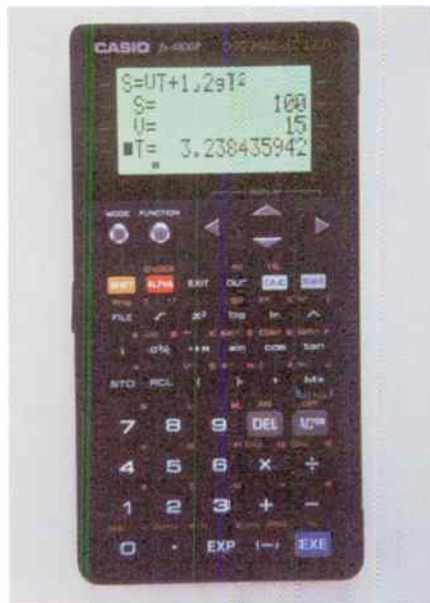
The FX7400G has been specifically designed for use throughout GCSE mathematics courses and beyond. Exceptional value for money the FX7400G is the ideal entry level graphic calculator combining a wide range of features with 7 kb memory. It's on screen icon driven menu makes it extremely user friendly and easy to use.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
PE37S	FX7400G Scientific	£51.050	£44.800	£41.700	£56.990

## Scientific FX4800P

Casio



- ★ Large 16 column, 4 line display
- ★ 20 Scientific constants
- ★ Programming functions
- ★ Formula storage and table function
- ★ Solve function
- ★ Function memory

The FX4800P is a programmable scientific calculator with a 4 line 16 column display and solve function. Facilities include - Differentials, complex number calculations, sigma calculations, integrations, programming function with filename registration and function memory.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
PE45y	FX4800P Scientific	£51.050	£44.800	£41.700	£59.990

## Colour Graphic CFX9850G

Casio



- ★ 28 Memories - 60kb total
- ★ 763 functions
- ★ 286 Scientific functions
- ★ Icon driven on screen menu
- ★ Colour Display
- ★ 21 Character by 8 line display

The CFX9850G is the latest addition to the Casio range. Colour LCD display and powerful graph capabilities are backed up with 60 kb of on board memory. Features include:- Dual graph, dynamic graph, Table & graph, graph solve, sketch function, statistical graph, inequality graph conics graph and integration graph plus a whole host of calculation functions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
PE38R	CFX9850G Scientific	£85.090	£77.500	£72.500	£99.990

## Databank DC4000S

Casio



- ★ Up to 149 telephone numbers
- ★ Conversion and redial facilities

- ★ Memo functions
- ★ Secret Area
- ★ 3 line display
- ★ Folding integrated case
- ★ Clock & alarm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
PE39N	DC4000S Databank	£16.160	£15.420	£14.760	£18.990

## Databank DC7700S

Casio



- ★ Up to 625 telephone numbers
- ★ 3 line display
- ★ Colour coded function keys
- ★ Separate calculator keypad
- ★ Memo, schedule, time & alarm
- ★ Folding integrated case

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
PE40T	DC7700S Databank	£21.260	£19.070	£18.250	£24.990

## Databank DC7800

Casio



- ★ 32kb Memory, approx 10,000 entries
- ★ Backlight display
- ★ Colour coded function keys
- ★ Separate calculator keypad
- ★ Memo, schedule, time & alarm
- ★ Folding integrated case

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
PE41U	DC7800 Databank	£33.180	£29.650	£28.300	£38.990

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## Databank DC8500

Casio



- ★ 64kb memory, approx 20,000 entries
- ★ Backlight display
- ★ Colour coded function keys
- ★ Separate calculator keypad
- ★ Memo, schedule, home/world time
- ★ Folding integrated case

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
PE42V	DC8500 Databank	£42.540	£37.760	£35.980	£49.990

## Backlight Digital Diary SF5580

Casio



- ★ Automatic backlight
- ★ 128kb Memory capacity
- ★ Telephone directory
- ★ Memo, home/world time
- ★ Expense function
- ★ Schedule keeper
- ★ Currency/metric conversion
- ★ Calculator
- ★ Calendar
- ★ Poker/blackjack game

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
PE44X	SF5580 Dig. Diary	£85.090	£75.250	£70.750	£99.990

## Electronic Books

### Pocket Spellmaster

Franklin



- ★ Spell corrects 80,000 words
- ★ Defines commonly confused words
- ★ Plays 7 wordgames
- ★ Solves crosswords
- ★ Matchmaker feature

Try your hand at hangman, jumble, anagrams and a variety of other fun and exciting words games. Supplied complete with batteries and carrying case.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CD90X 1	Franklin Spellmaster	£21.250	£19.150	£18.150	£24.990

### Pocket Thesaurus

Franklin



- ★ Spell corrects 80,000 words
  - ★ Contains 500,000 synonyms and antonyms
  - ★ Gives core meanings
  - ★ Defines commonly confused words
  - ★ Solves crosswords
  - ★ Plays 8 word games
- Play hangman, anagrams, jumble, flashcards, spelling bee, word builder, deduction and word blaster. Includes games scoring. Supplied complete with batteries and carrying case.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CD91Y	Franklin Thesaurus	£25.520	£22.900	£21.600	£29.990

### Bookman Dictionary & Thesaurus

Franklin



- ★ Spells and defines 80,000 words
  - ★ Contains over 496,000 synonyms
  - ★ Includes personal word lists
  - ★ 3 exciting word games
  - ★ Unique Bookman card slot
- Just snap in any Bookman card for full access to another book. There are plenty of Bookman cards to choose from, all available separately. These include Word Games; Encyclopaedia; Movieviews; Blackjack & Video Poker; English-French Translator. Supplied complete with lithium batteries and carrying case.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CD92A 1	Franklin Bookman	£51.050	£44.650	£41.770	£59.990

### Bookman Wordgames Cartridge

Franklin

- ★ Hours of fun for the entire family
- ★ Plays 10 challenging wordgames
- ★ Includes favorites such as hangman, anagrams and jumble
- ★ Selectable skill level from beginner to wizard



The Wordgames card is for use with the Franklin Bookman (CD92A) and will only work in conjunction with this product.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CD94C	Franklin Word Games	£17.010	£15.400	£14.620	£19.990

### Bookman English - French Translator Cartridge

Franklin



- ★ Translates and spells 200,000 French and English words
- ★ Built-in grammar guide
- ★ Personal word list

★ Plays 7 language learning word games  
The 'French Professor' card is for use with a Franklin Bookman (CD92A) and will only work in conjunction with this product.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CD97F	Franklin Eng French	£25.520	£22.860	£21.610	£29.990





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## AUDIO CONNECTOR SELECTION GUIDE



There is a variety of different connectors used to interface audio equipment.

### XLR

XLR 'barrel' plugs and sockets are normally used where microphones or balanced audio signals are encountered. Balanced audio - in which antiphase (differential) signals and ground are employed to reject hum over long cable lengths - tend to be found in professional and semi-professional audio equipment, such as mixers and amplifiers. The 3-pin connectors are robust, having been designed to withstand the rigours of 'on the road' use. A mechanical interlock prevents the plug from accidentally disengaging from the socket.

### Pinout:

Pin 1: Ground/shield  
Pin 2: In-phase  
Pin 3: Out-of-phase

### Phono

For many of use, the phono connector is the de facto audio connector, since it was originally designed for interfacing domestic audio equipment. Phono connectors have two conductors, and are intended for 'single-ended' (unbalanced) signals. In the world of high-fidelity, they are specified for both line-level (tape, tuner and CD), and low-level (turntable) connections. Nowadays, phono connectors are also used for composite video, the coaxial digital outputs of CD players, and the AC-3 RF outputs of laserdisc players. When wiring leads, note that the barrel for signal ground, and an inner pin for the signal. We recommend that gold-plated phono connectors should be used for high-quality applications, and that metal-shielded plugs be used wherever low-level signals (such as those from turntable cartridges) are present.

### DIN (Deutsche Industrie Normen)

DIN connectors, which were highly popular in 1970s audio equipment, are now rarely seen. Despite their near-disappearance, knowing about DIN wiring conventions is important if equipment of this vintage is still in use; some early VCRs also used them for audio inputs and outputs.

The most commonly-encountered 5-pin 'A' type lives on as a common PC keyboard connector, and a standard way of interconnecting electronic musical instruments, thanks to the MIDI (Musical Instrument Digital Interface) standard. The 5-pin 'A' connector is one of an extensive range that ranges from 2 to 14 pins, and there are also 'mini' variants that are common in the world of computer interconnections. Most plugs are plastic, although some pin configurations are available with metal casing. These shielded variants are ideal for low-signal applications. Some 'latching' plugs and sockets are also available from Maplin.

Although there are equipment-specific exceptions, most DIN audio applications follow a standard pin-out, which is listed below. Maplin does, however, sell multi-core cables with individually-screened wires. We recommend that such cable should be used to make custom cables for hi-fi applications.

2-pin: Flat pin, ground; round pin, signal  
5-pin A (tape): Pin 2, ground; Pin 3, input L; Pin 5, input R; Pin 1, output L; Pin 4, output R

5-pin A (turntable): Pin 2, ground; Pin 3, input L; Pin 5, input R

5-pin A (line input, e.g., tuner): Pin 2, ground; Pin 1, input L; Pin 4, input R

5-pin A (mic, low impedance): Pin 2, ground; Pin 3, input R/mono; Pin 5, input L

5-pin A (mic, high impedance): Pin 2, ground; Pin 1, input R/mono; Pin 4, input L

5-pin A (MIDI data): Pin 2, ground; Pin 3, Thru loop; Pin 5, loop return; Pin 1 TxD Thru return; Pin 4, TxD

5-pin A (PC keyboard): Pin 2, data; Pin 3, reset (active low); Pin 5, +5V; Pin 1, clock; Pin 4, ground

### 3.5mm/2.5mm/6.3mm 'jacks'

3.5mm 'stereo' jack plugs and sockets are commonly used as headphone and line-outputs on portable audio equipment, such as personal stereos and 'ghetto blasters'. They are also used for audio inputs and outputs on PC soundcards and Apple Macintoshes. The mono variant is often specified as a microphone connector with such equipment. The more established 6.3mm connector has a wider range of applications. It is a common microphone connector for domestic, and even some semi-professional audio equipment. 6.3mm connectors are also used for musical instruments, such as guitars (low-level) and keyboards (line-level). In domestic hi-fi and professional audio equipment (such as mixers), the stereo 6.3mm connector is often used as a headphone socket. A smaller 'subminiature' connector, which has a pin diameter of 2.5mm, is less common. Standardised connections across all three types are identical. Screened plugs and sockets should be employed wherever low-level signals, such as those from microphones, are involved. Some sockets have a break-action contact to (an) extra pin(s); this allows constructors to facilitate automatic source selection. It is also possible to implement a system whereby the connection of only one of a pair of microphones automatically switches the mike channel to mono.

Mono: barrel, ground; tip, signal

Stereo: barrel, ground; ring, right channel; tip, left channel

### SCART

Although the 21-pin SCART (also known as the Euroconnector or Peritel) is primarily designed as an AV connector, knowing which pins carry the audio signal is very useful. Not all AV equipment has phono audio outputs, although it is beneficial to route the sound from a satellite receiver, VCR or TV set to a stereo system or AV amplifier. In particular, NICAM TVs are capable of excellent stereo sound, which is seldom realised through the poor-quality and inadequately-spaced speakers that such sets tend to incorporate. Although 'standard' Scart-to-phono leads are available, they tend to be relatively short. A custom cable of the appropriate length will allow the TV and hi-fi - which tend to be separated in the average living room - to be bridged.

Pin 1: Output R  
Pin 2: Input R  
Pin 3: Output L  
Pin 4: Ground  
Pin 6: Input L

## AUDIO / VIDEO

### AUDIO

## Audio Locking Connectors Chassis Plug / Line Socket



A range of high quality audio connectors with die-cast metal housings and plated brass contacts. Connectors are keyed and a screw locking mechanism locks the connector into place. Line socket has an integral cable clamp. Chassis mounting plug requires a 16mm diameter panel cutout. Line socket overall length: 37mm, diameter 18mm. Current rating: 5A at 50V AC. Plugs and sockets supplied separately. Available in 2, 3, 4, 5, 6, 7 and 8-way. Please note that socket type connectors are required for microphone connections to mobile transceivers.

Retail Unit Price each (inc. VAT).

Order Code	Type 987	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FM50E	Lkg Audio Plug 2-Way	£0.936	£0.700	£0.600	£1.100
FK22Y	Lkg Audio Skt 2-Way	£0.936	£0.700	£0.600	£1.100
FM51F	Lkg Audio Plug 3-Way	£1.010	£0.730	£0.610	£1.190
FK23A	Lkg Audio Skt 3-Way	£0.978	£0.730	£0.610	£1.150
FM52G	Lkg Audio Plug 4-Way	£1.110	£0.840	£0.670	£1.310
FK24B	Lkg Audio Skt 4-Way	£1.100	£0.840	£0.670	£1.300
FM53H	Lkg Audio Plug 5-Way	£1.230	£0.900	£0.740	£1.450
FK25C	Lkg Audio Skt 5-Way	£1.200	£0.900	£0.740	£1.410
FM54J	Lkg Audio Plug 6-Way	£1.400	£0.980	£0.790	£1.650
FK26D	Lkg Audio Skt 6-Way	£1.370	£0.980	£0.790	£1.620
FK27E	Lkg Audio Plug 7-Way	£1.460	£1.080	£0.870	£1.720
FK28F	Lkg Audio Skt 7-Way	£1.460	£1.080	£0.870	£1.720
FK29G	Lkg Audio Plug 8-Way	£1.740	£1.320	£0.990	£2.050
FK30H	Lkg Audio Skt 8-Way	£1.740	£1.320	£0.990	£2.050

## Chassis Socket / Line Plug



Identical to the above connectors, but with a line plug and chassis socket. Available only in 10-way.

Retail Unit Price each (inc. VAT).

Order Code	Type 988	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FT91Y	Lkg Audio Ptg 10-Way	£4.920	£4.000	£3.650	£5.790
FT92A	Lkg Audio Skt 10-Way	£3.100	£2.500	£2.230	£3.650

## XLR CONNECTORS

### 3-Pin Plug



Low cost connectors for use on audio and test equipment etc. The strong metal housings are sandblasted die-cast zinc then copper and nickel plated. Contacts are brass, mercury dipped then silver-plated. Self-adjusting strain-relief sleeves on line plug and socket will accommodate cables from 4 to 7mm dia., preventing damage to cable sheath

up to 50kg stress.

**Specification**  
Current rating: 15A at 120V AC  
Contact resistance: 5mΩ max  
Overall length: 70mm  
Diameter: 19mm  
All parts are latching and will mate with other 3-pin XLR connectors.

Retail Unit Price each (inc. VAT).

Order Code	Type 1025	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BW89W	XLR Line Plug	£1.740	£1.230	£1.160	£2.050

### 3-Pin Chassis Socket

Mounting hole: 24mm dia.  
Bezel: 27 x 36.5mm.  
Fixing centres: 26 x 17mm x M3 countersunk.  
Overall depth (excl. latch release): 37mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1026	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BW90X	XLR Chassis Socket	£2.000	£1.700	£1.280	£2.350

### 3-Pin Line Socket



Overall length: 90mm. Diameter: 19mm (excluding latch release).

Retail Unit Price each (inc. VAT).

Order Code	Type 1027	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BW91Y	XLR Line Socket	£2.170	£1.700	£1.300	£2.550

### 3-Pin Chassis Plug

Mounting hole: 19mm dia.  
Bezel: 22.5 x 37mm.  
Fixing centres: 27mm x M3 countersunk.  
Overall depth: 25mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1028	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BW92A	XLR Chassis Plug	£1.740	£1.230	£1.160	£2.050

Order £30 or above?

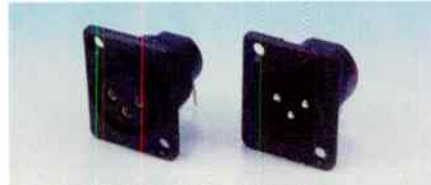
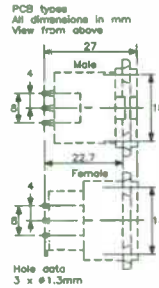
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### Low Cost XLR-Type Connectors

Cliff

A range of low cost plugs and sockets moulded from tough nylon. Metal fittings are silver-plated brass. Sockets may be mounted to the front or rear of a chassis, and rear mounting may utilise the PC type. The sockets are panel air-tight construction and secured by two diagonal M3 countersunk screws. Matching male and female plugs are available, and incorporate integral cable/strain relief.



#### Specification

Current rating: 3-pin 16A/250V AC  
Contact resistance: <3mΩ  
Insulation resistance: 1600V AC between contacts and housing  
Mounting hole: 21.5mm  
Fixing centres: 24 x 18mm

Type	Overall depth	Socket
ACF	32.5mm	female
ACM	30mm	male
ACF-PC	27mm	female PCB type
ACM-PC	27mm	male PCB type
		<b>Plug</b>
APF	91.6mm	female
APM	92.8mm	male



Retail Unit Price each (inc. VAT).

Order Code	Type 1029	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
KC53H	Low Cost XLR ACF	£0.757	£0.610	£0.560	£0.890
KC54J	Low Cost XLR ACM	£0.587	£0.510	£0.460	£0.690
KC55K	Low Cost XLR ACF-PC	£1.090	£0.830	£0.740	£1.290
KC56L	Low Cost XLR ACM-PC	£0.842	£0.710	£0.600	£0.990
KC57M	Low Cost XLR APF	£1.430	£1.190	£1.010	£1.690
KC58N	Low Cost XLR APM	£1.260	£1.100	£0.970	£1.490

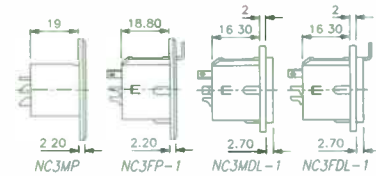
### Professional Quality XLR-Type Chassis Mounting Connectors

Neutrik



A range of professional quality XLR plugs and sockets for chassis and panel mounting. Suitable for audio applications such as cable connectors, microphone stage boxes, professional public address systems, recording studio applications and audio mixer connections. The range

includes 3, 4 and 5-pin plugs and sockets. The shell of the connector is of rugged die cast Zn/Al/Cu alloy construction with Cu/Sn alloy contacts and a contact surface of Ag/Au hard alloy. The contacts of the connector comply with solderability specification IEC 68-2-20 and can accommodate wire sizes up to 14AWG (1.63mm). The socket incorporates a locking mechanism to prevent the associated plug from being accidentally disconnected. The locking mechanism is released when the button is pressed, the plug simultaneously being pulled from the socket. The NC-FP1/NC-MP series is only suitable for mounting externally.



The NC-FDL/NC-MDL series has a raised edge surrounding the socket allowing mounting on the inside of a panel or chassis, reducing the amount of panel finishing work required. Also this 'DL' series is RF protected. These connectors will also mate with the Neutrik NC-FX/NC-MX series of in-line plug and socket connectors.

Type	Chassis Socket	MPS Code
NC3FP1	Female 3 pin	CW64U
NC4FP1	Female 4 pin	CW65V
NC5FP1	Female 5 pin	CX52G
NC3FDL1	Female 3 pin	CX56L
NC4FDL1	Female 4 pin	CX57M
NC5FDL1	Female 5 pin	CX58N
Type	Chassis Plug	MPS Code
NC3MP	Male 3 pin	CX53H
NC4MP	Male 4 pin	CX54J
NC5MP	Male 5 pin	CX55K
NC3MDL1	Male 3 pin	CX59P
NC4MDL1	Male 4 pin	CX60Q
NC5MDL1	Male 5 pin	CX61R

Retail Unit Price each (inc. VAT).

Order Code	Type 1030	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CW64U	XLRChassis NC3FP1	£2.970	£2.700	£2.530	£3.490
CW65V	XLRChassis NC4FP1	£3.900	£3.250	£3.080	£4.590
CX52G	XLRChassis NC5FP1	£5.690	£4.520	£4.130	£6.690
CX56L	XLRChassis.FPNC3FDL1	£2.110	£1.880	£1.830	£2.490
CX57M	XLRChassis.FPNC4FDL1	£3.050	£2.680	£2.520	£3.590
CX58N	XLRChassis.FPNC5FDL1	£4.670	£4.050	£3.760	£5.490
CX53H	XLRChassis NC3MP	£1.770	£1.560	£1.520	£2.090
CX54J	XLRChassis NC4MP	£2.680	£2.450	£2.080	£3.390
CX55K	XLRChassis NC5MP	£3.560	£2.880	£2.770	£4.190
CX59P	XLRChassis.FPNC3MDL1	£1.940	£1.670	£1.580	£2.290
CX60Q	XLRChassis.FPNC4MDL1	£2.450	£2.200	£1.980	£2.890
CX61R	XLRChassis.FPNC5MDL1	£3.650	£3.080	£2.900	£4.290

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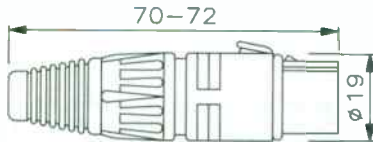
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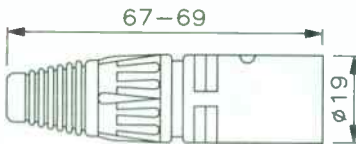
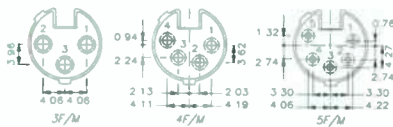
## Professional Quality XLR-Type Connectors: In-Line

Neutrik



Type NC-FX

A range of professional quality XLR plugs and sockets for in-line cable connection. Suitable for audio applications such as microphone cable connectors and audio mixer connections. The range includes 3, 4 and 5-pin plugs and sockets. Assembling the in-line plugs and sockets does not require a screwdriver. The connectors contain four easy to assemble parts including the chuck type strain relief assembly. The shell of the connector is of rugged die cast Zn/Al/Cu alloy construction with Cu/Sn contacts that comply with solderability specification IEC 68-2-20 and can accommodate wire sizes up to 16AWG (1.29mm). These connectors will also mate with the Neutrik series of chassis mounting plug and socket connectors.



Type NC-MX

Type	Socket	MPS Code
NC3FX	Female 3 pin	CW58N
NC4FX	Female 4 pin	CW59P
NC5FX	Female 5 pin	CW60Q
Type	Plug	MPS Code
NC3MX	Male 3 pin	CW61R
NC4MX	Male 4 pin	CW62S
NC5MX	Male 5 pin	CW63T

Retail Unit Price each (inc. VAT).

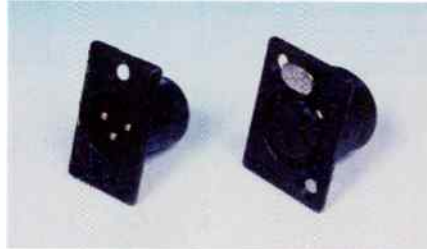
Order Code	Type 1021	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CW58N	XLRInLine NC3FX	£2.280	£2.020	£1.950	£2.690
CW59P	XLRInLine NC4FX	£3.220	£2.820	£2.740	£3.790
CW60Q	XLRInLine NC5FX	£5.090	£4.600	£4.540	£5.990
CW61R	XLRInLine NC3MX	£1.860	£1.680	£1.600	£2.190
CW62S	XLRInLine NC4MX	£2.370	£2.150	£2.020	£2.790
CW63T	XLRInLine NC5MX	£3.650	£3.250	£2.950	£4.290

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## Black Finish Gold Contact XLR Type Connectors

Neutrik



Designed for professional, industrial and commercial applications with minimal parts for straightforward assembly (no assembly screws). These connectors have solder bucket connections and the standard self adjusting cable strain relief. With the same specification and features as other Neutrik XLR ranges these connectors feature the non reflective black chrome finish together with the gold plated contacts.

Retail Unit Price each (inc. VAT).

Order Code	Type 12033	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CT43W	Blk XLR 3P Free Plug	£2.110	£1.860	£1.810	£2.490
CT44X	Blk XLR 4P Free Plug	£2.880	£2.610	£2.440	£3.390
CT45Y	Blk XLR 5P Free Plug	£4.670	£4.120	£3.880	£5.490
CT46A	Blk XLR 3P Free Skt	£2.800	£2.390	£2.230	£3.290
CT47B	Blk XLR 4P Free Skt	£3.900	£3.450	£3.240	£4.590
CT48C	Blk XLR 5P Free Skt	£5.520	£5.020	£4.720	£6.490
CT51F	Blk XLR 3P Chas Plg	£2.110	£1.910	£1.800	£2.490
CT52G	Blk XLR 4P Chas Plg	£2.710	£2.390	£2.240	£3.190
CT53H	Blk XLR 5P Chas Plg	£4.240	£3.840	£3.510	£4.990
CT54J	Blk XLR 3P Chas Skt	£2.880	£2.520	£2.360	£3.390
CT55K	Blk XLR 4P Chas Skt	£3.990	£3.540	£3.330	£4.690
CT56L	Blk XLR 5P Chas Skt	£6.280	£5.590	£5.250	£7.390

## Heavy Duty Professional Quality XLR Type Connectors

Neutrik



Extremely rugged 3 pole free plug and socket connectors developed for outdoor use, offering dust and water protection to IP65 when mated. The plug shell is manufactured in stainless steel and the socket has a rubber jacket. Sealing is completed with an internal 'O' ring seal and polyurethane strain relief. The connectors provide minimum IP54 sealing when mated with most other 3 pole XLR's. Electrical specifications are the same as the standard Neutrik NC3MX/NC3FX.

Retail Unit Price each (inc. VAT).

Order Code	Type 42255	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CT50E	HD-XLR 3P Free Plg	£4.840	£4.190	£3.940	£5.690
CT49D	HD-XLR 3P Free Skt	£4.840	£4.170	£3.920	£5.690

## In-Line Male and Female XLR Adaptors

Switchcraft



These are 3-pin XLR in-line male to male or female to female audio connectors. The pins are prewired: 1 to 1, 2 to 2, 3 to 3.

Retail Unit Price each (inc. VAT).

Order Code	Type 11641	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GU17T	3 Pin F to F Adaptor	£10.950	£10.400	£9.850	£12.870
GU18U	3 Pin M to M Adaptor	£10.500	£9.970	£9.450	£12.340

## MINIATURE XLR CONNECTORS

### Tini 'Q-G' Miniature Audio Connectors

Switchcraft



These high quality miniature XLR style connectors give very reliable performance in a compact size. They are ideal for portable instruments, radio communications and miniature microphones. Precision machined nickel plated brass body with polarised positive latching available in 3,4 and 5 pole configuration.

Current Rating 5A 3 & 4 pole, 4A 5 pole  
Working Voltage 125VAC

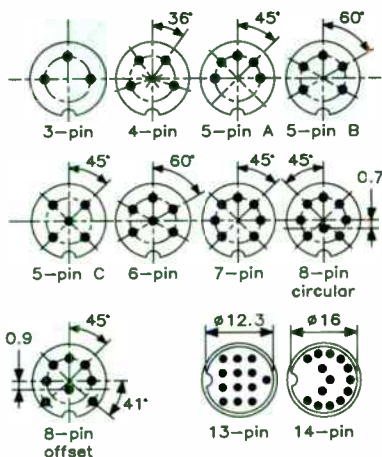
Dimensions mm

	Length	Diameter
Free Plug	51.7	10.5
Free Socket	48.3	10.5
Panel Plug	Panel Cutout Dia 11.0	Thickness 6.4max
Panel Socket	Panel Cutout Dia 15.0	Fixing Centres 17.1 x 11.4

Retail Unit Price each (inc. VAT).

Order Code	Type 12056	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CT57M	Mini XLR 3P Free Skt	£5.940	£5.440	£4.740	£6.990
CT58N	Mini XLR 4P Free Skt	£6.200	£5.610	£5.160	£7.290
CT59P	Mini XLR 5P Free Skt	£7.650	£6.970	£6.090	£8.990
CT60Q	Mini XLR 3P Free Plg	£4.840	£4.360	£3.960	£5.690
CT61R	Mini XLR 4P Free Plg	£5.600	£5.150	£4.740	£6.590
CT62S	Mini XLR 5P Free Plg	£7.050	£6.250	£5.250	£8.290
CT63T	Mini XLR 3P Chas Plg	£5.260	£4.790	£4.380	£6.190
CT64U	Mini XLR 4P Chas Plg	£6.280	£5.790	£5.280	£7.390
CT65V	Mini XLR 5P Chas Plg	£6.800	£6.290	£5.740	£7.790
CT66W	Mini XLR 3P Chas Skt	£6.710	£6.130	£5.740	£7.890
CT67X	Mini XLR 4P Chas Skt	£7.220	£6.670	£6.090	£8.490
CT68Y	Mini XLR 5P Chas Skt	£7.820	£7.090	£6.480	£9.590

**DIN CONNECTORS**



**2-Pin Plug**

2-pin plug with solder connections.



Retail Unit Price each (inc. VAT).

Order Code	Type 935	Price each exc. VAT	inc. VAT each
HH24B	DIN L/S Plug	1+ £0.246 25+ £0.160 100+ £0.135	1+ £0.290

**2-Pin Plug Screw Connections**

2-pin plug with screw terminals.



Retail Unit Price each (inc. VAT).

Order Code	Type 937	Price each exc. VAT	inc. VAT each
FM42V	Slits 2-Pin DIN Plg	1+ £0.382 25+ £0.260 100+ £0.215	1+ £0.450

**2-Pin Right-Angled Plug**

2-pin right-angled plug with screw terminals.



Retail Unit Price each (inc. VAT).

Order Code	Type 939	Price each exc. VAT	inc. VAT each
FM40T	R/A 2-Pin DIN Plug	1+ £0.382 25+ £0.260 100+ £0.215	1+ £0.450

**Slim 2-Pin Plug**

2-pin plug with slim body. Body size: 27 x 16 x 10.8mm thick.



Retail Unit Price each (inc. VAT).

Order Code	Type 940	Price each exc. VAT	inc. VAT each
FP13P	Slim DIN L/S Plug	1+ £0.297 25+ £0.170 100+ £0.140	1+ £0.350

**Slim 2-Pin Right-Angled Plug**

2-pin right-angled plug with slim body and solder connections. Body size: 21 x 11 x 9mm thick.



Retail Unit Price each (inc. VAT).

Order Code	Type 942	Price each exc. VAT	inc. VAT each
JK98J	Comp 2Pin DIN Pl R/A	1+ £0.382 25+ £0.220 100+ £0.170	1+ £0.450

**5-Pin Right-Angled Plug**

5-pin right-angled plug 180° (Type A) with solder connections.



Retail Unit Price each (inc. VAT).

Order Code	Type 946	Price each exc. VAT	inc. VAT each
FM44X	R/A 5-Pin DIN A Plug	1+ £0.629 25+ £0.470 100+ £0.425	1+ £0.740

**3- to 8-Pin Plugs**



- 3-pin plug HH25C
  - 4-pin plug HH26D
  - 5-pin plug 180° (Type A) HH27E
  - 5-pin plug 240° (Type B) HH28F
  - 5-pin plug 360° domino-style (Type C) RK64U
  - 6-pin plug HH29G
  - 7-pin plug HH430H
  - 8-pin plug with all outer pins in the same arc FJ91Y
  - 8-pin plug with two pins in a different arc from the other outer pins FG40T
- All types with solder connections.

Retail Unit Price each (inc. VAT).

Order Code	Type 944	Price each exc. VAT	inc. VAT each
HH25C	DIN Plug 3-Pin	1+ £0.331 25+ £0.220 100+ £0.190	1+ £0.390
HH26D	DIN Plug 4-Pin	1+ £0.374 25+ £0.270 100+ £0.230	1+ £0.440
HH27E	DIN Plug 5-Pin A	1+ £0.417 25+ £0.275 100+ £0.235	1+ £0.490
HH28F	DIN Plug 5-Pin B	1+ £0.417 25+ £0.275 100+ £0.235	1+ £0.490
RK64U	DIN Plug 5-Pin C	1+ £0.417 25+ £0.275 100+ £0.235	1+ £0.490
HH29G	DIN Plug 6-Pin	1+ £0.425 25+ £0.285 100+ £0.240	1+ £0.500
HH30H	DIN Plug 7-Pin	1+ £0.510 25+ £0.350 100+ £0.300	1+ £0.600
FJ91Y	DIN Plug 8-Pin Circ	1+ £0.553 25+ £0.365 100+ £0.310	1+ £0.650
FG40T	DIN Plug 8-Pin Offset	1+ £0.510 25+ £0.350 100+ £0.300	1+ £0.600

**13-Pin DIN Plug**



13-pin DIN plug, used on Atari ST computer video port, but will also find applications where a compact multi-way connector is required.

Retail Unit Price each (inc. VAT).

Order Code	Type 947	Price each exc. VAT	inc. VAT each
JW95D	13 Pin DIN Line Plg	1+ £1.370 25+ £0.990 100+ £0.740	1+ £1.620

**14-Pin DIN Plug**



14-pin DIN plug, used on Atari ST computer disk drive port and Amstrad 1512/1640 computer power socket, but will also find applications where a compact multiway connector is required.

Retail Unit Price each (inc. VAT).

Order Code	Type 948	Price each exc. VAT	inc. VAT each
JW96E	14 Pin DIN Line Plg	1+ £1.740 25+ £1.350 100+ £0.960	1+ £2.050

**2-Pin Chassis Socket**

2-pin socket for chassis mounting.



Retail Unit Price each (inc. VAT).

Order Code	Type 950	Price each exc. VAT	inc. VAT each
HH31J	DIN L/S Socket	1+ £0.331 25+ £0.225 100+ £0.180	1+ £0.390

**3- to 8-Pin Chassis Sockets**

- 3-pin HH32K
- 4-pin HH33L
- 5-pin 180° (Type A) HH34M
- 5-pin 240° (Type B) HH35Q
- 5-pin 360° (Type C) FJ92A
- 6-pin HH36P
- 7-pin HH37S
- 8-pin with all outer pins in the same arc FJ94C
- 8-pin with two pins not in the same arc as the other outer pins FJ93B

Retail Unit Price each (inc. VAT).

Order Code	Type 951	Price each exc. VAT	inc. VAT each
HH32K	DIN Socket 3-Pin	1+ £0.331 25+ £0.240 100+ £0.210	1+ £0.390
HH33L	DIN Socket 4-Pin	1+ £0.382 25+ £0.250 100+ £0.215	1+ £0.450
HH34M	DIN Socket 5-Pin A	1+ £0.425 25+ £0.290 100+ £0.255	1+ £0.500
HH35Q	DIN Socket 5-Pin B	1+ £0.425 25+ £0.290 100+ £0.255	1+ £0.500
FJ92A	DIN Socket 5-Pin C	1+ £0.425 25+ £0.290 100+ £0.255	1+ £0.500
HH36P	DIN Socket 6-Pin	1+ £0.468 25+ £0.310 100+ £0.275	1+ £0.550
HH37S	DIN Socket 7-Pin	1+ £0.468 25+ £0.320 100+ £0.280	1+ £0.550
FJ94C	DIN Skt 8-Pin Circ	1+ £0.553 25+ £0.370 100+ £0.310	1+ £0.650
FJ93B	DIN Skt 8-Pin Offset	1+ £0.553 25+ £0.370 100+ £0.310	1+ £0.650

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### 5-pin A DIN Plug to Stereo 6.35mm (1/4in.) Socket Adaptor



Allows a 6.35mm (1/4in.) stereo jack plug to be connected to a 5-pin A (180°) DIN socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW33L	Adaptor R	£1.230	£0.890	£0.680	£1.450

### L/S Plug to Open Lead



Loudspeaker plug to open end. Length 3m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW27E	3m L/S Open Lead	£1.090	£0.650	£0.560	£1.290

### L/S Plug to Socket Lead

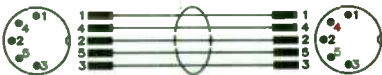


Loudspeaker plug to line socket. Length 5m or 10m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW47B	5m L/Sprk Plg-Skt	£1.090	£0.660	£0.720	£1.290
RW25C	10m L/Sprk Plg-Skt	£1.690	£1.040	£0.880	£1.990

### 5-Pin Plug to 5-Pin Plug Lead



5-pin A DIN plug to 5-pin A DIN plug. Length 1.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CN76H	5 Pin Din Plg/Plg Ld	£1.690	£1.370	£1.200	£1.990

### 5-Pin DIN MIDI Connection Lead

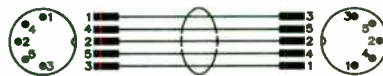


5-pin 180° 'A' DIN plug to 5-pin 180° 'A' plug non-reversed (pin 1 connects to pin 1, 2 to 2 etc.). Available in lengths of 1m and 6.5m approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YZ26D	MIDI Cable 1m	£2.540	£1.590	£1.330	£2.990
YZ27E	MIDI Cable 6.5m	£4.240	£3.140	£2.650	£4.990

### 5-Pin Plug to Mirror-Image Lead



5-pin DIN plug to 5-pin DIN plug with reversal (mirror image) connections. Length: 1.2m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW43W	5 Pin Din Mirror Ld	£1.520	£0.980	£0.840	£1.790

### 5-Pin Plug to Socket Lead

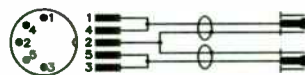


5-pin DIN plug to 5-pin DIN line socket. Length 1.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CN77J	5 Pin Din Plg/Skt Ld	£1.690	£1.180	£0.980	£1.990

### 5-Pin DIN Plug to 3.5mm Plugs

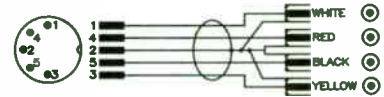


5-pin A DIN plug (pins 1 & 4 and pins 3 & 5) to two 3.5mm jack plugs. Length: 1.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW24B	5 Pin Din-3.5mm Plgs	£1.260	£0.890	£0.740	£1.490

### 5-Pin A DIN Plug to Four Phono Plugs



5-pin A (180°) DIN plug to four phono plugs. Length 1.2m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RW17T	5 Pin Din-Phono Plgs	£2.330	£1.560	£1.380	£2.740

## PHONO CONNECTORS

### Plastic Plug

A phono plug with a smart screw-on plastic cap. Available in Black, Blue, Red, White and Yellow. Overall length: 34mm. Pin length: 9mm from end of shield. Overall diameter: 11.5mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HQ54J	Screw-Cap Phono Blk	£0.297	£0.225	£0.195	£0.360
HQ55K	Screw Cap Phono Blue	£0.297	£0.225	£0.195	£0.360
HQ56N	Screw Cap Phono Red	£0.297	£0.225	£0.195	£0.360
HQ59P	Screw Cap Phono White	£0.297	£0.225	£0.195	£0.360
HQ60Q	Screw Cap Phono Yell	£0.297	£0.225	£0.195	£0.360

### Plastic Plug with Strain Relief Sleeve

A phono plug having a coloured plastic screw-on body. When the body is unscrewed the threaded moulding on the plug is exposed, which is colour matched to the body. The body is of hexagonal section and includes a strain relief sleeve.



Available in red and black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ88V	Phono Plug Red	£0.280	£0.210	£0.170	£0.330
FJ89W	Phono Plug Black	£0.280	£0.210	£0.170	£0.330

### Right-Angled Plastic Plug

A right-angled phono plug having a black plastic body with strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ74R	R/A Phono Plug	£0.638	£0.490	£0.430	£0.750

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

See Stock Code Index For More Price Breaks

## Screened Plug

A screened phono plug with a metal barrel and coiled spring cable relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type 1002	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH01B	Phono Plug Screened	£0.468	£0.330	£0.280	£0.550

## Gold-Plated Plug

A very high quality screened phono plug having a gold-plated body and gold-plated contact surfaces for maximum contact reliability. Plug has a coiled spring relief sleeve. Available with black or red identification bands.



Retail Unit Price each (inc. VAT).

Order Code	Type 1003	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK18U	Gold/Blk Phono Plug	£0.842	£0.570	£0.480	£0.990
JH94C	Gold/Red Phono Plug	£0.842	£0.570	£0.480	£0.990

## Phonos Plugs

Shark



### SILVER AND BLUE PHONO PLUGS.

High quality item with a thicker gold-plated to 3 micro", has a bronze (not brass) centre pin and a single piece internal construction.

Length	32.5mm (cover)
Outer Diameter	12.4mm (cover)
Length	31mm (body)

CODE	COLOUR	HOLE DIAMETER
VM46A	Silver	7.4mm
VM47B	Blue	7.4mm
VM48C	Silver	6.5mm
VM49D	Blue	6.5mm

SOLD IN PACKS OF 4

### VM50E - SILVER PHONO PLUG 10.5mm 1 pc CONSTRUCTION

This new model is suitable for use with the new bigger cables. Cable entry hole is 10.5mm. Centre pin is phosphor bronze and centre part is constructed from one single piece with 5 micro" gold plating. Insulator is Teflon.

SOLD IN PACKS OF 4

### PHONO PLUG PAIRS

Screened phono plug with gold-plated contact surfaces and a gold-plated body in silver-grey or blue. Includes gold-plated strain relief grip. Each

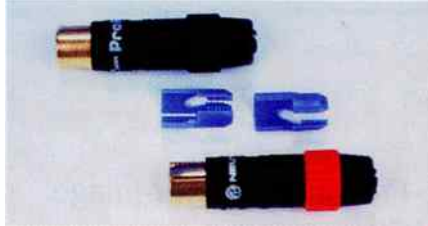
type is sold in pairs (silver-grey AQ57M, blue AQ56L) with a red and black identification band. Internal Diameter 7.5mm.  
**SOLD IN PAIRS**

Retail Unit Price each (inc. VAT).

Order Code	Type 1004	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
VM46A	7mm Silver Phono Plug	£8.500	£8.090	£7.700	£9.990
VM47B	7mm Blue Phono Plug	£8.500	£8.090	£7.700	£9.990
VM48C	6mm Silver Phono Plug	£8.500	£8.090	£7.700	£9.990
VM49D	6mm Blue Phono Plug	£8.500	£8.090	£7.700	£9.990
VM50E	10.5mm Phono Plugs	£17.010			£19.990
AQ57M	Silver Red+Blk Phono Pk	£4.240	£2.950	£2.530	£4.990
AQ56L	Blue Red+Blk Phono Pk	£4.240	£2.950	£2.530	£4.990

## Professional Phono-Plug

Neutrik



These high quality audio connectors with gold contacts feature the Neutrik chuck-principle cable protection, and also make ground before signal contact and break signal before ground. The outer shell element is spring loaded. The plugs are packaged as a pair (one black and one red banded) with a black housing, and each has two strain relief chucks, black and blue. The blue chuck accepts cables of 3 to 5.5mm diameter and the black chuck 5.5 to 7.3mm diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type 1005	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CC71N	Phono Plug Blk & Red	£9.350	£7.950	£7.050	£10.990

## Metal Barrel Gold-Plated Phono Plugs For Large Diameter Cables



A range of high quality metal barrelled phono plugs with gold plated contact surfaces for minimum contact resistance and maximum reliability. These plugs are designed for use with large diameter cables, often encountered in semi-professional and professional applications. Suffix 70 types have 27 x 12mm dia. bodies finished in black with knurled grip rings, an 18mm-long coil spring strain relief and are suitable for cables up to 7mm diameter. Suffix 85 types have 36 x 14mm dia. black knurled bodies, a 34mm-long coil spring strain relief and are suitable for cables up to 8.5mm diameter, a substantial tubular cable clamp will ensure cable retention. Both types are available with red or white identifier bands around the plug body; for left/right identification in stereo applications.

Retail Unit Price each (inc. VAT).

Order Code	Type 1006	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JU06G	Gold Phono P1-R-70	£1.310	£0.930	£0.700	£1.550
JU07H	Gold Phono P1-W-70	£1.310	£0.930	£0.700	£1.550
JU08J	Gold Phono P1-R-85	£1.600	£1.230	£0.990	£1.890
JU09K	Gold Phono P1-W-85	£1.600	£1.230	£0.990	£1.890

## High Quality Gold-Plated Phono Plugs

A range of metal barrelled, gold-plated phono line plugs with different cable entry diameters to match 5, 6, 7 and 8mm dia. sleeving. The high quality of construction includes a body containing a split collet with a ridged inner surface, to grip outer screen when folded back over outer sleeve. Inner conductor can be soldered to centre pin. Insulation material is Teflon. Available with black or red identification band.



Retail Unit Price each (inc. VAT).

Order Code	Type 1007	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JZ07H	Gold Phono Plug 5mm Blk	£1.600	£1.280	£1.070	£1.890
JZ08J	Gold Phono Plug 5mm Rd	£1.600	£1.280	£1.070	£1.890
JZ09K	Gold Phono Plug 6mm Blk	£1.600	£1.280	£1.070	£1.890
JZ10L	Gold Phono Plug 6mm Rd	£1.600	£1.280	£1.070	£1.890
JZ11M	Gold Phono Plug 7mm Blk	£1.650	£1.330	£1.140	£1.950
JZ12N	Gold Phono Plug 7mm Rd	£1.650	£1.330	£1.140	£1.950
JZ13P	Gold Phono Plug 8mm Blk	£1.650	£1.330	£1.140	£1.950
JZ14Q	Gold Phono Plug 8mm Rd	£1.650	£1.330	£1.140	£1.950

## Lockable Plug and Socket

A phono plug in a metal barrel having a threaded locking ring to firmly attach the plug to the matching socket. Plug has a coiled spring cable relief sleeve. Mounting hole for socket 6-3mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1008	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JB14Q	Locking Phono Plug	£0.842	£0.740	£0.660	£0.990
JB15R	Locking Phono Socket	£0.723	£0.600	£0.540	£0.850

## Single-Hole Fixing Chassis Socket

A chassis mounting phono socket that requires a single hole fixing. Mounting hole: 6-35mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type 1009	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW06G	Chassis Phono Skt	£0.382	£0.270	£0.210	£0.450

## Gold-Plated Socket

A chassis mounting phono socket with gold-plated contact surfaces for ultimate reliability. Available with either Red or Black colour bands to identify relevant channel. Single hole fixing. Mounting hole: 6-3mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type 1010	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FT96D	Gold Phono Skt Blk	£0.757	£0.530	£0.400	£0.890
DE77J	Gold Phono Skt Red	£0.757	£0.530	£0.400	£0.890



## Gold Single-Hole Fixing Insulated Chassis Socket

A chassis mounted phono socket, the body of which is insulated from its panel by shoulder washers. Fixed with supplied nut and tag washer for separate screen connection. Teflon insulation, gold-plated. Available with black or red identification band.

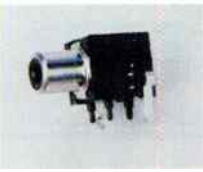


Retail Unit Price each (inc. VAT).

Order Code	Type 1011	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JZ05F	Gold Ch Phono Skt Blk	£1.600	£1.320	£1.210	£1.899
JZ06G	Gold Ch Phono Skt Red	£1.600	£1.320	£1.210	£1.899

## PCB Mounting Socket

A compact phono socket which mounts directly onto printed circuit boards. Dimensions: 22 x 15 x 10mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1012	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF99H	PCB Phono Skt	£0.426	£0.350	£0.300	£0.590

## Chassis Sockets



Chassis mounting phono sockets fixed to paxolin panels.

Type	No. of sockets	Dimensions of mount mm	Fixing centres mm	Socket centres mm
Single	1	35 x 22	26	—
Twin	2	56 x 22	48	20
Quad	4	76 x 24	65	14
2 Square	4	49 x 36	40 x 26	15 x 16
6-Way	6	65 x 36	55 x 26	15 x 16
8-Way	8	80 x 36	70 x 26	15 x 16

Fixing holes are 3-75mm dia. Phono sockets require 8-5mm dia. cut-outs.

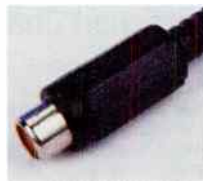
Retail Unit Price each (inc. VAT).

Order Code	Type 1013	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JH93B	Phono Socket Single	£0.246	£0.160	£0.140	£0.290
JK15R	Phono Socket Twin	£0.382	£0.250	£0.200	£0.450
BW74R	Phono Socket Quad	£0.553	£0.430	£0.340	£0.650
JK16S	Phono Socket 2 Sqre	£0.553	£0.430	£0.370	£0.650
JH95D	Phono Socket 6-Way	£0.757	£0.570	£0.520	£1.890
JK17T	Phono Socket 8-Way	£0.978	£0.750	£0.670	£1.150

**Business Account Holders**  
No Delivery Charges for any order

## Plastic Line Socket

An in-line plastic barrel phono socket with strain relief sleeve. Available in red and black.



Retail Unit Price each (inc. VAT).

Order Code	Type 1014	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ90X	Line Phono Skt Blk	£0.297	£0.180	£0.140	£0.350
JK23A	Line Phono Skt Red	£0.297	£0.180	£0.140	£0.350

## Screened Line Socket

A screened in-line metal barrel phono socket with coiled spring cable relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type 1015	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH04E	Line Phono	£0.417	£0.290	£0.260	£0.490

## Gold-Plated Line Socket

A very high quality screened phono line socket with a gold-plated body and gold-plated contact surfaces for ultimate contact reliability. It has a coil spring strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type 1016	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FA93B	Gold/Blk Phono Ln Skt	£0.757	£0.510	£0.425	£0.890
JH96E	Gold/Red Phono Ln Skt	£0.757	£0.510	£0.425	£0.890

## In-Line Connector

A metal barrel adaptor for connecting two phono plugs together.



Retail Unit Price each (inc. VAT).

Order Code	Type 1017	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH05F	Phono Extender Adpt	£0.553	£0.330	£0.240	£0.650

## Two-Into-One Adaptor

Allows two phono plugs to be used with one phono socket.

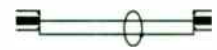


Retail Unit Price each (inc. VAT).

Order Code	Type 1018	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW39N	2 to 1 Phono Adptr	£1.140	£0.750	£0.590	£1.350

## Phono Plug to Phono Plug

Phono plug to phono plug lead. Length 1-2m. Also see Video Connectors.

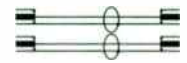


Retail Unit Price each (inc. VAT).

Order Code	Type 1019	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RW48C	Sgle Phono-Phono Ptg	£1.400	£0.750	£0.600	£1.650

## Twin Phono Plug to Phono Plug

Two phono plugs to two phono plugs. Length 1-2m.



Retail Unit Price each (inc. VAT).

Order Code	Type 1020	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RW50E	Twin Phono-Phono Ptg	£1.940	£0.950	£0.800	£2.290

## Quad Phono Plug to Phono Plug

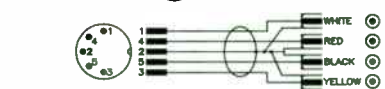


Four phono plugs to four phono plugs. Length 1-2m approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 1021	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RW51F	Quad Phono-Phono Ptg	£2.280	£1.750	£1.500	£2.690

## 5-Pin A DIN Plug to Four Phono Plugs



5-pin A (180°) DIN plug to four phono plugs. Length 1-2m.

Retail Unit Price each (inc. VAT).

Order Code	Type 1022	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RW17T	5pin Din-Phono Ptg	£2.330	£1.560	£1.380	£2.740

## Phono Plug to 3-5mm Mono Jack Socket Adaptor

Allows a 3-5mm mono jack plug to be used with a phono socket.



Retail Unit Price each (inc. VAT).

Order Code	Type 1023	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW06G	3.5mm to Phono Adptr	£0.587	£0.330	£0.310	£0.690

See Stock Code Index For More Price Breaks

## Phono Plug to 6.35mm (1/4 in.) Mono Jack Socket Adaptor



Allows a 6.35mm (1/4in.) mono jack plug to be used with a phono socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW05F	6.35mmtoPhono Adptr	£0.587	£0.380	£0.310	£0.680

## Screened Chassis Socket

2.5mm screened mono chassis socket for panels up to 2mm thick. Requires 6mm dia. panel cut-out. Overall length behind panel 21mm. Overall length 24mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK03D	2.5 Mono Chas Skt	£0.382	£0.275	£0.220	£0.450

## Screened Plug

2.5mm stereo jack plug with metal barrel and coiled spring cable relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE67X	Stereo 2.5mm Plg Scr	£1.120	£0.900	£0.830	£1.320

10

## JACK 2.5mm - MONO

### Plastic Barrel Plug

2.5mm jack plug with plastic barrel.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF78H	2.5 Plug Plas	£0.297	£0.180	£0.145	£0.350

### Plastic Barrel Plug with Strain Relief Sleeve

A 2.5mm mono jack plug with plastic barrel and strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK00A	2.5 Plug Plas SR	£0.340	£0.260	£0.220	£0.400

### Screened Plug

2.5mm jack plug with metal barrel and coiled spring cable relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF77J	2.5 Plug Scr	£0.382	£0.300	£0.250	£0.450

### Chassis Socket

2.5mm jack socket, open-type with break contact. Mounting hole: 3-8mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF78K	2.5 Jack Socket	£0.331	£0.260	£0.240	£0.390

## PCB Mounting Socket



A 2.5mm mono jack socket having a knurled fixing nut for panel mounting in addition to solder tags suitable for insertion into drilled holes in a printed circuit board. The socket also has a break action contact to a third pin on insertion of the plug. Overall height from PCB is 9mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK01B	PCB 2.5mm Jack Skt	£0.382	£0.310	£0.265	£0.450

## Line Socket

A 2.5mm mono line jack socket with plastic barrel and strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF79L	2.5 Line Socket	£0.297	£0.225	£0.185	£0.350

## 2.5mm Plug to 3.5mm Socket

Allows a 3.5mm mono jack plug to be used with a 2.5mm mono jack socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW08J	2.5 - 3.5mm Adptr	£0.553	£0.375	£0.280	£0.650

## JACK 2.5mm - STEREO

### Plastic Barrel Plug

2.5mm stereo jack plug with plastic barrel.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ85G	Stereo 2.5mm Jack Pl	£0.638	£0.520	£0.450	£0.750

## Chassis Socket

2.5mm screened stereo chassis socket for panels up to 2mm thick. Requires 6mm dia. panel cut-out. Overall length behind panel 21mm. Overall length 24mm. Coppered terminal is tip.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FT94C	2.5 Stereo Chas Skt	£0.382	£0.280	£0.220	£0.450

## Line Socket

A stereo 2.5mm line jack socket with plastic body and strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FT93B	2.5 Stereo Line Skt	£0.340	£0.265	£0.205	£0.400

## 2.5mm Plug to 3.5mm Stereo Socket

Allows a 3.5mm stereo jack plug to be used with a 2.5mm stereo jack socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FA94C	Adaptor W	£0.842	£0.715	£0.630	£0.990

## JACK 3.5mm - MONO

### Plastic Barrel Plug

A mono 3.5mm jack plug with a plastic barrel and strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF80B	Plug Plas 3.5	£0.340	£0.260	£0.205	£0.400

Business Account Holders  
No Delivery Charges for any order

**Coloured Plugs**



Plastic barrel mono 3.5mm jack plugs in five colours. The tip insulator ring matches the colour of the barrel. Supplied in packs of five plugs, one each of the following colours: Red, Yellow, Green, Blue, White.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JR95D	Colour 3.5mm Jacks	£2.330	£1.880	£1.740	£2.740

**Right-Angled Plug**

A right-angled mono 3.5mm jack plug with snap-on cover and solder terminals.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FA37S	R/A 3.5mm Plug	£0.417	£0.280	£0.220	£0.490

**Screened Plug**

A mono 3.5mm screened jack plug in a metal barrel with coiled spring cable relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF81C	Plug Metal 3.5	£0.417	£0.320	£0.260	£0.490

**Lockable Plug and Socket**



A 3.5mm mono jack plug in a metal barrel, having a threaded locking ring to firmly attach the plug to the matching socket. The fixing nut of the single hole mounting socket is threaded for the ring, and has flats for tightening with pliers or a spanner. Plug has coil strain relief sleeve. Mounting hole for socket: 6mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FV03D	Lok 3.5 Jack Plug	£1.180	£0.940	£0.810	£1.390
FV04E	Lok 3.5 Jack Skt	£0.765	£0.570	£0.550	£0.900

**Chassis Socket**

An open mono 3.5mm jack socket with break contact. Mounting hole: 6.3mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF82D	Jack Socket 3.5	£0.382	£0.290	£0.260	£0.450

**Screened Chassis Socket**

3.5mm screened mono chassis socket for panels up to 2mm thick. Requires 6mm dia. panel cut-out. Overall length behind panel 27mm. Overall length 30mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK02C	Mono 3.5mm Ch Jk Skt	£0.382	£0.280	£0.225	£0.450

**PCB Socket**

A PCB mounting mono 3.5mm jack socket which includes the facility for chassis mounting (6.3mm dia.)



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK02C	PCB 3.5mm Jack Skt	£0.382	£0.280	£0.225	£0.450

**Mono 3.5mm Jack Socket**

CHIT



A 3.5mm mono jack socket manufactured in accordance with DIN dimensions and fitted with break contacts. Available with either solder tags or PCB mounting tabs. Supplied with nickel-plated brass fixing nuts.

Manufacturer's Code	Mounting	Stock Code
S6 BB	Tag	CX93B
S6 BB PC	PCB	CX94C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CX93B	Mono 3.5 Skt Solder	£0.468	£0.340	£0.265	£0.550
CX94C	Mono 3.5 Skt PCB	£0.468	£0.340	£0.265	£0.550

**Plastic Barrel Line Socket**

A mono 3.5mm line socket in a plastic barrel with strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF83E	Line Socket Plas 3.5	£0.340	£0.230	£0.195	£0.400

**Screened Line Socket**

A 3.5mm mono jack line socket in metal barrel with coiled spring cable relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF84F	Line Socket Scr 3.5	£0.425	£0.310	£0.270	£0.500

**Screened Coupler**

A screened metal-barrelled coupler for joining two mono 3.5mm plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK06G	Mono 3.5mm Jk Cplr	£0.510	£0.415	£0.390	£0.600

**Two-Into-One Adaptor**

Allows two mono jack plugs to be connected to one socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW35Q	3.5mm 2 to 1 Adptr	£0.944	£0.880	£0.820	£1.110

**Plastic Barrel Plug with Strain Relief Sleeve**

A 2.5mm mono jack plug with plastic barrel and strain relief sleeve.

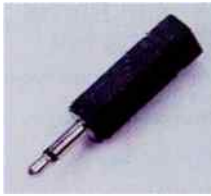


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK00A	2.5 Plug Plas SR	£0.340	£0.260	£0.220	£0.400

## 3.5mm Plug to Stereo 3.5mm Socket

Allows a 3.5mm stereo plug to be used with a 3.5mm mono socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK14Q	3.5mm Mono-Ste Adpt	£0.553	£0.390	£0.285	£0.650

## 6.35mm (1/4in.) Stereo Plug to 3.5mm Mono Socket Adaptor

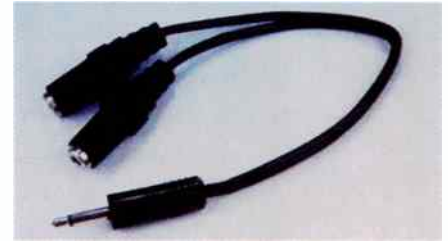
Allows a 3.5mm mono jack plug to be used with a 6.35mm (1/4in.) stereo jack socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW34M	6.35-3.5mm Ste-Mono	£0.595	£0.390	£0.300	£0.700

## (mono)



Headphone adaptor lead. Mono 3.5mm jack plug to two mono 3.5mm line sockets. Length: 0.2m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RK27E	Headphone Splitter	£1.260	£0.870	£0.710	£1.490

## 3.5mm Stereo Plug to 3.5mm Mono Socket Adaptor

Allows a 3.5mm mono jack plug to be used with a 3.5mm stereo jack socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK15R	Adaptor D	£0.417	£0.410	£0.310	£0.490

## 3.5mm Plug to Phono Socket

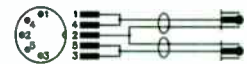
Allows a phono plug to be used with a 3.5mm mono jack socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW04E	3.5mm to Phono Adptr	£0.510	£0.365	£0.235	£0.600

## 5-Pin DIN Plug to 3.5mm Plugs



5-pin A DIN plug (pins 1 & 4 and pins 3 & 5) to two 3.5mm jack plugs. Length: 1.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW24B	5pin Din-3.5mm Plgs	£1.260	£0.890	£0.740	£1.490

## 3.5mm Plug to 6.35mm (1/4in.) Mono Socket

Allows a 6.35mm (1/4in.) mono jack plug to be used with a 3.5mm mono socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW02C	3.5mm-6.35mm Adptr	£0.595	£0.390	£0.285	£0.700

## Phono Plug to 3.5mm Mono Jack Socket Adaptor

Allows a 3.5mm mono jack plug to be used with a phono socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW06G	3.5mm to Phono Adptr	£0.587	£0.330	£0.310	£0.690

## JACK 3.5mm - STEREO

### Plastic Plug

A 3.5mm stereo jack plug with plastic barrel and strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF98G	Stereo Plas 3.5 Plug	£0.587	£0.350	£0.290	£0.690

## 6.35mm (1/4in.) Plug to 3.5mm Mono Socket Adaptor

Allows a 3.5mm mono jack plug to be used with a 6.35mm (1/4in.) mono jack socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW00A	Adaptor A	£0.595	£0.380	£0.310	£0.700

## 1.3mm Plug to 3.5mm Mono Jack Socket Adaptor

An adaptor which enables a 3.5mm mono jack plug to be used with Walkman-type cassette players using 1.3mm power sockets.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK10L	DC 3.5-1.3mm Adptr	£0.587	£0.440	£0.365	£0.690

## Right-Angled Plug

A right-angled stereo 3.5mm jack plug.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FA38R	R/A 3.5mm Stereo Plug	£0.595	£0.400	£0.350	£0.700

## 3.5mm Plug to 6.35mm (1/4in.) Stereo Socket

Allows a 6.35mm (1/4in.) stereo jack plug to be used with a 3.5mm mono jack socket.

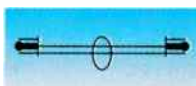


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW12N	3.5-6.35mm Ste-Mono	£0.553	£0.370	£0.275	£0.650

## Plug to Plug

3.5mm jack plug to 3.5mm jack plug. Length 1.5m.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW28F	3.5mm Plug-Plug Lead	£0.842	£0.590	£0.495	£0.990

## Screened Plug

A 3.5mm stereo jack plug with a metal barrel with a coiled spring cable relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ99H	Mt Stereo 3.5mm Jk	£0.765	£0.440	£0.350	£0.900

## Mini-Headphone Splitter



## 3.5mm Plug to Stereo 3.5mm Socket

Allows a 3.5mm stereo plug to be used with a 3.5mm mono socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK14Q	3.5mm Mono-Ste Adpt	£0.553	£0.390	£0.265	£0.650

## Stereo Phono Socket Adaptor

Allows two phono plugs, one carrying the left and one the right channel of a stereo signal to be connected to a 3.5mm stereo socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK14Q	Phono/Stereo 3.5mm	£0.978	£0.710	£0.570	£1.150

## JACK 6.35mm - MONO Plastic Barrel Plug



Standard 6.35mm (1/4in.) mono jack plug in plastic barrel with strain relief sleeve.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF85G	Jack Plug Plas	£0.723	£0.340	£0.250	£0.850

## 3.5mm Stereo Plug to 6.35mm (1/4in.) Stereo Socket Adaptors

Available with plastic barrel or fully screened metal barrel. They allow a 6.35mm (1/4in.) stereo jack plug to be used with a 3.5mm stereo socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RK56L	Ste 3.5-6.35mm Adptr	£0.595	£0.356	£0.290	£0.700
JK07H	Mtl 3.5-6.35mm Adptr	£0.680	£0.480	£0.380	£0.800

## 3.5mm Stereo Plug Extension Lead



A 1.2m long extension lead with a 3.5mm stereo plug at both ends. Suitable for connecting personal stereos to personal stereo loudspeakers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CK27E	3.5mm Stereo Ext Ld	£1.430	£0.790	£0.620	£1.690

## Two 6.35mm (1/4in.) Stereo Sockets to 3.5mm Stereo Plug

Allows two stereo 6.35mm (1/4in.) jack plugs to be connected to one 3.5mm stereo jack socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JB20W	2x1/4skt X3.5plg Sto	£0.936	£0.880	£0.820	£1.100

## 6.35mm (1/4in.) Stereo Plug to 3.5mm Stereo Socket Adaptor

Allows a 3.5mm stereo jack plug to be used with a 6.35mm (1/4in.) stereo jack socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RK55K	6.35-3.5 Ste Adpt	£0.723	£0.430	£0.330	£0.850

## Two 3.5mm Stereo Sockets to 6.35mm (1/4in.) Stereo Plug

Allows two stereo 3.5mm jack plugs to be connected to one 6.35mm (1/4in.) stereo jack socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JB18U	2x3.5skt X1/4plg Sto	£0.978	£0.720	£0.550	£1.150

## Mini-Headphone Extension Lead



Headphone extension lead. Stereo 3.5mm jack plug to stereo 3.5mm jack socket. Length 3m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CN79L	3.5mm Ste Plg/Skt Ld	£1.690	£1.290	£1.100	£1.990

## Mini-Headphone Splitter (stereo)



Headphone adaptor lead. Stereo 3.5mm jack plug to two stereo 3.5mm line sockets (so that two sets of headphones can be connected to one outlet). Length: 0.2m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RK58N	Mini H/Phone Splt	£1.690	£1.250	£1.100	£1.990

## Professional Plug



Solid nickel-plated brass jack plug with slide-over plastic sleeve. Suitable for cables 4.5 to 6.35mm overall diameter. Available in the following colours: Black, Blue, Orange, Red, White and Yellow.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FD80B	Prof Jack Plug Black	£2.110	£1.680	£1.460	£2.490
FD81C	Prof Jack Plug Blue	£2.170	£1.680	£1.460	£2.550
FD83E	Prof Jack Plug Orgng	£2.110	£1.680	£1.460	£2.490
FD79L	Prof Jack Plug Red	£2.110	£1.680	£1.460	£2.490
FD84F	Prof Jack Plug White	£2.110	£1.680	£1.460	£2.490
FD82D	Prof Jack Plug Yello	£2.110	£1.680	£1.460	£2.490

## Side Entry Jack Plug

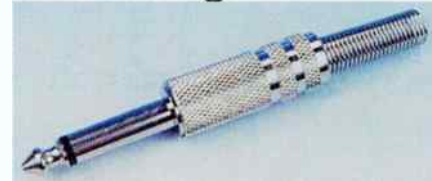
Standard 6.35mm (1/4in.) mono right-angled side entry jack plug with plastic cover.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF86T	Side Jack Plas	£0.553	£0.340	£0.280	£0.650

## Screened Plug



Standard 6.35mm (1/4in.) mono jack plug in a metal barrel with coiled spring cable relief sleeve.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF87U	Jack Plug Metal	£0.723	£0.470	£0.360	£0.850

See Stock Code Index For More Price Breaks

## High Quality Screened Plug



Standard 6.35mm (1/4in.) mono screened jack plugs with metal body and coiled spring cable relief sleeve. Available with black or red identification bands.

Retail Unit Price each (inc. VAT).

Order Code	Type 1240	Price each exc. VAT	inc. VAT each
YV07H	SR Jack Plug Black	1+ £0.842 25+ £0.520 100+ £0.420	1+ £0.950
JH99H	SR Jack Plug Red	1+ £0.842 25+ £0.470 100+ £0.420	1+ £0.950

## Professional Diecast Mono Jack Plug

Neutrik



A 6.35mm (1/4in.) professional diecast mono jack plug with Neutrik chuck-type strain relief. The item easily disassembles into four separate parts to facilitate soldering.

Order Code	Type 1232	Price each exc. VAT	inc. VAT each
CC69A	Neutrik Mono Jack	1+ £1.690 10+ £1.350 25+ £1.270	1+ £1.990

## Straight 6.35mm Audio Jack Plugs

Switchcraft



The stereo or mono straight audio jack plugs are designed for OEMs and users of commercial jack plugs. They are easily assembled using three pieces; handle, insulator and finger/housing. They have large terminals that accept up to 16AWG wiring (cables up to 6.35mm dia.).

Retail Unit Price each (inc. VAT).

Order Code	Type 1163H	Price each exc. VAT	inc. VAT each
GU13P	Prof Mono Straight	1+ £1.890 5+ £1.800 10+ £1.710	1+ £2.230
GU14Q	Prof Stereo Straight	1+ £2.900 5+ £2.750 10+ £2.610	1+ £3.410

## Gold-Plated Plug



A gold-plated 6.35mm (1/4in.) mono jack plug with metal body and coiled spring cable relief sleeve. Available with black or red identification bands.

Retail Unit Price each (inc. VAT).

Order Code	Type 1242	Price each exc. VAT	inc. VAT each
FJ86T	Gold/Bk Mon 1/4in Pl	1+ £1.360 25+ £0.960 100+ £0.720	1+ £1.600
JH98G	Gold/Red Mon 1/4in Pl	1+ £1.360 25+ £0.960 100+ £0.720	1+ £1.600

## Heavy Duty Plug



A gold-plated mono screened jack plug with heavy duty brass handle, plastic finger-grip and long coiled spring strain-relief sleeve. Handle dia. 16mm. Sleeve length 53mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1246	Price each exc. VAT	inc. VAT each
FP15R	Heavy Duty Jack Plug	1+ £1.650 25+ £1.040 100+ £0.830	1+ £1.950

## Screened Side-Entry Plug



Standard 6.35mm (1/4in.) right-angled side-entry mono jack plug with a metal body.

Retail Unit Price each (inc. VAT).

Order Code	Type 1249	Price each exc. VAT	inc. VAT each
YL03D	Side Jack Screened	1+ £0.553 25+ £0.350 100+ £0.290	1+ £0.650

## Right-Angled 6.35mm Audio Jack Plugs

Switchcraft



The stereo or mono right-angle audio jack plugs are designed for OEMs and users of commercial jack plugs. The robust slimline construction, 12.7mm body diameter, allows close stacking in adjacent jack sockets. They are easily assembled using three pieces; handle, insulator and finger/housing. They have large terminals that accept up to 16AWG wiring (cables up to 6.35mm dia.).

Retail Unit Price each (inc. VAT).

Order Code	Type 1164Q	Price each exc. VAT	inc. VAT each
GU15R	Prof Mono R/Angle	1+ £3.600 5+ £3.420 10+ £3.240	1+ £4.230
GU16S	Prof Stereo R/Angle	1+ £4.290 5+ £4.080 10+ £3.870	1+ £5.050

## Lockable Plug and Socket



A standard 6.35mm (1/4in.) mono jack plug with metal barrel and coiled spring relief sleeve. The plug has a threaded locking ring to firmly attach it to the matching socket, which has a fixing nut threaded for the ring. The chassis socket is single hole mounting requiring a 9.5mm (3/16in.) dia. hole.

Retail Unit Price each (inc. VAT).

Order Code	Type 1251	Price each exc. VAT	inc. VAT each
FV05F	Lok Standrd Jack Plg	1+ £1.690 25+ £1.320 100+ £1.200	1+ £1.990
FV06G	Lok Standrd Jack Skt	1+ £1.460 25+ £1.150 100+ £1.050	1+ £1.720

## Open Chassis Socket

Standard 6.35mm (1/4in.) open-type mono jack socket. Mounting hole: 9.5mm dia.



Retail Unit Price each (inc. VAT).

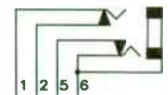
Order Code	Type 1252	Price each exc. VAT	inc. VAT each
HF91Y	Jack Skt Open	1+ £0.468 25+ £0.330 100+ £0.265	1+ £0.550

## Moulded Chassis Socket Plastic Bezel

CIMF



Dimensions in mm  
Holes #1.3mm  
Veneer from above



Standard 6.35mm (1/4in.) moulded jack socket with 2 break contacts. Mounting hole: 11mm dia. Available with solder tags or PCB mounting pins.

Retail Unit Price each (inc. VAT).

Order Code	Type 1238	Price each exc. VAT	inc. VAT each
HF90X	Jack Skt Brk	1+ £0.468 25+ £0.350 100+ £0.295	1+ £0.550
FJ00A	Mono PCB 1/4in J/Skt	1+ £0.468 25+ £0.350 100+ £0.295	1+ £0.550

**All Customers**  
No additional freight charges for heavy items

## Moulded Chassis Socket Chromed Bezel



**Cliff**  
Standard 6.35mm (1/4in.) moulded jack socket with 2 break contacts. Bezel is domed and chromed. Mounting hole: 11mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW78K	Chro Mono Jack Skt	£0.672	£0.480	£0.380	£0.790

## Two-Into-One Adaptor

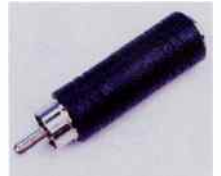
Allows two 6.35mm (1/4in.) mono jack plugs to be used with one 6.35mm (1/4in.) mono jack socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW37S	Adaptor V	£1.180	£0.760	£0.550	£1.380

## Phono Plug to 6.35mm (1/4in.) Mono Jack Socket Adaptor



Allows a 6.35mm (1/4in.) mono jack plug to be used with a phono socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW05F	6.35mm to Phono Adptr	£0.587	£0.380	£0.310	£0.690

## Compact Mono PCB Jack Sockets

**Cliff**  
A compact PC mounting 6.35mm (1/4in.) mono jack socket with a switch contact, and supplied with mounting nut and washer.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CX89W	PCB Skt Sw Mono	£0.689	£0.520	£0.460	£0.810

## Plastic Barrel Line Socket



A standard 6.35mm (1/4in.) mono line socket with plastic barrel and strain relief sleeve.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH19V	Line Jack Plas	£0.468	£0.300	£0.260	£0.550

## Screened Line Socket

Standard 6.35mm (1/4in.) mono line socket with metal barrel and coiled spring strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH20W	Scr Line Jack	£0.944	£0.660	£0.565	£1.110

## 6.35mm (1/4in.) Jack Coupler

A heavy-duty plastic-barrelled coupler for joining two mono 6.35mm (1/4in.) jack plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RK80B	Mono 0.25in. Jk Cplr	£0.927	£0.640	£0.535	£1.090

## 6.35mm (1/4in.) Plug to 3.5mm Mono Socket Adaptor

Allows a 3.5mm mono jack plug to be used with a 6.35mm (1/4in.) mono jack socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW00A	Adaptor A	£0.595	£0.380	£0.310	£0.700

## 3.5mm Plug to 6.35mm (1/4in.) Mono Socket

Allows a 6.35mm (1/4in.) mono jack plug to be used with a 3.5mm mono socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW02C	3.5mm-6.35mm Adptr	£0.595	£0.390	£0.285	£0.700

## 6.35mm (1/4in.) Plug to 6.35mm (1/4in.) Stereo Socket Adaptor

Allows a 6.35mm (1/4in.) stereo jack plug to be used with a 6.35mm (1/4in.) mono jack socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK11M	Adaptor L	£0.510	£0.360	£0.290	£0.600

## 6.35mm (1/4in.) Plug to Phono Socket Adaptors

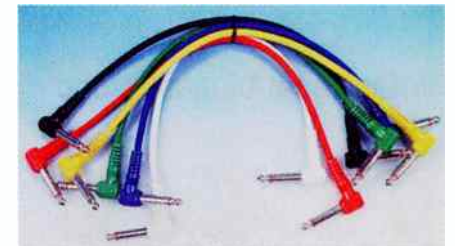
Allows a phono plug to be used with a 6.35mm (1/4in.) mono jack socket. Available with plastic body or high quality gold-plated metal body.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KW36P	Mtl 6.35 to Phono	£0.842	£0.630	£0.520	£0.990
RW01B	6.35mm to Phono Adptr	£0.689	£0.400	£0.300	£0.810

## Patch Lead Set



Six short colour coded screened leads terminated with right-angled 6.35mm (1/4in.) mono jack plugs for chaining several items of audio or stage equipment together. Supplied as a set. Length 300mm each. Colours: Black, Blue, Green, Yellow, Red, White.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YZ32K	300mm Patch Lead Set	£5.090	£3.750	£3.240	£5.990

## Coiled Right-Angled Mono 6.35mm (1/4in.) Jack Lead



A coiled extension lead terminated with a right-angled mono 6.35mm (1/4in.) jack plug and a straight 6.35mm (1/4in.) jack plug. Coiled length 1.2m. Extended length 3.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RW34M	Coiled Mono Jack Ld	£2.540	£1.690	£1.470	£2.990

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.



**Straight Mono 6.35mm (1/4in.) Jack Lead**



A straight extension lead terminated with a metal bodied 6.35mm (1/4in.) jack plug at each end. The plug bodies have knurled finger grips and coiled spring strain relief sleeves. Length 4.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type 1282	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YZ29G	Straight 1/4 Jack Lead	£3.390	£2.220	£2.040	£3.99H

**Double Screened Straight Mono 6.35mm (1/4in.) Jack Lead**



A straight extension lead terminated with a metal bodied 6.35mm (1/4in.) jack plug at each end. The plug bodies are sleeved with chunky moulded plastic finger grips. The cable features a conductive polythene screen over a polythene insulator for the central conductor which is in overall contact with an outer copper braided screen for minimum noise pick-up. Length 4.5m.

Retail Unit Price each (inc. VAT)

Order Code	Type 1283	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YZ30H	DS Straight 1/4 Jk Ld	£4.240	£3.150	£2.850	£4.980

**Double Screened Coiled Mono 6.35mm (1/4in.) Jack Lead**



A coiled extension lead terminated with a metal bodied 6.35mm (1/4in.) jack plug at each end. The plug bodies are sleeved with chunky moulded plastic finger grips. The cable features a conductive polythene screen over a polythene insulator for the central conductor which is in overall contact with an outer copper braided screen for minimum noise pick-up. Coiled length 1m. Extended length 3-2m.

Retail Unit Price each (inc. VAT).

Order Code	Type 971	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YZ31J	DS Coiled 1/4 Jk Ld	£4.240	£3.450	£3.050	£4.990

**Long Double Screened Coiled Mono 6.35mm (1/4in.) Jack Lead**



A coiled extension lead terminated with plastic bodied 6.35mm (1/4in.) jack plugs at each end, with chunky moulded finger grips. The cable has a conductive polythene screen over a polythene insulator for the central conductor, in contact with an outer copper braided screen for minimum noise pick-up. Coiled length: 1-3m. Extended length: 5-4m. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type 972	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JX84F	LD Coiled 1/4 Jk Ld	£5.090	£4.450	£3.800	£5.990

**High Quality Straight Mono 6.35mm (1/4in.) Jack Lead with OFC Conductors**



A straight extension lead terminated with a black, metal bodied, 6.35mm (1/4in.) jack plug at each

end. The plug bodies have knurled finger grips and coiled strain relief sleeves. Untinned OFC (oxygen free copper) conductors are used for unparalleled sound purity. Length 6m. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type 973	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JX85G	OFC 1/4 Jack Lead	£12.750	£10.500	£8.650	£14.990

**JACK 6.35mm - STEREO**

**Plastic Barrel Plug**

A standard 6.35mm (1/4in.) stereo jack plug with plastic barrel and strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type 975	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
HF88V	Jack Pl Sto Plas	£0.638	£0.400	£0.300	£0.750

**Side-Entry Plug**

Standard 6.35mm (1/4in.) stereo side-entry jack plug with plastic body.



Retail Unit Price each (inc. VAT).

Order Code	Type 976	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FK00A	Stereo R/A 1/4in Jk	£0.638	£0.420	£0.340	£0.750

**Screened Plug**

A standard 6.35mm (1/4in.) screened stereo jack plug with a metal barrel and coiled spring cable relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type 977	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
HF89W	Jack Pl Sto Metal	£0.842	£0.600	£0.450	£0.990

**Professional Diecast Stereo Jack Plug**

**Neutrik**  
A 6.35mm (1/4in.) professional diecast stereo jack plug with Neutrik chuck-type strain relief. The plug easily disassembles into four separate parts to facilitate soldering.



Retail Unit Price each (inc. VAT).

Order Code	Type 974	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
CC70M	Neutrik Stereo Jack	£2.420	£2.000	£1.900	£2.850

**All Customers**  
No additional freight charges for heavy items

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MAPLIN PROFESSIONAL

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Stockholding and Supply

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## Straight 6.35mm Audio Jack Plugs

Switchcraft



The stereo or mono straight audio jack plugs are designed for OEMs and users of commercial jack plugs. They are easily assembled using three pieces; handle, insulator and finger/housing. They have large terminals that accept up to 16AWG wiring (cables up to 6.35mm dia.).

Retail Unit Price each (inc. VAT).

Order Code	Type 11833	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GU13P	Prof Mono Straight	£1.890	£1.800	£1.710	£2.230
GU14Q	Prof Stereo Straight	£2.900	£2.750	£2.610	£3.410

## Gold-Plated Jack Plug

A gold-plated stereo 6.35mm (1/4in.) jack plug, having a plated barrel in addition to plated contact areas, plus a coil spring strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type 978	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FM12N	Gold Stereo 1/4in Jk	£1.480	£1.050	£0.830	£1.750

## Screened Side-Entry Plug

Standard 6.35mm (1/4in.) right-angled side-entry stereo jack plug with a metal body.



Retail Unit Price each (inc. VAT).

Order Code	Type 975	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK01B	Stereo R/A 1/4in Scr	£0.595	£0.425	£0.340	£0.700

## Right-Angled 6.35mm Audio Jack Plugs

Switchcraft

The stereo or mono right-angle audio jack plugs are designed for OEMs and users of commercial jack plugs. The robust slimline construction, 12.7mm body diameter, allows close stacking in adjacent jack sockets. They are easily assembled using three pieces; handle, insulator and finger/housing. They have large terminals that accept up to 16AWG wiring (cables up to 6.35mm dia.).



Retail Unit Price each (inc. VAT).

Order Code	Type 11840	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GU15R	Prof Mono R/Angle	£3.600	£3.420	£3.240	£4.230
GU16S	Prof Stereo R/Angle	£4.290	£4.080	£3.870	£5.050

## Open Socket

Standard 6.35mm (1/4in.) open-type 3-pole stereo jack socket. Mounting hole: 9.5mm dia.



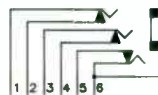
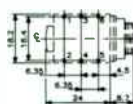
Retail Unit Price each (inc. VAT).

Order Code	Type 980	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF93B	Stereo Open Skt	£0.587	£0.400	£0.340	£0.690

## Moulded Chassis Socket with Plastic Bezel



Dimensions in mm  
Holes #1.2mm  
Viewed from above



Standard 6.35mm (1/4in.) moulded stereo jack socket with 3 break contacts. Mounting hole: 11mm dia. Available with solder tags or PCB mounting pins.

Retail Unit Price each (inc. VAT).

Order Code	Type 981	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF92A	Jack Skt Sto	£0.595	£0.430	£0.350	£0.700
FJ05F	Stereo PCB 1/4in Skt	£0.595	£0.430	£0.350	£0.700

## Moulded Chassis Socket with Chromed Bezel

Cliff

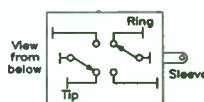
Standard 6.35mm (1/4in.) moulded stereo jack socket with 3 break contacts. Bezel is domed and chromed and contacts are nickel silver. Mounting hole: 11mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type 982	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW79L	Chro Stereo Jack Skt	£0.774	£0.550	£0.460	£0.910

## DPDT Jack Socket



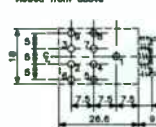
A standard 6.3mm (1/4in.) stereo jack socket with two changeover contacts which are not connected to the plug when it is inserted, 9 contacts. Ideally suited as headphone outlet on amplifier, with switches used to change main output from speakers to dummy loads. Mounting hole: 9.5mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 983	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW90B	DPDT Jack Socket	£0.944	£0.720	£0.650	£1.110

## DPDT PCB Jack Socket

Dimensions in mm  
Holes #2.5mm  
Viewed from above



A standard 6.35mm (1/4in.) stereo PCB mounting jack socket with internal DPDT contacts.

Retail Unit Price each (inc. VAT).

Order Code	Type 984	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ87U	Sw PCB Stereo Jk Skt	£1.370	£1.050	£0.940	£1.620

## Compact Stereo PCB Jack Sockets

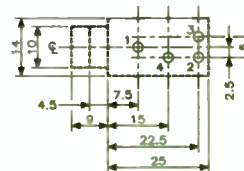
Cliff



FC 6792



FC 6794



4 Holes #2.4

Two types of compact PC mounting 6.35mm (1/4in.) stereo jack sockets, with either one switched contact or unswitched. Supplied with mounting nuts and washers.

Retail Unit Price each (inc. VAT).

Order Code	Type 985	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CX88V	PCB Skt UnSw Stereo	£0.689	£0.530	£0.465	£0.810
CX90X	PCB Skt Sw Stereo	£0.689	£0.530	£0.465	£0.810

## Plastic Barrel Line Socket

A standard 6.35mm (1/4in.) stereo line socket with plastic barrel and strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type 986	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH21X	Stereo Line Skt	£0.595	£0.450	£0.400	£0.700

### Screened Line Socket



A standard 6.35mm (1/4in.) stereo line socket with a metal barrel and coiled spring cable relief sleeve.

Retail Unit Price each (inc. VAT).

Order Code	Type 987	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH22Y	Scr Stereo Line Skt	£0.842	£0.660	£0.540	£0.990

### 6.35mm (1/4in.) Jack Coupler



A heavy-duty plastic-barrelled coupler for joining two stereo 6.35mm (1/4in.) jack plugs.

Retail Unit Price each (inc. VAT).

Order Code	Type 998	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK04E	Stereo 1/4in. Jk Cplr	£0.842	£0.660	£0.550	£0.990

### Two-Into-One Adaptor



Allows two 6.35mm (1/4in.) stereo jack plugs to be used with one 6.35mm stereo jack socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 988	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JB17T	2 Into 1 Stereo Jk	£0.944	£0.720	£0.540	£1.110

### 6.35mm (1/4in.) Stereo Plug to 5-Pin A DIN Socket Adaptor



Allows a 5-pin A (180°) DIN plug to be used with a 6.35mm (1/4in.) stereo jack socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 984	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK12N	6.35mm to Din Adptr	£0.944	£0.730	£0.660	£1.110

### 5-pin A DIN Plug to Stereo 6.35mm (1/4in.) Socket Adaptor



Allows a 6.35mm (1/4in.) stereo jack plug to be connected to a 5-pin A (180°) DIN socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 1085	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW33L	Adaptor R	£1.230	£0.890	£0.680	£1.450

### 6.35mm (1/4in.) Stereo Plug to 3.5mm Mono Socket Adaptor



Allows a 3.5mm mono jack plug to be used with a 6.35mm (1/4in.) stereo jack socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 995	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW34M	6.35-3.5mm Ste-Mono	£0.595	£0.390	£0.300	£0.700

### 3.5mm Plug to 6.35mm (1/4in.) Stereo Socket



Allows a 6.35mm (1/4in.) stereo jack plug to be used with a 3.5mm mono jack socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 1178	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW12N	3.5-6.35mm Ste-Mono	£0.553	£0.370	£0.275	£0.650

### 6.35mm (1/4in.) Stereo Plug to 3.5mm Stereo Socket Adaptor



Allows a 3.5mm stereo jack plug to be used with a 6.35mm (1/4in.) stereo jack socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 996	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK55K	6.35-3.5 Ste Adpt	£0.723	£0.430	£0.330	£0.850

### Two 3.5mm Stereo Sockets to 6.35mm (1/4in.) Stereo Plug



Allows two stereo 3.5mm jack plugs to be connected to one 6.35mm (1/4in.) stereo jack socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 992	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JB18U	2x3.5skt X1/4plg Sto	£0.978	£0.720	£0.550	£1.150

### Two 6.35mm (1/4in.) Stereo Sockets to 3.5mm Stereo Plug



Allows two stereo 6.35mm (1/4in.) jack plugs to be connected to one 3.5mm stereo jack socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 1218	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JB20W	2x1/4skt X3.5plg Sto	£0.936	£0.880	£0.820	£1.100

### Two 6.35mm (1/4in.) Mono Sockets to 6.35mm Stereo Plug



Allows two 6.35mm (1/4in.) mono plugs, one carrying the left and one carrying the right channel of a stereo signal to be connected to a stereo socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 999	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JM92A	2x1/4 Mono 1/4 Sto	£0.902	£0.720	£0.650	£1.060

### 6.35mm (1/4in.) Plug to 6.35mm (1/4in.) Stereo Socket Adaptor



Allows a 6.35mm (1/4in.) stereo jack plug to be used with a 6.35mm (1/4in.) mono jack socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 1279	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK11M	Adaptor L	£0.510	£0.350	£0.290	£0.600

### Stereo Phono Socket Adaptor



Allows two phono plugs, one carrying the left and one the right channel of a stereo signal to be connected to a 6.35mm (1/4in.) stereo socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 991	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK13P	Phono/Stereo 1/4in	£0.978	£0.730	£0.630	£1.150

### Coiled Stereo Jack Plug to Socket Lead



An expandable stereo jack plug to socket lead with a standard 6.35mm stereo jack plug and socket. Ideal for extending the length of a headset for easy listening.

Retail Unit Price each (inc. VAT).

Order Code	Type 11424	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CN78K	Ste Jack Plug/Skt Ld	£1.940	£1.390	£1.110	£2.290

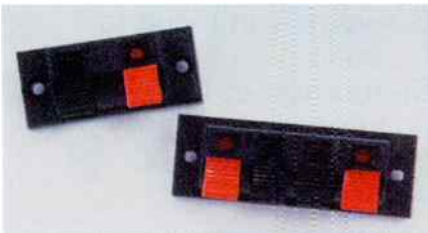
See Stock Code Index For More Price Breaks

## LOUDSPEAKER CONNECTORS

### Quick Connection Lever Terminals

Spring loaded, lever action, quick connection terminals which will hold wires in a vice-like grip. These terminals, originally intended for terminating loudspeaker leads, have many uses.

The 2-way lever terminal on a round escutcheon has one red and one black lever marked '+' and '-', and 'INPUT'. Escutcheon diameter 74mm. Requires 50mm diameter panel cut-out. Fixing centres 43.5 x 43.5mm x 3mm clear. Overall depth 28mm.



The 2-way lever terminal on a rectangular escutcheon has one red and one black lever. Escutcheon size 55 x 24mm. Fixing centres 43.5mm x 3mm clear. Max depth 22mm. The two solder tags are 4mm from one edge and 19mm apart. The 4-way type has two black and two red levers on a base 65 x 17.5mm. Fixing centres 58mm x 3mm clear. Max depth 22mm. The four solder tags are 4mm from one edge and 13mm apart.

Retail Unit Price each (inc. VAT).

Order Code	Type 1385	Price each exc. VAT	inc. VAT each
CC72P	L/S Cable Plug 4Pole	£3.140	£3.690
CC73C	L/S Chassis Connector	£1.690	£1.990

### Speaker Terminal

A spring loaded terminal for gripping speaker wires etc. The terminal is attached to a base panel with a threaded M3 stud and nut. In use, simply depress plunger and insert wire into sidehole. Available in red and black.



Retail Unit Price each (inc. VAT).

Order Code	Type 1387	Price each exc. VAT	inc. VAT each
JY89W	Spkr Term Bk	£0.468	£0.550
JY90X	Spkr Term Red	£0.468	£0.550

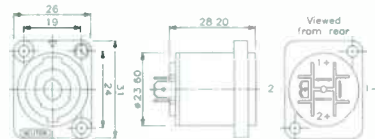
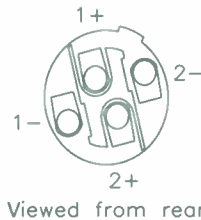
### Loudspeaker Amplifier Connectors

Neutrik



An extremely robust four pole cable plug and mating chassis loudspeaker connector configuration. The chassis connector is suitable for airtight speaker

cabinets. A 'latch lock' action mates the cable plug with the chassis socket and is locked by a securing ring mechanism. This ensures that leads are reliably secured. The cable plug dismantles into 4 separate parts and the cable is secured by screw terminals and clamped by the Neutrik chuck-type strain relief. The chassis socket terminals provide soldering points for internal wiring.



(Dimensions in mm)

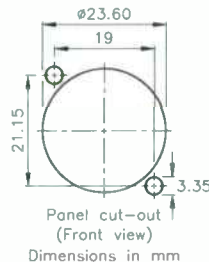
NL4FC Cable plug 4 pole  
NL4MP X1 Chassis connector 4 pole

Retail Unit Price each (inc. VAT).

Order Code	Type 1385	Price each exc. VAT	inc. VAT each
CC72P	L/S Cable Plug 4Pole	£3.140	£3.690
CC73C	L/S Chassis Connector	£1.690	£1.990

### Four-Pole Touch-Proof Connector

CIFF



Panel cut-out (Front view)  
Dimensions in mm

A high quality four-pole connector featuring touch-proof contacts, polarised locking mechanism, built-in cable clamp, gold-plated contacts, fits standard XLR cut-outs and offers a low-cost solution to interconnection problems.

**Specification**  
Voltage rating 250V RMS max.  
Contact rating 30A RMS at 20°C (20A RMS at 80°C)  
Insulation resistance >20MΩ @ 4000V

Retail Unit Price each (inc. VAT).

Order Code	Type 8518	Price each exc. VAT	inc. VAT each
BN32K	4 Pole TchProof Plug	£2.940	£3.460
BN33L	4 Pole TchProof Skt	£1.690	£1.990

## 8 Pole Touchproof Connector

CIFF



A tough, lightweight and economical solution to multi circuit connections. Particularly useful in instrumentation, system interconnections and lighting as well as speaker systems and amplifier outputs. The 10A rating together with touchproof contacts and a polarized locking system deliver high standards of safety and reliability. Contacts are touchproof to IEC65/IEC348 and IEC1010-1. For speaker systems the chassis connector is panel airtight.

Retail Unit Price each (inc. VAT).

Order Code	Type 03135	Price each exc. VAT	inc. VAT each
RY18U	8P Touchproof Skt	£2.030	£2.390
RY19V	8P Touchproof Plg	£5.090	£5.990
RY20W	8P Touchproof Cover	£0.561	£0.660

## OPTICAL FIBRE

### Digital Optical Fibre Lead



An optical fibre lead specifically designed for use with CD equipment, to link the CD player to an external D to A converter unit and convert the digital data into analogue information. The lead is 1m long and manufactured from high quality, flexible, fibre optic light guide material. It is covered in a black protective sheath and terminated with standard couplings to fit most CDs.

Retail Unit Price each (inc. VAT).

Order Code	Type 1332E	Price each exc. VAT	inc. VAT each
CC40T	Fibre Optic Lead Dig	£13.600	£15.990

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**VIDEO CONNECTORS**

**Round 10-Way**

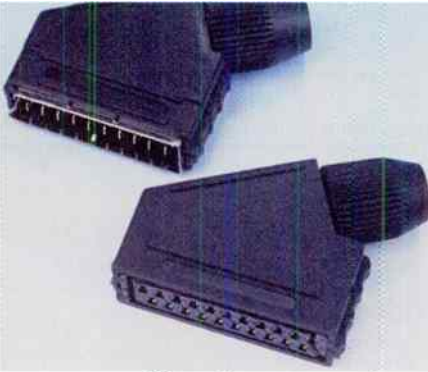


A high quality set of plugs and sockets, mainly for use as video camera connectors. Connectors are keyed and a screw locking mechanism locks them tightly in place. Line socket overall length is 66.5mm, diameter 20mm. Line plug overall length is 70mm, diameter 23mm. Chassis mounting socket length is 18mm, and requires a 16.5mm diameter panel cut-out.

Retail Unit Price each (inc. VAT).

Order Code	Type 1036	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RK52G	10 Way Line Skt	£4.000	£2.950	£2.550	£4.700
RK53H	10 Way Line Plug	£4.000	£2.950	£2.550	£4.700
RK54J	10 Way Chassis Skt	£2.080	£1.450	£1.200	£2.400

**Peritel (SCART) Line Connectors**

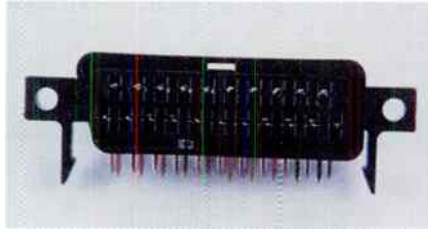
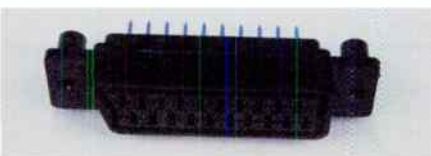
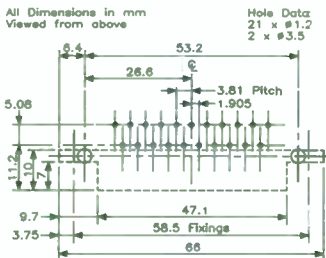


A 21-way Peritel (SCART) line plug for use with audio/ video equipment. Available in both line plug and line socket. Both connectors have plastic connector housings and cable clamps.

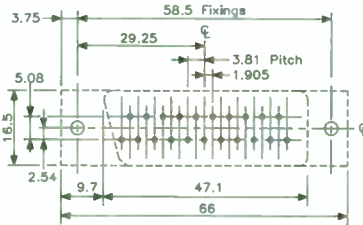
Retail Unit Price each (inc. VAT).

Order Code	Type 4281	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ41U	Peritel Line Plug	£1.520	£0.820	£0.535	£1.730
JW33L	Peritel Line Skt	£1.190	£0.890	£0.600	£1.400

**Peritel (SCART) PCB Sockets**



All Dimensions in mm  
Viewed from above  
Hole Data  
21 x Ø1.2  
2 x Ø2

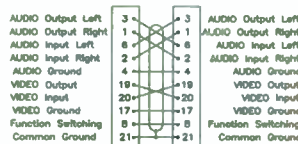


21-way Peritel (SCART) PCB mounting sockets for use with audio/video equipment. Available in right-angled and straight versions. Sockets have M2 or M3.5mm fixing holes on 58.5mm centres, for pane fixing etc. Panel cut out 48 x 17mm. BP65V is a right-angled socket without lugs.

Retail Unit Price each (inc. VAT).

Order Code	Type 1035	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FY89W	Peritel R/A PCB Skt	£0.553	£0.470	£0.390	£0.650
BP65V	Peritel R/A Skt Xlgs	£0.510	£0.440	£0.360	£0.600
JW34M	Peritel St PCB Skt	£1.020	£0.720	£0.595	£1.210

**Peritel (SCART) Plug to Plug Connecting Cable (Composite Video & Audio)**



Peritel (SCART) plug to plug composite video, stereo audio and function switching unused pins : 5, 7, 9-18, 18.

A 21-way Peritel (SCART) plug to plug connecting cable for interconnecting video equipment, such as TV's and VCR's. This cable provides connection for composite video, stereo audio and function switching. Length (approx.) 1.5m. The diagram below shows the connections between the plugs. Please Note: this cable does not provide connections for Data Communication, RGB Video and Blanking signals, for applications requiring these connections use Universal Cable (JW37S).

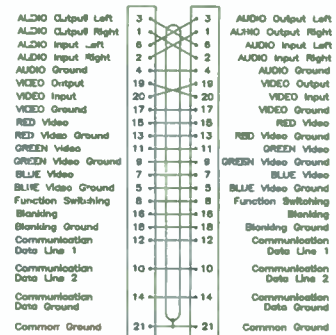
Retail Unit Price each (inc. VAT).

Order Code	Type 1038	Price each exc. VAT			inc. VAT each
		1+	5+	25+	1+
JW36P	Peritel St/Aud&Com/Vid	£5.940	£5.000	£4.500	£6.990

**Peritel (SCART) Plug to Plug Connecting Cable (Universal)**



A 21-way Peritel (SCART) plug to plug connecting cable with all 21 pins connected for interconnecting video equipment, such as TV's, VCR's and computers. This cable provides connection for composite video, RGB video, blanking, stereo audio, data communication and function switching. Length (approx.) 1.5m. The diagram below shows the connections between the plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type 1039	Price each exc. VAT			inc. VAT each
		1+	5+	25+	1+
JW37S	Peritel Univrl Cable	£8.500	£5.500	£3.750	£9.990

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## Scart Extension Leads

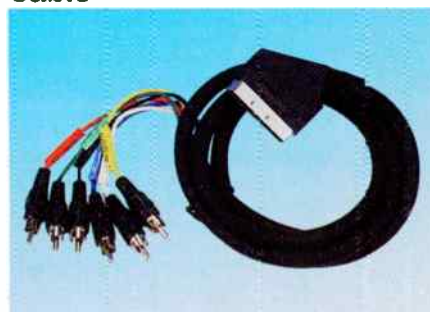


Three approximately 50cm long extension leads with 1 to 2-way, 1 to 3-way or 1 to 5-way adaptors, connecting a SCART plug at one end to two, three or five SCART sockets in a box 98 x 70 x 30mm, or 125 x 70 x 30mm, or 188 x 70 x 30mm respectively. The cable is a sleeved loom 10mm in diameter containing individually screened conductors where required. The lead is merely an extension and does not include any in/out line reversals; all pins on the plug connect directly to all equivalent pins in all sockets simultaneously. Use to connect two TVs to one VCR, etc., with the aid of twin plug connection leads (as above). Note that contention from more than one audio/video, etc., outputs sharing one conductor must be avoided, but one output to two or more inputs is allowable. Colour black.

Retail Unit Price each (inc. VAT).

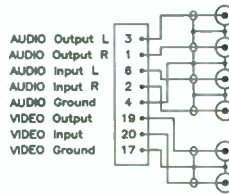
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BM61C	2Way Scart Skt Strip	£7.220	£5.750	£5.000	£8.490
AQ17T	Scart Ext/Adaptor 3W	£8.920	£5.950	£5.430	£10.490
BM82D	5Way Scart Skt Strip	£8.500	£6.500	£5.750	£9.990

## Peritel (SCART) Plug to Phono Plugs Connecting Cable



A 21-way Peritel (SCART) plug to phono plug connecting cable for interconnecting audio/video equipment fitted with phono connectors. This cable provides connection to audio pins (left & right audio

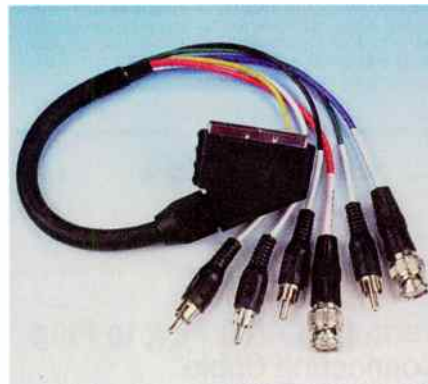
input, left & right audio output) and composite video pins (video input, video output). Length (approx.) 1.5m. The diagram shows the connections between the plugs. Please Note: this cable does not provide connections for Function Switching, Data Communication, RGB Video and Blanking signals.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	25+	
JW36R	Peritel-Phono Cable	£10.200	£7.000	£4.750	£11.990

## Peritel (SCART) Plug to Phono & BNC Plugs



A 21-way Peritel (SCART) plug to standard phono and BNC plug connecting cable for interconnecting audio/video equipment fitted with mating phono plugs and BNC connectors. This cable provides connection to audio pins (left/right audio input and left/right audio output) and composite video pins (video input and video output). Length 1.4m. Please note that this cable does not provide any connections for Function Switching, Data communication, RGB Video and Blanking Signals.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	25+	
CC04E	Scart - Phono Cable	£8.920	£6.990	£4.750	£10.490

## Stereo Video Copying Kit



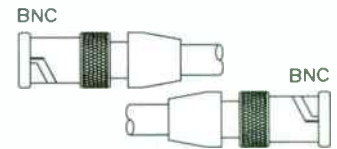
A universal connector kit for audio/video equipment that includes Peritel and camcorder plugs. The kit includes the following items:  
 Peritel (SCART) to 6-pin DIN socket (150mm) 2 off  
 6-pin DIN socket to 3 x phono plugs (200mm) 2 off  
 5-pin DIN plug to 2 x phono sockets (200mm) 2 off  
 6-pin DIN plug to 6-pin DIN plug (2m) 1 off  
 Phono plug to 2 x phono sockets (150mm) 1 off  
 BNC plug to phono socket adaptor 2 off  
 UHF plug to phono socket adaptor 2 off  
 3.5mm plug to phono socket adaptor 2 off

Please note that this cable does not provide connections for function switching, data communications, RGB video or blanking signals.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JW36Q	Peritel Uhi Conn Kit	£9.350	£9.000	£8.750	£10.990

## Video Lead 1

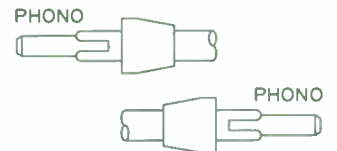


A BNC plug to BNC plug with approx. 1.5m of cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RK84F	Video Lead 1	£3.110	£1.790	£1.480	£3.680

## Video Lead 4

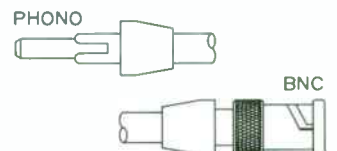


Phono plug to phono plug with approx. 1.5m of cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	25+	
CN48D	Phono Plg/Plg Vid Ld	£1.690	£1.410	£1.250	£1.990

## Video Lead 5



BNC plug to phono plug with approx. 1.5m of cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RK87U	Video Lead 5	£2.070	£1.200	£1.020	£2.440

## Video Lead



Phono plug to coax plug with approx. 1.2m of cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FV90X	Phono/Coaxplg Vid Ld	£1.350	£0.990	£0.790	£1.590

**RF CONNECTORS**

**COAX CONNECTORS**

**Screw-On In-Line Plug**

An all metal co-ax in-line plug with a novel cable fixing method. Prepare the co-ax in the usual way, fold back the screening braid over the outer sheath, then screw the co-ax cable into the connector until tight.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CC68Y	ScrewOn UHFConnector	£0.842	£0.560	£0.435	£0.990

**Metal Plug**

A standard co-ax plug with aluminium body and cap.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH07H	Co-Ax Plug Aly	£0.510	£0.250	£0.205	£0.600

**Plastic Plug**

A standard co-ax plug with plastic covered body and plastic cap.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW06J	Co-Ax Plug Plas	£0.842	£0.540	£0.450	£0.950

**High Quality Plug**

A standard co-ax plug with nickel-plated brass body. The centre conductor is terminated by means of a small grub screw.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FD85G	HQ Co-Ax Plug	£0.680	£0.450	£0.340	£0.840

**Chassis Socket**

A panel mounting socket which protrudes above the chassis surface. Fixing centres: 19mm x 6BA clear



Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH08J	Co-Ax Socket Pan	£0.391	£0.260	£0.240	£0.450

**Flush Socket**

A panel mounting socket which fits flush to the chassis surface. Panel cut-out 12.7mm. Fixing centres: 19mm x 6BA clear.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH09K	Co-Ax Socket Flush	£0.391	£0.260	£0.240	£0.460

**High Quality Socket**

A standard panel-mounting co-ax socket with nickel-plated brass body. Single-hole fixing. Panel cut-out 9.5mm dia. Supplied with solder tag for screen connection.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE10L	HQ Co-Ax Socket	£1.360	£1.070	£0.990	£1.600

**Line Socket**

A standard co-ax in-line socket with aluminium body and cap.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW09K	Co-Ax Line Skt	£0.595	£0.375	£0.280	£0.700

**Plastic Line Socket**

A standard co-ax socket with plastic covered body and plastic cap.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JB16S	Coax Line Skt Plas	£0.391	£0.260	£0.200	£0.460

**High Quality Line Socket**

A standard co-ax in-line socket with nickel-plated brass body. The centre conductor is terminated by means of a small grub screw.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FD86T	HQ Co-Ax Line Skt	£0.680	£0.430	£0.330	£0.800

**Line Connector Plastic**

A line connector for connecting two co-ax plugs together.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH11M	Co-Ax Conn	£0.391	£0.230	£0.165	£0.460

**Line Connector Metal**

A screened line connector for connecting two co-ax plugs together.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS22Y	Co-Ax Conn Metal	£0.510	£0.330	£0.270	£0.600

**Two Into One Y Adaptor**



A low-cost Y-shaped 2 into 1 adaptor for splitting or combining co-axial feeders

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS23A	2/1 Coax Adptr Typ Y	£1.520	£0.600	£0.450	£1.790

**Two Into One Adaptor**



A simple plug-in 2 into 1 adaptor for splitting or combining coaxial feeders.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FT85G	2 Into 1 Coax Adptr	£1.430	£0.900	£0.700	£1.690

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## TV Aerial Flylead



Co-axial cable with co-ax plugs connected at both ends. Available in 2m, 5m and 10m length.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW39N	Flylead 5m	£2.450	£1.500	£1.250	£2.890
JW40T	Flylead 10m	£3.310	£1.750	£1.500	£3.890

## Free Plug



Nickel-plated brass plug with silver-plated centre pin and ferrule. Available in 50Ω and 75Ω impedance.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HH17T	BNC Plug 50	£1.690	£1.300	£1.150	£1.990
FE99H	BNC Plug 75	£1.690	£1.300	£1.150	£1.990

## BNC Boot



An insulating boot for use with crimp plug JC23A. The boot is cut to suit the diameter of the cable if necessary, and then pushed on to the cable, before crimping. The hood is then forced over the crimp, and with the matching hood, the plug is now insulated. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CK06J	BNC Boot	£0.187	£0.112	£0.092	£0.220

## Aerial Extension Cable

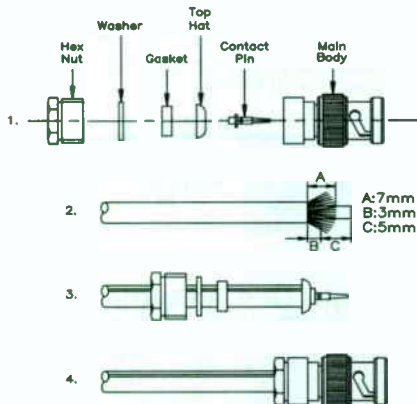
Coaxial extension lead manufactured from 75Ω coaxial cable and terminated at one end in a coaxial plug and at the other end in a coaxial socket. The terminations are protected with a plastic strain relieving sheath. Length 2m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GW61R	Aerial Extn Cable	£1.690	£1.000	£0.750	£1.990

## LOW COST BNC

### RF CONNECTORS How to Assemble BNC/TNC and Other RF Connectors



1. Connector parts.
2. Cut the cable to the specified lengths as indicated in the diagram. Take care not to nick the braid or centre conductor.
3. Slide the Hex nut, washer and grommet over the cable before soldering the pin on the centre conductor. Tin end of conductor prior to soldering. Place the top hat over the braid and push back against cable jacket., then pull the braid back over the top hat as shown.
4. Insert cable and parts into the connector body and screw home the hex nut until it is tightened.

## BNC Connectors

A range of BNC series connectors with 50Ω and 75Ω impedances. Both types will mate with one another. Peak working voltage 500V. Max frequency 5GHz

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## Crimp Plugs

Nickel plated brass plug with gold-plated centre pin. The plug is suitable for use with any 50Ω & 75Ω cable. 50Ω UR76, RG58 (our XR19V/XS51F), 75Ω RG59 (XS52G). See Tools section for suitable crimp tool (ZF41U).



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JC23A	BNC Crimp Plug 50	£0.842	£0.750	£0.700	£0.990
CL06G	Crimp Plug RG59 75	£0.953			£1.120

## Coax Connector Crimping Tool



A coax crimping tool that has five separate sections to accept 1-72, 2-5, 5-4, 6-48 and 8-2mm connectors for crimping. The pressure necessary for crimping can be adjusted for individual requirements, and is made easy with the aid of long contoured, plastic covered handles.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
ZF41U	Coax Crimper	£19.080	£16.650	£15.140	£22.430

## BNC Hood

An insulating hood for use with crimp plug JC23A. The hood is pushed over the plug before the cable is crimped on. Colour black.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CK07H	BNC Hood	£0.161	£0.112	£0.092	£0.190

## Twist-on Plugs

Nickel-plated brass plugs suitable for use with 75Ω and 50Ω cable. 50Ω UR76, RG58 (XS51F), 75Ω RG59 (XS52G). To fit, strip outer sheath then fold the screen back over the outer sheath, then strip the inner sheath and screw the plug on.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JK21X	Twist-On BNC Plug	£1.290	£1.020	£0.820	£1.520
CL03D	Twist Plug 75 Ohm	£1.200	£0.990	£0.850	£1.410

## Right-Angled Free Plug

A right-angled BNC plug with plastic body and strain relief sleeve, and solderless cable connections.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FJ72P	BNC R/A Plug	£1.230	£0.850	£0.635	£1.450

## Round Chassis Socket

Nickel-plated brass chassis socket with gold-plated centre pin and earth tag. Available in 50Ω and 75Ω impedance. Requires 9-7mm diameter panel cut-out.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HH18U	BNC Round Skt 50	£1.020	£0.860	£0.700	£1.200
FE31J	BNC Round Skt 75	£1.020	£0.860	£0.700	£1.200



### Insulated Chassis Socket

An insulated earth version of the round chassis socket with gold-plated centre pin. Requires a 9.7mm diameter panel cut-out.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CK05F	Insulated BNC Skt	£1.290	£0.940	£0.750	£1.520

### Square Chassis Socket

Nickel-plated brass chassis socket with silver-plated centre pin. Square base 17 x 17mm with four holes on 12.7mm centres.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW00A	BNC Square Socket	£1.100	£0.830	£0.690	£1.304

### Free Socket

A BNC socket for cable mounting.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW01B	BNC Line Socket	£1.230	£0.900	£0.620	£1.450

### BNC Terminator

A termination plug fitted with an encapsulated 50Ω resistor, and gold plated centre pin. Suitably for end termination on network computer installations.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CK06G	BNC Terminator Plug	£1.370	£0.918	£0.765	£1.620

### Straight Female Adaptor

Two Free Plugs may be connected together with this adaptor.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW02C	BNC Straight Adaptor	£1.690	£1.350	£1.230	£1.990

### Straight Male Adaptor

Back-to-back male plugs in nickel-plated brass with silver-plated centre pin.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE96T	BNC Double Male	£2.080	£1.250	£0.850	£2.450

### 'T' Adaptor

Two Free Plugs may be connected together then connected to one socket with this adaptor.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW03D	BNC T Adaptor	£2.540	£2.350	£1.150	£2.990

### 'Y' Adaptor



Fitted with a gold-plated pin, this adaptor connects two cables with BNC plugs to one socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CK01B	BNC Y Adaptor	£3.310	£2.490	£1.820	£3.990

### BNC Male to Phono Socket Adaptor

A BNC plug to phono socket adaptor enabling a phono plug to be used with a BNC socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FA11M	Phono Skt/BNC Plg	£1.570	£1.040	£0.580	£1.850

### BNC Female to Phono Plug Adaptor

A BNC socket to phono plug adaptor enabling a BNC plug to be used with a phono socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE88V	BNC Fem/Phono Plug	£1.480	£1.000	£0.600	£1.750

### BNC Connectors Mini UHF Male to BNC Female Adaptor

Allows a standard male BNC cable to be connected to a mini UHF female socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BZ21X	BNC Fem/Mini UHF Male	£1.400	£1.040	£0.880	£1.650

### Mini UHF Female to BNC Male

Allows a mini UHF cable with a male connector to be connected to a standard BNC female socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BZ22Y	BNC Male/Mini UHF Fem	£1.400	£1.040	£0.880	£1.650

### PCB Mount BNC Series Sockets

Vitelec



Two in this series of BNC sockets are standard or low profile PC mounting sockets. The other two are the same with the addition that they are EMC shielded. They are nominally 50Ω impedance with an operating frequency range of 0 to 4GHz.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE15R	Std PC Mnt Skt	£1.940	£1.510	£1.440	£2.290
KE16S	L/P PC Mnt Skt	£1.940	£1.610	£1.440	£2.290
KE17T	Std Shld PC Mnt Skt	£2.280	£1.910	£1.710	£2.690
KE18U	L/P Shld PC Mnt Skt	£2.280	£1.910	£1.710	£2.690

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## PCB Straddle Mount BNC Series Sockets

VITELEC



These 50 ohm BNC panel mounting sockets sit straddle mounted on the PCB enabling closer packing density of PCB's. Signal contact is made centrally above the board and the ground is made adjacent above the board (same side = CT70M) or in line below the board (alternate side = CT69A) Recommended PCB thickness 1.6mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 12055	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CT69A	Saddle Mnt BNC Alt	£2.620	£2.130	£2.030	£3.090
CT70M	Saddle Mnt BNC S/S	£2.620	£2.130	£2.030	£3.090

## BNC SERIES

### BNC Plug

VITELEC

A high quality BNC plug with gold plated contacts. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type 1513	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV14Q	Clamp Plug (RG58)	£1.540	£1.420	£1.270	£1.810

### BNC Line Socket

VITELEC

A high quality BNC line socket with gold plated contacts. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type 1524	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV16S	Clamp Jack (RG58)	£1.880	£1.730	£1.550	£2.210

### BNC Isolated Chassis Socket

VITELEC

A high quality BNC isolated chassis socket with gold plated contacts and solder pins.



Retail Unit Price each (inc. VAT).

Order Code	Type 1523	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV28F	ISOL Pnt Jack	£1.780	£1.650	£1.470	£2.100

**Business Account Holders**  
No Delivery Charges for any order

## BNC Line Socket

VITELEC

A high quality BNC line socket with captive centre pin and gold plated contacts. This connector is suitable for use with 75Ω screened cable RG59, Order Code XS52G.



Retail Unit Price each (inc. VAT).

Order Code	Type 1524	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV17T	Clamp Jack (RG59)	£1.880	£1.730	£1.550	£2.210

## BNC Plug to UHF Socket Adaptor

VITELEC

A high quality BNC plug to UHF socket adaptor.



Retail Unit Price each (inc. VAT).

Order Code	Type 1525	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV35Q	BNC to UHF Adaptor	£2.740	£2.530	£2.260	£3.220

## BNC Chassis Socket

VITELEC

A high quality BNC chassis socket with gold plated contacts.



Retail Unit Price each (inc. VAT).

Order Code	Type 1526	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV29G	Flange Mnt Jack	£1.760	£1.620	£1.450	£2.070

## BNC 'T' Adaptor

VITELEC

A high quality BNC 'T' adaptor with gold plated contacts.



Retail Unit Price each (inc. VAT).

Order Code	Type 1527	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV34M	BNC T Adaptor	£3.470	£3.210	£2.860	£4.080

## BNC Plug Clamp Type

VITELEC

A high quality BNC plug with gold plated contacts and cable clamp fixing. This connector is suitable for use with 75Ω screened cable RG59, Order Code XS52G.



Retail Unit Price each (inc. VAT).

Order Code	Type 1528	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV15R	Clamp Plug (RG59)	£1.470	£1.360	£1.210	£1.730

## BNC Plug to N Socket Adaptor

VITELEC

A high quality BNC plug to N-type socket adaptor.



Retail Unit Price each (inc. VAT).

Order Code	Type 1529	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV36P	BNC to N Adaptor	£3.660	£3.390	£3.020	£4.310

## BNC Plug to BNC Plug Adaptor

VITELEC

A high quality BNC plug to BNC plug adaptor.



Retail Unit Price each (inc. VAT).

Order Code	Type 1531	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV31J	Plug to Plug Adaptor	£2.800	£2.590	£2.310	£3.290

## BNC Socket to BNC Socket Adaptor

VITELEC

A high quality BNC socket to BNC socket adaptor with gold plated contacts.



Retail Unit Price each (inc. VAT).

Order Code	Type 1532	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV32K	Jack to Jack Adaptor	£1.930	£1.780	£1.590	£2.270

## Chassis Mounting BNC Socket to BNC Socket Adaptor

VITELEC

A high quality adaptor with gold plated contacts for chassis mounting to connect an internal signal lead to a conventional front panel plug.



Retail Unit Price each (inc. VAT).

Order Code	Type 1533	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV33L	BHd Plug To Plug	£2.620	£2.430	£2.170	£3.090

## BNC Chassis Socket

VITELEC

A high quality BNC chassis socket with solder connections and gold plated contacts.



Retail Unit Price each (inc. VAT).

Order Code	Type 1534	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV30H	Panel Mnt Jack	£0.961	£0.888	£0.792	£1.130

**BNC Crimp Plug 58**

VITELEC

A high quality crimp plug with gold plated contacts. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type 1536	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV18U	Crimp Plug (RG58)	£1.030	£0.962	£0.858	£1.220

**BNC Crimp Plug 59**

VITELEC

A high quality crimp plug with gold plated contacts. This connector is suitable for use with 75Ω screened cable RG59, Order Code XS52G.



Retail Unit Price each (inc. VAT).

Order Code	Type 1537	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV19V	Crimp Plug (RG59)	£1.030	£0.962	£0.858	£1.220

**BNC Right-Angled Crimp Plug**

VITELEC

A high quality BNC right-angled crimp plug with gold plated contacts. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type 1538	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV20W	Crimp Plg R/A (RG58)	£3.670	£3.400	£3.030	£4.310

**BNC Crimp Chassis Socket**

VITELEC

A high quality BNC crimp-on chassis mounting socket with gold plated contacts. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type 1539	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV21X	Crimp Bhd Jck (RG58)	£2.660	£2.460	£2.190	£3.130

**BNC Crimp Plug 59**

Amphenol RFX

A high quality BNC crimp-on plug with gold plated contacts. This connector is suitable for use with 75Ω screened cable RG59, Order Code XS52G, see Tools section.



Retail Unit Price each (inc. VAT).

Order Code	Type 1540	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
AJ13P	31-71008-RFX	£1.350	£1.130	£0.970	£1.590

**BNC Crimp Line Socket 59**

Vitellic

A high quality BNC crimp-on line socket with gold plated contacts. This connector is suitable for use with 75Ω screened cable RG59, Order Code XS52G.



Retail Unit Price each (inc. VAT).

Order Code	Type 1541	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV23A	Crimp Jack RG59	£1.760	£1.620	£1.450	£2.070

**BNC Crimp Chassis Socket 59**

VITELEC

A high quality BNC crimp chassis socket with gold plated contacts. This connector is suitable for use with 75Ω screened cable RG59, Order Code XS52G.



Retail Unit Price each (inc. VAT).

Order Code	Type 1542	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV22Y	Crimp Bhd Jck (RG59)	£2.660	£2.460	£2.190	£3.130

**BNC Crimp Line Socket 58**

Vitellic

A high quality BNC line socket with gold plated contacts and crimp connections. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type 1543	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV24B	Crimp Jack RG58	£1.760	£1.620	£1.450	£2.070

**BNC 50Ω Terminator**

Vitellic

A high quality BNC plug with gold plated contacts and internal 50Ω load for terminating networks, etc.



Retail Unit Price each (inc. VAT).

Order Code	Type 1550	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV25C	50 Ohm Terminator	£2.570	£2.380	£2.120	£3.030

**BNC 75Ω Terminator**

Vitellic

A high quality BNC plug with gold plated contacts and internal 75Ω load for terminating networks, etc.



Retail Unit Price each (inc. VAT).

Order Code	Type 1552	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV26D	75 Ohm Terminator	£2.570	£2.380	£2.120	£3.030

**BNC 93Ω Terminator**

Vitellic

A high quality BNC plug with gold plated contacts and internal 93Ω load for terminating networks, etc.



Retail Unit Price each (inc. VAT).

Order Code	Type 1554	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV27E	93 Ohm Terminator	£2.570	£2.380	£2.120	£3.030

**UHF Plug to BNC Socket Adaptor**

Amphenol RFX

A high quality adaptor with gold plated contacts for connecting a UHF plug to a BNC socket.



Price each shown, but sold only in multiples of 1.

Order Code	Type 1555	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
AJ11M	31-2900-RFX	£7.820	£7.050	£5.480	£9.190

**LOW COST TNC**

**Plug**



Nickel-plated brass plug with silver-plated centre pin and ferrule. 50Ω impedance. See BNC plug for assembly details.

Retail Unit Price each (inc. VAT).

Order Code	Type 1571	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE80B	TNC Plug	£1.350	£0.970	£0.840	£1.590

**Crimp Plug**

Nickel-plated brass plug with silver-plated centre pin. The plug is suitable for use with any 50Ω cable where the outside diameter of the sheath of the inner conductor is approx. 3mm, and the outside diameter of the outer sheath is 5mm e.g. UR76, RG58 (our XR19V/XS51F).



Retail Unit Price each (inc. VAT).

Order Code	Type 1573	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JC22Y	TNC Crimp Plug	£1.020	£0.690	£0.550	£1.200

**All Customers**  
No additional freight  
charges for heavy items

## Twist-on Plug

Nickel-plated brass plug suitable for use with any 50Ω cable having a 5mm overall diameter e.g. UR76, RG58C (XR19V, XS51F). To fit, strip about 8mm of outer sheath then fold the screen back over the outer sheath, then strip 6mm of the inner sheath and screw the plug on.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK22Y	Twist-On TNC Plug	£0.836	£0.660	£0.560	£1.100

## TNC Male to BNC Female Adaptor

Allows a BNC plug to be used with a TNC socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE83E	TNC Male/BNC Fem	£1.290	£0.850	£0.720	£1.520

## BNC Male to TNC Female Adaptor

Allows a TNC plug to be used with a BNC socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS45Y	TNC Fem/BNC Male	£1.020	£0.790	£0.690	£1.200

## TNC Male to UHF Female Adaptor

Allows a UHF plug PL239 to be used with a TNC socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE84F	TNC Male/UHF Fem	£1.180	£0.860	£0.740	£1.390

## UHF Male to TNC Female Adaptor

Allows a TNC plug to be used with a UHF socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS47B	TNC Fem/UHF Male	£1.740	£1.080	£0.850	£2.050

## TNC SERIES

### TNC Crimp Plug 58

A high quality TNC crimp plug with gold plated contacts. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV37S	TNC Crimp Plug RG58	£1.320	£1.230	£1.090	£1.560

## TNC Crimp Plug 59

A high quality TNC crimp plug with gold plated contacts. This connector is suitable for use with 75Ω screened cable RG59, Order Code XS52G.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV38R	TNC Crimp Plug RG59	£1.320	£1.230	£1.090	£1.560

## TNC Crimp Chassis Socket 58

A high quality TNC crimp chassis socket with gold plated contacts. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV40T	TNC Crimp B/H Jck RG58	£2.790	£2.580	£2.300	£3.280

## TNC Plug to TNC Plug Adaptor

A high quality adaptor with gold plated contacts for chassis mounting to connect together two TNC line plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV41U	TNC Jck to Jck Adptr	£1.760	£1.620	£1.450	£2.070

## TNC Chassis Adaptor

A high quality adaptor with gold plated contacts for chassis mounting to connect an internal signal lead with plug to a conventional TNC front panel socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV42V	TNC Bhd J to J Adptr	£3.320	£3.080	£2.740	£3.910

## TNC Plug 58

A high quality TNC plug with gold plated contacts and clamp fixings. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Price each shown, but sold only in multiples of 0.

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV39R	TNC Clamp Plug	£3.170	£2.930	£2.620	£3.720

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## Chassis Socket

Nickel-plated brass chassis socket with silver-plated centre pin and earth tag. 50Ω impedance. Requires 9.7mm diameter panel cut-out.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE81C	TNC Socket 50	£0.757	£0.490	£0.430	£0.890

## Free Socket



A TNC in-line socket for cable mounting.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS44X	TNC In-Line Socket	£0.893	£0.645	£0.580	£1.050

## Straight Female Adaptor

An in-line adaptor for joining two TNC plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE82D	TNC Fem/Fem Adaptor	£0.893	£0.620	£0.530	£1.050

## Straight Male Adaptor

An in-line adaptor for joining two TNC sockets.



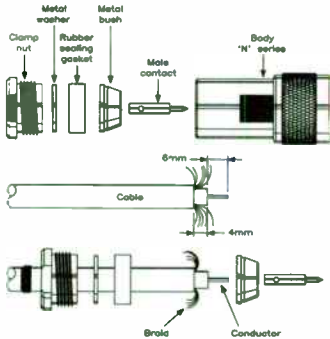
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS46A	TNC Male/Male Adptr	£1.230	£0.865	£0.770	£1.450

**Business Account Holders**  
No Delivery Charges for any order

## LOW COST N SERIES

### Plugs



Two N-type coaxial plugs, to suit two sizes of coaxial cable.  
Plug N-050 is compatible with coaxial cable of 5mm diameter, such as the Low C Cable/UR76.  
Plug N-011 is compatible with heavy duty RF cable of 10/11mm dia., such as the UR67 RF Cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ77J	Plug N-050	£2.420	£1.700	£1.350	£2.160
FJ78K	Plug N-011	£2.420	£1.700	£1.350	£2.160

### Chassis Socket

A single hole fixing N-type chassis mounting socket, requires 16mm dia. cutout. Earth tag included.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ79L	N Type Chassis Skt	£1.570	£1.150	£0.960	£1.850

### Square Chassis Socket

Requires 16mm round cutout. Fixing centres: 18 x 18mm x 6BA (M3) clear.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ80B	N Type Chass Skt Sq	£1.650	£1.170	£0.960	£1.950

### Free Socket



Two N-type free sockets to suit two sizes of coaxial cable. Socket N-050 fits cables of 5mm diameter, such as UR76, while socket N-011 suits cables 10 to 11mm diameter such as UR67. For assembly details see BNC plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FP00A	Socket N-050	£2.170	£1.450	£1.180	£2.550
FP01B	Socket N-011	£2.250	£1.550	£1.240	£2.650

### Straight Female Adaptor

An in-line adaptor for joining two N-type plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ81C	N Double Female	£2.170	£1.450	£1.180	£2.550

### Straight Male Adaptor

Back-to-back male plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE96E	N Double Male	£2.590	£1.780	£1.420	£3.050

### N Male to BNC Female Adaptor

Allows a BNC plug to be used with an N-type socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ82D	N Male to BNC Adapt	£2.590	£1.800	£1.450	£3.050

### N Female to BNC Male Adaptor

Allows an N-type plug to be used with a BNC socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ83E	N Fem to BNC Male	£2.590	£1.800	£1.450	£3.050

### N Female to BNC Female Adaptor

Allows a BNC plug to be connected in-line with an N-type plug.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ84F	N Fem to BNC Fem	£2.590	£1.750	£1.400	£3.050

### N Male to UHF Female Adaptor

Allows a UHF plug PL259 to be used with an N-type socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE97F	N Male/UHF Fem	£2.420	£1.540	£1.220	£2.850

### N Female to UHF Male Adaptor

Allows an N-type plug to be used with a UHF socket SO239.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE94C	N Fem/UHF Male	£2.340	£1.540	£1.250	£2.750

## N SERIES

### N Plug 58

**VITELIC**  
A high quality N type line plug with gold plated contacts and clamp assembly method. This connector is suitable for use with 50Ω screened cable RG58 Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV43W	N Clamp Plug RG58	£3.500	£3.240	£2.890	£4.120

### N Plug 59

**VITELIC**  
A high quality N line plug with gold plated contacts. This connector is suitable for use with 75Ω screened cable RG59, Order Code XS52G.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV44X	N Clamp Plug RG59	£3.500	£3.240	£2.890	£4.120

See Stock Code Index For More Price Breaks

## N Line Socket 58

**VITELIC**

A high quality N type line socket with gold plated contacts and clamp assembly. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type 1848	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DV47B	N Line Socket RG58	£3.490	£3.230	£2.680	£4.110

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## N Line Socket 59

**VITELIC**

A high quality N type line socket with gold plated contacts. This connector is suitable for use with 75Ω screened cable RG59, Order Code XS52G.



Retail Unit Price each (inc. VAT).

Order Code	Type 1848	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DV48C	N Line Socket RG59	£3.490	£3.230	£2.680	£4.110

## N Line Socket

**VITELIC**

A high quality clamp type N line socket with gold plated contacts.



Retail Unit Price each (inc. VAT).

Order Code	Type 1850	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DV49D	N Line Socket	£4.610	£4.260	£3.800	£5.420

## N Chassis Socket

**VITELIC**

A high quality N chassis socket with gold plated contacts and solder tags.



Retail Unit Price each (inc. VAT).

Order Code	Type 1851	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DV51F	N Flange Mnt Jack	£2.620	£2.430	£2.170	£3.090

## N Socket to N Socket Adaptor

**VITELIC**

A high quality adaptor with gold plated contacts to connect together two N style sockets.



Retail Unit Price each (inc. VAT).

Order Code	Type 1852	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DV52G	N Adaptor Plug-Plug	£5.250	£4.650	£4.330	£6.170

## N Plug to N Plug Adaptor

**VITELIC**

A high quality adaptor with gold plated contacts to connect together two N style plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type 1853	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DV53H	N Adaptor Jack-Jack	£3.210	£2.970	£2.650	£3.780

## N Plug

**VITELIC**

A high quality N plug with gold plated contacts and clamp fixing.



Retail Unit Price each (inc. VAT).

Order Code	Type 1855	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DV45Y	N Clamp Plug RG213	£4.200	£3.880	£3.460	£4.940

## N Crimp Plug 58

**VITELIC**

A high quality N type crimp-on plug with gold plated contacts. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type 1858	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DV46A	N Crimp Plug RG58	£3.140	£2.910	£2.590	£3.700

## N Crimp Line Socket 58

**VITELIC**

A high quality N type crimp-on line socket with gold plated contacts. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type 1859	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DV50E	N Crimp Line Sld 58	£3.140	£2.910	£2.590	£3.700

## N Plug to N Plug Adaptor

**Amphenol RFX**

A high quality adaptor with gold plated contacts for connecting together two N type plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type 1860	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
AJ38R	82-5588-RFX	£5.480	£4.930	£3.840	£6.440

## N Twin Plug

**Amphenol RFX**

A high quality N type twin plug.



Retail Unit Price each (inc. VAT).

Order Code	Type 1861	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
AJ39N	82-5589-RFX	£4.290	£3.850	£3.410	£5.050

## N Twin Chassis Socket

**Amphenol RFX**

A high quality N type twin centre contact chassis socket with gold plated contacts and solder terminals.



Retail Unit Price each (inc. VAT).

Order Code	Type 1862	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
AJ40T	82-5590-RFX	£4.290	£3.850	£3.520	£5.050

## N 50Ω Terminator

**Amphenol RFX**

A high quality N-type terminator plug with gold plated contacts and 50Ω impedance.



Retail Unit Price each (inc. VAT).

Order Code	Type 1815	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
AJ42V	82-5721-10-RFX	£8.410	£7.100	£5.490	£9.890

## F SERIES

### Plug

A plug for use with solid centre conductor cables. Plug simply pushes onto cable between inner sheath and screen. The centre wire of the cable takes the place of the centre pin of the plug. Two types are available: 4mm type suits RG58/RG59 cable. (Order Code XS51F/XS52G.) 5mm type suits our low loss co-ax cable (XR29G etc.). The crimping ring is supplied with both types.



Retail Unit Price each (inc. VAT).

Order Code	Type 5342	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JL62S	F Plug 4mm	£0.280	£0.220	£0.180	£0.330
FE90X	F Plug 5mm	£0.280	£0.170	£0.140	£0.330

### Chassis Socket

A single-hole fixing socket. Requires a 9.5mm diameter panel cut-out.



Retail Unit Price each (inc. VAT).

Order Code	Type 1836	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FE98G	F Socket	£0.340	£0.265	£0.220	£0.400

## Screw-On F Connectors

A selection of screw-on F connectors for a variety of different cables including RG58, RG59 and CT100, etc.



Cable Type	Part Number	Order Code
RG6, CT100, 3/X/289	TOF 56	FU04E
RG58, 309 EP	TOF 58	FU05F
RG59, H109F	TOF 59	FU06G
H47, RA521, CT125	TOF 5C2V	GV17T

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FU04E	RG6 F Plug	£0.842	£0.680	£0.520	£0.960
FU05F	RG58 F Plug	£0.842	£0.680	£0.520	£0.960
FU06G	RG59 F Plug	£0.842	£0.680	£0.520	£0.960
GV17T	CT125 F Plug	£0.842	£0.680	£0.520	£0.960

## F Series Connectors

Vitelec



Two additional sockets from the F Series range. A Panel Mounting Socket suitable for panel mounting with a flat sided oval cut-out of 7.87mm (side) by 9.65mm oval. The other is the PC Board Mounting Socket with a D shape panel cut-out of 8.8mm (side) by 9.65mm oval. They are a compatible connector interface for CATV, MATV and Satellite TV installations.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE11M	F Panel Mt Skt	£0.382	£0.325	£0.295	£0.450
KE12N	F PC Mt Sht	£0.953	£0.820	£0.740	£1.120

## Straight Female Adaptor

Adaptor to couple two F plugs together.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE92A	F Double Fem	£0.348	£0.295	£0.220	£0.410

## F Male to BNC Female Adaptor

Allows a BNC plug to be used with an F socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE87U	BNC Fem/F Male	£1.110	£0.850	£0.620	£1.310

## F Series Adaptor Connectors

Vitelec



A new addition to our F Series range. A plug to plug adaptor and a right-angle plug to jack adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE13P	F Plg To Plg Adptr	£0.757	£0.650	£0.600	£0.890
KE14Q	F RA Plg To Jk Adap	£1.140	£0.980	£0.890	£1.350

## LOW COST UHF Plug (PL259)



Suits cable UR67. Size 38 x 19mm dia. Cable entry hole: 11mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW81C	Plug PL259	£1.200	£0.800	£0.650	£1.410

## Reducer Small

Screws into plug PL259 to enable it to be used with cables around 5-3mm dia. e.g. UR76.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW82D	UHF Reducer Small	£0.297	£0.200	£0.165	£0.350

## Reducer Large

Screws into plug PL259 to enable it to be used with cables around 6-4mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW83E	UHF Reducer Large	£0.297	£0.200	£0.165	£0.350

## Right-Angled UHF Plug (PL259)

A right-angled UHF plug in a plastic body with strain relief sleeve, and solderless cable connections.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ73Q	UHF RA Plug	£1.230	£0.850	£0.720	£1.450

## Right-Angled Plug (PL259)

A twist-on PL259 plug with a right-angled cable input and reducer for connection to RG58/UR76-type cable.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL95D	RA PL259 Plug	£1.260	£0.980	£0.890	£1.490

## Round Socket

Mounting hole: 16.5mm dia. Earth tag fitted.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW84F	UHF Socket Round	£1.020	£0.600	£0.500	£1.200

## Square Socket

Cut-out 16.5mm dia. Fixing centres: 18 x 18mm x 6BA (M3) clear.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW85G	Socket SO239	£1.010	£0.610	£0.470	£1.190

## Elbow Adaptor

A right-angled coupler. PL259 to SO239



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW86T	UHF Elbow Adaptor	£1.740	£1.250	£1.080	£2.050

## Straight Female Adaptor

Adaptor to couple two PL259 plugs together.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW87U	UHF Straight Adaptor	£1.020	£0.600	£0.500	£1.200

## Straight Male Adaptor

Back-to-back male plugs PL259 to PL259.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE91Y	UHF Double Male	£1.090	£0.690	£0.600	£1.290

## 'T' Adaptor



Adaptor to couple two PL259 plugs and then join them to an SO239 socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW88V	UHF T Adaptor	£2.000	£1.500	£1.290	£2.360

## Female/Female



A straight through adaptor for connecting two PL259 plugs together with provision for connecting an earth wire.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RK01B	UHF Adaptor FFLA	£2.170	£1.760	£1.610	£2.550

## Male/Female



A straight through adaptor for connecting a PL259 plug to an SO239 socket, but with provision for connecting an earth wire.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RK02C	UHF Adaptor FMLA	£2.510	£2.080	£1.910	£2.960

## UHF Female to BNC Male Adaptor



A BNC plug internally connected to a UHF SO239 socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW04E	Adaptor 239	£1.820	£1.120	£0.900	£2.150

## UHF Male to BNC Female Adaptor



A BNC socket internally connected to a UHF PL259 plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW05F	Adaptor 259	£1.820	£1.120	£0.900	£2.150

## UHF Female to Phono Plug Adaptor



A UHF socket SO239 internally connected to a phono plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE89W	UHF FemPhono Plug	£0.893	£0.600	£0.520	£1.050

## UHF Male to Phono Socket Adaptor



A UHF plug PL259 internally connected to a phono socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE85G	UHF Plug/Phono Skt	£0.893	£0.600	£0.520	£1.050

## UHF SERIES

### M UHF Crimp Plug

VITELIC

A high quality M UHF crimp plug with gold plated contacts.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV54J	UHF Mini Plug RG58	£1.500	£1.390	£1.240	£1.770

### UHF Reducing Adaptor

VITELIC

For use with 83 1SP-15 and cable RG58.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV55K	UHF Reducer RG58/59	£0.417	£0.389	£0.347	£0.490

### UHF Chassis Socket

Amphenol RFX

A high quality UHF chassis socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
AJ44X	83-0878-RFX	£2.340	£2.100	£1.670	£2.750

### UHF Plug to UHF Plug Adaptor

Amphenol RFX

A high quality adaptor for connecting together two UHF plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
AJ45Y	83-1J-RFX	£4.500	£3.390	£3.100	£5.290





**UHF Chassis Socket**

Amphenol RFX

A high quality UHF chassis socket.



Retail Unit Price each (inc. VAT).

Order Code	Type 1587	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
AJ46A	83-1R-RFX	£2.290	£1.930	£1.650	£2.700

**UHF Plug**

Amphenol RFX

A high quality UHF plug with clamp type assembly.



Retail Unit Price each (inc. VAT).

Order Code	Type 1650	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
AJ47B	83-ISP-15-RFX	£2.280	£1.950	£1.770	£2.640

**UHF Plug to BNC Socket Adaptor**

Amphenol RFX

A high quality adaptor with gold plated contacts for connecting a UHF plug to a BNC socket.



Retail Unit Price each (inc. VAT).

Order Code	Type 1555	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
AJ11M	31-2900-RFX	£7.820	£7.050	£5.480	£9.490

**TWIN AX CONNECTORS**

**Plug**

Cable entry hole 9mm diameter. See BNC plug for assembly details.



Retail Unit Price each (inc. VAT).

Order Code	Type 1643	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
JB07H	Twinax Plug	£3.140	£2.200	£1.750	£3.690

**Chassis Socket**



Requires a 19mm diameter panel cut-out.

Retail Unit Price each (inc. VAT).

Order Code	Type 1644	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
JB09K	Twinax Chassis Skt	£4.890	£2.300	£1.820	£5.750

**CAR AERIAL CONNECTORS**

**Skeleton Plug**



A skeleton-type plug which fits the aerial sockets fitted to most car radios.

Retail Unit Price each (inc. VAT).

Order Code	Type 1049	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HH13P	Skeleton Car Plug	£0.297	£0.200	£0.165	£0.350

**Plastic Plug**



A car aerial plug similar to the skeleton plug above, but with plastic body and screw-on cap.

Retail Unit Price each (inc. VAT).

Order Code	Type 1050	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HH12N	Car AE Plug Plas	£0.808	£0.600	£0.530	£0.950

**Line Socket**

A line socket for extending a car aerial lead.



Retail Unit Price each (inc. VAT).

Order Code	Type 1051	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FJ76H	Car AE Line Skt	£0.774	£0.660	£0.575	£0.910

**Socket**



A chassis mounting socket to suit above car plugs. As fitted on many car radios. Panel cut-out: 12.7mm. Fixing centres: 20mm x 6BA clear.

Retail Unit Price each (inc. VAT).

Order Code	Type 1052	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HH14Q	Chassis Car Socket	£0.331	£0.245	£0.200	£0.390

**FM Aerial Plug**

Moulded plugs for connecting aeriels to radiograms etc.



Retail Unit Price each (inc. VAT).

Order Code	Type 1052	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HH16S	FM Aerial Plug	£0.340	£0.300	£0.260	£0.400

**POWER CONNECTORS**

**UK MAINS PLUGS**

**13 Amp Rubber Plug**

A 13A mains plug moulded in unbreakable tough white rubber. Fitted with a 13A fuse and cord-grip. Conforms to BS1363A.



Retail Unit Price each (inc. VAT).

Order Code	Type 1181	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HL58N	Rubber 13A Plug	£2.110	£1.310	£1.170	£2.490

**13 Amp Mains Plug**

A Rough Service 13A mains plug. Supplied fitted with 13A fuse and cord-grip. Conforms to BS1363A.



Retail Unit Price each (inc. VAT).

Order Code	Type 1158	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RW67X	13 Amp Mains Plug	£0.638	£0.606	£0.545	£0.750

**Super Grip Plug**

A 13A mains plug moulded in tough white nylon with an integral handle for easier insertion and removal for people with arthritic fingers and similar problems of impaired gripping ability. Ideal for appliances which need frequent connection and disconnection, e.g. electric kettles, vacuum cleaners, toasters etc., and some power tools. The effort required to insert/remove this type of plug is considerably reduced compared with the normal type. Fitted with ASTA approved 13A fuse to BS1362. Manufactured to BS1363/A and ASTA approved. Maximum distance of handle from socket is 50mm (2in.).



Retail Unit Price each (inc. VAT).

Order Code	Type 1159	Price each exc. VAT			inc. VAT each
		1+	10+	100+	
ZB88V	Super Grip Plug	£2.030	£1.780	£1.550	£2.390

**5 Amp**

A 5A mains plug moulded in hard wearing heat-resistant bakelite. Fitted with cordgrip. Not fused. Conforms to BS546A.



Retail Unit Price each (inc. VAT).

Order Code	Type 1156	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HL57M	5 Amp Plug Bakelite	£1.090	£0.909	£0.808	£1.290

**Business Account Holders**  
**No Delivery Charges for any order**

## Shaver Adaptor

Standard 13A 3-pin plug internally connected to a 2-pin socket rated at 1A suitable for accepting the plugs fitted to electric shavers. Sockets are shuttered. Fitted with 1A fuse. White. Imported type. This adaptor is suitable for use with standard 2-pin continental mains plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type 1188	Price each exc. VAT	inc. VAT each
HL64U	Shaver Adaptor	1+ 25+ 100+	1+ 1+ 1+
		£1.350 £0.990 £0.770	£1.590

## Travel Plug

A one-piece earthed adaptor suitable for use worldwide. No need to change plugs when you travel abroad, just use this neat adaptor. Suitable for hairdryers, heated curlers, shavers, travel irons, and in fact almost anything that does not exceed 110/220V AC 5A rating of the adaptor. Complete with instructions and a list of all the countries where it can be used.



Retail Unit Price each (inc. VAT).

Order Code	Type 1188	Price each exc. VAT	inc. VAT each
RZ36P	Travel Plug	1+	1+
		£4.240	£4.990

## Universal Travel Plug



Travel round the world and plug into worldwide power. The Continental Adaptor connects earthed or non-earthed appliances rated up to 1.5W. The Intercontinental Adaptor connects non-earthed (2 wire) appliances rated up to 1.5W. Both adaptors are retained in a single cylindrical holder which is easily slipped into the suitcase.

Retail Unit Price each (inc. VAT).

Order Code	Type 11845	Price each exc. VAT	inc. VAT each
BN30H	Universal Adaptor	1+	1+
		£2.970	£3.490

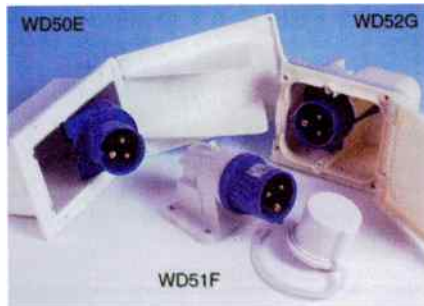
Order £30 or above?

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(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## CEE MAINS

### CEE Type Plugs and Sockets



A range of high quality 3-way CEE industrial type connectors rated at 16A that comply to BS 4343, where applicable, and IEC 309/1 + 2. The range includes a surface mounting socket, an in-line coupler (socket) and a plug. These are available in both 110/130V AC (colour coded yellow) and 230V AC (colour coded blue) versions. The socket and coupler have a spring loaded cap to protect the contacts, and when a plug is connected, the cap locks on to the plug and has to be lifted before the plug can be removed. This prevents the plug being removed by pulling on the cable. A keyway, and a larger diameter earth pin/socket make it impossible for a plug and socket/coupler to be incorrectly connected. Three CEE inlets (plugs) are available in a choice of configurations - straight flush (WD52G), angled flush (WD50E) and angled surface (WD51F) mounting - all three are for 230V AC supplies. The angled surface inlet is supplied with a protective cap for use when de-mated. The connectors are the standard type used on caravans etc. for connecting to mains supplies, and being splashproof are suitable for outside use.

Retail Unit Price each (inc. VAT).

Order Code	Type 1183	Price each exc. VAT	inc. VAT each
KC76H	110V Plug	1+ 10+ 25+	1+ 1+ 1+
KC77J	110V Coupler	£3.870 £3.180 £2.960	£4.550
KC78K	110V Socket	£6.170 £5.010 £4.810	£7.250
KC79L	240V Plug	£2.760 £2.320 £2.130	£3.250
KC80B	240V Coupler	£3.870 £3.180 £2.960	£4.550
KC81C	240V Socket	£6.170 £5.010 £4.810	£7.250
WD50E †	Ang Flush CEE Inlet	£16.970	£19.950
WD51F	Ang Surf Mains Inlet	£6.760	£7.950
WD52G (S)	Str Flush CEE Inlet	£15.270	£17.950

## IEC MAINS

### European Style Connectors Line Socket

Rated at 6A at 250V AC, this socket includes cord grip and strain relief sleeve.



Retail Unit Price each (inc. VAT).

Order Code	Type 1493	Price each exc. VAT	inc. VAT each
HL16S	Eurosocket	1+ 25+ 100+	1+ 1+ 1+
		£1.310 £0.900 £0.750	£1.550

## Right-Angled Mains Inlet Line Socket

Bulgin

This well finished right-angled or side entry line socket is rated at 10A at 250V AC. It features clearly labelled screw terminals for connecting wires to Live, Neutral and Earth. In addition there is a metal cable clamp, and a strain relief sleeve. Approved to VDE, UL, CSA, SEV, SEMKO, and DEMKO standards.



Retail Unit Price each (inc. VAT).

Order Code	Type 1434	Price each exc. VAT	inc. VAT each
FT62S	R/A Euro Mns In P588	1+ 25+ 100+	1+ 1+ 1+
		£2.200 £2.090 £1.980	£2.590

## Side Entry Euro Socket

Bulgin

A mains line socket with side entry for cable, conforming to BS4491. Rated at 10A at 250V AC. Includes cable clamp and strain relief. Approved to BS1, VDE, UL, CSA, SEMKO, NEMKO, DEMKO and IMQ standards.

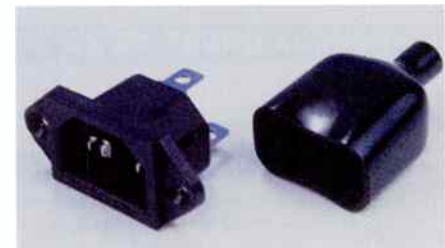


Retail Unit Price each (inc. VAT).

Order Code	Type 1435	Price each exc. VAT	inc. VAT each
JP19V	Side Eurosocket	1+ 25+ 100+	1+ 1+ 1+
		£1.690 £1.600 £1.520	£1.990

## Mains Inlet Chassis Plug

Cliff



Rated at 10A 250V AC. Terminals 6.3mm solder tags. Fixing centres: 40 x 6BA (M3) countersunk. Overall depth: 33mm, including solder tag contacts. Cut Outs Front Mounting 23mm x 31mm Rear Mounting 27mm x 19.5mm An insulation cover for the rear of this plug is also available. Conforms to IEC 320.

Retail Unit Price each (inc. VAT).

Order Code	Type 1436	Price each exc. VAT	inc. VAT each
HL15R	Europlug	1+ 25+ 100+	1+ 1+ 1+
JK66W	Ins Cover for HL15R	£0.893 £0.600 £0.500	£1.050
		£0.510 £0.335 £0.260	£0.600

## Hot Condition Euro Chassis Plug

Bulgin

'Hot condition' plug, that is capable of withstanding high temperatures, moulded in black nylon, with integral polarisation lug. Fitted with 6.35mm (1/4in.) blade connections at the rear. Rating 10A 250V AC. Operating temperature -40°C to +70°C. Maximum pin temperature 120°C. Mounting hole 27.5 x 20mm.



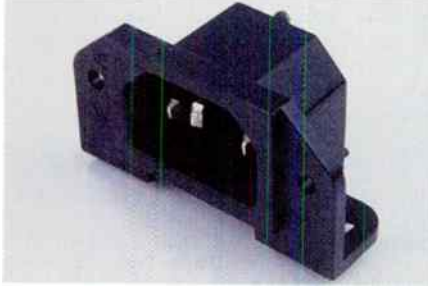
Fixing centres 40mm x M3(6BA). Overall depth 32mm. UL, CSA, VDE, IMQ, SEMKO, DEMKO and NEMKO approved.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
MK19V	Hot Chassis Plug	£0.927	£0.881	£0.834	£1.090

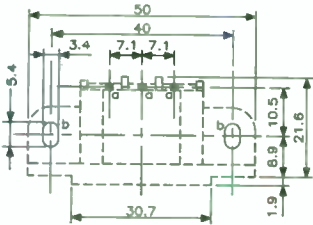
## PCB Mounting Mains Inlet Plug

CIFF



Requires chassis cut-out 30 x 22mm. Has 3mm (6BA) dia. holes in front face and base for fixing to panel and/or pcb on 39mm centres. Pcb pins are 1.5mm dia. and in addition the earth pin also has a solder lug protruding from the rear for earth wire to chassis connection etc. Overall size (excluding PCB pins and lug): 49 x 21 x 27mm high. Front flange protrudes by 3mm.

All dimensions in mm  
Viewed from above  
Hole data  
a 3 x Ø1.6mm  
b 2 x Slots 3.4 x 5.4

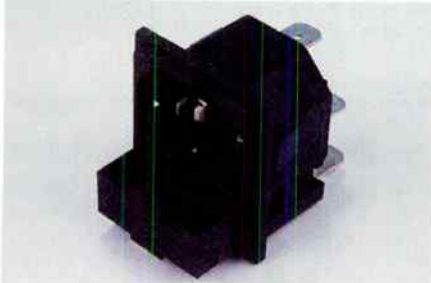


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE15R	PCB Europlug	£0.757	£0.600	£0.520	£0.890

## Euro Fused Mains Chassis Plug Inlet

Bulgin



A chassis mounting, Euro style, moulded nylon, mains inlet plug with integral fuseholder, or magazine that partially withdraws to accept a 5 x 20mm cartridge fuse. The fuse magazine is connected in the Live line only and the mains connector cannot be inserted unless the magazine is closed. When the fuse magazine is opened the fuse is disconnected and remains loose in the drawer. Changing the fuse is then just a matter of lifting out the old and inserting the new. The magazine has storage space for one spare fuse.

(Fuses are not included.) Maximum rating is 10A at 250V AC. Connections are tin-plated brass 6.35mm (1/4in.) blades and may be soldered, or a quick-fit receptacle used (e.g., HF10L). The chassis plug is a snap fit, into an aperture of 27.3 x 31.12mm, in a panel of 1.5mm thickness and has an overall depth of 27.6mm. An insulation cover is available for protecting the rear of this item. UL, CSA, VDE, IMQ and SEMKO approved.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
MK18U	Euro Fused	£1.250	£1.190	£1.130	£1.480
JK67X	Cover For FT37/MK18	£0.502	£0.410	£0.365	£0.590

## Fused Euro Mains Inlet/Outlet Socket

Bulgin



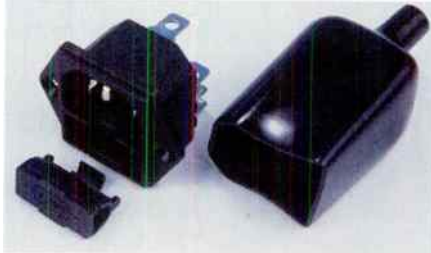
This is a panel mounting snap-in Euro mains inlet/outlet. This 10A rated mains combined plug/socket has a fuseholder for a 20mm fuse. Chassis cut-out is 34.4 x 76.5mm. Unit is UL, CSA, VDE, SEMKO, IMQ & SEV approved.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE06G	Euro In/Out Fused	£2.570	£2.440	£2.320	£3.030

## Fused Mains Inlet Chassis Plug

CIFF



A chassis mounting Euro style mains inlet connector with a built-in fuseholder that accepts a 5 x 20mm cartridge fuse. The fuse is connected in the Live line only. The fuseholder consists of a small 'drawer' which cannot be withdrawn unless the input lead line socket is removed first. The fuse is automatically disconnected and remains loose in the 'drawer'; changing the fuse is merely a matter of lifting out the old and dropping in the new. Additional space is provided at the front of the 'drawer' to carry a spare fuse. (Fuses are not included.) The line socket cannot be inserted without closing the 'drawer'.

An insulation cover for the rear of this plug is also available. (Manufactured by Bulgin.)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FT37S	Fused Euro Ch Plug	£1.430	£1.080	£0.900	£1.690
JK67X	Cover For FT37/MK18	£0.502	£0.410	£0.365	£0.590



## Fused Mains Inlet Chassis Plug with Switch

Bulgin

As FT37S but with SPST mains switch incorporated in the one moulding and having a snap-in fixing. Requires a 56.6 x 34.4mm panel cut-out. UL, CSA, VDE and SEMKO approved. 10A 250V rating. Bezel size 59 x 36mm. Overall depth behind bezel 26mm. Suitable for 1-0, 1-5, 2-0 and 3mm panel thickness.

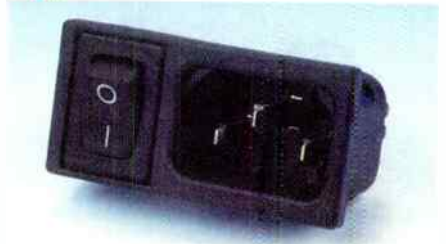


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK71N	Fuse/Switch Inlet	£3.020	£2.860	£2.710	£3.550

## Euro Mains Power Fused Switches

Bulgin



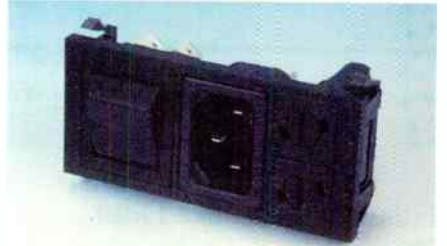
These are chassis snap-in, 3-pin Euro 10A mains power plugs. They come with a single pole or double pole rocker switch. The plugs are available with or without an illuminated neon switch. Chassis cut-out is 21.3 x 45.9mm, for single pole and 21.3 x 54.9mm, for double pole making this ideal for fitting in 1U height racking panels. UL, CSA, and VDE approved.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE00A	Euro Inlet SP Sw	£1.770	£1.690	£1.590	£2.080
KE01B	Euro In. SP Illum Sw	£2.530	£2.410	£2.280	£2.980
KE02C	Euro Inlet DP Sw	£2.360	£2.250	£2.130	£2.780
KE03D	Euro In. DP Illum Sw	£3.210	£3.050	£2.890	£3.780

## Euro Mains Power Twin Fused Switches

Bulgin



These are similar to the above except that they have two fuseholders for 20mm fuses. The plugs are available as double pole switches with or without an illuminated neon switch. Chassis cut-out is 34.4 x 76.5mm. Bezel size 36.1 x 78.7mm. UL, CSA, VDE and SEMKO approved. **WARNING: Neutral line must not be fused where it is referenced to earth.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE05F	Euro In. DP Illum SW	£5.860	£5.570	£5.270	£6.890
KE04E	Euro Inlet DP Sw+Fs	£4.990	£4.740	£4.490	£5.870

## Retaining Clips

**Bulgin**

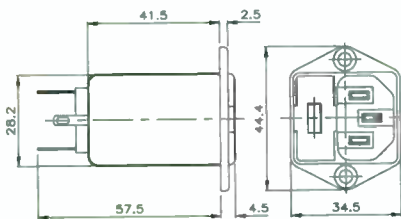
Retaining clips for preventing the accidental removal of the connector. A spring steel clip retained by two bolts acts as the fixing for the chassis connector. Three versions are available, for use with Euro chassis socket FT63T, Euro chassis plug HL15R and fused Euro chassis plug FT37S.



Retail Unit Price each (inc. VAT).

Order Code	Type 1307	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
MK21X	Ret Kit Fr HL15/FT63	£1.120	£1.060	£1.010	£1.320
MK22Y	Ret Kit Fr MK19	£1.120	£1.060	£1.010	£1.320
MK23A	Ret Kit For FT37	£1.910	£1.820	£1.720	£2.250

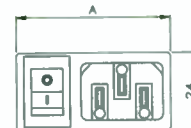
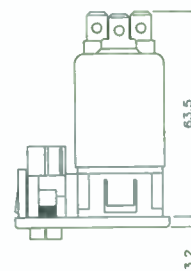
Cut Out 29.25 x 33.25  
Fixing Centres 36.0



Retail Unit Price each (inc. VAT).

Order Code	Type 12190	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
CT81C	Fused IEC Inlet Filtr	£10.870	£10.330	£9.790	£12.780

Polysnap modules fit 1.5mm panel thickness. UL, CSA & VDE approved. Each element is individually terminated for flexibility of interconnection.



SP Switch, A=48.5  
DP Switch, A=57.5

Dimensions mm

	Single Pole	Double Pole	depth
Cut Out	21.3 x 45.9	21.3 x 54.9	63.5

Retail Unit Price each (inc. VAT).

Order Code	Type 12150	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
CT85G	Snapfit Filtr 1P Illm	£10.530	£10.010	£9.480	£12.380
CT84F	Snapfit Filtr 1P Sw	£10.030	£9.520	£9.020	£11.790
CT86T	Snapfit Filtr 2P Sw	£10.700	£10.170	£9.630	£12.580
CT87U	Snapfit Filtr 2P Illm	£11.140	£10.580	£10.020	£13.090

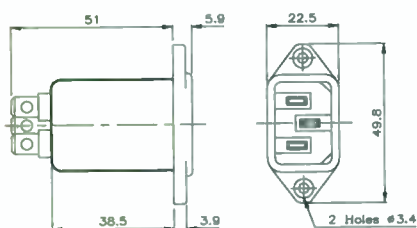
## Filtered Mains Inlet

**Bulgin**



A flange mounting Euro style mains power inlet which has an integral interference filter for the exclusion of unwanted noise from the mains supply, or to prevent equipment introducing noise spikes into the mains circuit. The filter circuit includes the Earth connection together with the Line and Neutral to cover all possible interference sources. UL, CSA, VDE & SEMKO approved.

Working Voltage 250VAC 50Hz  
Current Rating 6A  
Earth Leakage Current <0.35mA  
Cut Out 28.5 x 21.0  
Fixing Centres 40.0



Retail Unit Price each (inc. VAT).

Order Code	Type 12182	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
CT80B	IEC Inlet Filter	£8.910	£8.470	£8.020	£10.480

## Fused Mains Inlet Filter

**Bulgin**



A flange mounting Euro style mains power inlet with built-in fuseholder and RF filter. The fuseholder accepts 5 x 20mm fuse cartridge. The rated current is 6A. Connections are by 6.3mm solder tags. UL, CSA & VDE approved.

## Vertical Snap Fit Switched & Fused Mains Inlet Filter

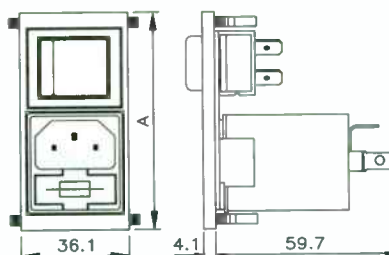
**Bulgin**

Vertical snap fit panel mounting Euro style RF filtered mains inlets, available with built-in fuseholder and choice of single or double pole switch. Each item is individually terminated giving flexibility of interconnection by 6.3mm solder tags. Rated current 6A. Fuseholder accepts 20 x 5mm fuse UL, CSA & VDE approved.



Dimensions mm

	Single Pole	Double Pole	depth
Cut Out	34.4 x 56.6	34.4 x 70.1	59.7



SP Switch, A = 58.9mm  
DP Switch, A = 72.3mm

Retail Unit Price each (inc. VAT).

Order Code	Type 12183	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
CT82D	DP Sw IEC Inlet Filtr	£14.240	£13.530	£12.810	£16.740
CT83E	SP Sw IEC Inlet Filtr	£13.540	£12.870	£12.190	£15.920

## Horizontal Snap Fit Filtered Switched Mains Inlet

**Bulgin**



New low profile Euro style mains inlets with built-in filter and plain or illuminated single or double pole switching. This low profile mini bezel design allows fitting into standard 1U racking front panels. Rated Current 6A

## Euro Facility Line Plug

**Bulgin**

Plug has cord grip and strain relief grommet. The pins are partly shrouded for extra safety. Rated at 6A 250V, BEAB and CSA approved.



Retail Unit Price each (inc. VAT).

Order Code	Type 1307	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HL43W	Euro Facility Plug	£3.140	£2.980	£2.820	£3.690

## Euro Facility Chassis Socket

**Bulgin**

Mounting hole: 28.24 x 23.24mm. Overall depth: 33mm. Socket is snap-in fixing. Rated at 6A, 250V. Beab and CSA approved. An insulation cover for the rear of this socket is also available.



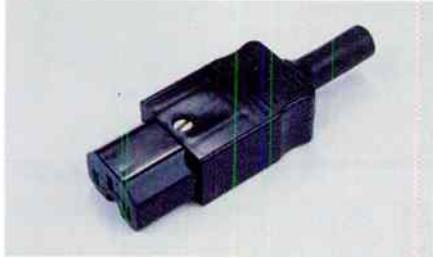
Retail Unit Price each (inc. VAT).

Order Code	Type 1358	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HL42V	Euro Facility Outlet	£1.030	£0.989	£0.937	£1.220
JK69A	Ins Cover for HL42V	£0.697	£0.666	£0.631	£0.820

† This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## Hot Condition Euro Line Socket

Bulgyn



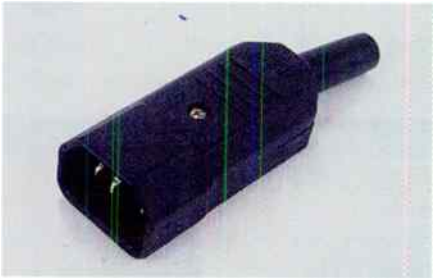
Rewirable cable mounting Hot Condition socket with cord grip and strain relief grommet. Rated at 250V AC 10A maximum.

Retail Unit Price each (inc. VAT).

Order Code	Type 1359	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
MK20W	Euro Line Socket	£1.600	£1.520	£1.440	£1.880

## Mains Outlet Line Plug

CIIT



A line plug for use with the chassis mounting Euro outlet socket. The line plug has shielded pins to prevent accidental touching of the pins whilst inserting or removing the plug. Wires are terminated to the connectors using screw terminals. Includes cable clamp and strain relief sleeve. Rated at 6A at 250V AC.

Retail Unit Price each (inc. VAT).

Order Code	Type 1360	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FT64U	Euro Outl Pig P686	£2.030	£1.480	£1.140	£2.390

## Right-Angled Mains Outlet Line Plug

Bulgyn

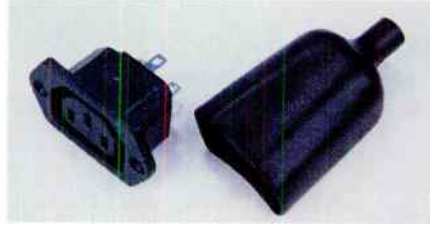
A right-angled or side entry Euro style mains outlet plug, having the special feature in that the centre portion comprising the shielded pins and screw terminals can be mounted into the body upon assembly in any one of four positions relative to the body and 90° to each other, so that the cable may exit in whichever direction is the most convenient. Includes cable clamp and strain relief sleeve. Rated at 10A at 250V AC. UL, CSA, SEV and BEAB approved.



Retail Unit Price each (inc. VAT).

Order Code	Type 1362	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FT65V	Euro R/A Out Pg P685	£2.360	£2.250	£2.130	£2.780

## Mains Outlet Chassis Socket



A mains outlet chassis socket complementary to the mains inlet chassis plug HL15R. Physically identical it requires a 32 x 25mm mounting hole, and has an overall depth of 35mm. Fixing centres are 40mm x 6BA or M3, countersunk. Contacts are rated at 6A at 250V AC, with solder tag terminations at rear 6-35mm wide x 10mm long that will accept standard 6-35mm (1/4in.) push-on connector. An insulation cover for the rear of this socket is also available.

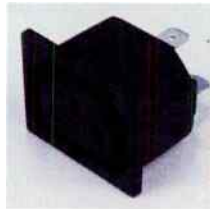
Retail Unit Price each (inc. VAT).

Order Code	Type 1361	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FT63T	Euro Outl Skt P675	£1.060	£0.650	£0.500	£1.250
JK68Y	Cover For FT63MK17	£0.570	£0.541	£0.513	£0.670

## Euro Mains Outlet Chassis Socket

Bulgyn

A chassis mounting, Euro style, moulded nylon, mains inlet socket with a maximum rating of 10A at 250V AC. Connections at the rear are tin-plated brass solder tags 2-8mm wide x 8-7mm long. The chassis socket is a snap fit, into an aperture of 24.77 x 32.26mm, in a panel of 1.5mm thickness and has an overall depth of 32.5mm. An insulation cover is available for protecting the rear of this item. Approved to UL, CSA, VDE, BEAB, SEV, SEMKO, and IMQ standards.



Retail Unit Price each (inc. VAT).

Order Code	Type 1362	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
MK17T	Euro Mains	£0.672	£0.638	£0.605	£0.790
JK68Y	Cover For FT63MK17	£0.570	£0.541	£0.513	£0.670

## Shuttered IEC Mains Outlet

Bulgyn

A shuttered IEC mains outlet that is snap fit chassis mounting. This 10A 250VAC rated socket is moulded in UL94V-0 flammability nylon with 6.3mm solder tag connections. Cut out dimensions 24.77 x 32.26mm with an overall depth of 33.1mm. UL, CSA, VDE, IMQ, SEMKO, DEMKO & BEAB approved.

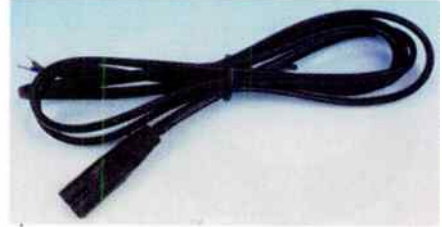


Retail Unit Price each (inc. VAT).

Order Code	Type 13221	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
RY15R	IEC Shuttered Outlet	£1.250	£1.190	£1.130	£1.480

## MAINS LEADS

### Cassette Mains Lead



A mains lead with moulded socket which will fit the mains plugs on many battery/mains cassette players, radios etc. For manufacturers' use only.

Retail Unit Price each (inc. VAT).

Order Code	Type 1167	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW66W	Cas Lead Telefunken	£1.010	£0.680	£0.560	£1.190

### Mains Lead



A non-rewirable mains lead with Telefunken style moulded two-pin socket at one end and a 13A moulded plug at the other. The Telefunken style socket is suitable for use with most mains/battery radios, cassette recorders, etc. The lead is 2m long, coloured black and rated at 250V AC, 2-5A. The 13A plug carries a 3A fuse.

Retail Unit Price each (inc. VAT).

Order Code	Type 1168	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
AK16S	2.5A Mains Lead	£2.200	£1.670	£1.700	£2.590

## European Plug and Socket Cord Set



Moulded, high quality, BEAB approved non-rewirable European style shrouded plug and socket cable assembly, 2m long, rated at 250V 10A. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type 1171	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MK24B	Euro Mains Cord Set	£4.670	£4.250	£3.750	£5.490

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## Moulded Socket and Lead

Bulgin



A line socket permanently moulded to a length of 3-core flex. Rated at 10A, 250V AC. Available with straight or right-angled line socket. Length of flex: BW99H 1.5m; FE79L 2m. Approved to BSI, VDE, SEMKO, SEV, NEMKO, DEMKO and IMQ standards. For manufacturers' use only.



Retail Unit Price each (inc. VAT).

Order Code	Type 1488	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
BW99H	Euroconn Lead	£2.110	£2.000	£1.890	£2.480
FE79L	R/A Euroconn Lead	£2.970	£2.820	£2.670	£3.490

## Moulded Socket Lead



A right-angled socket, permanently moulded to a 2m length of 3-core flex. Rated at 6A. For manufacturers' use only.

Retail Unit Price each (inc. VAT).

Order Code	Type 1174	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
AP08J	Cable Euro R-Angle	£1.600	£1.320	£1.140	£1.890

## Euro Socket to 13A Plug Lead



Moulded, high quality plug and socket non-rewirable cable assembly 2m long and rated at 5A 250V AC. The plug is supplied with a 5A fuse. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type 1176	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
MK41U	Euro-3Pin Lead	£3.390	£2.830	£2.420	£3.990

## Moulded Mains Plug and Lead



This integrally moulded 5A mains plug with 2m of 0.75mm diameter 3-core cable is supplied prepared for fitting to an electrical appliance. The plug features double insulation, and wire connections that have been crimped on by specialised semi-automatic equipment, to ensure consistent safety and reliability. The plug is supplied with solid brass semi-insulated pins and is approved to BS1363. Supplied fitted with a 5A fuse; cable end stripped 40mm, and cores bared 10mm. Available in either black or white. For manufacturers' use only.

Retail Unit Price each (inc. VAT).

Order Code	Type 1179	Price each exc. VAT			inc. VAT each 1+
		1+	20+	100+	
CY32K	Mains Plg+Cable Bk	£2.540	£2.470	£2.300	£2.990
CY33L	Mains Plg+Cable Wht	£2.540	£2.470	£2.300	£2.990

## European Mains Lead



A fully moulded double-earthed system mains lead with a 2-pin European Schuko plug at one end and the other with a Euro 3-pin socket. Suitable for equipment designed for operation from European mains supplies. Current rating: 6A. Voltage rating: 250V max. Available in two colours; Black or Grey.

Retail Unit Price each (inc. VAT).

Order Code	Type 11642	Price each exc. VAT			inc. VAT each 1+
		1+	50+	100+	
KE77J	Schuko-Euro Bk	£2.540	£2.250	£1.950	£2.990
KE78K	Schuko-Euro Gry	£2.540	£2.250	£1.950	£2.990

## USA MAINS

### American Plug

A 2-pin 7.5A line plug with flat pins on 12.7mm centres. For 110V use only.



Retail Unit Price each (inc. VAT).

Order Code	Type 1472	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
HL17T	USA Mains Plug	£0.425	£0.330	£0.265	£0.500

### American Chassis Socket

A 2-pin 7.5A chassis socket to suit USA Mains Plug. Fixing centres 32mm. For 110V use only.



Retail Unit Price each (inc. VAT).

Order Code	Type 1473	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
HL18U	Flat Pin MS	£0.331	£0.245	£0.170	£0.390

## American 3-pin Chassis Socket

A 3-pin 7.5A chassis socket with snap-in fixing in 23 x 23mm panel cut-out. Bezel size 27 x 27mm. Overall depth: 32mm. For 110V use only.



Retail Unit Price each (inc. VAT).

Order Code	Type 1475	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JK19V	USA 3-Pin Socket	£0.893	£0.580	£0.450	£1.050

## American Line Socket

A two pin 7.5A line socket to suit our USA Mains Plug. For 110V use only.



Retail Unit Price each (inc. VAT).

Order Code	Type 1476	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
HL19V	Flat Pin Conn	£0.842	£0.670	£0.600	£0.990

## FIGURE EIGHT

### Figure 8 Power Inlets

Bulgin



High quality miniature figure of eight two pin mains power inlets. Manufactured in UL94V-0 flammability nylon these inlets are available in flange fitting (front or rear fixing) and snap fit. Designed for EN60 320 (BS4491) they have UL, CSA and VDE approval.

Rating 2.5A 250VAC  
Terminations 2.8mm solder

#### Cut Outs:

Flange 19.8 x 11.7mm, 28.0mm centres  
Snap Fit 23.7 x 11.7mm  
1, 1.5, 2.0mm panel thickness.

Retail Unit Price each (inc. VAT).

Order Code	Type 12050	Price each exc. VAT			inc. VAT each 1+
		1+	10+	50+	
FY16S	Fig 8 Pwr Inlet PMnt	£0.842	£0.800	£0.758	£0.990
FY17T	Fig 8 Pwr Inlet Snap	£0.842	£0.800	£0.758	£0.990

## Telefunken Line Socket

A 2-pin line socket for use with the Telefunken style 2-pin mains plug. Twin wire cable can be terminated to the pair of solder tags inside, beneath the removable cover retained by a single screw. Overall length 31mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1477	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FT99H	Telefunken Skt	£0.510	£0.330	£0.260	£0.620

## Telefunken Plug

A 2-pin mains plug with integral change over switch for isolating internal battery supply or similar, operated on insertion of the line socket. Suits Telefunken plug. Cut-out required: 20 x 20mm. Fixing centres: 26.5mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1480	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FT98G	Telefunken Plug	£1.090	£0.890	£0.800	£1.290

## DISTRIBUTION UNITS

### 2-way & 4-way Plug Adaptors



An ingenious way of providing a mains supply to Hi-Fi, computer equipment etc. These units allow either 2 or 4 miniature mains connectors to be connected to one mains socket safely and neatly. The main unit has integral 13A plug pins and sockets to take the miniature connectors. Supplied with miniature connectors.

Retail Unit Price each (inc. VAT).

Order Code	Type 1363	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YZ13P	Plug Connector 2 Way	£8.500	£7.250	£6.750	£9.990
YZ12N	Plug Connector 4 Way	£11.050	£9.650	£9.250	£12.990

### 4-Way and 6-Way Mains Distribution Units



A safe and tidy way of connecting up to four or six mains appliances to a single mains socket, ideally suited to Hi-Fi and computer equipment, etc. The unit may be used either 'trailing' or fixed to a wall. The unit has the following features: Neon 'on' indicator, sockets are fully shuttered for safety, internally fused, labelling system to identify appliance plug, unbreakable polycarbonate construction. Current capacity 13A (240V AC mains) overall, maximum current per socket 10A. Conforms to BS5733. Supplied complete with miniature connectors.

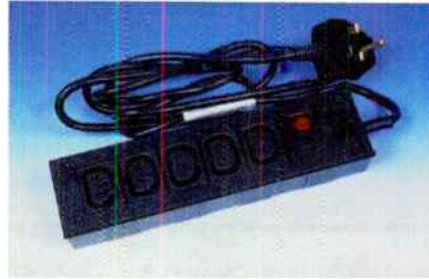
Retail Unit Price each (inc. VAT).

Order Code	Type 1364	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YZ10L	4 Way Mains Conn	£11.900	£10.000	£9.250	£13.990
YZ11M	6 Way Mains Conn	£14.450	£12.450	£11.650	£16.990

See Stock Code Index For More Price Breaks

## 5-Way IEC Mains Outlet

Bulgin



A European plug multi-way mains outlet. The unit is moulded in rugged thermoplastic with 5 shuttered IEC outlets, a 20x5 fuseholder and neon indicator. Supplied fitted with a 2m cable and BS1363 plug the unit has a maximum current rating of 10A. Overall dimensions 226 x 58.5 x 40 mm

Retail Unit Price each (inc. VAT).

Order Code	Type 2026	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
RY14Q	5 Wy IEC Mains Outlet	£20.400	£19.390	£18.360	£23.960

## IP68 SEALED

### IP68 Sealed In-Line Connector

Bulgin



A threaded-coupling IP68 sealed in-line connector, suitable for repairing or extending 3-core circular mains cables. The plastic sealed two-piece black housing is fitted with cable glands and retained together with a screwed ring. Supplied with 3-way terminal block, rated at 6A 250V AC, and fitting instructions. Conforms to BS5490: 1977.

Retail Unit Price each (inc. VAT).

Order Code	Type 1366	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
MK33L	In-Line Connector	£5.210	£4.950	£4.690	£6.130

### Buccaneer IP68 Sealed Coupling Connectors

Bulgin

A range of plastic moulded in-line and chassis mounting 3-way interchangeable plug and socket connectors. The threaded-coupling housings are supplied with interchangeable polarised plug and socket inserts to cater for mains inlet or outlet application and cable glands for circular mains cable. Two types of insert/extraction tools are available, for ease of assembly of plugs and sockets, that also double as sealing covers. Rated at 10A 250V AC. Sealed to IP68. BS5490: 1977, UL, CSA & VDE approved.

MK25C Chassis mounting 3-way plug  
MK26D Chassis mounting 3-way socket  
MK27E Free 3-way plug (with coupling ring)  
MK28F Free 3-way socket (with coupling ring)  
MK29G In-line 3-way plug  
MK30H In-line 3-way socket



MK31J Cap/Tool for chassis mounted and in-line connectors  
MK32K Cap/Tool for free connectors

Retail Unit Price each (inc. VAT).

Order Code	Type 1367	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
MK25C	3-Way Chassis Plug	£3.470	£3.300	£3.120	£4.080
MK26D	3-Way Chassis Socket	£4.260	£4.050	£3.830	£5.010
MK27E	3-Way Plug	£4.260	£4.050	£3.830	£5.010
MK28F	3-Way Socket	£5.140	£4.870	£4.620	£6.040
MK29G	3-Way Plug	£4.780	£4.450	£4.300	£5.620
MK30H	3-Way Socket	£5.650	£5.370	£5.090	£6.650
MK31J	Assembly Tool Chass	£0.510	£0.488	£0.463	£0.600
MK32K	Assembly Tool	£0.688	£0.655	£0.620	£0.810

## LOW CURRENT

### Please Note:

Connectors marked \* are unsuitable for use on domestic equipment at voltages over 50V; unless contact with the connector or terminals is impossible without the use of a tool defined in the Electrical Equipment (Safety) Regulations 1975. Connectors marked \*\* are suitable for use on domestic equipment at voltages over 50V, provided they are NOT live when unmated and are used in conjunction with a connector NOT marked with a \*. Or alternatively, if contact with the connector or terminals is impossible without the use of a tool as defined in the Electrical Equipment (Safety) Regulations 1975.

### 3-Pin Low Current Range P429 \*\*

Bulgin

A three pin chassis plug. Overall depth: 21mm. Mounting hole: 19mm dia. Bezel diameter: 24.7mm. Rated: 1.5A at 250V, 2A at 110V, 3A at 6V AC and DC. Mates with sockets P631, P646 and P430SE. See note below.



Retail Unit Price each (inc. VAT).

Order Code	Type 1368	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HL20W	Mains Plug P429	£0.961	£0.912	£0.864	£1.130

### P646

Bulgin

A 3-pin line socket to fit plug P429. With cord grip and strain relief sleeve. Rated: (as P429).



Retail Unit Price each (inc. VAT).

Order Code	Type 1369	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HL44X	Mains Socket P646	£2.170	£2.060	£1.950	£2.550

### P430SE

Bulgin

A 3-pin line socket; side entry version of P646. With cord grip. Rated as P429.



Retail Unit Price each (inc. VAT).

Order Code	Type 1371	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HL23A	Mains Socket P430SE	£1.920	£1.820	£1.720	£2.260

## P631 ★

**Bulgin**

A three-pin line socket with strain relief sleeve. Rated as P429. Mates with Plug P429. Suitable for use with PSU24 Soldering Station.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JU67X	50V Socket P631	£0.953	£0.907	£0.859	£1.120

## 3-Pin 5A Range SA1861 HH

A 3-pin chassis plug. Overall depth: 33mm. Mounting hole: 27mm dia. Bezel dia. 40mm. Fixing centres: 32mm x 4BA. Rated: 5A at 50V AC. 7A at 6V AC and DC. Mates with sockets SA2597 and SA2111.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL27E	50V Plug SA1861	£1.560	£1.490	£1.410	£1.840

## SA2368

**Bulgin**

A 4-pin chassis socket. Overall depth: 28mm. Mounting hole: 19mm. Bezel dia: 25mm. Rated: (as SA2367). Mates with SA2367.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL34M	Mains Socket SA2368	£1.490	£1.420	£1.350	£1.760

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## P649 ★★

**Bulgin**

A 3-pin plug with cord grip and strain relief sleeve. Rated at 2.5A at 250V, 3A at 110V, 4A at 6V AC and DC. Mates with socket P650.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL45Y	Mains Plug P649	£1.730	£1.650	£1.560	£2.040

## SA2597 ★

A 3-pin line socket to fit plug SA1861. With cord grip. Strain relief sleeve available separately, if required.



Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL28F	50V Socket SA2597	£1.520	£1.150	£0.980	£1.790

## Six-Pole Connector P635 ★

**Bulgin**

A six-pin chassis plug. Overall depth: 34mm. Mounting hole: 19mm dia. Bezel dia: 23.5mm. Rated: 1.5A at 250V, 3A at 50V AC and DC. Mates with socket P636.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL36P	50V Plug P635	£1.650	£1.560	£1.480	£1.940

## P650

**Bulgin**

A 3-pin chassis socket. Mounting hole: 19mm. Rated as P649. Mates with plug P649.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL46A	Mains Socket P650	£1.380	£1.320	£1.250	£1.630

## Strain Relief Sleeve

**Bulgin**

A moulded black strain relief sleeve suitable for use with Socket SA2597.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL50E	Sleeve 8037	£0.238	£0.224	£0.213	£0.280

## P636 ★

**Bulgin**

A six-pin line socket with strain relief sleeve. Rated as P635. Mates with Plug P635.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL37S	50V Socket P636	£1.920	£1.820	£1.720	£2.260

## SA2403

**Bulgin**

A 3-pin line plug with shielded pins and cord grip. Plug is side entry type. Rated: 2A at 250V, 3A at 110V and 4A at 6V AC and DC. Mates with socket SA2404.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL47B	Mains Plug SA2403	£2.000	£1.890	£1.790	£2.350

## SA2111

**Bulgin**

A 3-pin line socket; side entry version of SA2597. With cord grip. Fits plug SA1861, and the pair are suitable for use at 250V AC in domestic applications, otherwise rated as SA1861.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL48D	250V Socket SA2111	£2.880	£2.740	£2.590	£3.390

## P551

**Bulgin**

An eight-pin line plug with cord grip. Side entry type. Will accept up to eight full size insulated conductors or two to three mains cables simultaneously. Rated (per pin): 6A at 250V, 10A at 2.5V AC. Mates with socket P552.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL39N	Mains Plug P551	£4.360	£4.150	£3.930	£5.130

## SA2404

**Bulgin**

A 3-pin chassis socket. Mounting hole: 19mm dia. Rated (as SA2403). Mates with plug SA2403.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL48C	Mains Socket SA2404	£1.210	£1.150	£1.060	£1.430

## Four Pole Connector SA2367

**Bulgin**

A 4-pin line plug with shielded pins and cord grip. Plug is side entry type. Rated 2A at 250V, 3A at 110V and 4A at 6V AC and DC. Mates with socket SA2368. Plug is keyed so that it can only be inserted one way.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL33L	Mains Plug SA2367	£2.340	£2.230	£2.110	£2.760

## P552

**Bulgin**

An eight-pin chassis socket available with solder tags P552, or PCB pins PX0552. Overall depth: 23mm. Mounting hole: 38mm dia. Bezel: 41 x 41mm. Fixing centres: 33 x 33mm x 6BA (M3) countersunk. Rated as P551. Mates with plug P551.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL40T	Mains Socket P552	£1.470	£1.390	£1.320	£1.730
JZ02C	Mains Socket PX0552	£1.520	£1.440	£1.370	£1.790



## Insulating Boot

### Bulgin

Flexible black covers providing neat tangle-free cable connection and giving protection against accidental contact. Fits over the back of Plug P429 and Sockets SA2404 and SA2368.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL51F	Boot 9455	£0.425	£0.407	£0.386	£0.500

## MINIATURE

### 1.3mm Plug

A miniature DC power plug as used with the Walkman-type personal stereo cassette players. Suitable only for use with matching socket having 1.3mm dia. pin.



Retail Unit Price each (inc. VAT).

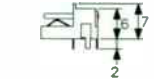
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK05F	Mini DC Pwr Plug	£0.331	£0.250	£0.220	£0.390

### 1.3mm PCB Socket

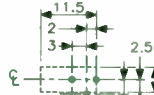
A PCB mounting socket compatible with 1.3mm Walkman type plugs.



All Dimensions in mm



Viewed from above



Hole Dato 3 x ø1.2mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK07H	PCB Mini DC Pwr Skt	£0.553	£0.440	£0.400	£0.650

### 1.3mm Plug to 2.1mm Socket Adaptor

Converts 2.1mm power plug to 1.3mm for use with Walkman-type cassette power sockets.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK08J	DC 2.1 - 1.3mm Adapt	£0.587	£0.440	£0.395	£0.690

### 1.3mm Plug to 2.5mm Socket Adaptor

Converts 2.5mm power plugs to 1.3mm for use with Walkman-type cassette power sockets.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK09K	DC 2.5-1.3mm Adapt	£0.587	£0.440	£0.395	£0.690

### 1.3mm Plug to 3.5mm Mono Jack Socket Adaptor

An adaptor which enables a 3.5mm mono jack plug to be used with Walkman-type cassette players using 1.3mm power sockets.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK10L	DC 3.5-1.3mm Adapt	£0.587	£0.440	£0.395	£0.690

### Standard 2.1mm Plug

2.1mm power plug of standard length.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH60Q	Std Power Plug 2.1	£0.323	£0.230	£0.180	£0.380

### Long 2.1mm Plug

2.1mm power plug having a long reach.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH61R	Long Pwr Plug 2.1	£0.331	£0.250	£0.210	£0.390

### 2.1mm Socket

2.1mm chassis socket with break contact suits Standard Power Plug 2.1. Fixing centres: 24mm. Hole diameter: 2mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH85G	Power Skt 2.1	£0.417	£0.260	£0.220	£0.490

### 2.1mm Plastic Socket

A plastic bodied 2.1mm power socket with break contact. Suits Standard Power Plug 2.1. Fixing centres: 15.5mm. Hole diameter: 2.5mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FT96E	Plas 2.1 Chas Skt	£0.331	£0.220	£0.180	£0.390

### 2.1mm Socket Single-Hole-Fixing

A 2.1mm power socket with break contact. Requires a single 8mm panel cut-out. Overall size: 21 x 11mm dia.



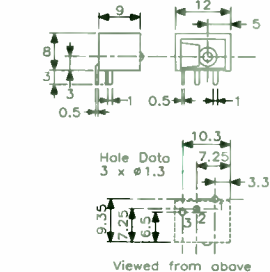
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK09K	Pan Mnt Pwr Skt 2.1	£0.765	£0.540	£0.460	£0.900

### 2.1mm Socket Printed Circuit Mounting

A DC socket that mounts directly onto PCBs. Eliminates internal wiring. Intended for low voltage and current applications. Should not be used at currents greater than 2A or DC voltages greater than 50V. Ideal for most 12V DC powered items.

All Dimensions in mm



Viewed from above

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK37S	PC Mtg Power Socket	£0.417	£0.310	£0.270	£0.490

### 2.1mm Line Socket

A 2.1mm in-line socket.

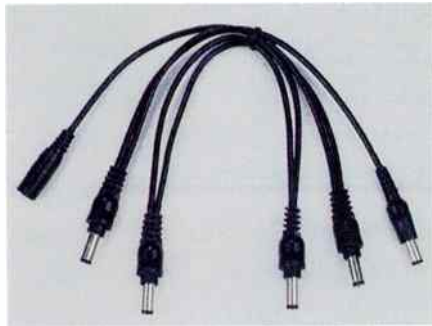


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK11M	Power Line Skt 2.1	£0.680	£0.510	£0.420	£0.800

See Stock Code Index For More Price Breaks

## 2.1mm Power Extension Lead Set



Five 2.1mm standard length power plugs connected together in a chain with 190mm of cable between each. The end of the chain is terminated with a line socket into which the original power supply plug is inserted which can then power several items simultaneously. Input socket suits 2.1 or 2.5mm plug.

Retail Unit Price each (inc. VAT).

Order Code	Type 1410	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JR94C	Pwr Ext Lead 2.1mm	£2.510	£2.100	£1.850	£2.950

## Standard 2.5mm Plug

2.5mm power plug of standard length.



Retail Unit Price each (inc. VAT).

Order Code	Type 1411	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HH62S	Std Power Plug 2.5	£0.374	£0.245	£0.190	£0.440

## Long 2.5mm Plug

2.5mm power plug having a long reach.



Retail Unit Price each (inc. VAT).

Order Code	Type 1412	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HH63T	Long Pwr Plug 2.5	£0.374	£0.245	£0.190	£0.440

## 2.5mm Socket

2.5mm chassis socket with break contact suits Standard Power Plug 2.5. Fixing centres: 24mm. Hole diameter: 2mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1413	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HH86T	Power Skt 2.5	£0.382	£0.260	£0.220	£0.450

## Plastic 2.5mm Socket

A plastic bodied 2.5mm chassis socket with break contact. Suits Standard Power Plug 2.5. Fixing centres: 15.5mm. Hole diameter: 2.5mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1415	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FT97F	Plas 2.5 Chas Skt	£0.331	£0.250	£0.190	£0.390

## 2.5mm Socket Single-Hole-Fixing

2.5mm power socket with break contact. Requires a single 8mm panel cut-out. Overall size: 21 x 11mm dia.

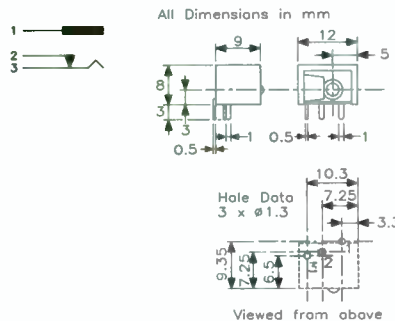


Retail Unit Price each (inc. VAT).

Order Code	Type 1416	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JK10L	Pan Mnt Pwr Skt 2.5	£0.757	£0.540	£0.460	£0.890

## 2.5mm Socket Printed Circuit Mounting

A 2.5mm PCB mounting DC power socket with break contact.



Retail Unit Price each (inc. VAT).

Order Code	Type 1419	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK06G	PCB 2.5mm DC Pwr Skt	£0.469	£0.370	£0.320	£0.540

## 2.5mm Line Socket

A 2.5mm in-line socket.



Retail Unit Price each (inc. VAT).

Order Code	Type 1420	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JK12N	Power Line Skt 2.5	£0.672	£0.450	£0.385	£0.790

## JVC-Type 3.1mm Plug

JVC-type 3.1mm plug with cable strain relief.



Retail Unit Price each (inc. VAT).

Order Code	Type 1421	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FM47B	JVC Type DC Plug	£0.417	£0.300	£0.230	£0.490

## Universal Plug

Four plugs:



2.1mm power; 2.5mm power; 2.5mm mono; 3.5mm mono; moulded onto 2m of 2-core flex.

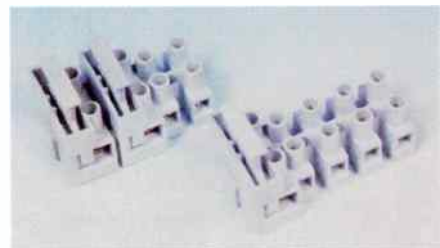
Retail Unit Price each (inc. VAT).

Order Code	Type 1422	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HH38R	Universal Plug	£1.090	£0.650	£0.530	£1.290

## SCREW TERMINAL BLOCKS

### Modular Fused Terminal Blocks

Camden



One, three, and five-way terminal blocks complete with inline fuseholder. The three and five way blocks are fitted with rear mounting screws through the second (earth) terminal and have an anti rotation spigot. The one way fused block (or any multiple) can be interlocked with the three and five way for additional fused circuits. The 20 x 5 fuse (not supplied) is housed in the pull up latch making it easy to replace.

Moulded in flame retardant UL94-V0 Polyamide 66 the blocks have a maximum working temperature of 125°C.

Rating Fuseholder 13A Terminal 13A  
Voltage Fuseholder 250VAC Terminal 450VAC

Retail Unit Price each (inc. VAT).

Order Code	Type 11643	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RY21X	Fused-Term Block 1W	£0.468	£0.360	£0.335	£0.550
GU72P	Fused Terminal Block	£0.587	£0.470	£0.435	£0.690
RY22Y	Fused-Term Block 5W	£0.757	£0.612	£0.567	£0.890

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No Delivery Charges for any order

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## Nylon Terminal Blocks

Camden



A range of 12 way terminal strips manufactured in self extinguishing nylon 66. Easily cut to size the strips are approved by UL, CSA, IMQ, KEMA, VDE, SEMKO, DEMKO, OVE & SEV.

Max Voltage 380VAC

Max Working Temperature 120°C

Dimensions mm.

Current Rating	Max Wire size	Width	Length	Height	Pitch
6A	4.0	16.4	94.9	14.5	8
10A	4.0	18.1	116.0	16.0	10
16A	10	23.1	139.8	21.0	12
32A	16	31.6	174.0	24.6	14.5

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RY23A	12Way Nylon Term 6A	£0.672	£0.540	£0.480	£0.790
RY24B	12Way Nylon Term 10A	£0.842	£0.625	£0.560	£0.990
RY25C	12Way Nylon Term 16A	£1.090	£0.900	£0.810	£1.290
RY26D	12Way Nylon Term 32A	£2.110	£1.720	£1.550	£2.490

## Nylon Terminal Strips

Camden



12 way terminal strips, manufactured in self extinguishing Nylon 66 with Nickel plated inserts and Stainless Steel wire protectors.

Approved to UL, CSA, IMQ, KEMA, VDE, SEMKO, DEMKO, OVE & SEV

Maximum voltage 380Vac

Maximum working temp 120 C

Dimensions (mm):

Current Rating	Max Wire Size (mm)	Width	Length	Height	Pitch
6A	2.5	16.4	94.9	14.5	8
10A	2.5	18.1	116.0	16.0	10
12A	6.0	23.1	139.8	21.0	12

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
SH50E	12Wy 6A+Wire Prot	£0.978	£0.930	£0.880	£1.150
SH51F	12Wy 10A+Wire Prot	£1.120	£1.060	£1.010	£1.320
SH52G	12Wy 16A+Wire Prot	£1.870	£1.780	£1.680	£2.200

## AUTOMOTIVE

### Car Accessory Plug



A plug for cigarette lighter sockets to which car accessories may be connected.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HW12N	Car Accessory Plug	£0.757	£0.440	£0.320	£0.890

### Car Accessory Plug



A plug for connecting car accessories to the vehicle's 12-volt supply via the cigarette lighter socket. The plug has a continuous current rating of 2A (3A at 12V) and a maximum short term rating of 10A. Two versions are available: fused and unfused, both have a LED.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BV46A	Car Plug Fuse/LED	£1.060	£0.850	£0.720	£1.250
BV63T	Car Acc Plug	£0.842	£0.550	£0.460	£0.990

### Car Accessory Socket



An in-line socket for cigarette lighter plugs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FE42V	Car Accessory Skt	£0.927	£0.550	£0.450	£1.090

### 12N Plastic Plug



A 12V plastic plug to complete the circuit, used with the 12N Plastic Socket (WD75S). DIY, easy fit, supplied with wiring diagram. Suitable for all makes and models, complies with all UK legal and safety requirements.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
WD76H	12N Plastic Plug	£2.590			£3.050

### 12S Plastic Plug Assembly



A 12V plastic plug to complete the circuit with the 12S Plastic Socket (WD77J). DIY easy fit, supplied

with wiring diagram. Suitable for all makes and models, and complies with all UK legal and safety requirements.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
WD78K	12S Plastic Plug	£2.590			£3.050

### 13-Pin Multicon Plug



This versatile 13-pin plug makes it possible to feed both your 12N obligatory and 12S supplementary 12V electrical circuits through one plug (but only when used in conjunction with the Multicon Socket WE07H). All couplings must be made with the correctly coloured 13-pin core cable. Easy DIY, a wiring diagram is included. Made to original equipment specifications, the Multicon conforms to all international standards.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
WE06G	13Pin Multicon Plug	£19.950			£23.450

### 13-Pin Plug



A top quality 12V 13-pin plug, complete with a rubber seal.

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
WE12N	13 Pin Plug	£17.350			£20.390

### 12N Line Socket



A handy, quality made, socket that is ideal for creating extension leads and auxiliary leads for your 12V power supply. Supplied with a hanging D-ring and a hinged protective cover for the connections (colour coded to avoid confusing a 12N socket with a 12S socket). Easy DIY, supplied with wiring instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
WE08J	12N Line Socket	£5.200			£6.110

## 12S Line Socket

A handy, quality made, socket that is ideal for creating extension leads and auxiliary leads for your 12V power supply. Supplied with a hanging D-ring and a hinged protective cover for the connections (colour coded to avoid confusing a 12N socket with a 12S socket). Easy DIY, supplied with wiring instructions.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE09K	12S Line Socket	£5.200	£6.110

## 12N Plastic Socket



This tough plastic 12V 7-pin connecting socket for obligatory lighting circuits is the ideal connection for your caravan or trailer indicators, side lights, plate lamps and stop lamps. Features a rear fog cut-out (requires 8-core cable). Connections are protected by a tough plastic cover when not in use. DIY, easy fit, supplied with wiring diagram. Suitable for all makes and models, complies with all UK legal and safety requirements.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD75S	12N Plastic Socket	£2.590	£3.050

## 12S Plastic Socket

This tough plastic 7-pin connecting socket is specifically designed to supply your caravan's supplementary electrical circuits (e.g. fridge, auxiliary battery). Connections are protected by a tough plastic cover when not in use. Obligatory and supplementary circuits must never be combined so, to help avoid accidental mis-connection, 12N plugs and sockets and 12S plugs and sockets are colour coded. DIY easy fit, supplied with wiring diagram. Suitable for all makes and models, and complies with all UK legal and safety requirements.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD77J	12S Plastic Socket	£2.590	£3.050

**All Customers**  
No additional freight charges for heavy items

## 13-Pin Multicon Socket



This versatile 13-pin socket makes it possible to feed both your 12N obligatory and 12S supplementary 12V electrical circuits through one socket (but only when used in conjunction with the Multicon Plug, WE06G). All couplings must be made with the correctly coloured 13-pin core cable. Easy DIY, a wiring diagram is included. Made to original equipment specifications, the Multicon conforms to all international standards. Has an advantage that a standard 12N connector can still be plugged in.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE07H	13Pin Multicon Skt	£23.420	£27.530

## 13-Pin Socket

A top quality 12V 13-pin socket, complete with spring loaded lid with rubber seal to protect the connections when not in use and a rubber seal to prevent water ingress at the mounting point.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE13P	13 Pin Socket	£17.350	£20.390

## 12N Socket Assembly

A complete quick-fit prewired professional single socket assembly for all of the obligatory lighting circuits for your caravan or trailer. The socket features a rear fog cut-out that automatically switches off the rear fog lamps on your car when towing. Connections are protected by a tough plastic cover when not in use. Suitable for all makes and models, and complies with all UK legal and safety requirements. 12N socket assembly is supplied ready assembled with corrosion-resistant mounting plate, socket seal, cable connectors, 1.5m of 8-core heavy duty cable, nuts, bolts and washers, and plastic cable clips.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD79L	12N Socket Assembly	£9.540	£11.210

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## 12S Socket Assembly



A complete quick-fit prewired professional single socket assembly for all of the supplementary circuits (e.g. fridge, auxiliary battery) for your caravan or trailer. Connections are protected by a tough plastic cover when not in use. Obligatory and supplementary circuits must never be combined so, to help avoid accidental mis-connection, 12N plugs and sockets and 12S plugs and sockets are colour coded. Suitable for all makes and models, and complies with all UK legal and safety requirements. 12S socket assembly is supplied ready assembled with corrosion-resistant mounting plate, socket seal, 1.5m of 7-core heavy duty cable, nuts, bolts and washers, and plastic cable clips.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD80B	12S Socket Assembly	£9.540	£11.210

## 12N and 12S Socket Assembly

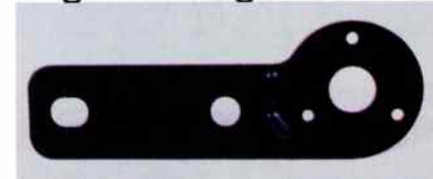
A complete prewired professional double socket assembly for all of your obligatory lighting and supplementary circuits. The assembly includes a rear fog cut-out that automatically switches off the rear fog lamps on your car when towing and the 12N and 12S sockets are colour coded to help avoid accidental mis-connections. Connections are protected by a tough plastic cover when not in use. Suitable for all makes and models, and complies with all UK legal and safety requirements. The twin sockets are supplied ready assembled with corrosion-resistant mounting plate, socket seals, 1.5m of 8-core cable and 1.5m of 7-core heavy duty cable, nuts bolts and washers and plastic cable clips.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD81C†	12N & 12S Socket Ass	£16.480	£19.370

## Single Mounting Plate



A solidly constructed metal mounting plate for a single 12N or 12S socket, protected by a 'cathodic' corrosion resistant plating for extended life. Salt spray tested.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD86T†	Single Mntg Plate	£1.720	£2.030

### Double Mounting Plate

A solidly constructed metal mounting plate for a twin 12N and 12S Socket, protected by a "CATHODIC" corrosion resistant plating for extended life. Salt spray tested.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD87U†	Double Mntg Plate	£2.590	£3.050

### Socket Cover

A handy socket cover to protect your 12N and 12S sockets when not in use.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD89W	Socket Cover	£2.160	£2.540

### Socket Seal

A safe, weatherproof seal specifically designed to prevent water ingress into the connections of 12N and 12S sockets. Supplied complete with fixing nuts, bolts and washers.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD91Y	Socket Seal Kit	£1.290	£1.520

### 12N Extension Lead



A top quality, ready assembled 6m long 12N extension lead for the obligatory 12V lighting circuits on your trailer or caravan. Complete with colour coded plug and socket to avoid confusing a 12N lead with a 12S lead.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE10L	12N Extension Lead	£14.740	£17.330

### 12S Extension Lead



A top quality, ready assembled 6m long 12S extension lead for the supplementary 12V electrical circuits on your trailer or caravan. Complete with colour coded plug and socket to avoid confusing a 12S lead with a 12N lead.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE11M	12S Extension Lead	£14.740	£17.330

### Ring Coiled Cable Kits

Coiled cable means no more trailing cable when towing, no more damaged plugs and leads when on site and the added security feature of removable 12N and 12S leads, leaving would-be thieves with no way of connecting road lights. 12N plugs and sockets are used for obligatory lighting circuits only, while 12S are used for supplementary electrical circuits (serving a fridge or internal lighting in the towed vehicle, for example). These circuits must be kept separate - if both obligatory and supplementary circuits are to be powered, both kits are required. Each kit includes a prewired coiled cable with two plugs, a socket (with socket seal) for wiring to the caravan 'A' frame, fixing kit and full instructions. 12N kit (WD26D), 12S kit (WD27E).



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD26D	12N Coiled Cable Kit	£21.690	£25.490
WD27E	12S Coiled Cable Kit	£21.690	£25.490

### 12V Car Accessory Panel Socket

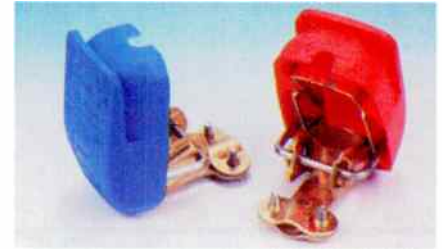


This 12V panel socket is ideal for those occasions when you want to use equipment with a car cigar lighter type plug inside your caravan. The high quality flush mounting socket is manufactured in a non-corrosive, marine quality material. Twin pole, 16A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD68Y	Car Acc Panel Socket	£4.330	£5.090

### Lift Off Battery Clamps



Two very strong battery connector clamps (red=positive, blue=negative). Simply snap down the plastic cover for a strong and safe electrical connection, and lift the plastic cover for safe and instant disconnection.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD15R	Battery Clamps	£8.230	£9.680

## BATTERY CONNECTORS

### Battery Connector

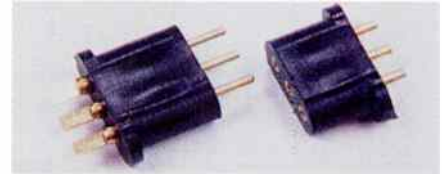


A non-reversible, mirror image plug and socket assembly for quick and simple battery coupling.

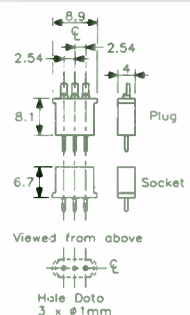
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FK96E	Batt Plt/Skt Pair	£0.842	£0.990

### 3-Pin Connector



A 3-pin plug and socket assembly for interconnections where three wires are required. Note the connectors are not polarised. The socket is designed for PCB mounting.



Retail Unit Price each (inc. VAT).

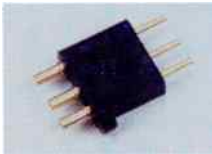
Order Code	Type	Price each exc. VAT	inc. VAT each
FK97F	GP Plt/Skt Pair	£0.672	£0.790

## Call and Collect

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See the maps at the front of the catalogue for the nearest one to you.

## 3-Way Polarised Plug

A 3-pin plug having one pin offset in order to prevent accidental reversal. Such connectors are ideal for interconnecting the receiver to a servo control circuit, providing power on two pins and a signal on the other.



Retail Unit Price each (inc. VAT).

Order Code	Type 1303	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK99H	3-Pin Offset Plug	£0.417	£0.290	£0.260	£0.490

10

## 3-Way Polarised Socket

A non-reversible 3-pin socket that mates to the above plug.

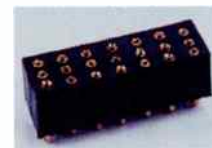


Retail Unit Price each (inc. VAT).

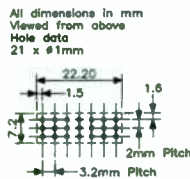
Order Code	Type 1304	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK98G	3P Offset Skt	£0.417	£0.315	£0.270	£0.490

## 7-Way PCB Socket

A PCB mounting socket providing for up to seven 3-way outlets from receiver board etc. Pins are spaced 2mm apart in each row of 3 pins, with 3mm spacing between rows. Overall length of block: 22mm. Overall width: 7mm.



Note these connectors are non-polarised.

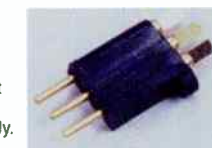


Retail Unit Price each (inc. VAT).

Order Code	Type 1305	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FM01B	7-Way Skt Bloc	£2.110	£1.850	£1.750	£2.490

## Small 3-Way Plugs

Miniature 3-pin plugs to fit the above 7-way socket block. Plugs are sold singly.



Retail Unit Price each (inc. VAT).

Order Code	Type 1306	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FM00A	3-Pin Plug	£0.331	£0.280	£0.250	£0.390

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## Battery Connectors



Male Female

For making your own battery packs and chargers, the standard racing pack plugs and sockets are available pre-assembled to 150mm (6in.) lengths of red and black high-temperature silicone insulated wires. The part with the pins inside the connector housing is the male part and normally connected to the battery, and the part with the sockets inside the housing which also has the latch mechanism is the female part and normally connected to the model or charger.

Retail Unit Price each (inc. VAT).

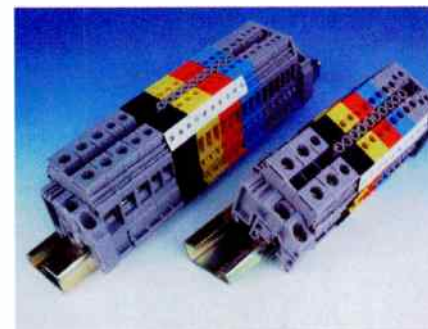
Order Code	Type 1307	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JG04E	Race Pk Lead Male	£1.090	£0.640	£0.530	£1.290
JG05F	Race Pk Lead Female	£1.090	£0.640	£0.530	£1.290

## DIN RAIL TERMINALS

### TOP HAT & G TYPE

## Feed Through DIN Rail Terminals

Entrelec



Available in five sizes from a cable capacity of 2.5mm<sup>2</sup> to 16mm<sup>2</sup>, in a choice of colours to aid circuit identification. The range has a VDE voltage rating of 750V. A pre-assembled 10-way jumper bar is available, as is end sections and end stops. See 'DIN Rail and Accessories' for DIN rail, pre-assembled jumper bar, markers, end sections and end stops.

- ★ Fits both top hat and 'G' rails
- ★ Range of colours
- ★ Easy installation

Colour/ cable size, mm <sup>2</sup>	VDE Amps,	Approvals	Part No.	Order Code
yellow/2.5	26	a,b	105-486-12	MB24B
grey/2.5	26	a,b	115-486-03	MB25C
blue/2.5	26	a,b	125-486-05	MB26D
grey/4.0	35	a-n	115-116-07	MB27E
blue/4.0	35	a-n	125-116-01	MB28F
red/4.0	35	a-n	105-032-15	MB29G

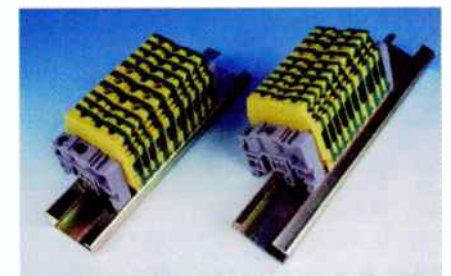
black/4.0	35	a-n	105-031-14	MB30H
yellow/4.0	35	a-n	105-116-16	MB31J
grey/6.0	46	a-n	115-118-11	MB32K
grey/10.0	63	a-j,l,m,n	115-120-17	MB33L
grey/16.0	85	a-f,h,i,j,l,m,l,v	115-129-14	MB34M
Size mm <sup>2</sup> :			2.5 4 6 10 16	
Terminal Pitch mm			5 6 8 10 12	

Retail Unit Price each (inc. VAT).

Order Code	Type 17311	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MB24B	2.5mm Term Blk-Yell	£0.510	£0.504	£0.465	£0.600
MB25C	2.5mm Term Blk-Gray	£0.408	£0.403	£0.372	£0.480
MB26D	2.5mm Term Blk-Blue	£0.510	£0.504	£0.465	£0.600
MB27E	4mm Term Blk-Gray	£0.408	£0.403	£0.372	£0.480
MB28F	4mm Term Blk-Blue	£0.510	£0.503	£0.464	£0.600
MB29G	4mm Term Blk-Red	£0.510	£0.503	£0.464	£0.600
MB30H	4mm Term Blk-Black	£0.510	£0.503	£0.464	£0.600
MB31J	4mm Term Blk-Yell	£0.510	£0.503	£0.464	£0.600
MB32K	6mm Term Blk-Gray	£0.595	£0.581	£0.536	£0.700
MB33L	10mm Term Blk-Gray	£0.723	£0.710	£0.655	£0.850
MB34M	16mm Term Blk-Gray	£1.040	£1.020	£0.942	£1.230

## Earth Terminal

Entrelec



Available in three sizes and finished in green/yellow, they are electrically connected to the DIN rail. A suitable end section, which will fit all three sizes, is available separately.

### Specification

Size	Pitch	Part No.	Order Code
2.5mm <sup>2</sup>	5mm	165-488-27	MB43W
4mm <sup>2</sup>	6mm	165-113-16	MB44X
6mm <sup>2</sup>	8mm	165-114-17	MB45Y
end section		103-062-21	MB46A

Retail Unit Price each (inc. VAT).

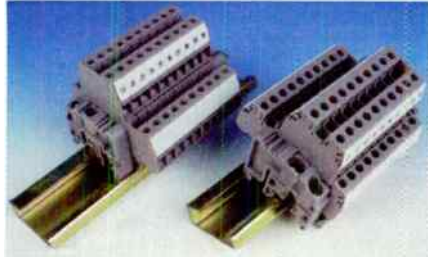
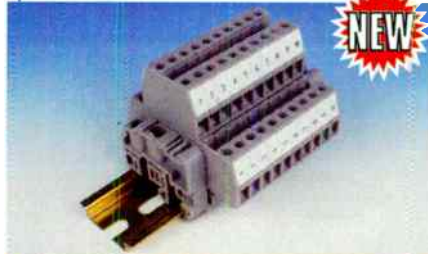
Order Code	Type 17320	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MB43W	2.5mm Earth Term Blk	£1.710	£1.670	£1.540	£2.020
MB44X	4mm Earth Term Blk	£1.710	£1.680	£1.550	£2.020
MB45Y	6mm Earth Term Blk	£1.970	£1.920	£1.770	£2.320
MB46A	Earth End Sect-Yell	£0.221	£0.220	£0.203	£0.260

Businesses and Government Establishments – open a Maplin MPS Account

Just complete form at back of catalogue

**Double Deck Terminal**

Entelec



Provides two separate circuits within the same termination width, with interconnection via a pre-assembled jumper bar. 6mm terminal pitch. A suitable end section is available separately.

★ Fits both rails

★ Space saving

Specification

Size	VDE spec.	Pitch	Part No.	Order Code
4mm <sup>2</sup> end section	750V/25A	6mm	115-271-22	MB41U
			118-499-23	MB42V

Retail Unit Price each (inc. VAT).

Order Code	Type 17219	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
MB41U	Double Decker-Grey	£1.060 £1.040 £0.962	£1.250
MB42V	End Section DD Grey	£0.417 £0.413 £0.382	£0.490

**Fuse Terminals**

Entelec



A range of fuse terminals available in either 'pull-up' or 'lever' action, that accept various fuse types. A suitable end section is available separately for the 'pull-up' type.

Specification

Size	VDE	Approvals	Part No.	Order Code
mm <sup>2</sup>	Spec			
10/6	750V/16A	a,b	115-377-24	MB48C
1 1/4in. x 1 1/4in. fuse - pull-up type				
16/10	750V/16A	a,b	199-013-10	MB49D
5 x 25mm and 5 x 20mm fuse - lever action				
Size	VDE	Approvals	Part No.	Order Code
mm <sup>2</sup>	Spec			

4/4. 630V/10A a,b 115-657-25 MB74R  
end section 116-951-15 MB75S  
NB size is stated as solid/stranded cable

Retail Unit Price each (inc. VAT).

Order Code	Type 17227	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
MB48C	Fuse Hld-11/4 X1/4	£2.180 £2.130 £1.960	£2.570
MB49D	FHld 11/4x11/4&1x1/4	£2.860 £2.800 £2.580	£3.370
MB74R	FHld-5x25&5x20	£1.770 £1.730 £1.600	£2.090
MB75S	End Section-M 4x8 SF	£0.280 £0.278 £0.257	£0.330

**Isolating Terminal Block**

Entelec

Designed to interrupt a circuit for testing etc., this short blade isolating terminal accepts 4mm<sup>2</sup> cable, with a 6mm terminal pitch. Rated at 500V/10A.



Retail Unit Price each (inc. VAT).

Order Code	Type 17325	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
MB47B	4mm Isolating TBk	£1.100 £1.080 £1.000	£1.300

**DIN Rail and Accessories**

Entelec

DIN rail in 1m lengths available in either 'G' type asymmetric, (BS55825, DIN46277-1, CENELEC EN50-035), standard 'Top Hat' (BS5584, DIN46277-3, CENELEC 50-022), and miniature 'Top Hat', (BS6273, DIN46277-2, CENELEC 50-045).



Accessories

MB35Q - end cover for 2.5 - 10mm<sup>2</sup> standard,

4mm<sup>2</sup> isolation and earth

MB36P - end cover for 10mm<sup>2</sup>.

MB37S - end stop for fitting at each end of an assembled rail.

Pe-assembled jumper bars for transverse connections up to 10 terminals but can easily be cut for less terminals.

MB38R - for 2.5/5mm<sup>2</sup> 25A rating.

MB39N - for 4/6mm<sup>2</sup> 32A rating.

MB40T - for 6/8mm<sup>2</sup> 41A rating.

Marker cards for standard range DIN rail terminals

MC10L - 5mm terminal pitch

MC11M - 6mm terminal pitch.

Retail Unit Price each (inc. VAT).

Order Code	Type 17315	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
MB38R	Jumper Bar MA 2-5/5	£2.320 £2.270 £2.090	£2.730
MB39N	Jumper Bar MA 4/6	£2.690 £2.630 £2.420	£3.170
MB40T	Jumper Bar MA 6/8	£3.300 £2.740 £2.530	£3.880
MB35Q	End Section 2.5-10mm	£0.178 £0.176 £0.162	£0.210
MB36P	End Section for 16mm	£0.382 £0.373 £0.345	£0.450
MB37S	End Stop-Term Block	£0.340 £0.337 £0.311	£0.400
MC10L	Marker Cards-Lg 5mm	£1.240 £1.210 £1.120	£1.460
MC11M	Marker Cards-Lg 6mm	£1.230 £1.210 £1.110	£1.450

Retail Unit Price each (inc. VAT).

Order Code	Type 17315	Price each exc. VAT	inc. VAT each
		1+ 5+ 10+	1+
MC07H	Top Hat DIN Rail	£1.980 £1.890 £1.790	£2.330
MC08J	G Section DIN Rail	£2.180 £2.080 £1.970	£2.570
MC09K	Miniature DIN Rail	£1.980 £1.890 £1.790	£2.330

**MAPLIN Discover!es**  
THE WORLD OF ELECTRONICS AND BEYOND

**MINIATURE**

**Miniature DIN Rail Range**

Entelec

This compact range of terminals is designed for mounting on a miniature 'top hat' symmetrical rail.



The mouldings are manufactured in flame-resistant grey polyamide 6.6 with a working temperature range of -55°C to +130°C. Accessories include end sections, an end stop and symmetrical rail in one metre lengths.

★ Space saving

★ Low profile

★ Easy installation

Specification

Terminals Size mm <sup>2</sup>	VDE Spec	Terminal Pitch mm	Part No.	Order Code
1.5	250V/20A	5	115-377-24	MC01B
4	500V/35A	6	110-491-17	MC02C
4 earth terminal		6	160-496-26	MC03D

Accessories

1.5 end section	117-318-23	MC04E
4 end section	117-600-03	MC05F
end stop	199-420-21	MC06G
miniature rail 1m length	164-600-12	MC09K

Retail Unit Price each (inc. VAT).

Order Code	Type 17329	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
MC01B	1.5mm Min Term-Grey	£0.672 £0.657 £0.607	£0.790
MC02C	4mm Min Term-Grey	£0.425 £0.418 £0.386	£0.500
MC03D	4mm Min Earth Term	£1.460 £1.430 £1.320	£1.720
MC04E	E/Sect 1.5mm Min	£0.178 £0.175 £0.161	£0.210
MC05F	E/Sect 4mm Min	£0.161 £0.163 £0.150	£0.190
MC06G	End Section for Min	£0.340 £0.337 £0.311	£0.400

Retail Unit Price each (inc. VAT).

Order Code	Type 17329	Price each exc. VAT	inc. VAT each
		1+ 5+ 10+	1+
MC09K	Miniature DIN Rail	£1.980 £1.890 £1.790	£2.330

**COMPUTER CONNECTORS**

**CENTRONICS - TYPE IEEE488**

**Centronics-Type**

(See also IDC connectors)

A multi-way connection system commonly used for connecting data interface cables to computers and their peripherals. Cable conductors insert into the hollow solder terminals of the gold-plated, double row contacts. The plugs have ears for the spring clips of the socket to secure them in position.

**Screened Plug**

A double row plug in a metal body with oval cable entry and clamp. The body is in two parts secured by two screws, this being all that is required to retain the thermoplastic contact block. Available in 14, 24, 36 and 50 ways.



Retail Unit Price each (inc. VAT).

Order Code	Type 1523	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
JB47B	Centronics 24W Plug	£1.690 £1.250 £1.150	£1.990
JB48C	Centronics 50W Plug	£2.540 £1.750 £1.500	£2.990

Retail Unit Price each (inc. VAT).

Order Code	Type 1523	Price each exc. VAT	inc. VAT each
		1+ 25+ 100+	1+
JB46A	Centronics 14W Plug	£1.640 £1.120 £0.938	£1.930
FJ61R	Centronics 36W Plug	£1.990 £1.350 £1.120	£2.340

## Flat Cable Centronics Type IDC Plug



A range of double row plugs in a thermoplastic body with cable clamp for use with IDC cable.

Retail Unit Price each (inc. VAT).

Order Code	Type 1405	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JB55K	IDC Centronix 24Wplg	£2.420	£1.480	£1.190	£2.850
FJ62S	IDC Centronix 36Wplg	£2.240	£1.370	£1.140	£2.640
JB56L	IDC Centronix 50Wplg	£3.020	£2.040	£1.680	£3.560

## 36-Way Metallised Centronics Hood



A metallised hood for use with 36-way centronics connectors. Supplied with cable clamp.

Retail Unit Price each (inc. VAT).

Order Code	Type 1325	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW89W	MHood Centronics 36	£0.774	£0.434	£0.367	£0.910

## Flat Cable Centronic Type IDC Chassis Socket



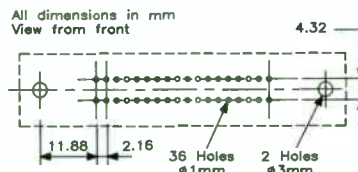
A range of double row sockets in a thermoplastic body with cable clamp and M3/6BA holes for chassis mounting. Includes spring clips for locking the plug. Chassis fixing centres are as follows. 24-way: 47mm; 36-way: 60mm; 50-way: 75mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1470	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JB57M	IDC Centronix 24Wskt	£2.420	£1.580	£1.220	£2.850
FT74R	IDC Centronix 36Wskt	£2.240	£1.470	£1.180	£2.640
JB58N	IDC Centronix 50Wskt	£3.200	£2.140	£1.790	£3.760

**Business Account Holders  
No Delivery Charges for  
any order**

## Straight Chassis Socket



A double-row socket with metal shroud. Connections are brought out at rear to two rows of PCB pins. Plug locking clips are included. Sockets are available in 14, 24 and 36 ways. Diagram shows 36-way type. Fixing holes suit M3/6BA bolts and fixing centres are as follows. 14-way: 36mm; 24-way: 47mm; 36-way: 60mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1326	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JB50E	Centronix 24W Chaskt	£1.690	£1.250	£1.000	£1.990

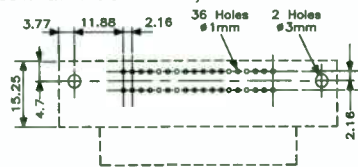
Retail Unit Price each (inc. VAT).

Order Code	Type 1326	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JB49D	Centronix 14W Chaskt	£1.550	£0.969	£0.714	£1.830
FV67U	Centronix 36W Chaskt	£1.990	£1.120	£0.816	£2.340

## 36-Way Right-Angled Socket



A right-angled double row socket suitable for PCB mounting. The socket has two rows 4.32mm apart of 18 pins spaced at 2.16mm at 90° to the metal shrouded socket. Plug locking clips are included. Socket available in 36 ways.



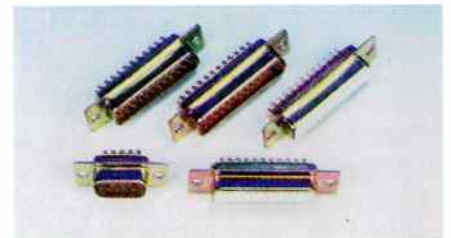
Retail Unit Price each (inc. VAT).

Order Code	Type 1328	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FV88V	RA Centronix 36W Skt	£1.990	£1.280	£1.020	£2.340

**All Customers  
No additional freight  
charges for heavy items**

## D SERIES

### Solder Type



Gold over nickel plated copper alloy contacts identified on both sides of the PBT and glass fibre reinforced moulding (UL-94-V0). Solder cup terminations.

#### Specification

Working current: 7.5A per contact  
Working voltage: 300V rms  
Contact resistance: <math><3m\Omega</math>  
Insulation resistance: >106M $\Omega$

	9-Way	15-Way	19-Way
Overall length:	31	39.4	45
Fixing centres: (M3/6BA)	25	33.3	39
Cut-out if mounting from rear of panel:	19 x 11	27 x 11	34 x 11
from front of panel:	21 x 10	29 x 10	31 x 10
Height:	12.6	12.6	12.6
Width:	16	16	16
	23-Way	25-Way	37-Way
Overall length:	51	53	69
Fixing centres: (M3/6BA)	44.5	47	63.5
Cut-out if mounting from rear of panel:	39 x 11	41 x 11	58 x 11
from front of panel:	36 x 10	43 x 10	60 x 10
Height:	12.6	2.6	12.6
Width:	16	16	16
	50-Way		
Overall length:	67		
Fixing centres: (M3/6BA)	61.5		
Cut-out if mounting from rear of panel:	55 x 13		
from front of panel:	57 x 14		
Height:	15.5		
Width:	16		

All dimensions in mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1113	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RK60Q	D-Range 9 Way Plug	£0.468	£0.300	£0.275	£0.550
BK58N	D-Range 15-Way Plug	£0.638	£0.450	£0.400	£0.750
JZ16S	D-Range 19-Way Plug	£0.638	£0.440	£0.380	£0.750
JZ17T	D-Range 23-Way Plug	£0.672	£0.450	£0.390	£0.790
YQ48C	D-Range 25-Way Plug	£0.765	£0.490	£0.400	£0.900
FV71N	D-Range 37-Way Plug	£1.010	£0.810	£0.670	£1.190
FV74R	D-Range 50-Way Plug	£1.570	£1.150	£0.970	£1.850
RK61R	D-Range 9 Way Skt	£0.672	£0.430	£0.350	£0.750
BK59P	D-Range 15-Way Skt	£0.808	£0.600	£0.500	£0.950
JZ18U	D-Range 19-Way Skt	£0.765	£0.580	£0.490	£0.900
JZ19V	D-Range 23-Way Skt	£1.010	£0.670	£0.530	£1.190
YQ49D	D-Range 25W Socket	£1.140	£0.690	£0.550	£1.350
FV72P	D-Range 37-Way Skt	£1.350	£1.120	£0.880	£1.580
FV75S	D-Range 50-Way Skt	£1.680	£1.340	£1.050	£1.980



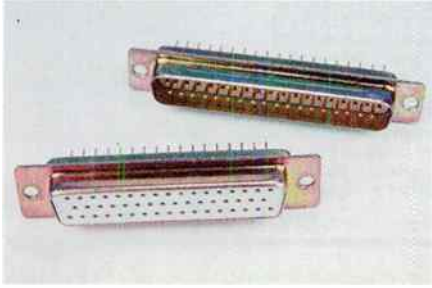
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Every order £30 or above will be sent with carriage paid.

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### Straight PCB Type

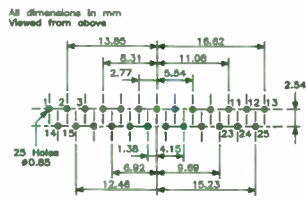
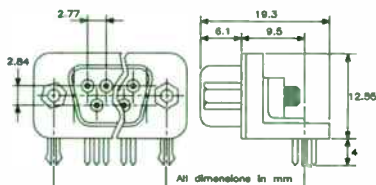


As solder type, but with machined pcb pins 3-7mm long from shoulder (1mm long).

Retail Unit Price each (inc. VAT).

Order Code	Type 1114	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JB29G	D-Ring 9W Plug PC	£0.587	£0.460	£0.410	£0.690
JB30H	D-Ring 15W Plug PC	£0.757	£0.640	£0.550	£0.890
JZ20W	D-Ring 19W Plug PC	£0.808	£0.660	£0.575	£0.950
JZ21X	D-Ring 23W Plug PC	£0.936	£0.690	£0.605	£1.100
FS84F	D-Ring 25W Plug PC	£1.140	£0.910	£0.800	£1.350
JB31J	D-Ring 37W Plug PC	£1.570	£1.430	£1.300	£1.850
JB32K	D-Ring 50W Plug PC	£1.870	£1.580	£1.450	£2.200
JB33L	D-Ring 9W Skt PC	£0.672	£0.520	£0.470	£0.790
JB34M	D-Ring 15W Skt PC	£0.936	£0.790	£0.690	£1.100
JZ22Y	D-Ring 19W Skt PC	£1.090	£0.870	£0.730	£1.290
JZ23A	D-Ring 23W Skt PC	£1.180	£0.920	£0.770	£1.390
FS82D	D-Ring 25W Skt PC	£1.270	£1.050	£0.970	£1.500
JB35Q	D-Ring 37W Skt PC	£2.110	£1.840	£1.680	£2.490

### Right-Angled D Connectors



A D series connector with right-angled bends in the pins, enabling them to be directly mounted on to PCBs. All dimensions are as solder type.

Retail Unit Price each (inc. VAT).

Order Code	Type 1116	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FG66W	RA D Range 9 Way Plg	£0.672	£0.460	£0.335	£0.750
FG67X	RA D Range 15 Wy Plg	£0.800	£0.610	£0.500	£0.940
FG68Y	RA D Range 25 Wy Plg	£0.978	£0.730	£0.560	£1.150
JB37S	RA D Range 37 Wy Plg	£1.200	£0.910	£0.720	£1.410
FG25C	RA D Range 9-Way Skt	£0.672	£0.460	£0.335	£0.790
FG26D	RA D Range 15-Way Skt	£0.800	£0.610	£0.500	£0.940
FG27E	RA D Range 25-Way Skt	£0.978	£0.730	£0.560	£1.140
JB38R	RA D Range 37 Wy Skt	£1.230	£0.910	£0.720	£1.440

### Shells



Standard D connector shells with separate gold-plated pins for plugs and sockets enabling connectors to be constructed with pins only in the positions where a connection is required. Plug housings and socket housings are available and plug-pins or sockets simply snap in from the rear after soldering or crimping wires to them. Both plug pins and socket pins are sold in strips of 10.

Retail Unit Price each (inc. VAT).

Order Code	Type 1119	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JB39N	D-Ring Plug Shell 9W	£0.417	£0.270	£0.210	£0.490
JB40T	D-Ring Plug Shell 15W	£0.451	£0.330	£0.240	£0.530
FS83E	D-Ring Plug Shell 25W	£0.553	£0.355	£0.270	£0.650
UJ11M	10pk D Plg Shell Pin	£0.468	£0.330	£0.240	£0.550
JB42V	D-Ring Skt Shell 9W	£0.417	£0.270	£0.210	£0.490
JB42D	D-Ring Skt Shell 15W	£0.468	£0.330	£0.240	£0.550
FS85G	D-Ring Skt Shell 25W	£0.519	£0.355	£0.270	£0.610
UJ14Q	10pk D Skt Shell Pin	£0.468	£0.330	£0.240	£0.550

### Filtered D Subminiature Solder Bucket Connectors



A filtered range of solder bucket termination 'D' subminiature connectors, incorporating turned contacts, bright tin finish and grounding indents to guarantee full shielding integrity for protection against RFI/EMI. Signal filtration is achieved via a 1nF capacitor from each contact to ground. Feed-through technology in the capacitor elements enhances rejection levels in the VHF and UHF bands. Fully potted construction ensures maximum resistance to hazardous environments. Intermateable with all 'D' subminiature connectors of comparable pin count and complying dimensionally with BS 9523, MIL-C-24308 or HE 501.

Mating cycles: 250  
Wire accommodation: ≤0.5mm (20AWG)  
Contact material: Copper alloy  
Current rating: 5A  
Working voltage: 200V DC or AC peak  
Contact resistance: 5 x 103Ω max  
Insulation resistance: ≥5 x 104Ω  
Insulation Material: High impact epoxy and GF polyester

Retail Unit Price each (inc. VAT).

Order Code	Type 1168	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KE25C	Filtr D Plug 9Way	£4.670	£4.450	£4.200	£5.490
KE26D	Filtr D Plug 15Way	£6.370	£5.950	£5.700	£7.490
KE27E	Filtr D Plug 25Way	£9.600	£9.020	£8.650	£11.290
KE28F	Filtr D Plug 37Way	£13.180	£12.600	£11.950	£15.490
KE29G	Filtr D Skt 9Way	£5.090	£4.820	£4.600	£5.990
KE30H	Filtr D Skt 15Way	£7.050	£6.750	£6.400	£8.290
KE31J	Filtr D Skt 25Way	£11.050	£10.550	£10.050	£12.990
KE32K	Filtr D Skt 37Way	£14.280	£13.600	£12.900	£16.790

See Stock Code Index  
For More Price Breaks

### Covers



A thermoplastic cover to fit both the plugs and the sockets described previously. The connector is wired and the cover fitted afterwards. A removable side plate allows subsequent inspection without dismantling the assembly. The cable can enter from the side or top by removing the appropriate knock-out. Supplied with cable clamp & self tapping screws; the shorter one holds the side plate to the cover.

Retail Unit Price each (inc. VAT).

Order Code	Type 1125	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RK62S	D-Range 9-Way Cover	£1.350	£1.000	£0.880	£1.590
BK60Q	D-Range 15-Way Cover	£1.430	£1.070	£0.950	£1.690
YG50E	D-Range 25-Way Cover	£1.520	£1.130	£0.980	£1.790

### 25-Way D-Type Hoods with Thumbscrews



Hoods for standard 25-way D-type connectors. Supplied with cable clamp, assembly screws and quick secure/release thumbscrews. Available in plastic or metallised plastic versions.

Retail Unit Price each (inc. VAT).

Order Code	Type 1124	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW87U	T/Screw Hood 25W	£1.020	£0.700	£0.520	£1.200
JW88V	T/Screw MHood 25W	£1.200	£0.790	£0.620	£1.410

### Locking Hoods Plastic Type



A range of hoods for standard jack D connectors, with cable clamp and standard jack screws. Strong thermoplastic moulding.

Retail Unit Price each (inc. VAT).

Order Code	Type 1125	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FP27E	D Hood 9 Way	£0.561	£0.420	£0.300	£0.660
FP28F	D Hood 15 Way	£0.672	£0.480	£0.330	£0.790
JZ24B	D Hood 19 Way	£0.765	£0.600	£0.400	£0.900
JZ25C	D Hood 23 Way	£0.893	£0.620	£0.450	£1.050
FP29G	D Hood 25 Way	£0.893	£0.620	£0.450	£1.050
JB66W	D Hood 37 Way	£0.936	£0.700	£0.475	£1.100
JB67X	D Hood 50 Way	£1.200	£0.880	£0.590	£1.410

## Snap-Lock 25-Way D-Type Plastic Hood



A snap-lock plastic hood that may be used with standard 25-way D-type connectors but not D-type IDC connectors. Assembly of the hood is very quick and easy, the hood simply snaps shut and locks by means of plastic clips. A flat bladed screwdriver can be used to re-open the hood if necessary. Supplied complete with thumbscrews and cable clamp.

Retail Unit Price each (inc. VAT).

Order Code	Type 1127	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
KE94C	9W Snap-Lock Hood	£0.893	£0.570	£0.440	£1.050
KE95D	15W Snap-Lock Hood	£0.893	£0.570	£0.440	£1.050
JW91Y	25W Snap-Lock Hood	£0.893	£0.570	£0.440	£1.050

## Locking Hoods Metallised Type



A range of chrome-plated hoods for standard D connectors, with cable clamp and standard jack screws. Strong thermoplastic moulding.

Retail Unit Price each (inc. VAT).

Order Code	Type 1128	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JB68Y	Metallised D Hood 9W	£0.765	£0.560	£0.420	£0.800
JB69A	Metallised D Hood 15W	£0.893	£0.620	£0.440	£1.050
JB80B	Metallised D Hood 25W	£1.120	£0.840	£0.460	£1.320

## Locking Hood Metal Type



A chrome plated solid metal hood for standard 25-way D connectors supplied with jack screws.

Retail Unit Price each (inc. VAT).

Order Code	Type 1130	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JB02C	Metal D Hood 25W	£2.080	£1.450	£1.100	£2.450

## Shielding 'D' Connector Hoods

MH



Metal backshells for 'D' connectors manufactured in a zinc die cast material with a nickel plate finish. Supplied complete with full assembly instructions and finger operated jackscrews. With its unique cable clamping arrangement of conductive plastic strain relief inserts and sprung steel shielding support for both braid and foil shielded cable types, attenuation is better than 40dB over 30MHz to 1GHz. This meets VDE 0871, FCC 20780 and 89/336/EEC requirements when part of an approved system.

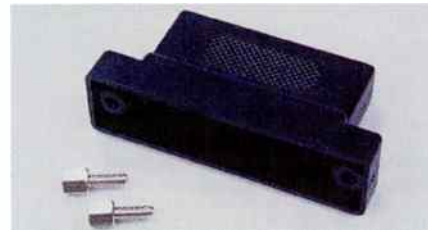
Dimensions mm

Hood Size	L	W	D
9 Way	40	32	15
15 Way	42	40	15
25 Way	50	54	15
37 Way	54	71	15

Retail Unit Price each (inc. VAT).

Order Code	Type 1200	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
CT71N	9W DHood Shielded	£1.430	£1.380	£1.360	£1.690
CT72P	15W DHood Shielded	£1.520	£1.410	£1.370	£1.790
CT73Q	25W DHood Shielded	£1.520	£1.430	£1.380	£1.790
CT74R	37W DHood Shielded	£2.800	£2.610	£2.500	£3.290

## 'Ribbon Cable' Plastic Hood for 25-Way D-type Connectors



A plastic hood designed for use with ribbon cables terminated in 25-way D-type connectors. Please note the cover is not suitable for use with IDC D-type connectors. Supplied complete with one pair of jack posts.

Retail Unit Price each (inc. VAT).

Order Code	Type 1131	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JW87T	Ribbon 25W D Hood	£0.680	£0.490	£0.330	£0.800

## Jack Posts



For use with locking hoods these jack posts have 8mm long screws and hexagonal spacers centred with a 4-40UNC thread. Sold in pairs.

Retail Unit Price each (inc. VAT).

Order Code	Type 1134	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FP31J	D Connectr Jack Post	£0.672	£0.410	£0.310	£0.790

## Extension Jack Posts

A pair of hexagonal extension jack posts, tapped with 4-40UNC threads, for use with D-type connectors, 5-03mm A/F x 5-93mm. The extension jack posts when fitted to a panel mounted or free connector allow a mating connector fitted with jack screws to be secured. Bright plated finish over brass.



Retail Unit Price each (inc. VAT).

Order Code	Type 1135	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JW82A	Jack Post Set	£0.246	£0.190	£0.150	£0.290

## Captive Jack Screws with Retainers

A pair of captive jack screws (4-40UNC thread) with retainers for use on standard D-type connectors. The jack screws allow connectors to be secured to a mating connector fitted with jack posts (for jack posts see below). Made from steel with chromate over zinc plating.



Retail Unit Price each (inc. VAT).

Order Code	Type 1204	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JW83B	Jack Screw Set	£0.340	£0.240	£0.175	£0.400

## Bail-Lock Mechanism for D-type Connectors

A bail-lock mechanism for use with standard D-type connectors. Set contains male and female bail-lock pairs, bail-arms, four nuts and four bolts. Bail-arm pair is attached to one connector (usually socket) and receptacle pair is attached to other connector (usually plug). Bright plated finish over steel.



Retail Unit Price each (inc. VAT).

Order Code	Type 1206	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JW94C	Bail-Lock Set	£0.561	£0.410	£0.360	£0.660

## 25-Way D Outlet

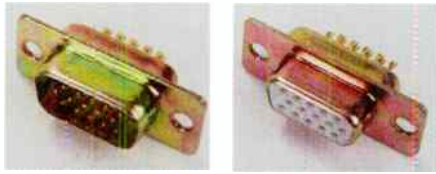
A flush mounting 25-way D female socket mounted on a white front plate. Fits standard conduit and surface boxes (see Electrical Accessories) to BS1363. Screws supplied. Depth from rear of plate 6mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1209	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
FP14Q	25W D Outlet	£2.650	£1.990	£1.830	£3.360

## High Density 15-way D-type Connectors



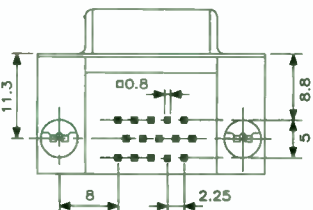
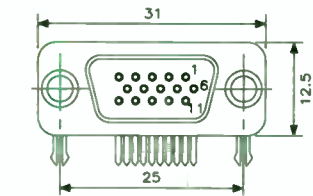
High density 15-way D-type connectors that fit 15 pins into the same size shell as a 9-way standard D-type connector. Termination is by solder bucket. Contacts are copper alloy with gold plating over nickel. Shells are steel with chromate plating over zinc. Insulator is glass reinforced PBT plastic to UL-94-V0.

Retail Unit Price each (inc. VAT).

Order Code	Type 1310	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW77J	HD 15 Way D Plg	£1.290	£0.918	£0.653	£1.520
JW78K	HD 15 Way D Skt	£1.550	£1.000	£0.700	£1.830

## High Density 15-way Right-Angled PCB D-type Socket

All dimensions in mm



View from below



A high density 15-way right-angled PCB D-type socket that fits 15 pins into the same size shell as a 9-way standard D-type connector. Termination is by PCB pins. Contacts are copper alloy with gold plating over nickel. Shells are steel with tin plating. Insulator is glass reinforced polyester resin to UL-94-V0.

Retail Unit Price each (inc. VAT).

Order Code	Type 1313	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW85C	HD 15 Way R/A D Skt	£1.640	£1.120	£0.755	£1.930

## High Density 15-way D-type Connector Shells



High density D-type connector shells with separate gold-plated pins for plugs and sockets enabling connectors to be constructed with pins only in the positions where a connection is required. Plug and socket housings are available, plug or socket pins simply snap in from the rear after soldering or crimping wires to them. Both plug and socket pins are supplied in strips of 10.

Retail Unit Price each (inc. VAT).

Order Code	Type 1315	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW81C	HD 15W D Plg Shell	£1.020	£0.673	£0.530	£1.210
JW82D	HD 15W D Skt Shell	£1.020	£0.673	£0.530	£1.210

Price each shown but sold only in multiples of 10

Order Code	Type 1315	Price each exc. VAT			inc. VAT each
		10+	250+	1000+	
JW83E	10pk HD Plg Pin	£0.034	£0.023	£0.020	£0.040
JW84F	10pk HD Skt Pin	£0.034	£0.023	£0.020	£0.040

## Flat Cable IDC Series D Connectors

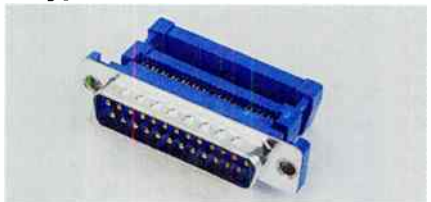


Of the range of the D series plugs and sockets described elsewhere in this section, 9-way, 15-way, 25-way and 37-way plugs and sockets are now available in IDC form, greatly simplifying the task of terminating many wires. In addition, many plugs or sockets can share the same cable harness for looping to several destinations. These metal and plastic bodied connectors will mate with the other D range connectors shown elsewhere in this section.

Retail Unit Price each (inc. VAT).

Order Code	Type 1483	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FV77J	IDC D-Ring 9-Way Plg	£1.860	£1.100	£0.850	£2.190
FV79L	IDC D-Ring 15-Way Plg	£2.370	£1.240	£0.890	£2.790
FV61C	IDC D-Ring 25-Way Plg	£2.540	£1.400	£1.010	£2.990
JB44X	IDC D-Ring 37-Way Plg	£3.390	£2.380	£1.900	£3.990
FV78K	IDC D-Ring 9-Way Skt	£1.940	£1.180	£0.840	£2.290
FV80B	IDC D-Ring 15-Way Skt	£2.540	£1.200	£0.870	£2.990
FV82D	IDC D-Ring 25-Way Skt	£2.880	£1.540	£1.090	£3.390
JB45Y	IDC D-Ring 37-Way Skt	£3.900	£2.500	£2.050	£4.590

## Low Profile 25-way IDC D-type Connectors



Low profile 25-way IDC D-type connectors, plastic body with metal shell incorporating grounding dimples, designed for use with IDC cable. These

connectors will mate with other standard 25-way D-type connectors. Contacts are copper alloy with gold plating over nickel. Shells are steel with tin plating. Body is glass reinforced PBT plastic to UL-94-V0.

Retail Unit Price each (inc. VAT).

Order Code	Type 1487	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW79L	LPHI IDC 25W D Plg	£2.030	£1.380	£1.020	£2.390
JW80B	LPHI IDC 25W D Skt	£2.200	£1.600	£1.120	£2.590

## DISK DRIVE CONNECTORS

### 4-pin 5.08mm (0.2in.) Spacing Polarised Power Connector



Commonly used on 133mm (5 1/4in.) floppy and hard disk drives. Supplied complete with connector housing and four crimp/solder terminals. Available in male and female types.

Retail Unit Price each (inc. VAT).

Order Code	Type 1317	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW64U	0.2in Power Conn M	£0.587	£0.440	£0.300	£0.690
JW65V	0.2in Power Conn F	£0.502	£0.390	£0.280	£0.590

### 4-pin 2.54mm (0.1in.) Spacing Polarised Power Connector



Commonly used on 89mm (3 1/2in.) floppy disk drives. Supplied complete with connector housing and crimp/solder terminals. Available in female only.

Retail Unit Price each (inc. VAT).

Order Code	Type 1318	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW63T	0.1in Power Conn F	£0.510	£0.357	£0.260	£0.600

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

**Business Account Holders**  
No Delivery Charges for any order

## FCC68 CONNECTORS

### FCC68 Modular Plugs

A range of modular plugs that are used on computer equipment and American telephones. Available in the following contact configurations: Four contacts in a four position shell (4C4P), four contacts in a six position shell (4C6P), six contacts in a six position shell (6C6P) and eight contacts in an eight position shell (8C8P).



Retail Unit Price each (inc. VAT).

Order Code	Type 423	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW42V	FCC68 Plg 4C4P	£0.340	£0.270	£0.185	£0.400
JW43W	FCC68 Plg 4C6P	£0.382	£0.290	£0.220	£0.450
JW41U	FCC68 Plg 6C6P	£0.425	£0.330	£0.240	£0.500
JW44X	FCC68 Plg 8C8P	£0.808	£0.580	£0.360	£0.950

### Crimping Tools for Modular FCC68 Connectors



Crimping tools for use with FCC68 modular connectors which are used on computers and American telephones. Simply place the plug with the cable in the tool and squeeze the grips together, thus causing the plug to bite into the cable. The handles are spring loaded for automatic opening. Wire can be cut with blades built into the handle. All made from toughened plastic. Overall length 190mm.

The following types are available:

#### Plastic Crimp 4C4P

This model is used on plugs with 4 contacts in a 4 position shell.

#### Plastic Crimp 4C6P

This model is used on plugs with 4 contacts in 6 position shell.

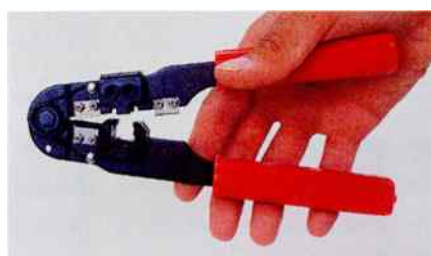
#### Plastic Crimp 6C6P

This model is used on plugs with 6 contacts in a 6 position shell.

Retail Unit Price each (inc. VAT).

Order Code	Type 1435	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JW51F	Plas FCC68 Crmp 4C4P	£5.190	£2.800	£2.550	£6.100
JW50E	Plas FCC68 Crmp 4C6P	£5.190	£3.650	£3.200	£6.100
JW49D	Plas FCC68 Crmp 6C6P	£6.110	£4.290	£3.780	£7.190

### Heavy Duty Crimping Tool for Modular FCC68 Connectors



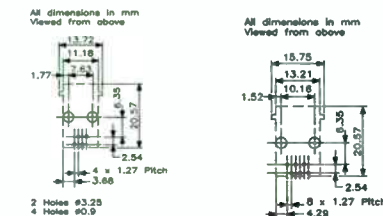
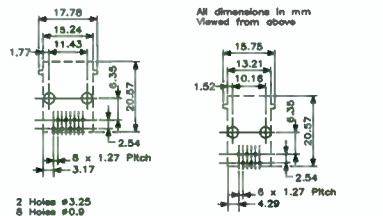
A crimping tool for use with FCC68 modular connectors which are used on computers and American telephones. This model crimps 8 position modular plugs. Simply place the plug with the cable in the tool and squeeze the grips together, thus causing the plug to bite into the cable.

The handles are spring loaded for automatic opening. Wire can be stripped and cut with two separate blades built into the handle. Made from 2.5mm steel with comfortable plastic grip. Overall length 200mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4233	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JW52G	HD FCC68 Crmp 8C8P	£14.710	£11.650	£10.850	£17.290

### FCC68 Modular PCB Sockets



A range of modular PCB sockets that are used on computer equipment and American telephones. Available in the following contact configurations: Four contacts in a four position shell (4C4P), four contacts in a six position shell (4C6P), six contacts in a six position shell (6C6P) and eight contacts in an eight position shell (8C8P).

Retail Unit Price each (inc. VAT).

Order Code	Type 1438	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW46A	FCC68 PCB Skt 4C4P	£0.680	£0.570	£0.500	£0.800
JW47B	FCC68 PCB Skt 4C6P	£0.680	£0.570	£0.500	£0.800
JW45Y	FCC68 PCB Skt 6C6P	£0.723	£0.650	£0.580	£0.850
JW48C	FCC68 PCB Skt 8C8P	£1.230	£0.920	£0.720	£1.450

## MINI DIN CONNECTORS

### Miniature DIN Line Plugs

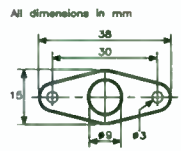


A range of miniature DIN line plugs which will mate with mini DIN sockets. Available in 3, 4, 5, 6, 7, 8 and 9-pin types.

Retail Unit Price each (inc. VAT).

Order Code	Type 1110	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JX01B	Mini DIN Line Plg 3W	£0.757	£0.530	£0.460	£0.890
JX02C	Mini DIN Line Plg 4W	£0.757	£0.530	£0.460	£0.890
JX03D	Mini DIN Line Plg 5W	£0.757	£0.530	£0.460	£0.890
JX04E	Mini DIN Line Plg 6W	£0.842	£0.570	£0.490	£0.990
JX05F	Mini DIN Line Plg 7W	£0.842	£0.570	£0.490	£0.990
JX06G	Mini DIN Line Plg 8W	£0.936	£0.720	£0.550	£1.100
JX19V	Mini DIN Line Plg 9W	£0.936	£0.720	£0.550	£1.100

### Miniature DIN Chassis Sockets

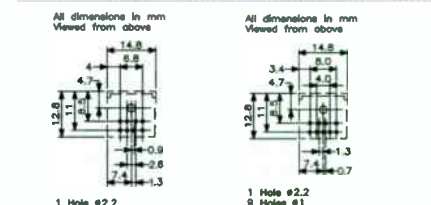
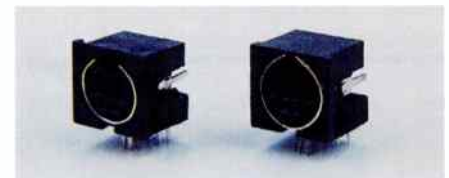
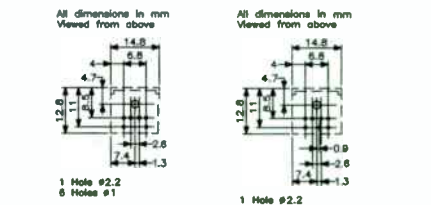
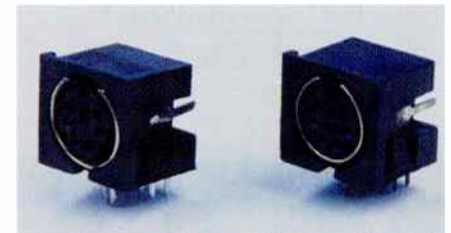
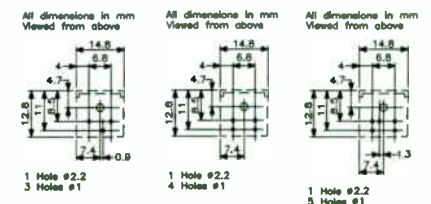
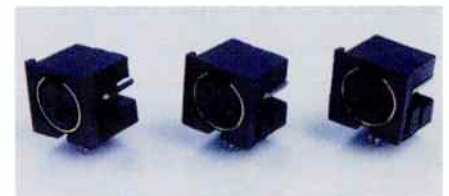


A range of miniature DIN chassis sockets which will mate with mini DIN plugs. Available in 3, 4, 5, 6, 7 and 8-pin types.

Retail Unit Price each (inc. VAT).

Order Code	Type 1111	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JX07H	Mini DIN Chss Skt 3W	£0.757	£0.530	£0.460	£0.890
JX08J	Mini DIN Chss Skt 4W	£0.757	£0.530	£0.460	£0.890
JX09K	Mini DIN Chss Skt 5W	£0.757	£0.530	£0.460	£0.890
JX10L	Mini DIN Chss Skt 6W	£0.842	£0.570	£0.490	£0.990
JX11M	Mini DIN Chss Skt 7W	£0.842	£0.570	£0.490	£0.990
JX12N	Mini DIN Chss Skt 8W	£0.842	£0.570	£0.490	£0.990

### Miniature DIN PCB Sockets



A range of miniature DIN PCB sockets which will mate with mini DIN plugs. Available in 3, 4, 5, 6, 7, 8 and 9-pin types.

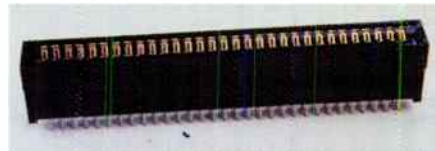
Retail Unit Price each (inc. VAT).

Order Code	Type 1115	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JX13P	Mini DIN PCB Skt 3W	£0.757	£0.530	£0.460	£0.890
JX14C	Mini DIN PCB Skt 4W	£0.757	£0.530	£0.460	£0.890
JX15R	Mini DIN PCB Skt 5W	£0.757	£0.530	£0.460	£0.890
JX16S	Mini DIN PCB Skt 6W	£0.842	£0.570	£0.490	£0.990
JX17T	Mini DIN PCB Skt 7W	£0.842	£0.570	£0.490	£0.990
JX18U	Mini DIN PCB Skt 8W	£0.936	£0.720	£0.550	£1.100
JX20W	Mini DIN PCB Skt 9W	£0.936	£0.720	£0.550	£1.100

## PCB & GENERAL CONNECTORS

## EDGE CONNECTORS

### 2.54mm (0.1in.) Double-Sided Low-Cost



A range of good quality low-cost edge connectors primarily for use with double-sided pcbs. Moulded in glass-fibre reinforced polyester UL94-V0, the connectors have gold-plated phosphor bronze contacts. All types have closed ends and overall width of pcb tongue should be 5.08mm (0.2in.) wider than measurement between centres of end contacts. Connectors available in 36, 46, 50, 56, and 62-way.

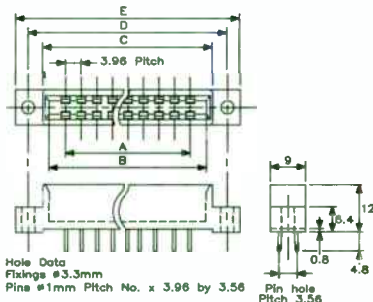
Retail Unit Price each (inc. VAT).

Order Code	Type 1414	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JB99H	Locost PC Edge 2x18W	£0.680	£0.450	£0.340	£0.800
JC00A	Locost PC Edge 2x23W	£0.893	£0.520	£0.410	£1.010
JC01B	Locost PC Edge 2x25W	£0.936	£0.560	£0.430	£1.140
JC02C	Locost PC Edge 2x28W	£1.020	£0.650	£0.500	£1.240
JC03D	Locost PC Edge 2x31W	£1.230	£0.780	£0.520	£1.430

### 3.96mm (0.156in.) Double-Sided



All Dimensions in mm



No. of Positions	A	B	C	D	E
2x6 way	19.81	28.20	31.40	38.89	45.30
2x12 way	43.57	51.96	55.16	62.65	69.06
2x16 way	55.45	63.84	67.04	74.53	80.94

A range of edge connectors designed to mount directly on pcbs, particularly double-sided types. Moulded in glass fibre reinforced polyester UL94-V0, the contacts and pins are gold-plated phosphor bronze. Connectors are available in 12, 24 and 30-way.

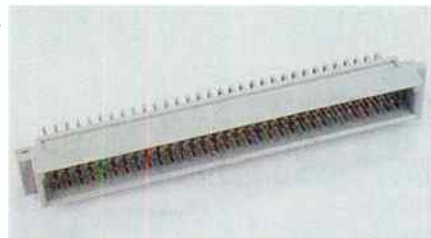
Type	Length (mm)
2x6-way	38-1
2x12-way	62-2
2x15-way	73-7

Retail Unit Price each (inc. VAT).

Order Code	Type 1428	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FG24B	0.156in 2x6way Egon	£0.936	£0.685	£0.540	£1.100
BK74R	0.156in 2x12way Egon	£1.650	£1.000	£0.835	£1.950
JB63T	0.156in 2x15way Egon	£1.740	£1.050	£0.875	£2.050

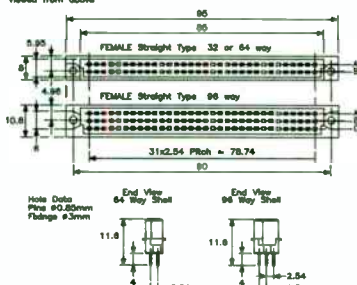
## EUROCARD LOW CURRENT

### DIN 41612 Indirect Cardframe Connectors



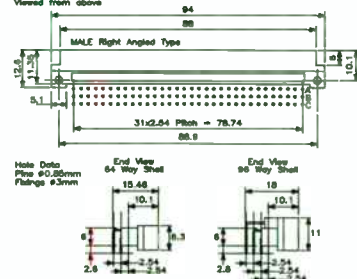
A range of DIN 41612 cardframe connectors, for use in cardframe and rackmounted assemblies. These connectors are ideal for use with our modular sub-rack system and eurocard prototyping boards. Other applications include mother board/daughter board interconnections. The connectors comprise of one multiway socket with PCB pins on a 2.54mm (0.1in.) pitch for fixing to a mother board or backplane. The mating plug has right-angled PCB pins for fixing to a daughter board or plug-in card. Socket contacts are gold plated phosphor bronze, plug contacts are gold plated brass, termination area of each pin is tin plated. Connectors have locking keys to prevent accidental reversal on insertion. Available in 32, 64 and 96-way. 32-way version is available in 64-way and 96-way shells. 64-way version is available in both 64 and 96-way shells (middle row unused). Shells are made from glass reinforced-PBT to UL94-V0.

All Dimensions in mm Viewed from above



Dimensions:	Plug (mm)	Receptacle (mm)
Length:	95	95
Width:	11	10.5
Fixing centres:	88.9	90
Depth + pins:	18	15.5
Without pins:	12.5	11

All Dimensions in mm Viewed from above



Type	Plg or Skt	No of Contacts	Shell Size	Straight or R/A	Contact Rows
RAPL32A	Plg	32	64	R/A	A
RAPL64AB	Plg	64	64	R/A	A & B
RAPL64AC	Plg	64	96	R/A	A & C

Type	Plg	96	96	R/A	A, B & C
STSK32A	Skt	32	64	ST	A
096001003	Skt	32	96	ST	A
STSK64AB	Skt	64	64	ST	A & B
STSK64AC	Skt	64	96	ST	A & C
STSK96ABC	Skt	96	96	ST	A, B & C

Retail Unit Price each (inc. VAT).

Order Code	Type 1424	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW69A	RAPL32A Connector	£0.953	£0.640	£0.535	£1.120
JW71N	RAPL64AB Connector	£1.230	£0.900	£0.785	£1.450
FJ51F	RAPL64AC Connector	£1.260	£0.900	£0.785	£1.490
JW73Q	RAPL96ABC Connector	£1.740	£1.190	£1.080	£2.050
JW70M	STSK32A Connector	£1.260	£0.900	£0.785	£1.490
FJ45Y	PCB Rec Gold 32Way	£1.690	£1.190	£1.080	£1.990
JW72P	STSK64AB Connector	£1.740	£1.190	£1.080	£2.050
FJ47B	STSK64AC Connector	£1.740	£1.190	£1.080	£2.050
JW74R	STSK96ABC Connector	£2.250	£1.670	£1.480	£2.650

### B Type 2 Row 32/64 Pin R/A Plug/Straight Socket



Male connector has right-angled solder pins for PCB mounting. Female has either solder pins (SP) or wrap posts (WP). The type column also specifies the rows used. Overall connector width: male 94mm, female 95mm.

Manufacturer's Code	Type	Level	Number of Contacts	Pins/post	Pins/post mm
0902 164 6921	M ab	2	64	PCB	—
0902 132 7931	M a	3	32	PCB	—
0902 132 6931	M a	2	32	PCB	—
0902 164 6825	F ab	2	64	SP	4
0902 132 6835	F a	2	32	SP	4
0902 164 7821	F ab	3	64	WP	13
0902 164 6821	F ab	2	64	WP	13
0902 132 6831	F a	2	32	WP	13

Suitable shell housing: Type C

Retail Unit Price each (inc. VAT).

Order Code	Type 6632	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CX95D	2A 2R 64P Plg Lvl2	£1.660	£1.590	£1.500	£1.960
CX96E	2A 2R 32P Plg Lvl3	£0.731	£0.700	£0.660	£0.860
CX97F	2A 2R 32P Plg Lvl2	£1.380	£1.310	£1.250	£1.630
CX98G	2A 2R 64P Sk Lvl2 SP	£2.360	£2.250	£2.130	£2.780
CX99H	2A 2R 32P Sk Lvl2 SP	£1.650	£1.570	£1.480	£1.940
CY00A	2A 2R 64P Sk Lvl3 WP	£1.930	£1.840	£1.740	£2.270
CY01B	2A 2R 64P Sk Lvl2 WP	£2.460	£2.340	£2.220	£2.900
CY02C	2A 2R 32P Sk Lvl2 WP	£1.650	£1.570	£1.480	£1.940

## C Type 3 Row 64/96 Pin R/A Plug/Straight Socket

Harting



NEW LOW PRICE

Male has right-angled solder pins for PCB mounting.

Female has either solder pins (SP) or wrap posts (WP). The type column also specifies the rows used.

Overall connector width: male 94mm, female 95mm.

Manufacturer's Code	Type	Level	Number of Contacts	Pins/post	Pins/post ømm
0903 196 6921	M abc	2	96	PCB	—
0903 164 6921	M ac	2	64	PCB	—
0903 196 6825	F abc	2	96	SP	4
0903 164 6825	F ac	2	64	SP	4
0903 196 6821	F abc	2	96	WP	13
0903 164 6821	F ac	2	64	WP	13

Suitable shell housing: Type C

Retail Unit Price each (inc. VAT).

Order Code	Type 1464	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CY03D †	2A 3R 96P RAPlug	£2.270	£2.160	£2.040	£2.670
CY04E †	2A 3R 64P RAPlug	£1.660	£1.590	£1.500	£1.960
CY05F †	2A 3R 96P Skt SP	£3.410	£3.250	£3.070	£4.010
CY06G †	2A 3R 64P Skt SP	£2.960	£2.250	£2.130	£2.780
CY07H †	2A 3R 96P Skt WP	£3.410	£3.250	£3.070	£4.010
CY08J †	2A 3R 64P Skt WP	£2.460	£2.340	£2.220	£2.900

## Q Type 2 Row 64 Pin Straight Plug

Harting



NEW LOW PRICE

Male available with either solder pins (SP) or wrap posts (WP). Overall width: 95mm.

Manufacturer's Code	Type	Level	Number of Contacts	Pins/post	Pins/post ømm
0972 164 6903	M	2	64	SP	4
0972 164 6907	M	2	64	WP	13

Retail Unit Price each (inc. VAT).

Order Code	Type 1462	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CY09K †	2A 2R 64P Ptg SP	£1.830	£1.750	£1.660	£2.160
CY10L †	2A 2R 64P Ptg WP	£1.690	£1.800	£1.710	£2.230

## R Type 3 Row 64/96 Pin Straight Plug/R/A Socket

Harting



NEW LOW PRICE

Male is available with either solder pins (SP) or wrap posts (WP).

Female has right-angled solder pins for PCB

mounting. The type column also specifies the rows used. Overall connector width: male 95mm, female 94mm.

Manufacturer's Code	Type	Level	Number of Contacts	Pins/post	Pins/post ømm
0973 196 6801	F abc	2	96	PCB	—
0973 164 6801	F ac	2	64	PCB	—
0973 196 6903	M abc	2	96	SP	4
0973 164 6903	M ac	2	64	SP	4
0973 196 6907	M abc	2	96	WP	13
0973 164 6907	M ac	2	64	WP	13

Retail Unit Price each (inc. VAT).

Order Code	Type 1464	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CY11M †	2A 3R 96P Plug	£3.170	£3.020	£2.860	£3.730
CY12N †	2A 3R 64P RA Skt SP	£2.200	£2.090	£1.980	£2.590
CY13P †	2A 3R 96P RASKI SP	£2.390	£2.270	£2.150	£2.810
CY14Q †	2A 3R 64P Plug	£1.830	£1.750	£1.660	£2.160
CY15R †	2A 3R 96P RASKI WP	£2.200	£2.090	£1.980	£2.590
CY16S †	2A 3R 64P RASKI WP	£1.890	£1.800	£1.710	£2.230

## 2B Type 2 Row 32 Pin R/A Plug/Straight Socket

Harting



NEW LOW PRICE

Male has right-angled solder pins for PCB mounting.

Female is available with either solder pins (SP) or wrap posts (WP). Overall connector width: male 54mm, female 55mm.

Manufacturer's Code	Type	Level	Number of Contacts	Pins/post	Pins/post ømm
0922 132 6921	M	2	32	PCB	—
0922 132 6825	F	2	32	SP	4
0922 132 6821	F	2	32	WP	13

Retail Unit Price each (inc. VAT).

Order Code	Type 1465	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CY17T †	2A 2x16P RAPlug	£1.380	£1.310	£1.250	£1.630
CY18U †	2A 2x16P Skt SP	£1.830	£1.750	£1.660	£2.160
CY19V †	2A 2x16P Skt WP	£1.900	£1.810	£1.710	£2.240

## 2Q Type 2 Row 32 Pin Straight Plug/R/A Socket

Harting

Male is available with either solder pins (SP) or wrap posts (WP); female has right-angled solder pins for PCB mounting. Overall connector width: male 55mm, female 54mm.

Manufacturer's Code	Type	Level	Number of Contacts	Pins/post	Pins/post ømm
0927 132 6801	F	2	32	PCB	—
0927 132 6903	M	2	32	SP	4
0927 132 6907	M	2	32	WP	13

Retail Unit Price each (inc. VAT).

Order Code	Type 1465	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CY24B †	2A 2x16P R/A Skt	£2.280	£2.170	£2.050	£2.680
CY25C †	2A 2x16P Ptg SP	£1.600	£1.520	£1.440	£1.880
CY26D †	2A 2x16P Ptg WP	£1.530	£1.460	£1.380	£1.800

See Stock Code Index  
For More Price Breaks

## 2C Type 3 Row 32/48 Pin R/A Plug/Straight Socket

Harting



NEW LOW PRICE

Male has right-angled solder pins for PCB mounting.

Female is available with either solder pins (SP) or wrap posts (WP). The type column also specifies the rows used. Overall connector width: male 54mm, female 55mm.

Manufacturer's Code	Type	Level	Number of Contacts	Pins/post	Pins/post ømm
0923 148 6921	M abc	2	48	PCB	—
0923 132 6921	M ac	2	32	PCB	—
0923 148 6825	F abc	2	48	SP	4
0923 148 6821	F abc	2	48	WP	13

Retail Unit Price each (inc. VAT).

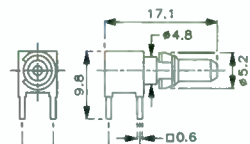
Order Code	Type 1465	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CY20W †	2A 3R 48P RAPlug	£1.600	£1.520	£1.440	£1.880
CY21X †	2A 3R 32P RAPlug	£1.420	£1.350	£1.280	£1.670
CY22Y †	2A 3R 48P Skt SP	£2.330	£2.220	£2.100	£2.740
CY23A †	2A 3R 48P Skt WP	£2.390	£2.270	£2.150	£2.810

## M Type 3 Row with additional coax or 10A contacts

Harting

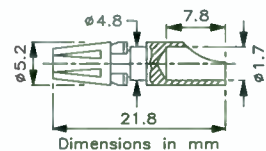


NEW LOW PRICE



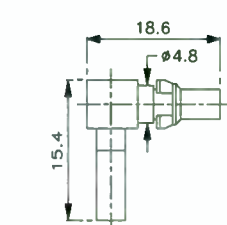
Solder pins for hole  $\pm 0.1$ mm  
Dimensions in mm

DL24B



Dimensions in mm

DL25C



Dimensions in mm

DL26D

The male is available with either 60 pins plus provision for 4 contacts or 42 pins plus 6 contacts. The connections to the board are by right-angled solder pins. The female connector has 13mm wrap posts and is configured with 78 pins plus provision for 2 contacts. A range of individual contacts are

available separately. All connectors and contacts are level 2 (400 cycles). Overall connector width: male 94mm, female 95mm.

Manufacturer's Code	Type	Number of Contacts
0903 160 6901	M	60 + 4
0903 142 6901	M	42 + 6
0903 178 6801	F	78 + 2

Manufacturer's Code	Type	Description
0903 000 6161		Coaxial contact for right-angled older and/or crimp terminations - male contact for female connector.
0903 000 6201		10A contact for straight solder terminations - female contact for female connector.
0903 000 6104		10A contact for printed circuit terminations - male contact for male connector.

A suitable crimping tool is available for use with the coaxial contacts, as is a removal tool for contacts.

Retail Unit Price each (inc. VAT).

Order Code	Type 1471	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CY27E †	2A 3R 60+4 Plug	£2.110	£2.010	£1.900	£2.480
CY28F †	2A 3R 42+6 Plug	£1.710	£1.630	£1.540	£2.010
CY29G †	2A 3R 78+2 Skt	£2.600	£2.470	£2.340	£3.060
DL24B	R/A Coax Contact	£7.370	£7.010	£6.640	£8.670
DL25C	FF 10A Contact	£3.130	£2.970	£2.820	£3.680
DL26D †	MM 10A Contact	£3.040	£2.900	£2.740	£3.580

## 6A Rated Contact Range

A range of high current connectors with a maximum working current of 6A. Contact spacing is 5.08mm.

### General Specification

Contact material:	Copper alloy
Contact surface:	Selectively gold-plated depending on level
Mouldings:	Thermoplastic resin glass fibre filled
Contact rating:	6A max.
Test voltage:	1-55kV
Contact resistance:	<15mΩ
Insulation resistance:	≥1012Ω
Temperature range:	-65°C to 125°C
Mating cycle life:	400

## D Type 2 Row 32 Pin R/A Plug/Straight Socket

Harting



Male connector has right-angled solder pins for PCB mounting and an overall width of 94mm. Female connector is available with either solder pins (SP) or wrap posts (WP), and has an overall width of 95mm.

Manufacturer's Code	Type	Number of Contacts	Pins/post	Pins/post mm
0904 132 6921	M	32	PCB	-
0904 232 6831	F	32	SP	4
0904 232 6821	F	32	WP	20

Retail Unit Price each (inc. VAT).

Order Code	Type 1474	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DL29G †	6A 2R 32P R/Plug	£1.960	£1.870	£1.770	£2.310
DL30H †	6A 2R Skt SP	£3.250	£3.090	£2.920	£3.820
DL31J †	6A 2R Skt WP	£3.250	£3.090	£2.920	£3.820

## F Type 3 Row 48 Pin R/A Plug/Straight Socket

Harting

Male has right-angled solder pins; female has either solder pins (SP), solder lugs (SL), or wrap posts (WP). Overall connector width: male 94mm, female 95mm.

Manufacturer's Code	Type	Number of Contacts	Pins/post	Pins/post mm
0906 148 6901	M	48	PCB	-
0906 248 6835	F	48	SP	4.5
0906 248 6823	F	48	SL	-
0906 248 6821	F	48	WP	22

Suitable shell housing: Type B

Retail Unit Price each (inc. VAT).

Order Code	Type 1478	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DL32K †	6A 3R 48P R/Plug	£2.880	£2.740	£2.600	£3.390
DL33L †	6A 3R 48P Skt SP	£3.280	£3.120	£2.960	£3.860
DL34M †	6A 3R 48P Skt SL	£3.310	£3.150	£2.980	£3.890
DL35Q †	6A 3R 48P Skt WP	£3.600	£3.430	£3.250	£4.240

## 15A Rated Contact Range H Type

Harting



A range of high current connectors with a maximum working current of 15A. The male connector has either provision for faston cable connectors (FC), or right-angled solder pins (SP). The contacts are configured as 14 + 1 with position z32 as the first mating contact. Faston connector 6-3 x 2.5mm. The female connectors are available for faston or 'cage clamp' (CC) cable connection. Overall connector width: male 94mm, female 95mm.

### General Specification

Contact material:	Copper alloy
Contact surface:	Hard silver-plated
Mouldings:	Thermoplastic resin glass fibre filled
Contact rating:	15A max.
Test voltage:	3-1kV
Contact resistance:	<8mΩ
Insulation resistance:	≥1012Ω
Temperature range:	-65°C to 125°C

Manufacturer's Code	Type	Number of Contacts	Pins/post	Description
0906 115 2932	M	14 + 1	SP	
0906 015 2931	M	14 + 1	FC	
0906 215 2871	F	15		FC. Not for shell housing use
0906 215 2811	F	15		FC. May be used in shell housing
0906 015 2813	F	15		CC. May be used in shell housing

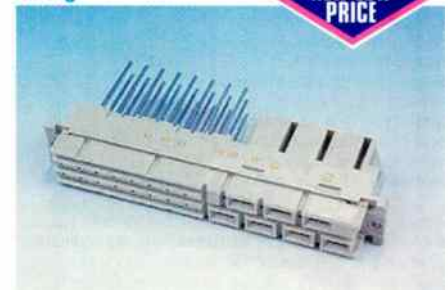
Suitable shell housing: Type B

Retail Unit Price each (inc. VAT).

Order Code	Type 1479	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DL36P †	15A Plug SP	£4.170	£3.960	£3.750	£4.900
DL37S †	15A Plug FC	£3.970	£3.780	£3.580	£4.670
DL38R †	15A Skt FC NonShell	£5.920	£5.620	£5.330	£6.960
DL39N †	15A Skt FC	£5.920	£5.620	£5.330	£6.960
DL40T †	15A Skt CC	£7.460	£7.090	£6.720	£8.770

## Combined 6A and 15A Rated Contact Range FH Type

Harting



A male and female connector configured with 24 pins rated at 6A maximum, and 7 pins rated at 15A maximum. The male connector has right-angled solder pins with position z32 making initial contact. The female connector has wrap posts 1 x 1mm. Overall width of connector: male 94mm, female 95mm.

### General Specification

Contact spacing	male: 2.54 x 5.08mm female: 5.08mm
Current rating	electronic connectors: 6A max. heavy duty connectors: 15A max.
Test voltage	electronic connectors: 1.55kV R.M.S. heavy duty connectors: 3-1kV R.M.S.
Contact resistance	electronic connectors: <15mΩ heavy duty connectors: <8mΩ
Insulation resistance:	1012Ω
Materials	mouldings: Thermoplastic resin, glass fibre filled contacts: Copper alloy
Contact surface	electronic connector: Gold-plated (contact zone), tinned termination heavy duty connector: Hard silver-plate, terminal ends of female connector are tinned
Mating cycle life:	400 Electrical termination
male connector:	Right-angled solder pins 0.6 x 0.6mm for PCB connections Ø0.8+0.3mm wire posts 1 x 1mm diagonal 1-34 to 1-45mm
female connector:	

Manufacturer's Code	Type
0906 131 6922	M
0906 231 6821	F

Suitable shell housing: Type B

Retail Unit Price each (inc. VAT).

Order Code	Type 1481	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DL41U †	6/15A Plug	£5.050	£4.800	£4.550	£5.940
DL42V †	6/15A Socket	£5.640	£5.360	£5.080	£6.630

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## Shell Housings and Accessories

### Harting

Two sizes of shell housing are available for use with certain types of Harting connectors. Type B is suitable for 3-row types and measures 103mm wide x 60mm deep. Type C is suitable for 2-row and 3-row female types and has fixing centres at 97.5mm, and 61.5mm deep.

Matching locking levers are available for both types of housing. Left and right fixing brackets are available for male 2 and 3 row connectors.



10

Manufacturer's Code	Shell Housing Type C
0902 064 0501	Shell housing, two rows
0903 096 0501	Shell housing, three rows
0902 000 9902	Left locking lever for shell housing
0902 000 9903	Right locking lever for shell housing
0902 000 9921	Left single fixing bracket for male connectors
0902 000 9922	Right single fixing bracket for male connectors

Manufacturer's Code	Shell Housing Type B
0906 048 0504	Shell housing
0906 000 9913	Left locking lever for shell housing
0906 000 9919	Right locking lever for shell housing
0906 000 9909	Left single fixing bracket for male connectors
0906 000 9910	Right single fixing bracket for male connectors

Retail Unit Price each (inc. VAT).

Order Code	Type 1482	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DL43W	Type C 2R Housing	£3.690	£3.510	£3.330	£4.340
DL44X	Type C 3R Housing	£5.040	£4.800	£4.540	£5.930
DL46A	TypeC Left Lock Lev	£0.408	£0.390	£0.370	£0.480
DL47B	TypeC Right Lock Lev	£0.408	£0.390	£0.370	£0.480
DL50E	TypeC Left Bracket	£0.961	£0.910	£0.860	£1.130
DL51F	TypeC Right Bracket	£1.400	£1.340	£1.270	£1.650
DL45Y	Type B 3R Housing	£3.440	£3.280	£3.100	£4.050
DL49C	TypeB Left Lock Lev	£0.451	£0.430	£0.400	£0.530
DL49D	TypeB Right Lock Lev	£0.451	£0.430	£0.400	£0.530
DL52G	TypeB Left Bracket	£0.731	£0.700	£0.660	£0.860
DL53H	TypeB Right Bracket	£0.731	£0.700	£0.660	£0.860

## 21-Pin Connectors

### Harting

A low-cost quality range of connectors that have 21 pins and meet DIN 41617 and VG 95323 standards. The male connector is available with either right-angled solder pins (AP) with a contact spacing of 2.5 x 2.5mm, or straight solder pins (SP), 2.5 x 5mm. The female connector has solder lugs (2.5 x 5mm). Overall width of connector: male 64.8mm, female 64.8mm.



### General Specification

Working current: 6A maximum  
 Test voltage: 1kV  
 Contact resistance: <12mΩ  
 Insulation resistance: ≥1011Ω  
 Capacity: <1pF  
 Temperature range: -65°C to +125°C

### Electrical terminations

male connector: Solder pins 0.8mm for PCB  
 female connector: Solder lugs 0.5mm2

### Materials

mouldings: Thermoplastic resin  
 glass fibre filled  
 contacts: Copper alloy  
 Contact surface: Selectively gold-plated  
 contact zone: Tinned  
 termination zone: Tinned

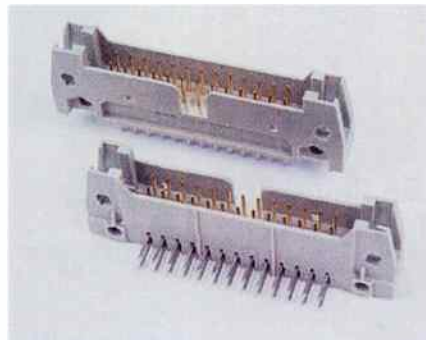
Mating cycle life: 50  
 Manufacturer's Code Type Pins/lugs  
 0901 021 7676 M SP  
 0901 021 7661 M AP  
 0901 021 7861 F Lugs

Retail Unit Price each (inc. VAT).

Order Code	Type 1465	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DL54J	21pin Plug SP	£2.680	£2.550	£2.410	£3.150
DL56K	21pin Plug AP	£1.230	£1.170	£1.110	£1.450
DL56L	21pin Skt Lugs	£1.650	£1.570	£1.480	£1.940

## IDC CONNECTORS

### 26-Way PCB Mounting Header



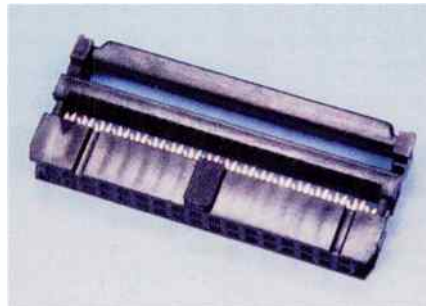
A 26-way male header for PCB mounting without a locking device. Available with either straight terminals or right-angled terminations.

Manufacturer's Code MPS Code  
 G80D26P9BBBL-DIN2 CX69A  
 G80D26P9BEEL-DIN2E CX70A (right-angled type)

Retail Unit Price each (inc. VAT).

Order Code	Type 1439	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CX69A	26W Straight Plug	£1.520	£1.210	£1.120	£1.790
CX70M	26W R/Angle Plug	£1.700	£1.480	£1.260	£2.000

### Double Row Cable Connector Socket



A range of double row IDC connectors moulded in 30% glass fibre reinforced PBT (UL94-V0). Contacts are gold-plated phosphor bronze. Cable strain-relief clamps are supplied. Connectors conform to BS9525.

Retail Unit Price each (inc. VAT).

Order Code	Type 1449	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JB59P	2x5 DIN IDC Socket	£0.757	£0.510	£0.340	£0.890
FG44X	2x5 DIN IDC Socket	£0.927	£0.640	£0.415	£1.090
FG84F	2x10 DIN IDC Socket	£1.010	£0.725	£0.480	£1.190
FG85G	2x13 DIN IDC Socket	£1.260	£0.895	£0.570	£1.490
FG86T	2x17 DIN IDC Socket	£1.520	£1.080	£0.660	£1.790
FG87U	2x20 DIN IDC Socket	£1.910	£1.300	£0.750	£2.250
FA00T	2x25 DIN IDC Socket	£2.280	£1.670	£0.860	£2.690

## IDC Connectors With Cables Fitted



A range of assembled Flat Cables and IDC Connectors conforming to BS9525 with pins on 2.54mm (0.1in.) spacing. All connectors are moulded in thermoplastic, glass-fibre filled resin. Max working voltage: 750V DC. Max working current: 2A. Fitted with 1/4 metre (10in. approx) of cable and other end unterminated. Available in 16-way, 20-way, 26-way, 34-way and 40-way.

Retail Unit Price each (inc. VAT).

Order Code	Type 1450	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FJ01B	16 Way IDC Skt+Cable	£1.260	£0.990	£0.790	£1.490
FJ02C	20 Way IDC Skt+Cable	£1.520	£1.220	£0.900	£1.790
FJ03D	26 Way IDC Skt+Cable	£1.770	£1.380	£1.020	£2.090
BK96E	34 Way IDC Skt+Cable	£2.030	£1.600	£1.160	£2.390
FJ04E	40 Way IDC Skt+Cable	£2.540	£1.950	£1.400	£2.990

## IDC Edge Connector and Cable Assemblies



The IDC Edge Connectors as above connected to 1m of IDC cable. The other end of the cable is unterminated.

Retail Unit Price each (inc. VAT).

Order Code	Type 1452	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FT71N	2X17W IDC Edge+Cable	£3.390	£2.950	£2.650	£3.990
FT70M	2X25W IDC Edge+Cable	£4.240	£3.750	£3.300	£4.990

## Low Cost IDC Edge Connectors



A range of low-cost IDC edge connectors moulded in glass fibre reinforced polyester (UL-94-V0). Contacts are gold-plated phosphor bronze.

Retail Unit Price each (inc. VAT).

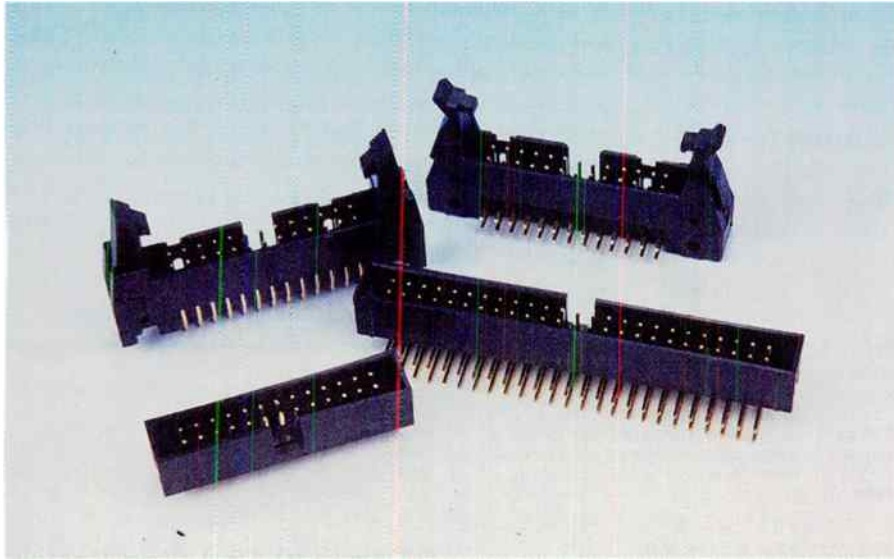
Order Code	Type 1455	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JC05F	Lo-Cost IDC Edge 16W	£0.510	£0.430	£0.360	£0.600
JB26D	Lo-Cost IDC Edge 20W	£0.561	£0.450	£0.380	£0.660
JB27E	Lo-Cost IDC Edge 26W	£0.595	£0.470	£0.400	£0.700
FS80B	Lo-Cost IDC Edge 34W	£0.680	£0.500	£0.420	£0.800
FS81C	Lo-Cost IDC Edge 40W	£0.936	£0.590	£0.470	£1.100
JB28F	Lo-Cost IDC Edge 50W	£1.180	£0.780	£0.540	£1.390



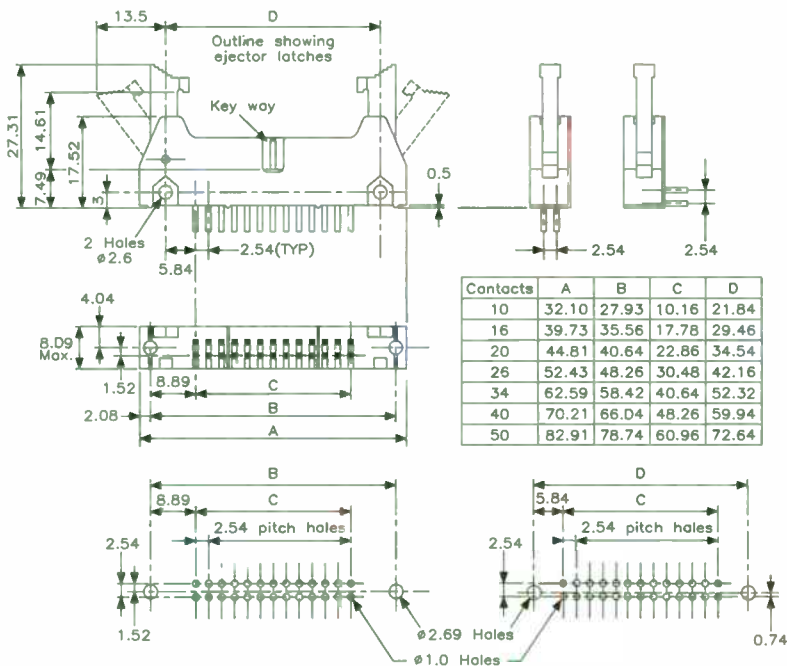
### IDC PCB Header Plugs

A range of pcb mounting header plugs to BS9525, matching the Double Row Cable Connectors. Plugs are available with straight and right-angled pins and types marked R/A have right-angled pins and types marked N/L (non-latching) are without locking ears. Moulded in 30%

glass fibre reinforced PBT (UL94-V0) with gold-plated contacts. Types marked R/A have right-angled pins and types marked N/L (non-latching) are without locking ears.



All dimensions in mm



PCB details for Straight Contacts

PCB details for Right Angled Contacts

Contacts	A	B	C	D
10	32.10	27.93	10.16	21.84
16	39.73	35.56	17.78	29.46
20	44.81	40.64	22.86	34.54
26	52.43	48.26	30.48	42.16
34	62.59	58.42	40.64	52.32
40	70.21	66.04	48.26	59.94
50	82.91	78.74	60.96	72.64

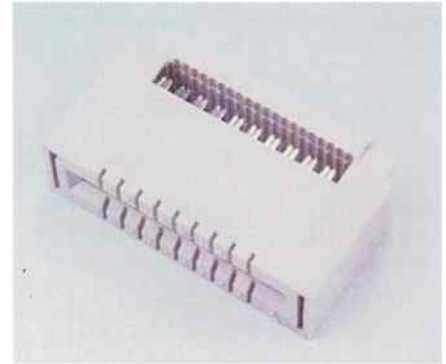
Retail Unit Price each (inc. VAT).

Order Code	Type 144E	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JB85G	10W IDC NL Header	£0.510	£0.370	£0.280	£0.500
JB86T	16W IDC NL Header	£0.638	£0.450	£0.350	£0.750
JB87U	20W IDC NL Header	£0.757	£0.490	£0.380	£0.900
JB88V	26W IDC NL Header	£0.978	£0.650	£0.490	£1.150
JB89W	34W IDC NL Header	£1.140	£0.800	£0.620	£1.350
JB90X	40W IDC NL Header	£1.260	£0.900	£0.700	£1.490
JB91Y	50W IDC NL Header	£1.430	£1.140	£0.850	£1.690
JB92A	10W IDC NL Header R/A	£0.587	£0.400	£0.310	£0.690
JB93B	16W IDC NL Header R/A	£0.680	£0.500	£0.370	£0.800
JB94C	20W IDC NL Header R/A	£0.765	£0.530	£0.420	£0.900
JB95D	26W IDC NL Header R/A	£0.978	£0.650	£0.500	£1.150
JB96E	34W IDC NL Header R/A	£1.100	£0.800	£0.640	£1.300
JB97F	40W IDC NL Header R/A	£1.260	£0.940	£0.730	£1.490
JB98G	50W IDC NL Header R/A	£1.480	£1.190	£0.880	£1.750

Retail Unit Price each (inc. VAT).

Order Code	Type 144E	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JB60Q	10way IDC Header	£0.765	£0.520	£0.350	£0.900
FJ13P	16way IDC Header	£0.927	£0.590	£0.450	£1.090
FJ14Q	20way IDC Header	£0.936	£0.640	£0.490	£1.100
FJ15R	26way IDC Header	£1.310	£0.880	£0.600	£1.550
FJ16S	34way IDC Header	£1.480	£0.980	£0.740	£1.750
FJ17T	40way IDC Header	£1.650	£1.140	£0.770	£1.950
FA41U	50way IDC Header	£1.740	£1.240	£0.880	£2.050
JB61R	10way IDC Header R/A	£0.808	£0.550	£0.400	£0.950
FA42V	16way IDC Header R/A	£0.936	£0.655	£0.490	£1.100
FT72P	20way IDC Header R/A	£1.020	£0.700	£0.510	£1.200
FA43W	26way IDC Header R/A	£1.310	£0.920	£0.640	£1.550
FA44X	34way IDC Header R/A	£1.480	£1.020	£0.770	£1.750
FA45Y	40way IDC Header R/A	£1.600	£1.280	£0.900	£1.890
FA46A	50way IDC Header R/A	£1.820	£1.340	£1.110	£2.150

### IDC Edge Connectors



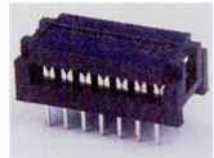
These grey moulded edge connectors feature closed ends for precise mating with a tongue shaped card edge, thus completely obviating any mismatch due to sideways slip. These connectors can be supplied in 20-way, 34-way and 50-way.

Retail Unit Price each (inc. VAT).

Order Code	Type 1457	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FT87U	20W IDC Edge Connctr	£2.110	£1.700	£1.600	£2.490
FT89W	34W IDC Edge Connctr	£2.710	£2.160	£1.830	£3.190
FT60Q	50W IDC Edge Connctr	£3.220	£2.700	£2.250	£3.790

### DIL IDC Headers

Headers which may be plugged into standard 14-pin, 16-pin or 28-pin DIL sockets, or they can be directly mounted on the pcb. Overall dimensions: (mm)



	14-way	16-way	28-way
Length	22.0	24.8	40.0
Width	10.8	10.8	18.1
Height (excl. pins)	5.9	5.9	5.9
Pin length	4.0	4.0	4.0

Retail Unit Price each (inc. VAT).

Order Code	Type 1459	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JH37S	14Pin DIL IDC Header	£0.672	£0.450	£0.320	£0.790
JH36P	16Pin DIL IDC Header	£0.757	£0.550	£0.360	£0.890
JP40T	28Pin DIL IDC Header	£1.430	£1.000	£0.630	£1.690

**ORDER BEFORE 5PM FOR SAME DAY DESPATCH**

**Tel: 01702 554000**

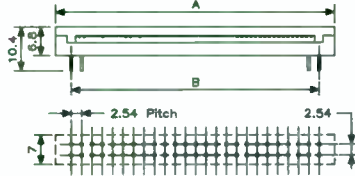
**Fax: 01702 554001**

**e-mail: Sales@maplin.co.uk**

## PCB Transition Headers

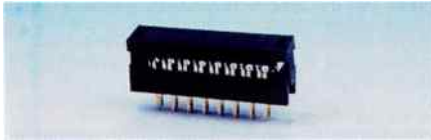
Two alternative types of double row or staggered pin transition headers for permanently attaching IDC cable looms to a PCB.

All dimensions in mm

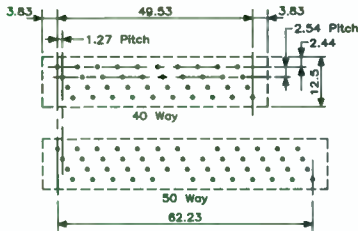


Holes  $\varnothing 0.85\text{mm}$

Pins	16	20	26	34	40	50
A	27.32	32.40	40.02	50.18	57.80	68.85
B	17.78	22.86	30.48	40.64	48.27	60.96



Dimensions in mm  
Holes  $\varnothing 0.85\text{mm}$   
Viewed from above



Retail Unit Price each (inc. VAT).

Order Code	Type 1401	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FA47B	Str Transheader 16w	£0.587	£0.460	£0.320	£0.690
FA48C	Str Transheader 20w	£0.672	£0.510	£0.355	£0.790
FA49D	Str Transheader 26w	£0.757	£0.580	£0.400	£0.890
FA50E	Str Transheader 34w	£0.842	£0.630	£0.460	£0.990
FA51F	Str Transheader 40w	£1.180	£0.835	£0.595	£1.390
FA52G	Str Transheader 50w	£1.260	£0.935	£0.620	£1.490
FA54J	Stg Transheader 50w	£1.990	£1.780	£1.730	£2.340

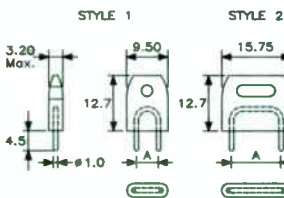
## PCB SHORTING LINKS

### 1mm Insulated Plug

Harwin

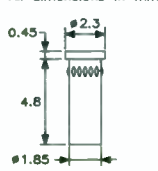


All dimensions in mm



A precision 1mm diameter gold-plated brass shorting plug that is moulded into a black polyacetal thermoplastic insulator. The plug is rated at 10A at 20°C, and is available in two sizes. The matching PCB socket has a tinned brass socket with a gold-plated beryllium copper contact with a contact resistance of 10mΩ. The socket is rated at 10A.

All dimensions in mm



Self Retention Feature  
Mounting Hole  $\varnothing 1.93$

Manufacturer's Code	MPS Code	Dimension A mm
D3086-98	CX76H	5-08

D3088-98 CX75S 10-16  
H3161-01(socket) CX77J —

Retail Unit Price each (inc. VAT).

Order Code	Type 1486	Price each exc. VAT			inc. VAT each
		1+	100+	250+	
CX76H	1mm Plug 5	£0.212	£0.200	£0.185	£0.250
CX75S	1mm Plug 10	£0.195	£0.180	£0.170	£0.230
CX77J	1mm Socket	£0.110	£0.079	£0.068	£0.130

## 2.54mm (0.1in.)



### Miniature Pin Jumpers

Miniature jumpers for bridging 'option pins' on computers, disk drives and other electronic hardware. Used in conjunction with 2.54mm (0.1in.) pin strips, these jumpers provide an easy means of being able to select various firmware options. Two versions are available, with or without extraction handle.

Retail Unit Price each (inc. VAT).

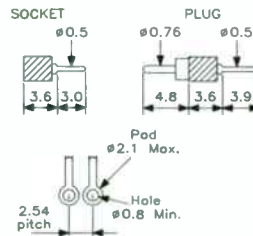
Order Code	Type 1504	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
UL71N	Mini Pin Jumper	£0.136	£0.100	£0.080	£0.160
UL70M	Mini Pin Jumper&Extr	£0.170	£0.120	£0.095	£0.200

## PIN SOCKET STRIPS

### Modular Connectors



Single row modular 2.54mm pitch sockets, and matching plugs, which are intended for mother-daughter board applications. The shrouded socket is fitted with a highly reliable four leaf gold on beryllium copper contact, and is also suitable for use with ICs. The unshrouded tin/lead finished brass plugs are also suitable for cable wiring applications. The 32-way connector strip can be easily cut to size using suitable hand tools. Insulator material: glass filled polyester UL94V-0.



Retail Unit Price each (inc. VAT).

Order Code	Type 1548	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DC17T	32 Socket Strip	£0.902	£0.490	£0.470	£1.060
DC18U	32 Plug Strip	£1.710	£1.370	£1.140	£2.020

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## 2.54mm (0.1in.) Pin Strips



Pin strips which are used in conjunction with pin jumpers to provide 'option pins' on computers, disk drives and other electronic hardware. These pin strips provide an easy means of being able to select various firmware options. Four versions are available, single row of 36 straight pins (1x36ST) single row of 36 right angle pins (1x36RA), double row of 72 straight pins (2x36ST) and double row of 72 right angle pins (2x36RA). Strips may be shortened by cutting at V-notches so any required length may be formed.

Retail Unit Price each (inc. VAT).

Order Code	Type 1500	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW59P	Pin Strip 1x36 St	£0.680	£0.480	£0.340	£0.800
JW60Q	Pin Strip 1x36RA	£0.765	£0.530	£0.370	£0.900
JW61R	Pin Strip 2x36 RA	£1.020	£0.770	£0.610	£1.200
JW62S	Pin Strip 2x36ST	£0.936	£0.670	£0.580	£1.100

## 2.54mm (0.1in.) Strip Socket

Harwin

20-way strip socket with a body made from glass reinforced thermoplastic polyester to UL94-V0, contacts are beryllium copper with tin on nickel-plating, rated at 100V RMS/150V DC @ 1A. Strips may be shortened by means of 'V notches'.

For mating strip see DC18U which can be cut to size.



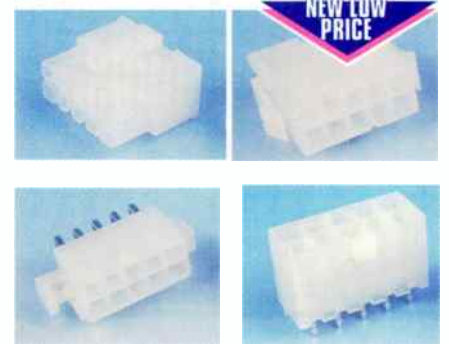
Retail Unit Price each (inc. VAT).

Order Code	Type 1506	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
KP51F	20 Way Socket Strip	£1.350	£1.050	£0.920	£1.590

## POWER TYPES

### Power PCB Connectors

Leoco



A range of high power and high density dual row connectors designed for power interconnection where space is at a premium.

Maximum voltage	250Vac
Maximum current	2 circuit, 9A; 4&6 circuit, 8A; 8&10 circuit, 7A; 12 circuit, 6A
Dielectric strength	1500Vac
Contact resistance	<20mΩ
Material	UL94V-0 or UL94V-2 self extinguishing plastic

Free Plugs

Order Code	No. of Circuits
SD32K	2
SD33L	4
SD34M	6
SD35N	8
SD36P	10

SD37S	12
<b>Receptacle</b>	
<b>Order Code</b>	<b>No. of Circuits</b>
SD38R	2
SD39N	4
SD40T	6
SD41U	8
SD42V	10
SD43W	12

<b>Straight Header</b>	
<b>Order Code</b>	<b>No. of Circuits</b>
SD44X	2
SD45Y	4
SD46A	6
SD47B	8
SD48C	10
SD49D	12

<b>Right Angled Headers</b>	
<b>Order Code</b>	<b>No. of Circuits</b>
SD50E	2
SD51F	4
SD52G	6
SD53H	8
SD54J	10
SD55K	12

<b>Crimp Contacts</b>	
<b>Supplied in packs of 10</b>	
<b>Order Code</b>	<b>Description</b>
SD56L	Pin
SD57M	Socket

Retail Unit Price each (inc. VAT).

Order Code	Type 1370S	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
SD32K	MF Free Plug 2Way	£0.144	£0.131	£0.120	£0.170
SD33L	MF Free Plug 4Way	£0.161	£0.147	£0.130	£0.190
SD34M	MF Free Plug 6Way	£0.178	£0.158	£0.140	£0.210
SD36P	MF Free Plug 10Way	£0.212	£0.188	£0.170	£0.250
SD37S	MF Free Plug 12Way	£0.229	£0.203	£0.180	£0.270
SD38R	MF Housing 2Way	£0.127	£0.115	£0.100	£0.150
SD39N	MF Housing 4Way	£0.136	£0.122	£0.110	£0.160
SD40T	MF Housing 6Way	£0.153	£0.140	£0.120	£0.180
SD41U	MF Housing 8Way	£0.161	£0.147	£0.130	£0.190
SD42V	MF Housing 10Way	£0.212	£0.188	£0.170	£0.250
SD43W	MF Housing 12Way	£0.221	£0.197	£0.180	£0.260
SD44X	PCB Hdr Vert 2Way	£0.246	£0.220	£0.200	£0.280
SD45Y	PCB Hdr Vert 4Way	£0.306	£0.276	£0.250	£0.360
SD46A	PCB Hdr Vert 6Way	£0.425	£0.385	£0.340	£0.500
SD47B	PCB Hdr Vert 8Way	£0.502	£0.449	£0.400	£0.590
SD48C	PCB Hdr Vert 10Way	£0.578	£0.518	£0.460	£0.680
SD49D	PCB Hdr Vert 12Way	£0.757	£0.684	£0.610	£0.890
SD50E	PCB Hdr R/A 2Way	£0.263	£0.234	£0.210	£0.310
SD51F	PCB Hdr R/A 4Way	£0.357	£0.322	£0.290	£0.430
SD52G	PCB Hdr R/A 6Way	£0.536	£0.492	£0.430	£0.630
SD53H	PCB Hdr R/A 8Way	£0.629	£0.571	£0.510	£0.740
SD54J	PCB Hdr R/A 10Way	£0.834	£0.749	£0.670	£0.930
SD55K	PCB Hdr R/A 12Way	£0.936	£0.845	£0.750	£1.100

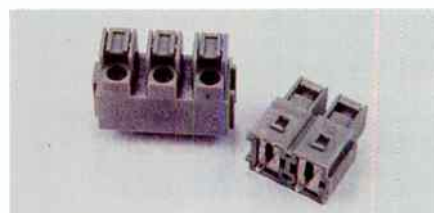
Retail Unit Price each (inc. VAT).

Order Code	Type 1370S	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
SD56L	Crimp Contact Pin	£0.400	£0.360	£0.320	£0.470
SD57M	Crimp Contact Socket	£0.451	£0.405	£0.360	£0.530

**SCREW TERMINAL BLOCKS**

**Quick Connecting PCB Terminal Blocks**

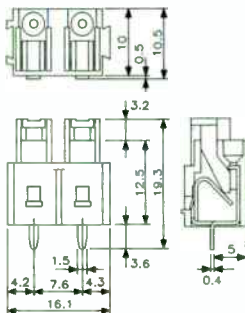
CIFF



PCB mounting terminal blocks for attaching wires to a board, but using spring-loaded wire grips instead of a screw clamp. Facilitates very fast connection and disconnection of cables from a PCB, ideal for prototyping, after which the board can become a permanent installation with the same connectors. Available in 2-way and 3-way versions. The release buttons on top are shrouded to prevent accidental

disconnection and the wire entry behind the button, which is vertical, will accept up to 1mm diameter solid core wire. Clamps can resist pulling force on the wire of up to 5.1kg. Buttons and body are made from grey nylon with 15% glass fibre content, and terminals are tin-plated brass. Requires 1.6mm dia. PCB holes spaced 7.6mm apart (0.3in.).

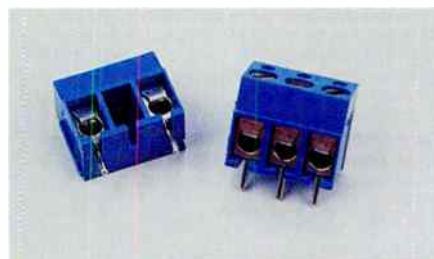
**Specification**  
 Contact rating: 7A @ 250V AC 50Hz  
 Contact resistance: <10mΩ  
 Contact heating: up to 30°C over ambient temperature at max. rating >100mΩ  
 Insulation resistance: 1.5kV AC @ 50Hz for 1 minute  
 Withstand voltage:  
 Operating temperature range: -10°C to +80°C



Retail Unit Price each (inc. VAT).

Order Code	Type 1447	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JZ63D	2W GC Term	£0.468	£0.320	£0.270	£0.550
JZ44E	3W GC Term	£0.672	£0.470	£0.400	£0.790

**PCB Terminal Blocks**

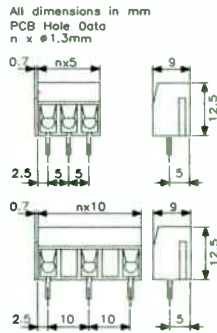


Terminal blocks which mount directly onto a printed circuit board or stripboard and provide a quick, easy means of connecting conventional wiring to the board. There are basically four ranges. Types 300, 301 and 320 are soldered to the board while type 332 acts as a free socket, being quickly removable from soldered PCB plug pins. Furthermore the blocks are modular, consisting of 2 and 3-way sections which can be stacked lengthwise with their dovetail joints to make any number of ways in one length of each type. In all cases the body material is flame retardant glass filled polyester to UL94 V0, designed to withstand operating temperatures in the range -33°C to +120°C. Most types feature 'wire guards' (metal leaves) under each screw to protect the wire against any twisting or cutting action by the screw. All types are available with 5mm (0.197in.) and some with 10mm (0.394in.) pitch between pins. The 10mm pitch is achieved by leaving every even numbered position blank or empty. These pitches are very close to 0.2in. and 0.4in. respectively for stripboard etc, but be aware that blocks will only sit comfortably in 0.1in. stripboard for a maximum of 4 x 5mm pitches (1 x 4-way block). Longer lengths are best made with separate short blocks end to end with the dovetailing removed (soldered types only). Contacts are tin-plated brass bodies with galvanised and chromatised steel screws and tin-plated solder pins.

**Business Account Holders  
 No Delivery Charges for  
 any order**

**Standard 300 Series**

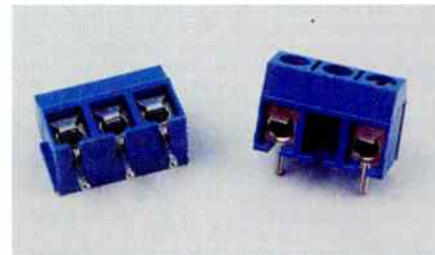
Soldered type PCB terminal block with 4.5mm long PCB pins requiring 1.2 to 1.4mm holes. Wire insertion direction is 90° to vertical (side entry), screws heads at top. Screw size: M3 x 5.8mm. Current rating: 16A max. Will accept wires up to 2mm thick. This type incorporates test probe holes behind the clamping screws which will hold standard sized (1.75mm dia.) multimeter type test probes or pins in contact with wire below. Height above PCB, 12.5mm. Width, 9mm. Tracking resistance between contacts conforms to VDE0110 Group B (250V @ 5mm, 500V @ 10mm). 2, 3, 4, 5 and 6-way versions available.



Retail Unit Price each (inc. VAT).

Order Code	Type 1448	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JY92A	2W PC Term 300 5mm	£0.314	£0.210	£0.175	£0.370
JY94C	3W PC Term 300 5mm	£0.468	£0.310	£0.250	£0.550
KE52G	4W PC Term 300 5mm	£0.570	£0.360	£0.310	£0.670
KE53H	5W PC Term 300 5mm	£0.723	£0.450	£0.390	£0.850
KE54J	6W PC Term 300 5mm	£0.876	£0.540	£0.460	£1.030
JY93B	2W PC Term 300 10mm	£0.331	£0.240	£0.200	£0.390
JY95D	3W PC Term 300 10mm	£0.485	£0.340	£0.290	£0.570

**Low Profile 301 Series**



Soldered type PCB terminal block as type 300 but smaller, being 10mm high above PCB and 7.5mm wide. Screw size: M2.6 x 4.5mm. Current rating: 16A max. Will accept wires up to 1.5mm thick. Has small 'test probe' holes behind the clamping screws of 1.1mm dia. Tracking resistance between contacts conforms to VDE0110 Group B (125V @ 5mm, 250V @ 10mm).

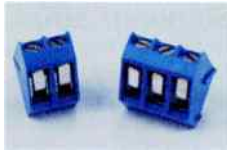
Retail Unit Price each (inc. VAT).

Order Code	Type 1451	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FT36R	2W PC Term 301 5mm	£0.289	£0.195	£0.165	£0.340
RK72P	3W PC Term 301 5mm	£0.400	£0.265	£0.225	£0.470
KE55K	4W PC Term 301 5mm	£0.536	£0.335	£0.290	£0.630
KE56L	5W PC Term 301 5mm	£0.655	£0.410	£0.350	£0.770
KE57M	6W PC Term 301 5mm	£0.765	£0.480	£0.410	£0.900
JX38R	2W PC Term 301 10mm	£0.306	£0.225	£0.185	£0.360
JR80B	3W PC Term 301 10mm	£0.417	£0.330	£0.265	£0.490

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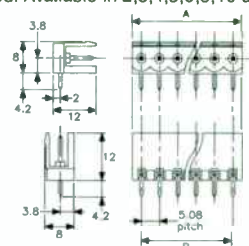
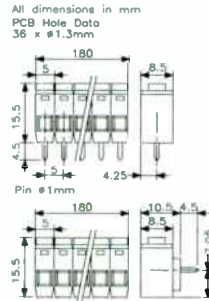
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## Angled 320 Series



Soldered type PCB terminal block with wire entry at screw access offset at 45° from vertical. Particularly useful on a crowded PCB or in a restricted space. A 1-3 to 1.5mm PCB hole is recommended. Unlike the 300 and 301 types, wire gripping is achieved through a rising clamp method. When tightened the screw raises a block which traps the wire beneath a ribbed upper contact. The technique provides a more reliable and rugged method of anchoring the wire compared with the conventional screw pressure method, with or without wire guards. Pins are 4.5mm long. Both height and width are 12.5mm and front face is chamfered at 45°. Screw size, M2.6 x 4.5mm. Current rating, 16A max. Wire capacity up to 2.5mm thick. Tracking resistance between contacts conforms to VDE0110 Group B (60V @ 5mm). Only available in 5mm pitch 2-way and 3-way.

Dielectric strength: >5kV  
 Insulation resistance: >40MΩ  
 Working temperature: 110°C  
 Moulding: UL94-VO flame retardant  
 Lexan Pin/terminal: 5 micron tinned nickel-plated brass  
 Rising clamp: Tinned nickel-plated steel



TYPE	A	B
2-way	10.16	5.08
3-way	15.24	10.16
4-way	20.32	15.24
6-way	30.48	25.40
8-way	40.64	35.56
10-way	50.80	45.72
12-way	60.96	55.88

Retail Unit Price each (inc. VAT).

Order Code	Type 1453	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JY96E	2W PC Term 320 5mm	£0.382	£0.280	£0.230	£0.450
JY97F	3W PC Term 320 5mm	£0.587	£0.420	£0.345	£0.690

Retail Unit Price each (inc. VAT).

Order Code	Type 1454	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KC02C	36W Snap-Off Vert	£4.240	£3.660	£3.490	£4.990
KC03D	36W Snap-Off Hor	£4.240	£3.660	£3.490	£4.990

## Pluggable 332 Series



A system which combines the ease of wire connection via terminal blocks with the speedy access to equipment, provided by on board plugs and sockets for cables and looms. Allows for swift disconnection of wires from a board during testing, servicing or replacement. An added advantage is that, unlike fixed terminal blocks, wires will not be replaced wrongly. While the actual blocks are attached to the wires, the PCB has rows of pins soldered in position over which the blocks are plugged. The blocks can connect two different ways, with the wires exiting either vertically or horizontally. The pins are provided on a 24-way strip, which is broken down by hand into shorter lengths as required. The blocks then simply plug onto it and may be connected and disconnected up to 30 times. Wires are retained in the usual way as with types 300 and 301, again protected by wire guards. Larger numbers of ways can be made up by joining blocks together with the dovetailed jointing system. Blocks are 11mm high and 13mm wide (screw heads at top). Screw size is M2.6 x 4.8mm. Current rating, 10A max.; wire capacity 1.75mm thick. Tracking resistance between contacts conforms to VDE0110 Group B (125V @ 5mm). Only available in 5mm pitch as 2-way, 3-way, 4-way and 6-way. Strip(s) of 24 PCB pins need ordering separately.

## Terminal Block (Cuttable)



Comes as a 36-way, 5mm pitch plug-in terminal block that can be cut to the required number of ways. The female block is fitted to the PCB and the male can then be fitted either vertically or horizontally to the female. This allows the cables to be positioned in the most convenient way.

Current rating: 10A  
 Screw zinc plated steel: M2.5  
 Cable entry: 3.5mm2  
 Pin dia: 1mm  
 Hole size: 1.3mm

Retail Unit Price each (inc. VAT).

Order Code	Type 11644	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
GU70M	Terminal Block Fern.	£3.900	£3.650	£3.400	£4.590
GU71N	Terminal Block Male	£1.690	£1.460	£1.420	£1.990

Retail Unit Price each (inc. VAT).

Order Code	Type 1454	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JY98G	2W PC Term 332 5mm	£0.297	£0.240	£0.210	£0.350
JY99H	3W PC Term 332 5mm	£0.417	£0.350	£0.310	£0.490
JZ00A	4W PC Term 332 5mm	£0.553	£0.450	£0.400	£0.650
JZ01B	6W PC Term 332 5mm	£0.842	£0.710	£0.620	£0.990
JY91Y	PC Term Pins 24	£0.672	£0.540	£0.495	£0.790

## 36-Pole Snap-Off Connectors or PCBs

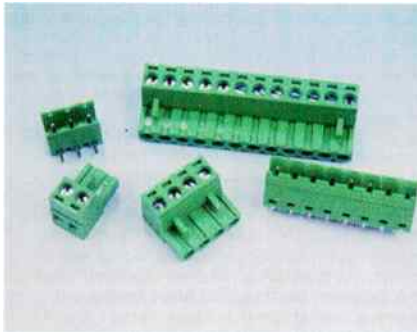


A 36-pole 5mm pitch professional connector that can easily be cut to the required size. Made from flame retardant material with a rising clamp, the connector will accept wire up to 3.5mm<sup>2</sup>. Two versions are available, vertical or horizontal mounting. Overall length of 36-way strip is 180mm.

### Specification

Rating: 13A 380V

## PCB Connectors with Screw Terminals



A range of two part PCB connectors with screw terminals that can accommodate cables up to 2.5mm<sup>2</sup> (12 AWG), and have a rating of 250V AC 10A. The PCB part is available either as vertical or horizontal mounting type. The pin strips are available with either open or closed ends, and the rising clamp cable trap system gives a rugged and reliable connection where frequent rewiring is

expected, and will not damage the wire by transmitting screw torque. The connectors meet VDE standards and are UL, CSA and SEMKO approved. Available in 2,3,4,5,6,8,10 and 12-way.

### Specification

Moulding material: UL94VO polyamide 6.6  
 Metal parts: Phosphor bronze contact nickel-plated-steel  
 M3 screw, Zinc passivated  
 10A 250V AC  
 Rating: 10A 250V AC  
 Operating temperature: 85°C  
 Pitch: 5.08mm (0.2in.)  
 PC hole diameter: 1.3 to 1.4mm  
 Insulation strip: 6mm

Horizontal Open End  
 Vertical Open End  
 Vertical Closed End  
 Horizontal Closed End

Retail Unit Price each (inc. VAT).

Order Code	Type 1509	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KC22Y	PCB Conn 2W Plug	£0.493	£0.420	£0.375	£0.580
KC23A	PCB Conn 3W Plug	£0.672	£0.580	£0.540	£0.790
KC24B	PCB Conn 4W Plug	£0.868	£0.750	£0.705	£1.020
KC26D	PCB Conn 6W Plug	£1.290	£1.150	£1.040	£1.520
KC27E	PCB Conn 8W Plug	£1.730	£1.470	£1.380	£2.040
KC28F	PCB Conn 10W Plug	£2.170	£1.830	£1.700	£2.550
KC29G	PCB Conn 12W Plug	£2.340	£2.070	£1.980	£2.750
CP43W	PCB Conn Hor 2W Hdr	£0.272	£0.210	£0.185	£0.320
CP44X	PCB Conn Hor 3W Hdr	£0.340	£0.280	£0.245	£0.400
CP45Y	PCB Conn Hor 4W Hdr	£0.442	£0.350	£0.315	£0.520
CP47B	PCB Conn Hor 6W Hdr	£0.587	£0.460	£0.410	£0.690
CP48C	PCB Conn Hor 8W Hdr	£0.748	£0.600	£0.540	£0.880
CP49D	PCB Conn Hor 10W Hdr	£0.927	£0.740	£0.665	£1.090
CP50E	PCB Conn Hor 12W Hdr	£1.050	£0.850	£0.770	£1.240
KC30H	PCB Conn Vert 2W Hdr	£0.238	£0.190	£0.175	£0.280
KC31J	PCB Conn Vert 3W Hdr	£0.306	£0.250	£0.230	£0.360
KC32K	PCB Conn Vert 4W Hdr	£0.408	£0.330	£0.300	£0.480
KC34M	PCB Conn Vert 6W Hdr	£0.527	£0.430	£0.400	£0.620
KC35Q	PCB Conn Vert 8W Hdr	£0.723	£0.580	£0.525	£0.850
KC36P	PCB Conn Vert 10W Hdr	£0.893	£0.720	£0.650	£1.050
KC37S	PCB Conn Vert 12W Hdr	£0.970	£0.800	£0.740	£1.140
GU19V	PCB Conn Vrt 2W Clsd	£0.238	£0.190	£0.175	£0.280
GU20WPCB	Conn Vrt 3W Clsd	£0.306	£0.250	£0.230	£0.360
GU21X	PCB Conn Vrt 4W Clsd	£0.408	£0.330	£0.300	£0.480
GU23A	PCB Conn Vrt 6W Clsd	£0.527	£0.430	£0.400	£0.620
GU24B	PCB Conn Vrt 8W Clsd	£0.723	£0.580	£0.525	£0.850
GU25C	PCB Conn Vrt 10W Clsd	£0.893	£0.720	£0.650	£1.050
GU26D	PCB Conn Vrt 12W Clsd	£0.970	£0.800	£0.740	£1.140
GU27E	PCB Conn Hor 2W Clsd	£0.272	£0.210	£0.185	£0.320
GU28F	PCB Conn Hor 3W Clsd	£0.340	£0.280	£0.245	£0.400
GU29G	PCB Conn Hor 4W Clsd	£0.442	£0.350	£0.315	£0.520
GU31J	PCB Conn Hor 6W Clsd	£0.587	£0.460	£0.410	£0.690
GU32K	PCB Conn Hor 8W Clsd	£0.748	£0.600	£0.540	£0.880
GU33L	PCB Conn Hor 10W Clsd	£0.927	£0.740	£0.665	£1.090
GU34M	PCB Conn Hor 12W Clsd	£1.050	£0.850	£0.770	£1.240

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**STANDARD PCB TYPES**  
**Low Cost Types**



These connectors are intended as a simple and inexpensive method of making cable to printed circuit board connections. Available with pins on a 2.54mm (0.1in.) pitch.

**0.1in. Series (2.54mm)**

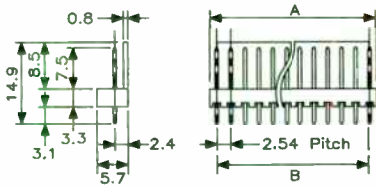
A range of connectors for pcb mounting that allow circuit boards to be plugged together at right angles or end-to-end, or cables to be plugged onto circuit boards at right angles or end-on at the edge of the pcb. Both plugs and sockets may be butted up end-to-end to form connectors with any number of ways from 2 upwards. Rated: 2.5A, 250V AC.

**Straight Polarised Locking Plug Assembly**

A wafer into which square, tin-plated brass pins have been inserted. These pins protrude 3.4mm on one side, and these should be soldered flat to the PCB. The nylon wafer sits flat on the PCB and is 3.3mm thick, and the back wafer provides the locking and polarising. The plug pins are 7.5mm long. Wafers are 2.3mm wide, and the pins require a 1mm dia. PCB hole.

Type	Length (mm)	Type	Length (mm)
2-way	3.5	8-way	19.5
3-way	7	10-way	24.5
4-way	9.5	12-way	29.5
5-way	12	17-way	42
6-way	14		

All Dimensions in mm



Hole Dia No. x  $\phi$ 1mm

TYPE	A	B
2-way	5.0	2.54
3-way	7.6	5.08
4-way	10.2	7.62
5-way	12.7	10.16
6-way	15.3	12.7
8-way	20.2	17.78
10-way	25.3	22.86
12-way	30.4	27.94
17-way	43.2	40.64

Retail Unit Price each (inc. VAT).

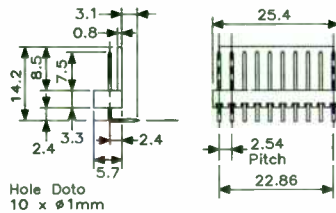
Order Code	Type 1487	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RK65V	PCB Latch Pl 2w	£0.297	£0.170	£0.110	£0.360
BX96E	PCB Latch Pl 3w	£0.382	£0.250	£0.160	£0.450
YW11M	PCB Latch Pl 4w	£0.382	£0.250	£0.160	£0.450
FY93B	PCB Latch Pl 5w	£0.382	£0.250	£0.160	£0.450
YW12N	PCB Latch Pl 6w	£0.468	£0.310	£0.200	£0.550
YW13P	PCB Latch Pl 8w	£0.510	£0.340	£0.220	£0.600
RK66W	PCB Latch Pl 10w	£0.595	£0.410	£0.270	£0.700
YW14Q	PCB Latch Pl 12w	£0.595	£0.410	£0.270	£0.700
BH61R	PCB Latch Pl 17w	£0.638	£0.430	£0.290	£0.750

**Right-Angled Polarised Locking Plug Assembly**

Wafer connector similar to the above, but with a right-angled bend in it, enabling one PCB to be connected parallel to another, or a right-angled PCB Polarised Locking Plug Assembly. Available in 10-way only.



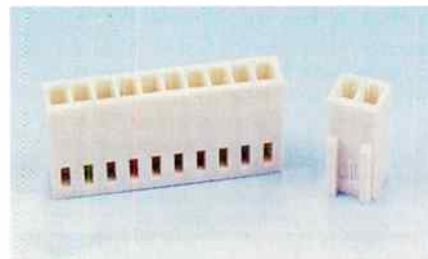
All Dimensions in mm



Retail Unit Price each (inc. VAT).

Order Code	Type 1488	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RK68Y	RA Lch PCB Pl 10w	£0.587	£0.380	£0.250	£0.690

**Socket Housing**



A housing which accepts the PCB terminals and then plugs onto the wafer plug assembly. Solder the wire to the terminal, then push the terminal into the housing until it latches and cannot be withdrawn. Housings are 13.5mm high and 4.8mm thick.

Retail Unit Price each (inc. VAT).

Order Code	Type 1490	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BH58P	PCB Latch Hsg 2-Way	£0.127	£0.100	£0.070	£0.150
BX97F	PCB Latch Hsg 3-Way	£0.127	£0.100	£0.070	£0.150
BH58N	PCB Latch Hsg 4-Way	£0.127	£0.100	£0.070	£0.150
BH66W	PCB Latch Hsg 5-Way	£0.127	£0.100	£0.070	£0.150
BH65V	PCB Latch Hsg 6-Way	£0.161	£0.110	£0.080	£0.190
YW23A	PCB Latch Hsg 8-Way	£0.161	£0.110	£0.080	£0.190
FY94C	PCB Latch Hsg 10-Way	£0.170	£0.125	£0.090	£0.200
YW24B	PCB Latch Hsg 12-Way	£0.170	£0.125	£0.090	£0.200
RK69A	PCB Latch Hsg 17-Way	£0.212	£0.130	£0.100	£0.250

**PCB Terminal**

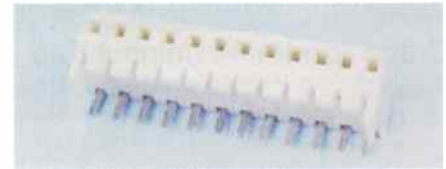


Tin-plated phosphor bronze terminals for use with the PCB Latch Housings. Designed for solder or crimp connections. Supplied in strips of ten.

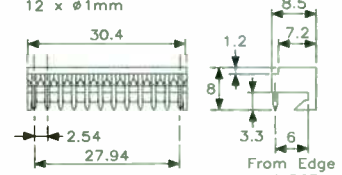
Retail Unit Price each (inc. VAT).

Order Code	Type 1491	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YW25C	PCB Terminal	£0.442	£0.280	£0.210	£0.520

**Right-Angled Socket Assembly**



All Dimensions in mm  
Hole Dia 12 x  $\phi$ 1mm



Housing with printed circuit type tin-plated phosphor bronze terminals pre-assembled with pins at right-angles to the housings for direct pcb mounting. Thus boards with straight plugs may be connected at right-angles and boards with right-angle plugs may be connected end to end. Housing is 7.9mm wide 4.7mm high. The housing has a clip which holds it against the edge of the pcb. Pin length: 3.3mm x 1mm dia. holes, which should be drilled 6mm from edge of pcb. Available in 12-way only. Length: 30-38mm.

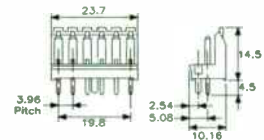
Retail Unit Price each (inc. VAT).

Order Code	Type 1492	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YW30H	PCB Skt 12-Way	£0.510	£0.400	£0.360	£0.600

**6-Pin 3.96mm (0.156in.) Spacing Polarised Power Connectors**

Commonly used on PC type computer mother boards. Connector female housing and crimp/solder terminals in a strip of 10 are supplied separately. Available in male and female versions.

All Dimensions in mm



Hole Dia 6 x  $\phi$ 1.2mm  
Plastic location peg  $\phi$ 1.8mm



Retail Unit Price each (inc. VAT).

Order Code	Type 1499	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JW68Y	0.156in Power Conn M	£0.468	£0.326	£0.230	£0.550
JW67X	0.156in Power Conn F	£0.229	£0.153	£0.112	£0.270
JW66W	0.156in Power Term	£0.400	£0.275	£0.204	£0.470

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## TERMINALS & CLIPS

### CRIMP TERMINALS

#### Crimp Terminals Uninsulated



Tin-plated copper crimp terminals with solder-filled seams, suitable for wires from 0.4mm<sup>2</sup> to 1.0mm<sup>2</sup>. Wire entry 1.7mm inside diameter, 3.3mm outside diameter. Terminal thickness 0.8mm.

Eyelets Type (Int. dia.) mm	External diameter mm	Overall length mm	Suits bolts mm/BA
3-2	5.5	11.2	3/6
4-3	8	15.5	4/4
5-3	8	15.5	5/2
6-7	11.6	21.3	6/0

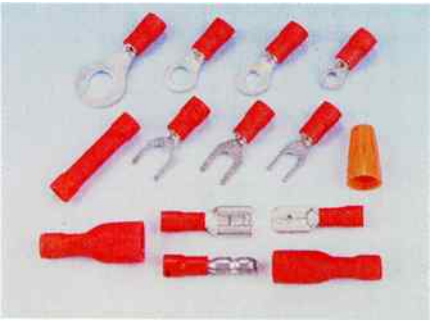
Spades Type (Int. width) mm	External width mm	Overall length mm	Suits bolts mm/BA
3-2	5.7	16	3.5/4
4-3	7.2	16	4/-
5-3	8	16	5/2

All supplied in packs of 10.

Retail Unit Price each (inc. VAT).

Order Code	Type 1063	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JH60Q	Eyelet 3.2mm	£0.187	£0.145	£0.120	£0.220
JH61R	Eyelet 4.3mm	£0.212	£0.175	£0.140	£0.250
JH62S	Eyelet 5.3mm	£0.238	£0.200	£0.150	£0.280
JH63T	Eyelet 6.7mm	£0.269	£0.245	£0.210	£0.340
JH64U	Spade 3.2mm	£0.246	£0.180	£0.145	£0.290
JH65V	Spade 4.3mm	£0.238	£0.200	£0.155	£0.280
JH66W	Spade 5.3mm	£0.297	£0.220	£0.150	£0.350

#### Crimp Terminals Insulated



Tin-plated copper crimp terminals with solder-filled seams, and PVC insulation. Types with red sleeves suit cables from 0.4mm<sup>2</sup> to 1.0mm<sup>2</sup>, with blue sleeves from 1.1mm<sup>2</sup> to 2.6mm<sup>2</sup>, except where shown.

Eyelets Type (Int. dia.) mm	External diameter mm	Overall length mm	Suits bolts mm/BA
3-2 Red	5.5	15.7	3/6

4-3 Red	8	20	4/4
5-3 Red	8	20	5/2
6-7 Red	11.6	25.8	6/0
4-3 Blue	8.5	21	4/4
5-3 Blue	9.5	21.5	5/2
6-7 Blue	12	26	6/0

Spades Type (Int. width) (mm)	External width (mm)	Overall length (mm)	Suits bolts (mm/BA)
3-7 Red	5.7	20.5	3.5/4
4-3 Red	7.2	20.5	4/0
5-3 Red	8	20.5	5/2
4-3 Blue	7.2	20.5	4/4
5-3 Blue	8	20.5	5/2

Butt Splices Type	Overall length (mm)
Red	25
Blue	25

Bullet Plugs Type	Overall length (mm)	Suits wires (mm <sup>2</sup> )
Red	21	0.5 to 1.5
Blue	21	1.5 to 2.5

Bullet Sockets Type	Overall length (mm)	Suits wires (mm <sup>2</sup> )
Red	23	0.5 to 1.5
Blue	23	1.5 to 2.5

Part-insulated 6-35mm (1/4in.) Receptacles Type	Overall length (mm)	Suits wires (mm <sup>2</sup> )
Red	21	0.5 to 1.5
Blue	21	1.5 to 2.5

6-35mm (1/4in.) Blades Type	Overall length (mm)	Suits wires (mm <sup>2</sup> )
Red	21	0.5 to 1.5
Blue	21	1.5 to 2.5

Fully-insulated 6-35mm (1/4in.) Receptacles Type	Overall length (mm)	Suits wires (mm <sup>2</sup> )
Red	21.5	0.5 to 1.5
Blue	21.5	1.5 to 2.5

All supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1067	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JH67X	Ins Eyelet Red 3.2mm	£0.323	£0.240	£0.200	£0.380
JH68Y	Ins Eyelet Red 4.3mm	£0.348	£0.290	£0.235	£0.410
JH69A	Ins Eyelet Red 5.3mm	£0.348	£0.290	£0.235	£0.410
JH70M	Ins Eyelet Red 6.7mm	£0.425	£0.350	£0.300	£0.500
JH71N	Ins Eyelet Blue 4.3	£0.357	£0.300	£0.250	£0.420
JH72P	Ins Eyelet Blue 5.3	£0.357	£0.300	£0.250	£0.420
JH73Q	Ins Eyelet Blue 6.7	£0.434	£0.380	£0.325	£0.510
JH74R	Ins Spade Red 3.7mm	£0.323	£0.255	£0.220	£0.380
JH75S	Ins Spade Red 4.3mm	£0.348	£0.270	£0.230	£0.410
JH76H	Ins Spade Red 5.3mm	£0.382	£0.270	£0.230	£0.450
JH77J	Ins Spade Blue 4.3mm	£0.382	£0.290	£0.240	£0.450
JH78K	Ins Spade Blue 5.3mm	£0.382	£0.290	£0.240	£0.450
JH79L	Ins Butt Red	£0.485	£0.375	£0.310	£0.570
JH80B	Ins Butt Blue	£0.485	£0.375	£0.310	£0.570
JH85G	Ins Bullet Red	£0.502	£0.385	£0.330	£0.590
JH86T	Ins Bullet Blue	£0.510	£0.395	£0.340	£0.600
JH83E	Ins Bullet Skt Red	£0.561	£0.430	£0.375	£0.660
JH84F	Ins Bullet Skt Blue	£0.595	£0.450	£0.400	£0.700
JH89W	2.5 Plns Blade Red	£0.425	£0.320	£0.290	£0.500
JH90X	2.5 Plns Blade Blu	£0.476	£0.370	£0.340	£0.560
JH87U	2.5 Plns Rcptcl Red	£0.510	£0.390	£0.360	£0.600
JH88V	2.5 Plns Rcptcl Blu	£0.561	£0.440	£0.400	£0.660
JH81C	2.5 Plns Rcptcl Red	£0.595	£0.490	£0.460	£0.700
JH82D	2.5 Plns Rcptcl Blu	£0.680	£0.540	£0.470	£0.800

#### Miniature Spade Connectors

A miniature female spade connector (AS34M) for use with speakers and PCBs where space is at a premium. Tinned copper terminals with an insulated plastic shroud enclosing the cable crimp section. Suitable for cables between 26AWG (0.4mm dia.) and 22AWG (0.64mm dia.). Overall length 16.7mm and width 3.7mm. Also, a miniature male spade connector (AS32K) is available for use on speakers etc. Suitable for PCB mounting, with 1.5mm holes. Overall tab length 12.6mm, width 5mm and thickness 0.5mm. Solder spill extends 4mm from the connector and is therefore suitable for a wide range of PCB thicknesses. Sold in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1025	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
AS34M	Mini Spade Female	£1.180	£1.000	£0.860	£1.390
AS32K	Mini PCB Spade Male	£0.297	£0.250	£0.230	£0.350

#### Push-on Lucar Style Receptacle



Push-on receptacle for 6-35mm (1/4in.) blades. In packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1070	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
HF10L	Push-On Receptacle	£0.502	£0.360	£0.270	£0.590

#### Lucar Style Blade



Puh-on 6-35mm (1/4in.) blades for above receptacle. Supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1071	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
HF11M	Push-On Blade	£0.485	£0.340	£0.250	£0.570

#### Covers



Transparent polythene covers to fit our 6-35mm (1/4in.) blades and receptacles. Covers overlap for maximum protection. Supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1072	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FE66W	Push-On Blade Covers	£0.502	£0.410	£0.365	£0.590
FE65V	Push-On Recept Covers	£0.485	£0.350	£0.255	£0.570

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## Snap-Lock Automotive Cable Connector



A very quick and reliable way of connecting additional cables to existing wiring in automotive applications, for example fitting car alarms, radio-cassette units, etc. The cables to be joined are placed inside the snap-lock connector, the cover is pushed home with a pair of pliers and locks shut, thus completing the connection. Available singly or in packs of 10.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JR88V	Quick Snap Connector	£0.144	£0.125	£0.110	£0.170

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AR21X	Quick Snap Conn 10PK	£1.120	£0.900	£0.620	£1.330

## Spade Connectors



A tin-plated brass male spade connector (AS33L) with a tab width of 7.75mm and a tab length of 16.25mm. Ideally suited to vertical PCB mounting in 1.5mm holes pitched at 5.08mm. The mounting pins project 3.4mm and are therefore suitable for a wide variety of PCB thicknesses. There is a horizontal version (BP88V) for PCB mounting. The associated tin-plated female spade connector (AS30H) mates with male connectors with a width of 6mm and a thickness of 0.5mm. Accepts cables from 17AWG (1.5mm dia.) to 13AWG (1.83mm dia.). Cables can be inserted into the connectors at 90° to the direction of insertion and crimped with a suitable tool. Overall length of connector is 16.7mm. Insulated plastic covers (AS31J) are available for use with the above spade connectors. After the cable has been crimped to the connector, thread the cable through the insulated cover and slide it down so that it locates over the connector. Overall length 17.2mm, width 14.2mm and thickness 6.2mm. Sold in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BP88V	PCB Brass Tab Horiz	£1.417	£0.330	£0.300	£0.490

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
AS33L	PCB Brass Tab Vert	£0.289	£0.230	£0.210	£0.340
AS30H	Flag Terminal	£0.442	£0.370	£0.340	£0.520
AS31J	PVC Insulating Boot	£0.246	£0.200	£0.175	£0.290

## Crimp Wire Joints



Insulated crimp-on connectors for joining the ends of two or more wires quickly and simply with a crimping tool. Two sizes are available. Price is for pack of ten.

Type	Internal Diameter	Overall Diameter	Overall Length
Small	2.9mm	10mm	21mm
Large	3.7mm	11mm	28mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MK34M	Crimp End Small	£0.723	£0.600	£0.550	£0.850
MK35Q	Crimp End Large	£1.060	£0.930	£0.850	£1.250

## Crimp Connector Sets



A choice of three kits, one containing 100 and one 300 assorted insulated crimp terminals and connectors and the other containing 50 and a crimping tool. The crimp tool has bolt cutters for M2.5, M3, M3.5, M4 and M5 bolts, wire strippers for wires and cables of conductor area 0.75, 1.0, 1.5, 2.5, 4.0 and 6.0mm<sup>2</sup>, a wire cutter and it can crimp red, blue and yellow insulated crimp connectors. Terminals are tin-plated copper with PVC insulation. Types with red sleeves suit cables from 0.4mm<sup>2</sup> to 1.0mm<sup>2</sup>, with blue sleeves from 1.1mm<sup>2</sup> to 2.6mm<sup>2</sup> and with yellow sleeves from 2.7mm<sup>2</sup> to 6.6mm<sup>2</sup>.

Kits contents are as follows:

Item	Size mm	Sleeve	Quantity in		
			YP96E	YP97F	YT11M
Eyelets	3.7	Red	4	-	25
	4.3	Red	4	10	20
	5.3	Red	4	-	20
	3.7	Blue	4	-	20
	4.3	Blue	-	10	20
	5.3	Blue	-	10	20
	5.3	Yellow	-	-	10
	6.7	Yellow	-	-	10
	Spades	3.7	Red	2	-
4.3		Red	2	10	20
4.3		Blue	4	10	20
5.3		Blue	2	10	14
Receptacles	6.35 (1/4in.)	Red	4	-	14
	6.35 (1/4in.)	Blue	4	7	14
Blades	6.35 (1/4in.)	Red	4	-	14
	6.35 (1/4in.)	Blue	4	7	14
Butts	-	Red	4	7	20
	-	Blue	4	7	15
	-	Yellow	-	-	10
Bullet	-	Red	-	6	-
Bullet Socket	-	Red	-	6	-
Crimp Tool	-	-	1	-	-

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YP96E	Delux Crimp Tool Set	£3.900	£3.050	£2.650	£4.590
YP97F	100pc Crimp Conn Kit	£3.390	£2.720	£2.350	£3.990
YT11M	300pc Crimp Conn Kit	£9.540	£6.500	£5.750	£11.210

## Wire Joints



Plastic wire connectors. Max temperature 105°C.

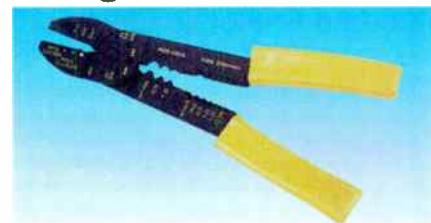
Type	Suits wires diameter (mm <sup>2</sup> )	diameter (mm)	Overall length (mm)	Overall length (mm)
Small	0.5 to 1.5	8.5	14.5	
Large	1.5 to 2.5	10	17.5	

Supplied in packs of 10.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JH91Y	Ins Wire Joint Small	£0.331	£0.265	£0.245	£0.390
JH92A	Ins Wire Joint Large	£0.468	£0.370	£0.320	£0.550

## Crimping, Stripping and Cutting Tool



A useful low-cost combination tool with cushioned plastic handles. Tool has bolt cutters for M2.5, M3, M3.5, M4 and M5 bolts, strippers for wires of conductor area 0.75, 1.0, 1.5, 2.5, 4.0 and 6.0mm<sup>2</sup>, a crimping tool for red, blue and yellow insulated crimp connectors and 1.5, 2.5 and 4.6mm<sup>2</sup> non-insulated crimp connectors, and a wire cutter. Overall length 232mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FY31J	Crimp Tool	£3.020	£2.230	£1.830	£3.560

## Heavy Duty Crimping Tool



A crimping tool for use with red, yellow and blue insulated crimp terminals. Simply place the connector to be crimped in the appropriate die in the jaws and squeeze the handles together, until the tool re-opens. A ratchet prevents the tool opening until the crimp is complete. A latch is provided so that the tool can be opened manually after the ratchet has engaged and before the crimp is complete if necessary. Manufactured from 3mm steel plate with plastic handles. Overall length 225mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JH19V	Crimp Tool Ratchet	£23.820	£16.540	£14.570	£27.990

## CROCODILE CLIPS

### Miniature Crocodile Clips

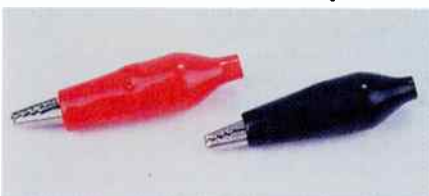


A range of crocodile clips with insulating vinyl covers in six colours, Red, Black, Yellow, Green, White and Blue. Clips are 27mm long. Overall length with sleeve 33mm. Also available with completely gold-plated clip with Red or Black sleeve.

Retail Unit Price each (inc. VAT).

Order Code	Type 1057	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FM37S	Red Croc Clip	£0.246	£0.160	£0.140	£0.290
FK34M	Black Croc Clip	£0.246	£0.160	£0.140	£0.290
FK35Q	Yellow Croc Clip	£0.246	£0.160	£0.140	£0.290
FK36P	Green Croc Clip	£0.246	£0.160	£0.140	£0.290
FK37S	White Croc Clip	£0.246	£0.160	£0.140	£0.290
FM11M	Blue Croc Clip	£0.246	£0.160	£0.140	£0.290
FS54J	Gold Croc Clip Red	£0.272	£0.180	£0.155	£0.320
FS55K	Gold Croc Clip Black	£0.272	£0.180	£0.155	£0.320

### Standard Crocodile Clips



A range of crocodile clips with insulating vinyl covers in six colours, Red, Black, Yellow, Green, White and Blue. Clips are 35mm long. Overall length with sleeve 42mm. Also available with completely gold-plated clip with Red or Black sleeve.

Retail Unit Price each (inc. VAT).

Order Code	Type 1058	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS48C	Std Croc Clip Red	£0.246	£0.145	£0.125	£0.290
FS49D	Std Croc Clip Black	£0.246	£0.145	£0.125	£0.290
FS50E	Std Croc Clip Yellow	£0.246	£0.145	£0.125	£0.290
FS51F	Std Croc Clip Green	£0.246	£0.145	£0.125	£0.290
FS52G	Std Croc Clip White	£0.246	£0.145	£0.125	£0.290
FS53H	Std Croc Clip Blue	£0.246	£0.145	£0.125	£0.290
FS56L	Gold Std Croc Clip Red	£0.297	£0.200	£0.170	£0.350
FS57M	Gold Std Croc Clip Blk	£0.297	£0.200	£0.170	£0.350

### Large Crocodile Clip



Crocodile clips with insulating vinyl covers in red and black. Clips are 50mm long and have a 4mm socket with insulating sleeve formed on one side of the clip. Overall length with sleeve 58mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1059	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF23A	4mm Croc Clip Black	£0.417	£0.340	£0.310	£0.490
HF24B	4mm Croc Clip Red	£0.417	£0.340	£0.310	£0.490

## Battery Charger Clips



Large plated clip as used on battery chargers. Overall length 75mm. Width of jaws 15mm, maximum gap between jaws when fully opened 28mm. Current rating 25A.

Retail Unit Price each (inc. VAT).

Order Code	Type 1060	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HF26D	Charger Clip	£0.400	£0.260	£0.225	£0.470

## Insulated Battery Charger Clips

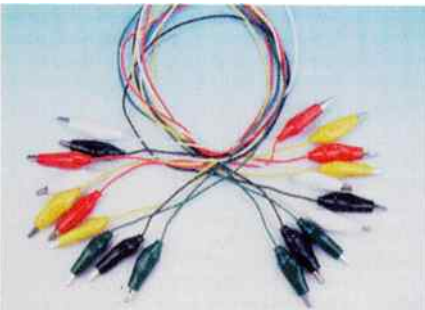


Large, heavily-sprung plated clip for use with battery chargers etc. Overall length 74mm. Width of jaws 16mm. Max gap between jaws when fully opened 15mm. Current rating 25A. The clips have a screw terminal connection and very thick PVC insulating cover available in red or black.

Retail Unit Price each (inc. VAT).

Order Code	Type 1061	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS86T	Large Batt Clip Red	£0.510	£0.400	£0.350	£0.600
FS87U	Large Batt Clip Blk	£0.510	£0.400	£0.350	£0.600

## Test Lead Kit



A very useful pack containing ten pieces of insulated stranded wire approx. 370mm long terminated at each end by a miniature insulated crocodile clip. The insulated sleeve on the clip and the wire are the same colour and there are two leads of each of five colours: Black, Green, Red, White and Yellow.

Retail Unit Price each (inc. VAT).

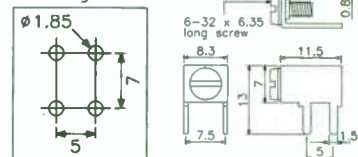
Order Code	Type 1062	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BW69A	Croc Lead Kit	£3.310	£2.750	£2.550	£3.890

## SCREW TERMINALS

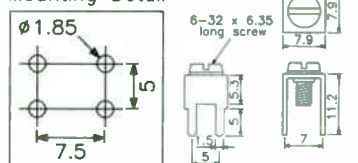
### Screw Terminals



#### Mounting Detail



#### Mounting Detail



These two low profile screw terminals are for PC mounting; one is a horizontal type and the other is a vertical type. They are easy to mount and will accommodate 14 to 22 AWG solid or stranded wire, crimp-type terminals or lugs. A brass binding head screw is the securing terminal. They are rated at 15A.

Retail Unit Price each (inc. VAT).

Order Code	Type 1063	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
GU63T	PC Mnt Screw Term V	£0.212	£0.185	£0.170	£0.250
GU64U	PC Mnt Screw Term H	£0.212	£0.185	£0.170	£0.250

## Screw Terminals



A paxolin strip having a pair of solder tags for terminating wires to a pair of screw terminals. The strip can be attached to a panel or instrument case within a suitably shaped cutout to provide a basic, simple method of connecting cables to the instrument or equipment in question. Bare wires can be wrapped around the screws before tightening, or spade terminals can be used; the screw terminals have ears to positively locate the spades. The screws are M4 size, and suitable for use with 4BA spades and tag washers. Overall size 42 x 18mm. Fixing centres 33mm. Screw/tag spacing 14.5mm.



A four way version of the above. Overall size 72 x 18mm. Fixing centres 62mm. Screw/tag spacing 14.5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1064	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK16S	Screw Terminal 2-Way	£0.417	£0.325	£0.295	£0.490
FK17T	Screw Terminal 4-Way	£0.680	£0.560	£0.500	£0.800



**SOLDER TAGS**

**Metric Solder Tags**

Heavily tinned solder tags available in the following sizes: M5, M4, M3, M2.5  
All types supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
LR62S	Isotag M5	£0.365	£0.260	£0.228	£0.430
LR63T	Isotag M4	£0.365	£0.260	£0.228	£0.430
LR64U	Isotag M3	£0.365	£0.260	£0.228	£0.430
LR65V	Isotag M2.5	£0.365	£0.260	£0.228	£0.430

**BA Solder Tags**

A heavily tinned solder tag available in the following sizes.  
2BA, 4BA, 6BA, 8BA  
All supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BF27E	Tag 2BA	£0.280	£0.171	£0.146	£0.330
BF28F	Tag 4BA	£0.280	£0.171	£0.146	£0.330
BF29G	Tag 6BA	£0.280	£0.171	£0.146	£0.330
LR02C	Tag 8BA	£0.280	£0.171	£0.146	£0.330

**TAG STRIPS**

**5-Way**

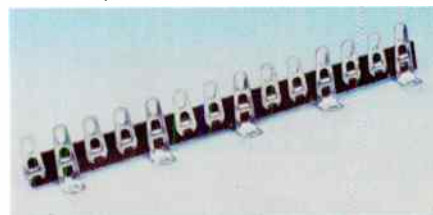


Five tags mounted on a paxolin strip where the middle tag is for screw fixing.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FM34M	5-Way Tagstrip	£0.417	£0.250	£0.220	£0.490

**14-Way**

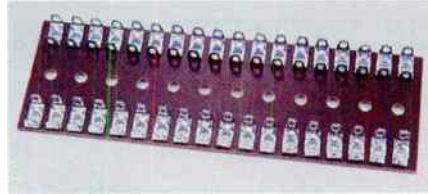


Fourteen tags mounted on a paxolin strip. Five of the tags are right-angled for mounting.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FL29G	14-Way Tagstrip	£0.672	£0.394	£0.360	£0.790

**Miniature Tag Board**



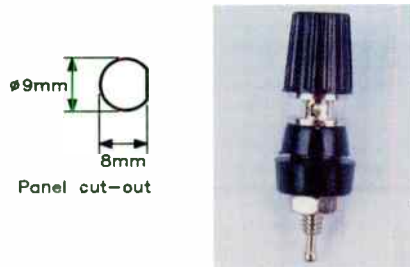
Miniature SRBP base with 36 solder tags in two rows. Overall size: 117 x 38 x 7.5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FL11M	Tag Board	£1.690	£1.070	£0.990	£1.990

**TERMINAL POSTS**

**Terminal Post with Small Handle**



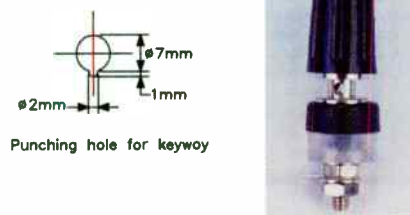
Nickel-plated brass terminal post rated 15A at 250V. It has a 4mm top socket and 2.1mm dia. hole in post. Knob size: 14mm x 11.5mm dia. Fits panels from 0.9mm to 5mm (20swg to 6swg) thickness. Available in the following colours: Black, Blue, Green, Red, White and Yellow.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FD69A	Small Term Post Blk	£0.595	£0.420	£0.370	£0.700
FD70M	Small Term Post Blue	£0.553	£0.390	£0.350	£0.650
FD71N	Small Term Post Grn	£0.561	£0.390	£0.350	£0.660
FD72P	Small Term Post Red	£0.587	£0.390	£0.350	£0.690
FD73Q	Small Term Post Wht	£0.561	£0.390	£0.350	£0.660
FD74R	Small Term Post Ylw	£0.587	£0.390	£0.350	£0.690

**Terminal Post with Large Handle**

CIFF



Nickel-plated brass terminal post with insulation moulded in polypropylene. Rated 15A at 240V. It has a 4mm top socket and 2.3mm dia. hole in post. Knob size: 17mm x 12.5mm dia. Fits panels up to 3mm (12swg) thickness. Available in the following colours: Black, Blue, Green, Red and Yellow.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HF02C	Large Term Post Blk	£0.672	£0.530	£0.450	£0.790
HF03D	Large Term Post Blue	£0.672	£0.530	£0.450	£0.790
HF05F	Large Term Post Grn	£0.672	£0.530	£0.450	£0.790
HF07H	Large Term Post Red	£0.672	£0.530	£0.450	£0.790
HF09K	Large Term Post Ylw	£0.672	£0.530	£0.450	£0.790

**Twin Terminal Post**



Gold-plated brass terminal posts, one with a red and one with a black knob on a twin base having one part red and one part black, so that the part on the outside of the chassis can be either red or black. Rated 15A at 240V. Each post has a 4mm top socket and a 2.1mm dia. hole in post. Knob size 16 x 15mm dia. Fits panels from 1.2mm dia. to 7mm thick. Panel cut-out requires two 12.7mm holes on 18.5mm centres. Bezel size 35mm x 16mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JK24B	Pair Terminal Posts	£1.740	£1.330	£1.150	£2.050

**30A Terminal Post**

CIFF

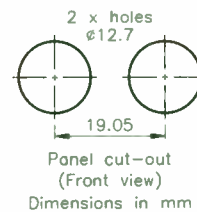
A 30A terminal (binding) post that will accept a 4mm plug-in front or through a cross hole in the post. Available in red and black. Mounting hole: 7mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CX83E	30A Post Red	£1.260	£1.080	£0.950	£1.490
CX84F	30A Post Black	£1.260	£1.080	£0.950	£1.490

**Amplifier and Speaker Terminals**



A fully touch-proof connector assembly, ideal for use in speaker to amplifier connections and for use with banana plugs. Features one red and one black terminal to ensure polarity is easily maintained. Bared cables can be gripped by tightening each terminal down, once the cable has been inserted into an aperture at the side of each terminal. Rated at 30A, with solderable or solder tag connections on the equipment side. Fixing holes are required with a pitch of 19mm and each with a diameter of 13mm.

**Specification**

Contact ratings: 30A  
Fixings: Same as standard XLR connectors

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BN34M	Term Post TouchProof	£2.970	£2.750	£2.400	£3.490

## Recess Terminal Mounting Plate

**CHIT**

A mounting plate for two 30A terminals that replaces the top insulators of those terminals.

Available in black.



Retail Unit Price each (inc. VAT).

Order Code	Type 1380	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CX85G	Mounting Plate	£0.170	£0.135	£0.110	£0.200

## Grounding Post with 4mm Socket

A grounding (terminal) post for use on equipment where a connection needs to be made to the earthed case, e.g. power supplies and measurement equipment. The post is made of chromed brass. It has a central hole to accept a 4mm plug and a 2mm hole in the post. Requires a 5-5mm mounting hole. Overall size 21mm x 10mm dia. Supplied with locking washer, solder tag and two nuts.



Retail Unit Price each (inc. VAT).

Order Code	Type 1381	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JL39H	Grounding Post	£0.595	£0.380	£0.330	£0.700

## Spade Terminals Solder Type



A spade terminal with insulated handle for use with our terminal posts. Wire is soldered to spade. Spade has 6-3mm (1/4in.) opening. Overall length 36mm. Overall width 12mm. Available in red and black.

Retail Unit Price each (inc. VAT).

Order Code	Type 1082	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FS90X	Solder Spade Red	£0.553	£0.450	£0.410	£0.650
FS91Y	Solder Spade Black	£0.587	£0.450	£0.410	£0.690

## Spade Terminals Screw Type

**CHIT**



A spade terminal with insulated handle forming a 4mm socket, for use with our terminal posts. Grub screw in handle clamps wire to spade. Spade has 6-3mm (1/4in.) opening. Overall length 42mm. Overall width 15mm. Available in red and black.

Retail Unit Price each (inc. VAT).

Order Code	Type 1083	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JC20W	Screw Spade Red	£0.502	£0.355	£0.300	£0.590
JC21X	Screw Spade Black	£0.502	£0.355	£0.300	£0.590

## TEST CONNECTORS & LEADS

### PLUGS, SOCKETS & PROBES

## Miniature 1mm Size

**Plug**

1mm plug suitable for low voltage circuits. Strong acetal moulding and silver-plated pin. Available in red and black. Overall length: 16mm. Pin length: 6mm. Overall diameter: 6mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1423	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
WL57M	1mm Plug Black	£0.212	£0.201	£0.196	£0.250
WL58N	1mm Plug Red	£0.212	£0.201	£0.196	£0.250

## Socket

1mm socket suitable for low voltage circuits. Strong acetal moulding and silver-plated contact. Available in red and black. Overall length: 16mm. Bezel diameter: 6mm. Mounting hole: 5mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type 1425	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
WL59P	1mm Socket Black	£0.212	£0.200	£0.194	£0.250
WL60Q	1mm Socket Red	£0.212	£0.200	£0.194	£0.250

## 2mm Size

**Plug**

2mm plug with silver-plated pin rated at 10A. Available in black and red. Note that to unscrew body, hold in one hand and turn plastic body clockwise with other hand. Overall length: 32mm. Pin length: 9mm. Overall dia: 6mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1427	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HF38R	2mm Plug Black	£0.331	£0.240	£0.210	£0.390
HF41U	2mm Plug Red	£0.331	£0.240	£0.210	£0.390

## Socket

2mm socket with silver-plated contact, rated at 10A. Available in Black and Red. Overall length: 19.5mm. Bezel: 6 x 6mm. Mounting hole: 5mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type 1429	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HF44X	2mm Socket Black	£0.331	£0.240	£0.210	£0.390
HF47B	2mm Socket Red	£0.331	£0.240	£0.210	£0.390

## 2mm Stackable Plugs

**Multi-Contact**

A touch-proof 2mm stackable plug with gold plated brass centre pins, and beryllium copper spring contacts rated at 600V/10A. Will accept cable up to 0.5mm<sup>2</sup>. Available in black (MF21X) or red (MF22Y).



- ★ Touch-proof
- ★ Rated at 600V/10A
- ★ Stackable

Retail Unit Price each (inc. VAT).

Order Code	Type 17391	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MF62S	2mm Stackable Black	£1.140	£1.090	£1.030	£1.350
MF63T	2mm Stackable Red	£1.140	£1.090	£1.030	£1.350

## 2mm Stackable Hollow Pin Plug

**Multi-Contact**



A laboratory standard 2mm stackable plug with gold plated hard-drawn copper alloy contacts, rated at 600V/10A. Available in red (MF64U) or black (MF65V).

- ★ Hollow pin
- ★ Rated at 600V/10A
- ★ Stackable

Retail Unit Price each (inc. VAT).

Order Code	Type 17393	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MF64U	2mm+insulator Red	£0.800	£0.760	£0.720	£0.940
MF65V	2mm+insulator black	£0.800	£0.760	£0.720	£0.940

## 2mm Safety Socket

**Multi-Contact**



A fully insulated safety socket for 2mm safety plugs and any similar 2mm spring-loaded plug. The socket is designed for screw, or push-fit mounting in to a suitable pre-drilled plastic or metal panel. The socket is gold-plated copper, and the 1.9mm dia. connecting pin is gold-plated brass.

- ★ Rated at 600V/10A
- ★ Easy panel mounting
- ★ Gold-plated connections

A spacing sleeve is supplied for panels below 5mm thickness which allows the socket to be either proud or flush mounted. For panels 5 to 9mm thickness



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the spacing sleeve is not used.

Type of mounting	Panel thickness mm	Hole dia. mm
Push fit	1.5 min	8.3
Flush - no spacer	5 to 9	8.6
Flush with spacer	5 max	8.6
Proud with spacer	5 max	8.2

Retail Unit Price each (inc. VAT).

Order Code	Type 17394	Price each exc. VAT	inc. VAT each
MF66W	2mm Safety Slt Black	£1.200	£1.410
MF67X	2mm Safety Slt Red	£1.200	£1.410

### 3.2mm Split Pin Type

Plug

Nickel plated brass wander plugs with a split-pin construction. Available in Black, Green and Red. Overall length: 33mm. Pin length: 12.7mm. Pin diameter: 3.2mm. Overall diameter: 9.3mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1430	Price each exc. VAT	inc. VAT each
HF50E	Wander Plug Black	£0.348	£0.410
HF52G	Wander Plug Green	£0.348	£0.410
HF53H	Wander Plug Red	£0.348	£0.410

### Socket

Wander socket with plated contact. Will fit panels up to 6.6mm thick. Available in Black, Green and Red. Overall length: 21mm. Bezel diameter: 11.7mm. Socket diameter: 3.3mm. Mounting hole: 8mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type 1432	Price each exc. VAT	inc. VAT each
HF56L	Wander Socket Black	£0.348	£0.410
HF58N	Wander Socket Green	£0.348	£0.410
HF59P	Wander Socket Red	£0.348	£0.410

### 4mm Size

Low Cost Plug



A 4mm plug suitable for use with 4mm sockets below. Sprung plug ensures good contact with socket. Available with red and black handles. Overall length 50mm. Pin length 15mm. Overall diameter 11mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1434	Price each exc. VAT	inc. VAT each
JB24B	Banana Plug Red	£0.263	£0.310
JB25C	Banana Plug Black	£0.263	£0.310

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

### Plug



A 4m plug with nickel alloy plated brass pin and stainless steel spring to maintain adequate pressure in 4mm sockets. Available in Black, Blue, Green, Red, White and Yellow. Overall length: 44mm. Pin length: 19mm. Overall diameter: 8mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1436	Price each exc. VAT	inc. VAT each
HF62S	4mm Plug Black	£0.400	£0.470
HF63T	4mm Plug Blue	£0.400	£0.470
HF65V	4mm Plug Green	£0.400	£0.470
HF66W	4mm Plug Red	£0.400	£0.470
HF67X	4mm Plug White	£0.400	£0.470
HF68Y	4mm Plug Yellow	£0.400	£0.470

### 4mm Uninsulated Plug

Multi-Contact



A 4mm plug made from gold plated brass with copper alloy spring contacts for uniform contact pressure and low resistance. Connection is via M4 threaded stud.

Retail Unit Price each (inc. VAT).

Order Code	Type 17406	Price each exc. VAT	inc. VAT each
MF72P	4mm plug SA403	£0.944	£1.110

### Socket

4mm socket with silver-plated contact. Available in Black, Blue, Green, Red, White and Yellow. Overall length: 29.2mm. Bezel diameter: 11.7mm. Mounting hole: 8mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type 1437	Price each exc. VAT	inc. VAT each
HF69A	4mm Socket Black	£0.374	£0.440
HF70M	4mm Socket Blue	£0.374	£0.440
HF72P	4mm Socket Green	£0.374	£0.440
HF73Q	4mm Socket Red	£0.374	£0.440
HF74R	4mm Socket White	£0.374	£0.440
HF75S	4mm Socket Yellow	£0.374	£0.440

### PCB Mounting 4mm Sockets

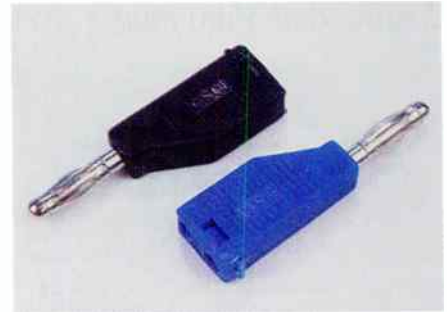
Single 4mm PCB mounting sockets, ideal for use in test and measurement equipment. Sockets are provided with interlocking slots/ridges which allow groups of sockets to be butted together. Pins are rectangular (1 x 1.5mm) and are arranged on a 2.54mm (0.1in.) matrix. Single sockets measure 10 x 12 x 23.5mm. Sockets are available in red and black. Fixing centres are 15.24mm (0.6in.)



Retail Unit Price each (inc. VAT).

Order Code	Type 1440	Price each exc. VAT	inc. VAT each
JP20W	4mm PCB Slt Sngl Bk	£0.417	£0.490
JP22Y	4mm PCB Slt Sngl Red	£0.417	£0.490

### Stackable 4mm Plugs



A range of 4mm banana plugs which have an integral 4mm socket allowing plugs to be stacked one into another. The sprung contact ensures good electrical connection with the socket. Available in black, blue, green, red and yellow.

Retail Unit Price each (inc. VAT).

Order Code	Type 1442	Price each exc. VAT	inc. VAT each
JM00A	Stack Pig 4mm Black	£0.587	£0.690
JM43W	Stack Pig 4mm Blue	£0.587	£0.690
JM44X	Stack Pig 4mm Green	£0.587	£0.690
JM45Y	Stack Pig 4mm Red	£0.587	£0.690
JM46A	Stack Pig 4mm Yel	£0.587	£0.690

### 4mm Stackable Hollow Pin Plug

Multi-Contact



A 4mm stackable hollow pin plug with gold-plated hard-drawn contacts rated at 19A. The plug is very easy to assemble, and is available in red (MF68Y) or black (MF69A).

- ★ Contacts rated at 19A
- ★ Gold-plated contacts
- ★ Easy to assemble

Retail Unit Price each (inc. VAT).

Order Code	Type 17396	Price each exc. VAT	inc. VAT each
MF68Y	4mm+Insulator Red	£1.090	£1.290
MF69A	4mm+Insulator Black	£1.090	£1.290

### Touchproof 4mm Socket

CIFF

A touchproof 4mm polypropylene socket with gold-plated contact that will accept both touchproof and non-touchproof 4mm plugs. Panel isolation of 3kV AC makes it suitable

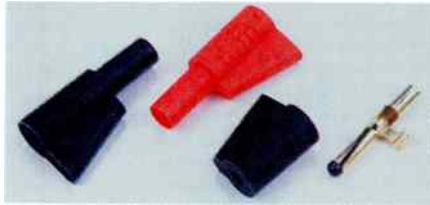
for use in test instruments, and educational equipment. Fixing is by a nylon nut. The socket complies with BS4743 and is rated at 30A max. Overall length: 29mm. Bezel diameter: 14mm. Mounting hole: 12.1 x 9.6mm. Available in red and black.

Retail Unit Price each (inc. VAT).

Order Code	Type 1444	Price each exc. VAT	inc. VAT each
KC49D	Shroud Slt Black	£0.331	£0.390
CK66W	Shroud Socket Red	£0.331	£0.390

## Touchproof 4mm Plug and Unshrouded 4mm Plug

CIFF



A touchproof stackable 4mm plug, designed to be used with the touchproof socket, but fits most similar style sockets. The standard contact finish is gold-plated and connection is by soldering. The contact is pushed into the case moulding and locked in place by the rear case moulding. Thick wires should be preformed into an 'S' shape to fit into the built-in cable restraint. Rated at 30A max. (with appropriate cable). Available in red and black. The unshrouded (touchable) version is similar and fits all standard 4mm sockets and terminals. Note: The contact has to be purchased separately.

Retail Unit Price each (inc. VAT).

Order Code	Type 1445	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
KC50E	Shroud Cov Black	£0.187	£0.140	£0.120	£0.220
CK67X	Shroud Plg Cov Red	£0.187	£0.140	£0.120	£0.220
KC51F	Unshroud Plg Cov Blk	£0.187	£0.140	£0.120	£0.220
CK68Y	Unshroud Plg Cov Red	£0.187	£0.140	£0.120	£0.220
KC52G	Contact Probe	£0.382	£0.300	£0.260	£0.450

## 4mm Retractable Plug

Multi-Contact



A 4mm plug with nickel plated contacts and a protection guard to prevent accidental contact to the 'live' part. The transparent guard sleeve is spring-loaded and retracts when the plug is inserted into a socket. Rated at 500V/32A with a contact resistance of 0.8Ω. Available in red (MF70M), and black (MF71N).

Retail Unit Price each (inc. VAT).

Order Code	Type 17648	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MF70M	5mm Retract Red	£2.840	£2.700	£2.560	£3.340
MF71N	4mm Retract Black	£2.840	£2.700	£2.560	£3.340

## Plug/Socket Adaptor

Multi-Contact



A range of plug/socket adaptors with either a 2mm plug and 4mm socket, or a 4mm plug and 2mm socket. Contacts made from gold-plated machined brass, and rated at 25A. Each type available in red or black.

Type - 2mm plug with 4mm socket

Colour	Contact Resistance	Order Code
Red	0.6mΩ	MF73Q
Black	0.6mΩ	MF74R

Type - 4mm plug with 2mm socket

Colour	Contact Resistance	Order Code
Red	<1.0mΩ	MF75S
Black	<1.0mΩ	MF76H

Retail Unit Price each (inc. VAT).

Order Code	Type 17407	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MF73Q	4mm Plug-2mm Skt Red	£1.790	£1.710	£1.620	£2.110
MF74R	4mm Plug-2mm Blk	£1.790	£1.710	£1.620	£2.110
MF75S	2mm Plug-4mm Skt Red	£1.290	£1.230	£1.170	£1.520
MF76H	2mm Plug-4mm Skt Blk	£1.290	£1.230	£1.170	£1.520

## Insulated Right-Angled Plug/Socket Adaptor

Multi-Contact

An insulated right-angled adaptor with a 4mm plug and 2mm socket, ideal for connecting a 2mm system to a 4mm shrouded system such as multimeters and test equipment. Contacts are gold-plated machined brass, and rated at 600V/25A. Available in black (MF77J) or red (MF78K).

Retail Unit Price each (inc. VAT).

Order Code	Type 17408	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MF77J	4mm Plug 2mm Skt Red	£2.290	£2.180	£2.070	£2.700
MF78K	4mm Plug 2mm Skt Blk	£2.290	£2.180	£2.070	£2.700

## Safety Right-Angled Plug/Socket Adaptor

Multi-Contact

This 1000V/25A adaptor has a 4mm plug and 4mm socket, configured at right-angles in a fully insulated body. The adaptor is designed to allow 90° entry to safety sockets where there is restricted access. Available in black (MF79L) or red (MF80B).

Retail Unit Price each (inc. VAT).

Order Code	Type 17409	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MF79L	4mm-4mm R/A Black	£2.990	£2.850	£2.700	£3.520
MF80B	4mm-4mm R/A Red	£3.140	£2.980	£2.820	£3.690

## Miniature Test Clip

Multi-Contact



A miniature test clip with revolving grapper and spring-loaded 1mm dia. socket, suitable for 1mm test leads. Available in red (MF81C), or black (MG02C).

Retail Unit Price each (inc. VAT).

Order Code	Type 17412	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MF81C	Min Test Clip Red	£7.240	£6.880	£6.520	£8.510
MG02C	Min Test Clip Black	£7.240	£6.880	£6.520	£8.510

## Miniature Probe Clips



Ideally suited for use with our extra flexible wire, these probe clips feature a spring-loaded wire hooked probe which retracts into the probe moulding. Two types are available. The 43mm type is available in black, blue, green, red, white or yellow and the 57mm type in black, green or red. Probe material is phosphor bronze plate 0.3mm thick on small and 0.4mm thick on larger type. Housing is nylon. Sold individually.

Dielectric strength: 2kV for 1 minute  
Insulation resistance: >100MΩ at 50V DC

Dimensions

Length	43mm	57mm
Cap diameter	8mm	13mm
Cap stroke	3.5mm	4mm
Probe tip	2 x 3mm	2.8 x 4.6mm
Wire entry hole	2.2mm	3mm
Probe length	24mm	40mm

Retail Unit Price each (inc. VAT).

Order Code	Type 5880	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FE16S	Sub-Min Probe Black	£0.510	£0.357	£0.296	£0.600
FE17T	Sub-Min Probe Blue	£0.510	£0.357	£0.296	£0.600
FE18U	Sub-Min Probe Green	£0.510	£0.357	£0.296	£0.600
FE19V	Sub-Min Probe Red	£0.510	£0.357	£0.296	£0.600
FE20W	Sub-Min Probe White	£0.510	£0.357	£0.296	£0.600
FE21X	Sub-Min Probe Yellow	£0.510	£0.357	£0.296	£0.600
YX57M	Min Probe Black	£0.595	£0.428	£0.388	£0.700
YX59P	Min Probe Green	£0.595	£0.428	£0.388	£0.700
YX60Q	Min Probe Red	£0.595	£0.428	£0.388	£0.700

## Probe Clip

Deltron



Probe with a positive spring-loaded hook grip for use in confined spaces. Fully insulated, with acetel mouldings and gold-plated contact. Screw or soldered connections. One red and one black. Supplied in pairs only. Overall length 83mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5882	Price each exc. VAT			inc. VAT each 1+
		1+	2+	5+	
HF21X	Probe Clips	£2.110	£1.370	£0.990	£2.490

## Hook Clip for IC Pins

Multi-Contact



This clip, which has a solder terminal for wires of 0.5mm total diameter (insulation diameter 2mm), is ideal for monitoring signals from IC pins, wires, terminals and test points. The spring-loaded hook is made from copper-beryllium. The low weight of 1.3g allows contact even with fragile components. Voltage rating: 30V AC (60V DC). Available in red or black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type 10291	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DN20W	IC Test Clip Red	£1.260			£1.490
DN21X	IC Test Clip Black	£1.260			£1.490

## 2mm Minigrip Probe

Multi-Contact



A safety minigrip probe with hardened spring wire grapper and gold-plated contact areas. Designed to accept 2mm safety leads or any spring-loaded 2mm plug. Rated at 300V/1A. Clamping limit 2mm max. Available in black (MG05F) or red (MG06G).

Retail Unit Price each (inc. VAT).

Order Code	Type 1741E	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG05F	2mm Minigrip Black	£3.690	£3.510	£3.330	£4.340
MG06G	2mm Minigrip Red	£3.690	£3.510	£3.330	£4.340

## Hook Grabber for 4mm Safety Test Leads

Multi-Contact



A fully-enclosed test probe for use with 4mm test leads. Squeezing the spring-loaded pistol-type grip reveals a pair of stainless-steel wire clamps for hooking onto the test conductor. The shaft is 50mm in length, flexible and coated in silicone rubber. Voltage rating: 1000V. Current rating: 1A. Available in red and black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type 1027E	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DN30H	Flexible Probe Red	£5.090			£5.990
DN31J	Flexible Probe Black	£5.090			£5.990

## Solderable Test Prods



A pair of test probes with plastic body, one red and one black, which can be unscrewed so that a cable can be soldered into the threaded well of the tip. Together with the required wander plugs or crocodile clips, and using preferably extra-flexible wire, it is possible to make up your own test leads to your own specifications. The prods have 27mm long tips with 100mm long x 10mm diameter handles.

Retail Unit Price each (inc. VAT).

Order Code	Type 5063	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
FK32K	Solder Test Prods	£2.110	£1.370	£0.990	£2.490

## Rigid Test Probe for Safety Test Leads

Multi-Contact



A 122mm long test probe with a refined non-slip steel tip, which is covered with a removable transparent cap for safely working on densely-populated circuit boards. A 4mm socket is built into the handle for the test lead. Available in red and black colours.

Specification

Length:	122mm
Shank:	70mm
Rated voltage:	1000V
Insulation co-ordination:	6kV/2 (only applies to handling part between guard collar and socket)
Test voltage:	3250V
Operating temperature:	-40°C to 80°C

Retail Unit Price each (inc. VAT).

Order Code	Type 1029E	Price each exc. VAT		inc. VAT each
		1+	5+	
DN46A	Rigid Test Probe Red	£2.540		£2.990
DN47B	Rigid Test Probe Bk	£2.540		£2.990

## GS38 Fused Test Probes

Multi-Contact



A pair of novel test probes that accommodate a fuse, and so are ideal for working on delicate or potentially-dangerous equipment. To access the fuseholder, the bayonet-fitting top section of the probe is removed from the base. The fuse section is transparent, so that the state of the fuse can be readily seen. To access the pointed test tip, the probe's handles are squeezed. Designed for use with high-power fuses of up to 20A (Isc = 100kA). Available in red and black. Fuses suitable 15A (UL73Q), 20A (GW90X) (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type 1028E	Price each exc. VAT		inc. VAT each
		1+	5+	
DN44X	Fused Test Probe Red	£14.880		£17.490
DN45Y	Fused Test Probe Bk	£14.880		£17.490

## 2mm Crocodile Clip

Multi-Contact



A fully insulated safety crocodile clip with toothed gripping jaws and a special fine-wire clamping surface. Designed to accept 2mm safety leads or an spring-loaded 2mm plug. Rated at 600V/10A. Clamping limit 6mm max. Available in black (MG03D), or red (MG04E).

Retail Unit Price each (inc. VAT).

Order Code	Type 1741A	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG03D	2mm Croc Clip Black	£2.890	£2.750	£2.610	£3.400
MG04E	2mm Croc Clip Red	£2.890	£2.750	£2.610	£3.400

## Small Crocodile Clip for Safety Test Leads

Multi-Contact



Designed for a good contact on small conductors – both round and rectangular. The spring-loaded clip has an ergonomically-designed insulated handle, which accommodates a 4mm socket for the test lead. The jaws, which will open out to accept cables of up to 11mm in diameter, are nickel-plated, have a flat clamping area for very fine wires. Available in red and black.

Specification

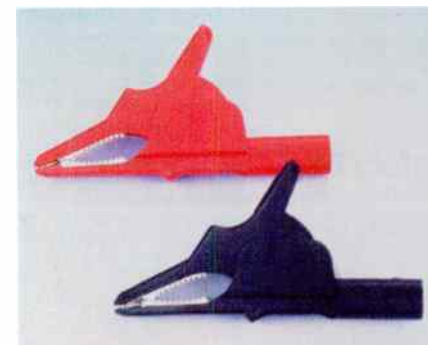
Clamping limit:	11mm (max)
Length:	53mm
Operating temperature:	-40°C to 80°C
Rated voltage:	300V
Rated current:	15A (max, depends on cross-sectional area of connecting lead and the clamped conductor)
Insulation co-ordination:	2.5kV/2 (applies only to handling part and safety socket)
Test voltage:	1350V

Retail Unit Price each (inc. VAT).

Order Code	Type 1026E	Price each exc. VAT		inc. VAT each
		1+	5+	
DN24B	Small Croc Clip Red	£2.330		£2.740
DN25C	Small Croc Clip Bk	£2.330		£2.740

## Large Crocodile Clip for Safety Test Leads

Multi-Contact



Designed for a good contact on conducting surfaces – large and small, round and rectangular. The spring-loaded clip has an ergonomically-designed insulated handle, which accommodates a 4mm socket for the test lead. The jaws, which will open out to accept cables of up to 30mm in diameter, are nickel-plated, have a flat clamping area for very fine wires. Available in red and black.

Specification

Clamping limit:	30mm (max)
Length:	80mm
Rated voltage:	1000V
Rated current:	32A (max, depends on cross-sectional area of connecting lead and the clamped conductor)
Insulation co-ordination:	6kV/2 (applies only to handling part and safety socket)
Test voltage:	3250V

Retail Unit Price each (inc. VAT).

Order Code	Type 1028E	Price each exc. VAT		inc. VAT each
		1+	5+	
DN22Y	Large Croc Clip Red	£2.800		£3.290
DN23A	Large Croc Clip Bk	£2.800		£3.290

See Stock Code Index  
For More Price Breaks

Sales Tel: 01702 554000 • Fax: 01702 554001 • Technical Helpline: 01702 556001

Export carriage charges (1,2 etc.) and price information see back of catalogue. + symbol in price block indicates While Stocks Last.

## Adaptor for 4mm Safety Test Leads

### Multi-Contact

This insulated adaptor is designed for the attachment of safety test leads to all kinds of conventional 4mm sockets. The spined shaft is made from gold-plated machined brass. Buried in the shaft is an Allen screw, which is tightened for a secure fit in the socket (a suitable Allen key (DN29G) is available separately). Available in red, black and green/yellow colours.



### Specification

Rated voltage: 1000V  
Insulation co-ordination: 6kV/2  
Test voltage: 3250V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN26D	Safety Adaptor Red	£2.800	£3.290
DN27E	Safety Adaptor Black	£2.800	£3.290
DN28F	Safety Adaptor Gr/Yl	£2.800	£3.290

## Allen Key for 4mm Safety Adaptors

### Multi-Contact



A STS 1.5mm Allen key designed for installing the above items in a 4mm socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN29G	Socket Screw Wrench	£0.340	£0.400

## Safety Plug Adaptor

### Multi-Contact



Designed to connect 4mm safety plugs, with a rigid insulating sleeve, to conventional 4mm sockets, binding posts, etc. The adaptor's plug has a relatively high plug-in force and is protected by a retractable insulating sleeve. Once the adaptor has been inserted into a socket, considerable force is required to withdraw it – since the safety plug requires a weaker withdrawal force, the adaptor will remain in place. Contact parts nickel-plated. Available in red only.

### Specification

Rated current: 25A  
Contact resistance: 0.8mΩ  
Rated voltage: 1000V (plugged in only, plug side)  
Insulation co-ordination: 6kV/2  
Test voltage: 3250V  
Operating temperature: -40°C to 80°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN59N	Die Socket Adaptor	£1.870	£2.200

## Concave Type



The CSP-2A contact probe has a non-slip concave conical tip, ideal for use on solder joints and similar surfaces.



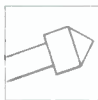
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
UL99H	Concave Probes 2A	1+ £0.740 25+ £0.612 100+ £0.561	1+ £0.870

## Convex Type



The CSP-2E contact probe has a convex conical tip, with a small surface area, ideal for use on fine PCB tracks, solder joints and plated-through holes.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
UM00A	Convex Probes 2E	1+ £0.740 25+ £0.612 100+ £0.561	1+ £0.870

## Concave Type



Cylindrical tip with a concave centre, used for connection to a soldered component lead on a PCB pad.



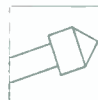
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
UM01B	Concave Probes	1+ £0.927 25+ £0.550 100+ £0.520	1+ £1.090

## Convex Type



Convex cylindrical tip, used for connection to plated-through holes, eyelets and open unused pads.



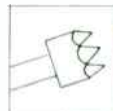
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
UM02C	Convex Probes	1+ £0.927 25+ £0.550 100+ £0.450	1+ £1.090

## Toothed Type



Cylindrical tip with small teeth on top, used for connection to short component leads. The teeth provide positive electric connection.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
UM03D	Toothed Probes	1+ £0.927 25+ £0.524 100+ £0.437	1+ £1.090

## Square Receptacle



A square pin projection receptacle for holding the above probes. Fits into a 0.5mm hole.

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
UM04E	Square Receptacle	1+ £0.365 25+ £0.296 100+ £0.265	1+ £0.430

## Circular Receptacle



A circular pin projection receptacle for holding the above probes. Fits into a 1.5mm hole.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
UM05F	Circular Receptacle	1+ £0.434 25+ £0.226 100+ £0.188	1+ £0.510

## LEADS

### Test Probe Leads

#### Moulded 2mm



A red and black test lead pair. Terminated in 2mm plugs to suit many multimeters etc. Other end terminated in heavy duty moulded PVC test prods. Heavy duty extra-flexible PVC covered wire 750mm long.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HF32K	Moulded Test Probe	1+ £1.860 5+ £1.220 10+ £0.990	1+ £2.190

**Moulded 4mm**



A red and black test lead pair terminated in moulded 4mm plugs. The other end is terminated in heavy duty moulded PVC test prods. Heavy duty extra-flexible PVC covered wire 850mm long.

Retail Unit Price each (inc. VAT).

Order Code	Type 5665	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
HF33L	4mm Test Probe	£2.110	£1.590	£1.390	£2.480

**4mm Patch Cord**



50cm (20in.) and 100cm (40in.) long patch cords for setting up test gear etc., comprising an extra flexible wire terminated at each end with a piggy-back 4mm plug and integral socket. Any number of these can be stacked. Each plug pin is 18mm long and has high quality sprung contacts. 50cm types available in three colours, Black, Red and Green. 100cm types available in Red and Black only. Sold singly.

Retail Unit Price each (inc. VAT).

Order Code	Type 1443	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
ZB25C	4mm Patch Cord Blk	£1.200	£0.950	£0.800	£1.410
ZB26D	4mm Patch Cord Grn	£1.200	£0.950	£0.800	£1.410
ZB27E	4mm Patch Cord Red	£1.200	£0.950	£0.800	£1.410
BZ23A	100cm Patch Cord Blk	£1.400	£1.090	£0.910	£1.650
BZ24B	100cm Patch Cord Red	£1.400	£1.090	£0.910	£1.650

**Test Lead Kit**



A universal test lead kit comprising one red and one black extra-flexible lead 1m long, terminated in either a 4mm plug at one end and a test prod at the other, or any combination of terminators; the test prod having a 27mm long tip in a 86mm long x 9mm diameter handle. The 4mm plugs can be plugged into one of three alternative terminations comprising 4mm (minimum) spade terminals, 38mm long crocodile clips (maximum gape 8mm), or 20mm long x 2mm diameter needle point plugs, all red/black colour matched pairs.

Retail Unit Price each (inc. VAT).

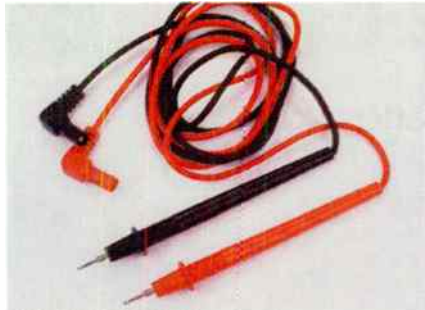
Order Code	Type 5669	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FK21X	4mm Test Lead Kit	£3.900	£2.990	£2.490	£4.590

**Banana Plug Probes**



Test leads for Precision Gold series multimeters M810, M195 and M920. Alligator clips for use with these probes are also available.

**Shroud Plug/Probes**



Test leads for multimeters M105, M125, M135, M205, M225 and M285. Alligator clips for use with these probes are shown below.

**Alligator Clips**

Alligator clips that screw onto the probes of the M105, M108, M125, M135, M205, M225, M285, M300A, M400D, M775, M779, M810, M874, M920, M990, M1300K, M2020S, M25001, M3500TC, M4510, M5010, M5010EC, M5020A, M5050DB, M5050E, and M6000. Sold as a red and black pair.

Retail Unit Price each (inc. VAT).

Order Code	Type 6006	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KW07H	Banana Plug/Probes	£2.750	£2.320	£1.990	£3.240
KW08J	Shroud Plug/Probes	£3.710	£2.550	£2.250	£4.360
JG13P	Alligator Clip	£1.190	£1.290	£1.090	£1.990
JG07H	Test Lead TL-25K	£1.430	£1.300	£1.200	£1.690

**1m Safety Test Lead with 4mm Shrouded Plug**

Multi-Contact



A highly flexible safety 1 metre connecting lead with a 4mm banana plug at either end. The lead is insulated with PVC. Rated current: 16A. Rated voltage: 1000V. Available in red and black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type 10282	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DN18U	Safety Lead 1m Red	£2.850			£3.360
DN19V	Safety Lead 1m Black	£2.850			£3.360

**High-Current 4mm Safety Test Lead**

Multi-Contact



An updated version of the above, with a rated current of 32A. Rated voltage: 1000V. Available in red and black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type 10201	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CN73Q	In-Line Safe Lead Rd	£5.020			£5.910
CN74R	In-Line Safe Lead Blk	£5.020			£5.910

**1m 20A Safety Test Lead with 4mm Shrouded Plug/Socket**

Multi-Contact

A highly flexible safety 1 metre connecting lead with a 4mm banana plug (with integrated 4mm socket) at either end. The integral socket means that the lead can be 'stacked' - in other words, multiple connections can be made to a piece of equipment.



The plug/socket conductor is formed from gold-plated brass for low contact resistance and long life, and the lead is insulated with high-temperature PVC. Rated current: 20A. Rated voltage: 1000V. Available in red and black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type 10279	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DN16S	20A Stackble Lead Rd	£3.890			£4.580
DN17T	20A Stackble Lead Blk	£3.890			£4.580

**1m 32A Safety Test Lead with 4mm Shrouded Plug/Socket**

Multi-Contact



A stackable version of the above. Rated current: 32A. Rated voltage: 1000V. Contact resistance: 0-3mΩ. Available in red and black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type 10282	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CN71N	Safety Lead 1m Red	£5.940			£5.980
CN72P	Safety Lead 1m Black	£5.940			£5.980

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## Probe Clip Sets



Sets of the sub-miniature and miniature probe clips described above previously. Each set contains twelve probe clips, two of each colour, black, blue, green, red, white and yellow. Each colour pair is connected together by a wire of the same colour such that the set contains six different colour test leads. Leads are 500mm long tip to tip.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
FA96E	S-Min Probe Clip Set	£9.700	£6.990	£5.490	£11.400
FE22Y	Min Probe Clip Set	£10.190	£7.670	£5.990	£11.980

## Probe to Croc Clip Leads



A red and black pair of test leads with a 57mm probe clip at one end and a 35mm crocodile clip at the other. Each lead is 1m long tip to tip. Crocodile clips have a vinyl sleeve 42mm long red and black to match wire and clip. Sold only in pairs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
FE23A	Probe/Croc Clip Lead	£3.220	£2.790	£1.990	£3.790

## MODELLING CONNECTORS

### BATTERY

## Kyosho Race Pack Connector



Comprising two crimp/solder terminals and one housing. Ideal for assembly of custom cables (use BJ40T/BJ41U 32A Silicone Wire-see cables section) and replacement of broken/damaged connectors on motors, speed controllers, battery packs, etc.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GZ98G	Kyosho Connector	£0.595	£0.520	£0.474	£0.700

## Tamiya Race Pack Connector



Comprising two crimp/solder terminals and one housing. Ideal for assembly of custom cables (use BJ40T/BJ41U 32A Silicone Wire-see cables section) and replacement of broken/damaged connectors on motors, speed controllers, battery packs, etc.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GZ99H	Tamiya Connector	£0.585	£0.520	£0.474	£0.700

## Battery Connectors



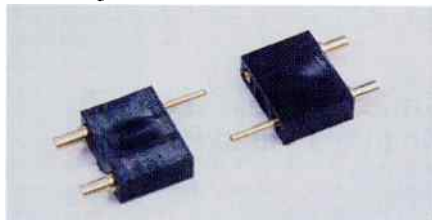
Male Female

For making your own battery packs and chargers, the standard racing pack plugs and sockets are available pre-assembled to 150mm (6in.) lengths of red and black high-temperature silicone insulated wires. The part with the pins inside the connector housing is the male part and normally connected to the battery, and the part with the sockets inside the housing which also has the latch mechanism is the female part and normally connected to the model or charger.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JG04E	Race Pk Lead Male	£1.090	£0.640	£0.530	£1.290
JG05F	Race Pk Lead Female	£1.090	£0.640	£0.530	£1.290

## Battery Connector



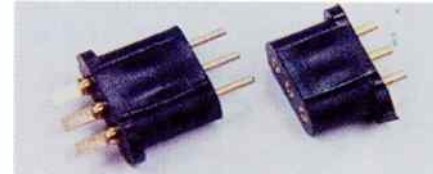
A non-reversible, mirror image plug and socket assembly for quick and simple battery coupling.

Retail Unit Price each (inc. VAT).

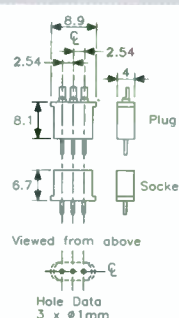
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK96E	Batt Pk/Skt Pair	£0.842	£0.640	£0.580	£0.990

† This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## 3-Pin Connector



A 3-pin plug and socket assembly for interconnections where three wires are required. Note the connectors are not polarised. The socket is designed for PCB mounting.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK97F	GP Pk/Skt Pair	£0.672	£0.545	£0.480	£0.790

## 3-Way Polarised Plug

A 3-pin plug having one pin offset in order to prevent accidental reversal. Such connectors are ideal for interconnecting the receiver to a servo control circuit, providing power on two pins and a signal on the other.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK99H	3-Pin Offset Plug	£0.417	£0.290	£0.260	£0.490

## 3-Way Polarised Socket

A non-reversible 3-pin socket that mates to the above plug.



Retail Unit Price each (inc. VAT).

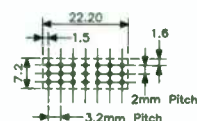
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK98G	3P Offset Skt	£0.417	£0.315	£0.270	£0.490

## 7-Way PCB Socket

A PCB mounting socket providing for up to seven 3-way outlets from receiver board etc. Pins are spaced 2mm apart in each row of 3 pins, with 3mm spacing between rows. Overall length of block: 22mm. Overall width: 7mm.



All dimensions in mm Viewed from above Hole data 21 x ø1mm



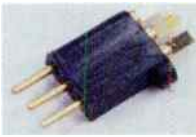
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FM01B	7-Way Skt Bloc	£2.110	£1.850	£1.750	£2.490



### Small 3-Way Plugs

Miniature 3-pin plugs to fit the above 7-way socket block. Plugs are sold singly.



Retail Unit Price each (inc. VAT).

Order Code	Type 1304	Price each exc. VAT	inc. VAT each
FM00A	3-Pin Plug	1+ £0.331 25+ £0.280 100+ £0.250	1+ £0.390

### Battery Connectors



Male

Female

For making your own battery packs and chargers, the standard racing pack plugs and sockets are available pre-assembled to 150mm (6in.) lengths of red and black high-temperature silicone insulated wires. The part with the pins inside the connector housing is the male part and normally connected to the battery, and the part with the sockets inside the housing which also has the latch mechanism is the female part and normally connected to the model or charger.

Retail Unit Price each (inc. VAT).

Order Code	Type 1307	Price each exc. VAT	inc. VAT each
JG04E	Race Pk Lead Male	1+ £1.090 25+ £0.640 100+ £0.530	1+ £1.240
JG05F	Race Pk Lead Female	1+ £1.090 25+ £0.640 100+ £0.530	1+ £1.290

### Power Connectors for Remote Control Models

Futaba



A range of genuine Futaba leads and connectors for servos and radio control systems.

Retail Unit Price each (inc. VAT).

Order Code	Type 11571	Price each exc. VAT	inc. VAT each
GZ84F	BEC Plug & Lead	1+ £1.120	1+ £1.320
GZ85G	BEC Skt & Lead	1+ £1.120	1+ £1.320
GZ88W	Ni-Cd Skt & Lead	1+ £2.160	1+ £2.540
GZ89V	Ni-Cd Plg & Lead	1+ £2.160	1+ £2.540

### External Charge Socket

Futaba

The easy and convenient solution; this plastic assembly fits neatly into the side of the model plane's fuselage and connects to the charge plug from the switch. Can be easily removed for transfer to other models. Pack contains charge socket, back plate, screws and fitting instructions.



Retail Unit Price each (inc. VAT).

Order Code	Type 11568	Price each exc. VAT	inc. VAT each
GZ80B	Charge Jack	1+ £2.590	1+ £3.050

### GLO-PLUG CLIP

#### Ripmax Glo-Plug Grip-Tite

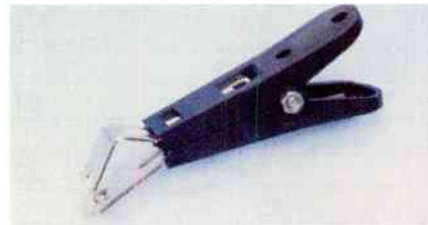


This ingenious glow plug clip is a must for all modellers using IC engines. Easy connection and release is made possible by thumb-grip release mechanism. Supplied with connecting cable and crocodile clips pre attached.

Retail Unit Price each (inc. VAT).

Order Code	Type 2990	Price each exc. VAT	inc. VAT each
DX12N	Glo-Plug Clip	1+ £3.890	1+ £4.580
MT85G	Glow Plug Clip Long	1+ £4.680	1+ £5.500

### Glow Plug Clip



This is the 'crocodile clip' for glow plugs. The clip has an insulated handle, making it the safe and convenient way to achieve a fast connection to your battery when you want to get your glow plugs started. Supplied with cable securing screws.

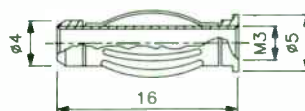
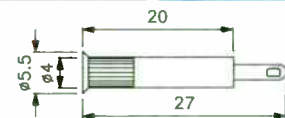
Retail Unit Price each (inc. VAT).

Order Code	Type 11769	Price each exc. VAT	inc. VAT each
DX95D	Glow Plug Clip	1+ £0.944	1+ £1.110

### HIGH CURRENT, LOW VOLTAGE

#### 4mm Contacts

Multi Contact



A pair of high quality, gold-plated connectors for use with motors, battery packs and speed controllers in model cars, etc. The plug (BJ39N) has an M3 internal thread to enhance mechanical strength when soldering wire to connector (suitable for conductors up to 2mm in diameter), but will accept an M3 bolt if a mechanical fixing is required. The socket (BJ37S) has a solder tag. The connectors can be used for high current applications (up to 25A), and high current wire must

be used. Silicone extra flexible cable (BJ40T, BJ41U) is recommended for model car applications. When the wire is soldered to the connector, the joint should be covered with 6.4mm heat-shrink sleeving (BF90X) or for a more reliable connection use 6mm adhesive lined heat-shrink sleeving (KC46A). Plug has a withdrawal force of 5N approx. Socket requires a hole 4.8mm diameter.

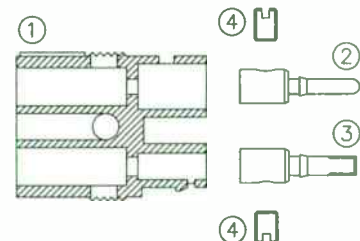
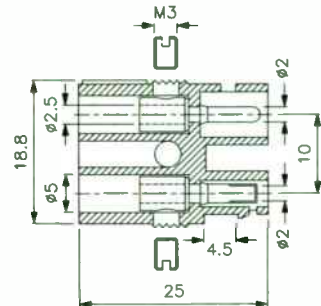
Retail Unit Price each (inc. VAT).

Order Code	Type 2911	Price each exc. VAT	inc. VAT each
BJ39N	4mm HQ Plug Contact	1+ £0.859	1+ £1.010
BJ37S	4mm HQ Skt Contact	1+ £1.290	1+ £1.520

### 2mm 2-Pole Connector



A high quality polarised connector with gold-plated contacts, ideal for modelling applications (battery packs, motors and speed controllers), low voltage halogen lighting, automotive applications etc. Two connectors are used to make a plug/socket pair which can be used for high current applications, but ensure to use high current wire. Silicone extra flexible cable (BJ40T, BJ41U) is recommended for model car applications. Connection is by means of screw terminals, but wires can be soldered, if preferred. The contacts lock into the connector body and are non-removable when locked. Meets all European CEE specifications and conforms to IEC 598-1 EDIN/VDE 0711 part 1/08.80, DIN/VDE 0627/06.86 and TUV-GEMI-EL-10.2/2/497/91.



#### Specification

Contact rating: 25A 25V AC/60V DC  
Contact resistance: 0.5Ω  
Cable size: 0.5mm<sup>2</sup> to 1.5mm<sup>2</sup>  
screw: 0.5mm<sup>2</sup> to 2.5mm<sup>2</sup>  
solder: 0.5mm<sup>2</sup> to 2.5mm<sup>2</sup>  
Parts supplied: 1 x black insulated body, 1 x plug, 1 x socket, 2 x screws

Retail Unit Price each (inc. VAT).

Order Code	Type 2912	Price each exc. VAT	inc. VAT each
BJ38R	2 Pole Plug/Socket	1+ £2.590	1+ £3.050

## SERVO CONNECTORS

### Futaba Servo Connectors



Available in both in-line plug (as fitted to servos) and in-line socket types; comprising three crimp/solder terminals and housing (photo shows in-line socket components). Ideal for assembly of custom cables (use three cores stripped from ribbon cable, e.g. XR06G – see Cables Section) and replacement of broken/damaged connectors on radio gear, servos, speed controllers, etc. Sold singly.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
	11654	1+	1+
GZ93B	Servo Skt Pack	£1.120	£1.320
GZ94C	Servo Plug Pack	£1.120	£1.320

### Servo Connectors and Leads

Futaba



A range of genuine Futaba leads and connectors for servos and radio control systems.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
	11570	1+	1+
GZ86T	Servo Y Junction	£5.200	£6.110
GZ87U	200mm Servo Xtn	£2.420	£2.850
GZ90X	400mm Servo Xtn	£3.460	£4.070
GZ91Y	1m Servo Xtn	£4.160	£4.890
GZ92A	Servo Conn & Lead	£1.720	£2.030

## Conductor Gauge Comparison Table

AWG	SWG	CSA (mm <sup>2</sup> )
32		0.032
	35	0.036
31	34	0.040
	33	0.049
30		0.051
	32	0.057
29	31	0.065
	30	0.078
28		0.081
	29	0.086
27		0.103
	28	0.124
26		0.128
	27	0.132
25	26	0.162
	25	0.193
24		0.210
	24	0.245
23		0.259
	23	0.295
22		0.324
	22	0.410
21		0.412
	21	0.511
20		0.556
19		0.636
	20	0.660
	19	0.813
18		0.826
17		1.040
	18	1.170
16		1.340
	17	1.630
15		1.680
14	16	2.080
13		2.630
	15	2.640
	14	3.250
11		4.130
	13	4.470
10		5.260
	12	5.390
9	11	6.600
8		8.400
	10	10.00
7	9	10.60
6		13.00
5		16.80
4		21.00
3		26.20
2		33.60



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## MOULDED ENCLOSURES

### D' TYPE AND CENTRONICS BOXES

#### 9-Way D-type Box



A small plastic box designed to house two 9-way D-type connectors. Small circuits may be built into the box, there is a 27.5 x 14.5mm area between the connectors which can accommodate items up to 12mm high. The box is in two parts that clip together. Both parts of the case have 16 x 9.5mm recesses, through which LEDs etc may be mounted. The box is supplied with two pairs of jack screws and posts. Connectors type RK60Q, RK61R, JB39N and JB42V from our range of connectors will fit this box. Dimensions: 53 x 34 x 17mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JW07H	9 Way Plastic D Box	£0.851	£0.676	£0.489	£1.000

#### 15-Way D-type Box



A small plastic box designed to house two 15-way D-type connectors. Small circuits may be built into the box, there is a 37 x 21.5mm area between the connectors which can accommodate items up to 12mm high. The box is in two parts that clip together. Both parts of the case have 15.8 x 25.8mm recesses through which LEDs etc. may be mounted. The box is supplied with two pairs of jack screws. Connectors type BK58N, BK59P, JB30H and JB34M from our range of connectors will fit this box.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JW53H	15W Plastic D Box	£0.680	£0.530	£0.354	£0.800

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#### 9-Way D-type to 25-Way D-type Box



A small plastic box designed to house one 9-way D-type connector and one 25-way D-type connector. Small circuits may be built into the box, items up to 12mm high can be accommodated. The box is in two parts that clip together. The box is supplied complete with two pairs of jack screws. Connectors type RK60Q, RK61R, JB39N, JB42V, YQ48C, YQ49D, FS82D and FS84F will fit this box.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JW55K	9W/25W Plastic D Box	£0.782	£0.634	£0.396	£0.920

#### 25-Way D-type Boxes



A novel plastic case designed so that a 25-way D connector will fit in each end. Small circuits may be built into the box which has a useful internal size of 38mm between connectors, 36mm wide and 11mm deep. Boxes snap together with interlocking clips. Two types of box are available.



One has a 33 x 21.5mm window cut in one side for access to wiring panel, switches, LEDs or whatever. The boxes are a very versatile means of making small in-line testers or projects on RS232 circuits. The boxes are supplied with two pairs of screws and washers which will mate with standard jack posts. Connectors type YQ48C, YQ49D, FS82D and FS84F from our range will fit in these boxes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JB03D	Plastic D Box	£0.851	£0.676	£0.489	£1.000
JB04E	Plastic D Box + Open	£0.851	£0.676	£0.489	£1.000

#### 25-Way D-type to 36-Way Centronics Box

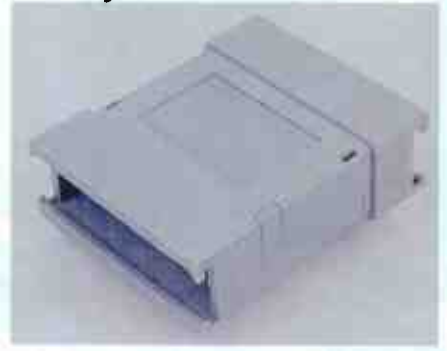


A small plastic box designed to house one 25-way D-type connector and one 36-way centronics connector. Small circuits may be built into the box, there is a 33.5 x 35.5mm area between the connectors which can accommodate items up to 12mm high. The box is in two parts that clip together. Both parts of the case have 32.8 x 21.8mm recesses through which LEDs etc. may be mounted. The box is supplied complete with one pair of jack screws. Connectors type FV87U, YQ48C, YQ49D, FS82D and FS84F from our range of connectors will fit this box.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JW56L	25D/36Cent Plas Box	£0.851	£0.676	£0.489	£1.000

#### 36-Way Centronics Box



A small plastic box designed to house two 36-way centronics connectors. Small circuits may be built into the box, there is a 36 x 43mm area between the connectors which can accommodate items up to 14mm high. The box is in two parts that clip together. Both parts of the case have 21.8 x 32.8mm recesses through which LEDs etc may be mounted. Connector type FV87U from our range of connectors will fit this box.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JW54J	36W Cent Plastic Box	£0.851	£0.676	£0.489	£1.000



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Technical: 01702 556001

Account: 01702 554187

Enquiries

e-mail: [Sales@maplin.co.uk](mailto:Sales@maplin.co.uk)

**PLASTIC BOXES**

**Veronex IP64 Cases**

Vero



- ★ Scratch resistant texture finish
- ★ UL94-V0 durable ABS
- ★ Superb styling
- ★ IP64 dust and water protection

This range of cases offers both quality and functionality, with a unique award winning design. PCBs can be fixed horizontally or vertically, and the removable end panels allow I/O connections and easy modification.

Specification					
Type	L x mm	W x mm	H mm	Part No.	Order Code
Size 1	90	50	24	75-227895J	MC83E
Size 2	120	60	40	75-227898L	MC84F
Size 3	150	80	45	75-227901H	MC85G
Size 4	190	100	60	75-227904K	MC86T

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MC83E	H-Held IP64 Size 1	£4.960	£4.710	£4.590	£5.830
MC84F	H-Held IP64 Size 2	£5.220	£5.920	£5.760	£7.320
MC85G	H-Held IP64 Size 3	£7.790	£7.410	£7.210	£9.190
MC86T	H-Held IP64 Size 4	£9.870	£9.380	£9.130	£11.300

**Veronex Accessories**

Vero



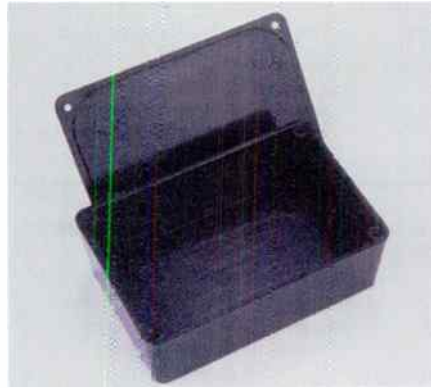
The battery box design allows a choice of battery holders to be used with the VERONEX range, offering total flexibility. The belt clips can be used with appropriate size for portable applications.

Specification					
Type	L x mm	W x mm	H mm	Part No.	Order Code
<b>Battery Box</b>					
Shallow	50	40	23	75-226685H	MC97F
Deep	50	40	38	75-226686D	MC98G
<b>Belt Clip</b>					
Size 2				75-237434E	MC91Y
Size 3				75-237435B	MC92A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MC97F	Veronex Batt Box Sh	£0.527	£0.509	£0.496	£0.620
MC98G	Veronex Batt Box Dp	£0.706	£0.679	£0.661	£0.830
MC91Y	Belt Clip Size 2	£1.380	£1.320	£1.280	£1.630
MC92A	Belt Clip Size 3	£1.580	£1.510	£1.470	£1.860

**Multi-purpose Plastic Boxes**



A range of three small boxes moulded in high impact ABS to give maximum strength. The lid is retained by four countersunk self-tapping screws.

External dimensions (mm):			
Type	Length	Width	Depth
T2	75	56	25
T3	75	51	25
T4	111	57	22

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
KC91Y	T2 Box	£0.910	£0.749	£0.634	£1.070
KC92A	T3 Box	£0.910	£0.749	£0.634	£1.070
KC93B	T4 Box	£1.120	£0.936	£0.812	£1.320

**ABS Boxes with Polished Finish**



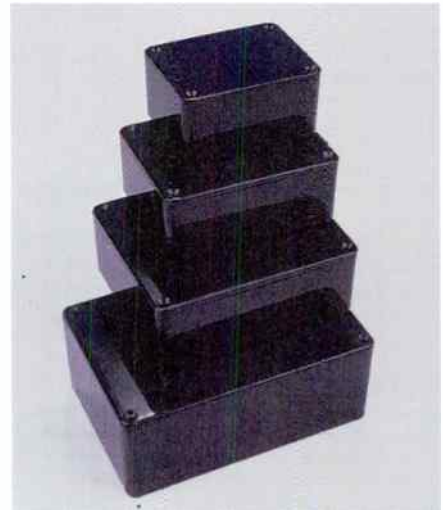
A range of three moulded ABS plastic boxes with a polished finish. Each box is rectangular and consists of two halves. The lid is retained by 4 x 3.5mm countersunk plated screws. The upper part of the box has a lip running internally around the edge, this is to ensure that both parts slot together. Due to the construction of the boxes the maximum size of a rectangular PCB board fitted horizontally is less than the internal dimensions (see dimensions below). Type BM12 is provided with slots in the base for holding vertically either three or five (depending on orientation) 2mm thick PCBs. Type BM22 has slots in both halves.

Type	External (mm)			Internal (mm)			PCB (mm)	
	L	W	H	L	W	H	L	W
BM11	143	82	30	138	76	25	117	58
BM12	143	82	44	138	76	38	117	58
BM22	143	82	58	138	76	54	117	58

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CC81C	BM11 ABS Box	£2.150	£1.860	£1.410	£2.540
CC82D	BM12 ABS Box	£2.420	£1.920	£1.530	£2.850
CC83E	BM22 ABS Box	£2.590	£2.180	£1.850	£3.050

**MB Plastic Boxes**



A range of glossy and matt finish black plastic boxes moulded in ABS with brass inserts. Lid and screws to fix lid are supplied. Lid is lipped to ensure a good fit. Insides of all except MB6 are grooved on all walls to accept PCBs etc. Types MB4 and MB6 have a matt external finish.



Type	Internal (mm)	External (mm)
MB1	76 x 58 x 36	79 x 62 x 39
MB2	97 x 73 x 39.5	100 x 76 x 41
MB3	115 x 95 x 43.5	118 x 98 x 45
MB4	208 x 122 x 81	216 x 130 x 85
MB5	145 x 95 x 57.5	150 x 100 x 60
MB6	214 x 143 x 61	220 x 150 x 64
MB7	172 x 115 x 79	177 x 120 x 83
MB8	145 x 75 x 46	150 x 80 x 50

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
LH20W	ABS Box ME1	£1.640	£1.436	£1.250	£1.930
LH21X	ABS Box ME2	£1.990	£1.710	£1.480	£2.340
LH22Y	ABS Box ME3	£2.160	£1.988	£1.610	£2.540
LH23A	ABS Box ME4	£5.060	£5.470	£4.730	£7.130
YN40T	ABS Box MB5	£3.020	£2.600	£2.380	£3.560
YN39N	ABS Box MB6	£4.590	£4.210	£3.690	£5.400
KC89W	ABS Box MB7	£3.890	£3.550	£3.150	£4.580
KC90X	ABS Box MB8	£2.590	£2.320	£2.040	£3.050

**Small Mountable Boxes**



A group of three small boxes having the distinctive feature of being provided with two holes in the base, whereby the boxes may be attached or

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mounted to a wall or panel. The holes are countersunk from the inside. The boxes are white in colour and have removable lids with chamfered edges retained by four screws.

**Dimensions (mm):**

Type	Length	Width	Depth
1521	50	37	24
321	75	50	25
3415	102	76	38

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 25+ 100+	1+
FK72P	Box 1521	£0.859	£1.010
FK73Q	Box 321	£1.020	£1.210
FK74R	Box 3415	£1.550	£1.830

## PX Plastic Boxes



A range of glossy finish grey plastic boxes, moulded in ABS. Lid and screws to fix lid are supplied. The lid is lipped to ensure a good fit.

The insides of all the boxes have slotted walls to accept PCBs etc. Note: the walls of the box have a slight slant from top to bottom of the box.

**Dimensions (mm):**

Type	Internal	External
PX-1	49.5 x 99.5 x 40	54.5 x 104.5 x 42
PX-2	58 x 123.5 x 40.5	64.5 x 129.5 x 42.5
PX-3	84.5 x 144.5 x 50	90 x 149.5 x 52.5
PX-4	109.5 x 179.5 x 60	114.5 x 184.5 x 62.5

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 25+ 100+	1+
YU52G	ABS Box PX1	£1.200	£1.420
YU53H	ABS Box PX2	£1.370	£1.620
YU54J	ABS Box PX3	£1.990	£2.340
YU55K	ABS Box PX4	£2.850	£3.360

## Plastic Boxes with PCB Guide Slots



A range of glossy black finished plastic boxes with a recessed aluminium top panel. The box has guide slots for holding 1.5mm thick PCBs etc. The aluminium panel is 1mm thick and secured by

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four self-tapping screws, supplied with the box. Type M4005 is for the Audio Waveform Generator Project LP01B.

Type	Internal (mm)	External (mm)
SB-1BA	100 x 50 x 37	105 x 55 x 42
SB-2BA	125 x 60 x 37	130 x 65 x 42
SB-3BA	145 x 85 x 48	150 x 90 x 53
SB-4BA	180 x 110 x 58	185 x 115 x 63
M4005	156 x 92 x 50	161 x 96 x 59

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 25+ 100+	1+
BZ27E	PCB Slot Box 1BA	£1.990	£2.340
BZ28F	PCB Slot Box 2BA	£2.160	£2.540
BZ29G	PCB Slot Box 3BA	£2.590	£3.050
BZ30H	PCB Slot Box 4BA	£3.460	£4.070

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 5+ 10+	1+
WY02C	Metal Panel Bx M4005	£4.000	£4.700

## Grey ABS Plastic Box



A plastic box moulded in grey ABS with brass inserts. Lid is lipped to ensure a good fit and fixing screws are supplied. The box has a guide slot for holding 1.5mm thick PCBs.

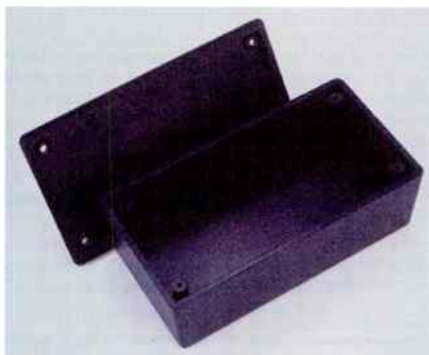
**Type Internal (mm) External (mm)**  
2002 96 x 46 x 21 100 x 50 x 25

A slotted plastic strap is supplied with this box so that boards mounted lengthwise are supported at the top in the middle. However, if this strap is used the height available will be reduced to 50mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 5+ 10+	1+
WY03D	ABS Box 2002	£2.000	£2.350

## ABS Plastic Boxes



A range of matt black, mottled finish plastic boxes moulded in ABS. The lid is lipped to ensure a good fit and fixed by four recessed, self-tapping screws.

**PHONE/FAX** for next day delivery  
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**by 5pm FAX: 01702 554001**

All boxes have slotted walls inside, to accept PCBs etc. The walls of the box have a slight slant from top to bottom of the box.

**Dimensions:**

Type	Internal	External
H2855	79 x 49 x 26mm	83 x 53 x 31mm
H2853	125 x 62 x 38mm	130 x 68 x 46mm
H2851	152 x 89 x 47mm	158 x 95 x 54mm
H2852	191 x 106 x 52mm	198 x 112 x 64mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 25+ 100+	1+
BZ72P	ABS Box H2855	£1.200	£1.420
BZ73Q	ABS Box H2853	£1.550	£1.830
BZ74R	ABS Box H2851	£1.990	£2.340
BZ75S	ABS Box H2852	£2.240	£2.640

## Boxes with Base



Boxes with loose fitting bases which may be secured when the box is fixed to a panel or bulkhead. Alternatively, the base may be riveted to the box flange to form a tamper-proof housing. The boxes are moulded in black ABS.

**Dimensions (mm):**

Type	Dimensions of base	Internal dimensions	Overall height
1	49 x 28.5	33 x 25 x 10	13
2	105 x 72	82 x 64 x 28	32
3	116 x 64	80 x 60 x 42	46

**Fixing centres:** Type 1: 43 x 22 x 2mm dia. holes.  
Type 2: 94 x 5mm dia. holes.

Type 3: 100 x 42 x 4mm dia. holes.  
There is a slot (e.g. for cable entry) 7 x 4mm cut near one corner, on Type 2 Box; 6 x 4.5mm on Type 1 Box.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 25+ 100+	1+
JX56L	Box and Base Type 1	£0.689	£0.810
YN36P	Box and Base Type 2	£1.020	£1.210
YN37S	Box and Base Type 3	£1.120	£1.320

## Miniature Sloping Case

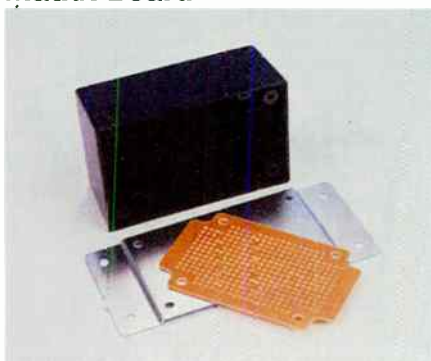


A highly adaptable miniature case ergonomically designed for desk, dashboard, pocket etc. that can be used either way up for the desired application. The case is made from high-impact ABS with a matt finish on all surfaces except for a polished recessed panel on the largest flat surface. The two halves of the case are held together by a single self-tapping screw and a cable knock-out is provided for flying lead applications.  
Overall dimensions (mm): 71 x 44 x 28 at highest, 22mm and 17mm at the ends.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 25+ 100+	1+
KC96E	Min Sloping Case	£0.689	£0.810

## Boxes with Base and Matrix Board



A range of neat black plastic boxes with aluminium base plates. Boxes are supplied with 2.54mm (0.1in.) pitch matrix board for circuit assembly. The boxes have extra mounting pillars for fixing the board in place. Supplied complete with screws for base plate and board. The matrix board has rows of circular copper pads, to which component leads are soldered, connection between components may be made using the wiring system described in the PCB Equipment Section of this catalogue. Clearance from the wiring side of the board is 5mm, care should be taken to ensure that there are no protruding wires to short against the base plate.

### Dimensions (mm):

Type	Internal	Base	Fixing centres
TB-14	49 x 79 x 33.5	50.5 x 114	
TB-15	64 x 101 x 38	65.5 x 139.5	
TB-16	79 x 129 x 38	80 x 171.5	
Type	Height	Fixing centres	
TB-14	37	100 x 34 x 4	
TB-15	42	123 x 45 x 4	
TB-16	42	155 x 56 x 4	

Retail Unit Price each (inc. VAT).

Order Code	Type 1882	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YU45Y	Base Box & PCB TB14	£3.46	£2.97	£2.70	£4.37
YU46A	Base Box & PCB TB15	£4.33	£3.74	£3.49	£5.39
YU47B	Base Box & PCB TB16	£5.20	£4.53	£4.21	£6.11

## HAND-HELD BOXES

### Veronex Hand Held Box with Belt Clip



- ★ Scratch resistant texture finish
- ★ UL94-V0 durable ABS
- ★ Belt clip

Designed for a wide range of mobile applications including data acquisition, field test and measurement etc., this compact box offers a comfortable and ergonomic solution. The box is supplied with a belt clip as standard.

### Specification

Type	L x W x H mm	Part No.	Order Code
Size 1	90 50 24	75-228112B	MC87U

Retail Unit Price each (inc. VAT).

Order Code	Type 17296	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MC87U	HH Belt Clip Sz 1	£6.01	£5.71	£5.56	£7.07

## Veronex Hand Held

Vero



Scratch resistant texture finish

- ★ UL94-V0 durable ABS
- ★ LCD cut-out
- ★ Versatile battery compartment

Designed for a wide range of mobile applications including data acquisition, field test and measurement etc., these cases offer a comfortable and ergonomic solution. The boxes offer a recessed membrane keypad area and a LCD cutout, with lens, to accept meters and displays.

### Specification

Type	L x W x H mm	Part No.	Order Code
Size 2	120 60 30	75-227909F	MC88V
Size 3	150 80 30	75-227910G	MC89W
Size 3	150 80 45	75-227911D	MC90X
	Size 2	Size 3	
Membrane:	74 x 40mm	96 x 60mm	
LCD area:	40 x 20mm	60 x 30mm	
Viewing area:	31 x 14mm	47 x 18mm	

Retail Unit Price each (inc. VAT).

Order Code	Type 17296	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MC88V	Batt Comp Size 2	£7.97	£7.58	£7.38	£9.37
MC89W	Batt Comp Size 3	£8.83	£8.39	£8.17	£10.38
MC90X	Batt Comp Size 4	£9.67	£9.19	£8.95	£11.37

## Veronex Accessories

Vero



The battery box design allows a choice of battery holders to be used with the VERONEX range, offering total flexibility. The belt clips can be used with appropriate size for portable applications.

### Specification

Type	L x W x H mm	Part No.	Order Code
Battery Box			
Shallow	50 40 23	75-226685H	MC97F
Deep	50 40 38	75-226686D	MC98G
Belt Clip			
Size 2		75-237434E	MC91Y
Size 3		75-237435B	MC92A

Retail Unit Price each (inc. VAT).

Order Code	Type 17291	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MC97F	Veronex Batt Box Sh	£0.527	£0.509	£0.496	£0.620
MC98G	Veronex Batt Box Dp	£0.706	£0.679	£0.661	£0.830
MC91Y	Belt Clip Size 2	£1.380	£1.320	£1.280	£1.630
MC92A	Belt Clip Size 3	£1.580	£1.510	£1.470	£1.860

## Plain Hand-Held Boxes

Retex



Injection moulded black rectangular boxes ready to be drilled or cut to your own design, having no preformed apertures or panels unlike many other boxes of this type. Each comprises top and bottom halves with lipped joint. Each includes a battery compartment which can contain one PP3 battery, with a removable door with quick release catch and lipped edges.

### Type HH1

Type HH1 has four PCB mounting pillars in the base and the two halves are attached with just two screws. Supplied with four short and two long self-tap screws. Outer dimensions: 105 x 61 x 28mm. PCB space (absolute max.): 66 x 50mm x height 15mm. Battery space: 55 x 29 x 19mm.

### Type HH2

Type HH2 has five PCB mounting pillars in the base and the two halves are attached with four screws. Supplied with five short and four long self-tap screws. Outer dimensions: 145 x 80 x 34mm. PCB space (absolute max.): 94 x 74mm x height 18.5mm. Battery space: 74 x 30 x 28mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1888	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZB17T	Plain HH1 Box	£2.50	£2.25	£2.06	£2.94
ZB16S	Plain HH2 Box	£4.00	£3.50	£3.30	£4.70

## Hand-Held Case with Pocket Clip Option

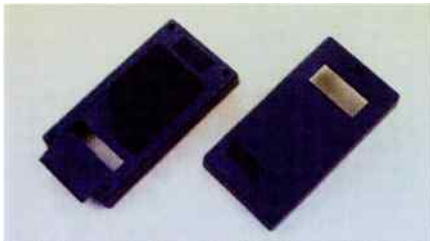


A moulded, high-impact ABS case with integral PP3 battery compartment that is accessible by a separate removable cover. Clip-in battery terminals are supplied as standard, and the pocket clip, if required, can be easily fixed to the case by the two self-tapping screws supplied. The two main halves of the case are held together by the two self-tapping screws supplied, which are concealed by the battery cover. Four integral location pegs and sockets will hold a PCB in place without further fixing. The overall finish of the case is matt with highlighted feature panels making it ideal for personalised products. Overall dimensions: 103 x 62 x 23mm (without clip).

Retail Unit Price each (inc. VAT).

Order Code	Type 1887	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KC15D	Pocket Clip Case	£3.29	£2.75	£2.18	£3.67

## Calculator-Style Hand-Held Box



An attractive calculator-style hand-held box moulded in black ABS plastic with a textured finish. A battery compartment is moulded into the case and has its own clip-on cover. The compartment will accept two PP3 batteries. Three pillars are provided in the base to which a PCB measuring 105 x 56mm may be fixed using No. 4 self-tapping screws. A PCB (107 x 71mm) can also be mounted in the top section using the pillar next to the battery compartment. The box is supplied with four self-tapping screws for holding the two parts together. In the top section of the case (window end) there is a removable insert to facilitate cable entry.

Overall size: 154 x 81 x 37.5/33mm.  
Window size: 49 x 20mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1988	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YK24B	Calc-Style Box	£4.760	£4.110	£3.170	£5.600

## ABS Plastic Box



A pair of well-constructed project boxes in ABS plastic with built-in mounting columns for PCBs, etc., one of which incorporates a battery compartment for a 9V PP3 type battery. The back and sides are finished in a matt black, mottled surface while the front is smooth, shiny black and is removable. These two-part boxes are grooved to ensure a safe and tight fit when secured by the four self-tapping fixing screws supplied.

Dimensions: BP97F 115 x 68 x 22mm  
BP96E 95 x 60 x 25mm

Retail Unit Price each (inc. VAT).

Order Code	Type 10458	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP97F	Junction Box HM	£2.110	£1.680	£1.540	£2.490
BP96E	Junction Box HM+Batt	£3.220	£2.550	£2.300	£3.790

## ABS Plastic Handheld Boxes



Finished throughout in a quality matt black mottled plastic, these small 'handheld' project boxes are ideal for the construction of prototypes or small

electronics projects. They include built in mounting columns for PCBs, etc. Available in miniature (BP98G) and small (BP99H) sizes measuring 58 x 61 x 25mm and 117 x 70 x 23mm respectively.

Retail Unit Price each (inc. VAT).

Order Code	Type 10497	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP98G	Junction Box JM22	£2.110	£1.680	£1.540	£2.490
BP99H	Junction Box HML	£4.070	£2.990	£2.750	£4.790

## Handheld Boxes with Battery Compartment



These solidly constructed ABS plastic project boxes are available in a quality matt black, mottled finish. One unit comes complete with a built-in PP3 type battery compartment with sliding cover and mounting columns for a PCB. Available measuring 146 x 91 x 28.5mm (BP94C) and 146 x 91 x 33mm + battery compartment (BP95D).

Retail Unit Price each (inc. VAT).

Order Code	Type 10498	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP94C	Remote Control Case	£3.390	£2.790	£2.590	£3.990
BP95D	Remote Case + Batt	£4.670	£3.780	£3.490	£5.490

## Remote Control Box with Buttons

West Hyde



A small remote control box manufactured in ABS with a matt black finish. Supplied with four push-buttons to give one, two or four button options. The base of the enclosure includes a battery compartment with a snap-on lid.

Manufacturer's External dimensions mm MPS Code Length Width Height Code

TEKRC124	107	60	22	CW26D
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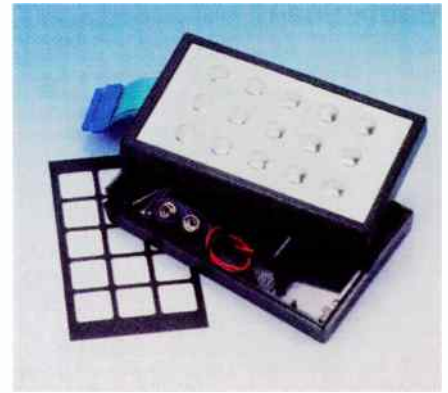
Retail Unit Price each (inc. VAT).

Order Code	Type 1685	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CW26D	Remote With Buttons	£5.460	£4.830	£4.110	£5.420

**All orders over £30.00  
FREE DELIVERY.**

(All orders free delivery for Business Account Customers)

## Handheld Switch-Pacs



These packs contain everything you need to assemble your project into a high quality rugged enclosure, complete with a standard membrane switch panel. They are ideal for prototypes or small production runs. Constructed in tough ABS plastic in a matt black mottled finish, the front panel features a standard matrix steel dome tactile membrane switch panel, complete with ribbon cable and connector. The box interior includes a built in battery compartment (complete with PP3 type battery connector) and mounting columns for a PCB, etc. Each pack includes top and bottom covers, a built in battery compartment, PP3 type battery connector, a tactile membrane switch panel with ribbon cable and connector, full sized polyester overlay on which you can print, type or write your own control legend and four self tapping assembly screws. The Switch-Pac is available in two sizes, the standard 4 x 6 matrix switch panel measuring 142 x 90 x 35mm (BP90X) and a medium 3 x 5 matrix switch panel measuring 115 x 70 x 25mm (BP89W).

Retail Unit Price each (inc. VAT).

Order Code	Type 10499	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP89W	Switch-Pac 3x5	£13.180	£10.300	£9.450	£15.490
BP90X	Switch-Pac 4x6	£15.730	£12.200	£11.050	£18.490

## Small Remote Control Box



A small, flat box with a smart recessed panel and surround at one end, readily suitable as a handheld transmitter/sender as part of a remote control system. The box includes a battery compartment with removable slide-on lid, particularly suitable for PP3 etc. The box is split in two halves using a tongue and groove type joint, secured by two screws. The 'front panel' surround is removable as a unit, allowing access to the plastic panel itself, which is then free to allow hole-cutting for ultrasonic/infra-red transmitting devices, cables etc. The box is 119mm long x 67mm wide x 32.5mm deep. Front panel area is 62 x 27mm. The box is moulded in matt black finish plastic. Two fixing screws supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type 1684	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
LH90X	Small Remote Cntrl Bx	£3.720	£2.870	£2.500	£4.380



## Keyring Remote Case



A compact enclosure ideal for remote control alarm projects, etc. Measures 35 x 70 x 15mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JR9GX	Keyring Remote Case	£1.520	£1.750

## INSTRUMENT CASES

### Plastic Two-Tone ABS Boxes



A range of plastic boxes featuring clip together design and runners for PCBs. Clip on plastic end caps finish each box, producing a quality enclosure ideal for circuitry, remote control applications and electronic equipment. Available in 5 sizes.

Box Code	Dimensions	Order Code
DB1	25 x 53 x 103	BN51F
DB2	25 x 63 x 125	BN52G
DB3	30 x 83 x 163	BN53H
DB4	30 x 103 x 203	BN54J
DB5	50 x 103 x 203	BN55K

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BN51F	Clip Case Size 1	£6.200	£7.290
BN52G	Clip Case Size 2	£6.800	£7.990
BN53H	Clip Case Size 3	£7.650	£8.990
BN54J	Clip Case Size 4	£8.500	£9.990
BN55K	Clip Case Size 5	£9.350	£10.990

### Plastic Project Boxes



Two-tone grey plastic project boxes in three different sizes. Each box has PCB mounting pillars with M3 brass inserts on the base. The lid and base are held together using four M3 screws for the smaller sizes,

M4 screws for the large sizes.

Each box has a removable plastic panel at each end which can be entirely removed to make a window for displays, I/R senders/receivers, or for easy working while drilling holes for cable entry or exit, switches or controls. Tongue and groove joints are used throughout. Both lid and base include raised ribs at the midway position to support the longest sides of a PCB.

#### Dimensions

Type	External mm	Internal mm	End panels mm	PCB size max. mm	PCB fixing centres, mm
D-003	130 x 67 x 47	123 x 59 x 40	52 x 22 offset	98 x 58	86 x 48 and 43
D-009	160 x 80 x 60	152 x 72 x 52	61 x 30	128 x 70	116 x 63 and 58
D-014	197 x 110 x 56	189 x 103 x 48	92 x 42	162 x 102	150 x 90 and 85

	D-003	D-009	D-014
Lid depth	35	44	38
Base depth	12	16	18

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZB01B	Proj Box D-003	£4.760	£5.600
ZB02C	Proj Box D-009	£5.200	£6.110
ZB03D	Proj Box D-014	£6.760	£7.950

### Veroboxes

#### Vero

A range of high quality moulded boxes featuring a tongue and groove construction to ensure a perfect fit.

#### 200 Series



Type 200 boxes are moulded in two-tone grey high impact ABS. Top and bottom sections which include fixing points for circuit boards or chassis plates are held together by four screws entering through the base concealed by plastic feet through which they pass. Anodised aluminium front and rear panels are automatically retained in position when the two halves of the box are screwed together. Moulded guide slots are provided to allow circuit boards to be mounted vertically. On 210 types, the boxes clip together and therefore have no screws, though four self-adhesive feet are provided. Type 217 is different in that the front panel is fixed with four screws and vertical guide slots are not provided.

#### 300 Series



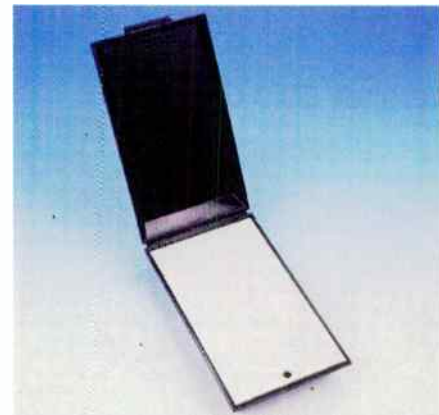
These boxes are moulded in high impact ABS and are supplied with lid and four self-tapping screws. All types are black.

#### 401 Box



This box is moulded in white high impact ABS. It is designed as a hand-held plastic control box and will find many applications including model control, car racing controllers, ultrasonic controllers etc.

#### 601 Box



A sloping front box with hinged snap-shut lid. Moulded in black matt finish polypropylene. A clear anodised aluminium alloy front panel is supplied which clips into box. Pillars are moulded into base and a PCB may be mounted on these using self-tapping screws (supplied). A flat area is located at the back of the box, designed for mounting sockets etc.

#### Overall Dimensions

Type	Vero Part No.	Width (mm)	Depth (mm)	Height (mm)
201	202-21034J	205	140	40
202	202-21035F	205	140	75
203	202-21036G	205	140	110
211	202-21040F	153	84	39.5
212	202-21041C	153	84	59
213	202-21042L	153	84	79
214	202-21037L	180	120	40
215	202-21038H	180	120	65
216	202-21039N	180	120	90
217	202-21033A	171	121	75/37.5
301	202-21024B	71.5	49	24.5
303	202-21390D	120	80	35
305	202-21391A	180	110	55
401	202-21026G	94	61	27
601	202-21317D	75	130	34 (max)

Retail Unit Price each (inc. VAT).

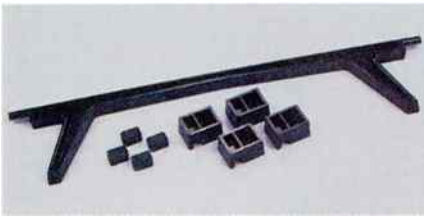
Order Code	Type	Price each exc. VAT	inc. VAT each
LL05F	Verobox 201	£10.400	£12.220
LL06G	Verobox 202	£11.000	£12.930
LL07H	Verobox 203	£13.750	£16.160
LL08J	Verobox 211	£5.750	£6.760
LL09K	Verobox 212	£6.290	£7.400
LL10L	Verobox 213	£7.400	£8.700
LQ07H	Verobox 214	£7.490	£8.810
LQ08J	Verobox 215	£8.100	£9.520
LQ09K	Verobox 216	£8.290	£9.750
LL11M	Verobox 217	£8.850	£10.400

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LL12N	Verobox 301	£1.120	£1.320
LH50E	Verobox 303	£2.690	£3.170
LH51F	Verobox 305	£3.940	£4.640
LL14Q	Verobox 401	£1.290	£1.520
LQ03D	Flip-Top Box 601 Bk	£4.500	£5.290

## Tilt Leg Assembly

Vero



A tilt leg which fits Veroboxes type 201, 202 and 203. Supplied with four rubber feet and a tilt leg which hinges up when not in use.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
HQ47B	Tilt Leg Large	£3.400	£3.230	£3.140	£4.000

## Veronex EMC Cases

Vero



- ★ Durable Cu/Si EMC coating
- ★ UL94-V0 durable ABS
- ★ Good attenuation characteristics
- ★ Oxidation and corrosion resistance

The tongue and groove joint design and end panel retention method ensures good EMC performance from this stylish range of cases. The mouldings have been coated with copper/silver paint which is resistant to atmospheric oxidation and corrosion.

### Specification

Type	L x W x H mm	Part No.	Order Code
Size 1	90 50 24	75-245324H	MC93B
Size 2	120 60 30	75-245325E	MC94C
Size 3	150 80 30	75-225327K	MC95D
Size 4	190 80 40	75-225328G	MC96E

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MC93B	Veronex EMC Size 1	£7.190	£6.830	£6.650	£8.450
MC94C	Veronex EMC Size 2	£10.450	£9.940	£9.670	£12.290
MC95D	Veronex EMC Size 3	£11.740	£11.120	£10.830	£13.760
MC96E	Veronex EMC Size 4	£14.670	£13.940	£13.570	£17.240

## Veronex Accessories

Vero



The battery box design allows a choice of battery holders to be used with the VERONEX range, offering total flexibility. The belt clips can be used with appropriate size for portable applications.

### Specification

Type	L x W x H mm	Part No.	Order Code
Battery Box			
Shallow	50 40 23	75-226685H	MC97F
Deep	50 40 38	75-226686D	MC98G
Belt Clip			
Size 2		75-237434E	MC91Y
Size 3		75-237435B	MC92A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MC97F	Veronex Batt Box Sh	£0.527	£0.509	£0.496	£0.620
MC98G	Veronex Batt Box Dp	£0.706	£0.679	£0.661	£0.830
MC91Y	Belt Clip Size 2	£1.380	£1.320	£1.280	£1.630
MC92A	Belt Clip Size 3	£1.580	£1.510	£1.470	£1.860

## Apollo Cases

Vero



- ★ Clip together design for fast assembly
- ★ High quality ABS mouldings
- ★ Superbly styled
- ★ Reversible front panels (size 4 & 5)

This neat range of textured finished cases will accept horizontal and vertical PCB mounting. The cases feature a plastic front panel (size 4 & 5) and aluminium rear panels (size 3 has two aluminium end panels).

### Specification

Type	L x W x H mm	Part No.	Order Code
Size 3	91 155 79	75-38108K	MC88V
Size 4	146 206 39	75-38118E	MC89W
Size 5	146 206 74	75-38119A	MC90X

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MC99H	Apollo Size 3	£8.440	£8.020	£7.810	£9.920
ME08J	Apollo Size 4	£9.280	£8.820	£8.580	£10.310
ME89W	Apollo Size 5	£10.490	£9.970	£9.710	£12.330

## Plastic LAN Housings



These two-tone grey plastic enclosures are purpose built for local area networks. Each kit includes top and bottom covers, removable front and rear panels, assembly screws, rubber feet and instructions. Available in medium and small sizes measuring 129 x 129 x 38mm and 108 x 205 x 38mm respectively.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BP92A	Lan Case 8x4	£8.500	£6.460	£5.850	£9.990
BP91Y	Lan Case 5x5	£7.050	£5.400	£4.850	£8.290

## Modem/Test Instrument Case



A compact plastic housing ideally designed for use as a modem or test equipment enclosure. With overall dimensions of 241 x 161 x 35mm, relatively large PCBs can be installed with enough back and front panel space for most types of connection, switch and indicator arrays. Supplied in two-tone durable plastic.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BP93B	Modem/Test Inst Case	£10.880	£8.150	£7.350	£12.790

## Two Part ABS Plastic Boxes



Two boxes are available, the smaller has a mottled black finish including the front and back panels. The larger box has the top and bottom parts in a light grey mottled finish and the front and back panels in a black mottled finish. The top and bottom sections are held together by two screws. Both boxes have slotted sections inside to accept PCBs etc., and numerous mounting pillars for fixing boards in place. It is possible to have a combination of vertical and horizontally mounted boards. The larger box has ventilation slots along the edges of the top and bottom sections, the bottom section also has a circular slotted area that would be suitable for a small loudspeaker.

### Dimensions:

Type	Internal	External
Small	197 x 145 x 55mm	203 x 158 x 65mm
Large	250 x 175 x 74mm	257 x 190 x 85mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BZ76H	H2505 Small	£4.760	£3.850	£3.230	£5.600
BZ77J	H2507 Large	£6.930	£5.670	£4.580	£8.150

## ABS Plastic Instrument Case



A high-quality black ABS plastic two-part instrument case with matching front and back panels. The two parts are held together by four recessed screws, and the parts are tongued and grooved to make the box rigid when assembled. Both parts have six pillars,

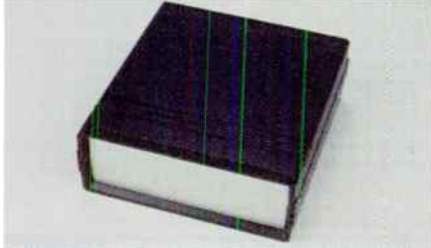
4mm high, for fixing PCBs, and ventilation grills. Finished in matt mottled black. Internal size: 17C x 122 x 50mm. External size: 175 x 130 x 58mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1718	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KC61R	Plastic Instrm Case	£3.720	£3.170	£2.750	£4.380

## ABS Instrument Cases

West Hyde



A range of low-cost, two-piece, cases moulded in textured, black ABS, with aluminium front and rear panels. Each half has bosses to support a PCB or chassis, together with slots for vertical boards. The aluminium panels are 1mm thick and have a silver-grey lacquered finish. When assembled, no screw heads are visible.

Manufacturer's Code	External dimensions mm			MPS Code
	Length	Width	Height	
TEK011K	134	129	47	CW22Y
TEK022K	134	129	61	CW23A
TEK222K	173	154	47	CW24B
TEK233K	173	154	61	CW25C

Retail Unit Price each (inc. VAT).

Order Code	Type 1720	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CW22Y	Case 011K	£7.800	£7.030	£6.510	£9.170
CW23A	Case 022K	£9.670	£8.220	£7.490	£10.190
CW24B	Case 222K	£9.970	£9.110	£8.430	£11.720
CW25C	Case 233K	£10.400	£9.360	£8.640	£12.230

## Instrument Cases

Boss



A range of instrument cases with built-in fixing points for various size Eurocards. The boxes have pre-punched metal side-chassis supports to which are screwed 1mm thick brushed satin-finish aluminium front and rear panels. Dark grey ABS top and bottom covers screw together around the chassis and front and rear panel assembly ensuring a very stylish and rigid unit.

On the larger unit, tilt legs are supplied which can be fitted to the front or rear of the bottom cover, the rubber feet supplied being used in the alternative positions. Both the rear and base panels have ventilation slots.

Type	Overall size (w x d x h mm)	Panel aperture (mm)
3501	90 x 145 x 41	71 x 25
3502	171 x 145 x 56	152 x 40

Retail Unit Price each (inc. VAT).

Order Code	Type 1722	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YN32K	Case 3501	£9.140	£8.230	£7.540	£10.750
YN33L	Case 3502	£11.940	£10.750	£9.850	£14.040

## Instrument Cases



A range of rugged plastic instrument cases and boxes for a wide range of applications. AR88V is a V110 shell type plastic box with integral battery compartment, suitable for 9V PP3 type batteries. The front face of the box is blanked with a silver brushed aluminium panel and the box slots together easily and is secured with four screws. Inside the box there is enough space for a PCB approximately 57 x 43mm, with four pillars for fixings. Rubber feet are also provided to prevent scratching of delicate surfaces.

AR89W is a V190 shell type box with integral battery compartment suitable for four AA type cells or two 9V PP3 cells. Slots and mounting pillars are provided for PCB fixing.

AR90X is ideal for applications such as keypads etc. as it has a sloping front and room inside for a PCB (100 x 175mm max.) to be mounted either on pillars or in slots. The height of the box slopes from 32 to 54mm, making keypads easy to operate with one hand.

Dimensions (mm) (L x W x H)	Order Code
114 x 72 x 33	AR88V
190 x 138 x 45	AR89W
190 x 138 (sloped from 32 to 54mm)	AR90X

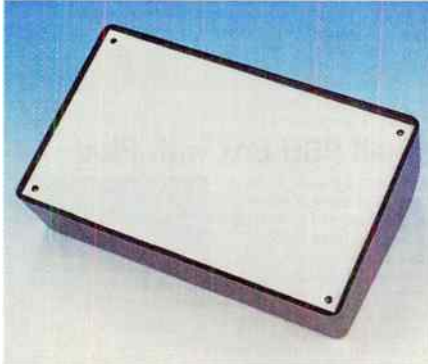
Retail Unit Price each (inc. VAT).

Order Code	Type 8901	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AR88V	Shell Type Box Small	£9.540	£8.270	£7.600	£11.210
AR89W	Shell Type Box Large	£13.880	£12.430	£11.500	£16.310

## ALUMINIUM FRONT PANEL

### Desk Console Style 1

Boss



Glossy black finish boxes moulded in ABS with brass inserts and having a sloping aluminium front panel that sits recessed into the top of the box. The box has guide slots for holding 1.5mm thick PCBs and 3mm high stand-off bosses in the base (for use with self-tappers No. 4). The aluminium front panel is finished in a matt light grey on one side and is 1mm thick. Front panel fixing screws and stick-on feet are supplied.

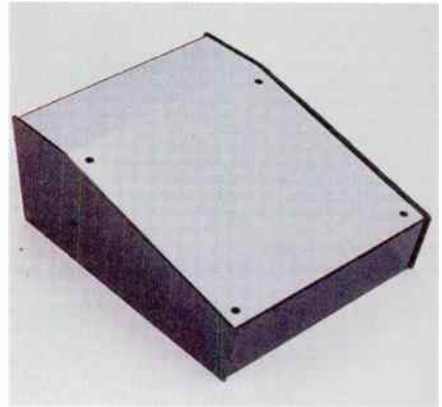
Type	Internal (mm)	External (mm)
M1005	156 x 91 x 47/34	161 x 96 x 61/39
M1006	210 x 125 x 62/41	215 x 130 x 78/47

Retail Unit Price each (inc. VAT).

Order Code	Type 1802	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
LH63T	ABS Console M1005	£3.350	£3.010	£2.760	£3.940
LH64U	ABS Console M1006	£5.090	£4.590	£4.200	£5.990

## Desk Console Style 2

Boss



Glossy black finish boxes moulded in ABS with brass inserts and having an aluminium front panel flat at the rear then sloping down to the front. The box has 3mm high stand-off bosses in the base (for use with No. 4 self-tapping screws). The aluminium front panel is finished in a matt light grey and is 1mm thick. Front panel fixing screws and stick-on feet are supplied.

Type	External (mm)	Max PCB size (mm)
M6005	105 x 143 x 55/31	80 x 128
M6006	170 x 143 x 55/31	140 x 128
M6007	170 x 213 x 82/31	140 x 198

Retail Unit Price each (inc. VAT).

Order Code	Type 1493	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
LH65V	ABS Console M6005	£3.540	£3.190	£2.920	£4.170
LH66W	ABS Console M6006	£4.450	£4.000	£3.670	£5.230
LH67X	ABS Console M6007	£6.640	£5.980	£5.480	£7.610

## Desk Console Style 3

Boss



A three-part construction box moulded in grey ABS with brass inserts, a sloping aluminium front panel and a separate ABS base. The base has 3mm high stand-off bosses for use with No. 4 self-tapping screws and the main part has slotted sides for PCB mounting. The aluminium front panel is finished in a matt light grey and is 1mm thick. Front panel and base fixing screws and four stick-on feet are supplied.

Type M8005 dimensions (mm):

External:	169 x 126 x 70/45
Internal:	163 x 121 x 55/35
Front panel:	157 x 92
Max pcb size in base:	160 x 100

Type M8007 dimensions (mm):

External:	243 x 187 x 103/66
Internal:	237 x 182 x 85/55
Front panel:	225 x 136
Max pcb size in base:	233.4 x 160

Retail Unit Price each (inc. VAT).

Order Code	Type 1804	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
LH68Y	ABS Console M8005	£6.000	£5.390	£4.940	£7.050
LH69A	ABS Console M8007	£9.750	£8.770	£8.040	£11.460

## PCB Guide Adaptor

### Boss

A plastic moulding that can be slid into the PCB guide slots on Desk console style boxes types M1005-6, M6006-7 and M8005-7. The adaptor grips the board horizontally and with one adaptor on each of the four corners of a PCB the whole assembly may be slid into a box. PCBs may be stacked using the adaptor then finally the adaptor cut so that the box lid holds it in place. Adaptors are 52mm long.



Retail Unit Price each (inc. VAT).

Order Code	Type 1005	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YR72P	Pcb Guide Adaptor	£0.204	£0.180	£0.170	£0.240

## Desk Console Style 4

### Boss



A glossy finish box moulded in ABS with grey upper and lower sections. The satin finish front panel is 1.3mm thick aluminium. Screws for the front panel and push-fit rubber feet are supplied.

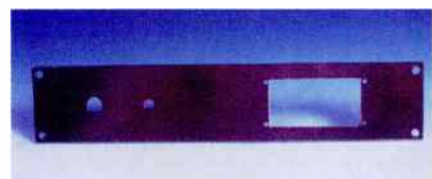
Overall dimensions in mm.

Type	Width	Depth	Min Height	Max Height
2801	190	120	33	62
2802	260	185	33	78
2803	260	185	33	117

Retail Unit Price each (inc. VAT).

Order Code	Type 1006	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YN29G	ABS Console 2801	£9.750	£8.770	£8.040	£11.460
YN30H	ABS Console 2802	£15.000	£13.500	£12.370	£17.630
YN31J	ABS Console 2803	£17.250	£15.520	£14.230	£20.270

## Desk Console Front Panel



This front panel fits ABS Console 2803 (YN31J) and is specifically designed to accept two switches and a temperature module for the Maplin Weather Monitoring System Project. This panel will find uses in other applications with similar requirements.

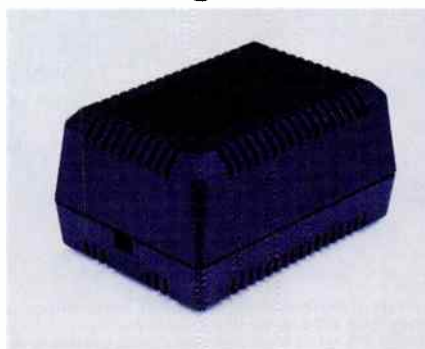
Retail Unit Price each (inc. VAT).

Order Code	Type 1006E	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JL95D	Mapmet FP Metal	£3.820			£4.490

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## PSU BOXES

### Free Standing PSU Box



A neatly styled black plastic box, moulded in two parts and held together by four screws. The box is primarily intended to house a free standing power supply. Both case parts have ventilation slots to facilitate cooling of transformer/regulator etc. For cable entry grommet use JM16S. External dimensions: 129.5 x 91.5 x 70mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1007	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YU32K	Free Strding PSU Box	£3.390	£2.880	£2.540	£3.990

### PSU Box

A power supply style case with an attractive rugged appearance, moulded in black ABS. The case will house E154, S35 or S147 size transformers with space for other components. The top and base are held together by four fixing screws (supplied). The inside of the box is moulded to hold the specified transformer and our types YJ50E and WB11M fit quite snugly. Overall dimensions: 117 x 63 x 62mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1008	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YN38R	Power Supply Case	£1.550	£1.240	£1.040	£1.830

### Small PSU Box with Plug

A moulded plastic case in a matt stone-colour finish designed to house power supplies for low voltage equipment. The case has a plastic earth pin and brass live and neutral pins so that it plugs directly into a 13A socket. An extra moulding is provided to separate the mains and low-voltage parts of the circuit. A shallow recess in the lid is provided for a label. The two parts of the box fit tightly together and two screws are supplied for firm fixing.

External dimensions: 76 x 49 x 43mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1009	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YN18U	Small PSU Box	£1.990	£1.610	£1.410	£2.340

## PSU Box with Plug

### West Hyde

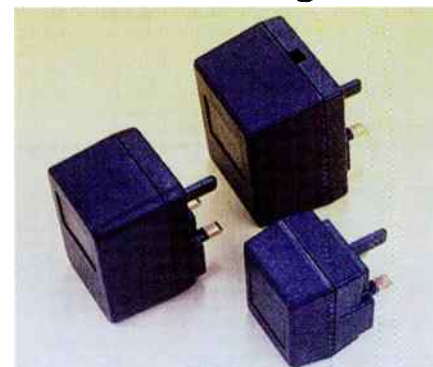
A moulded black plastic case specifically designed to house power supplies for low voltage equipment. The case features a plastic earth pin and brass live and neutral pins to allow the unit to plug directly into a 13A socket. It will accommodate the components of a power supply including the transformer, and safety is assured with the inclusion of a special internal moulding which, as well as retaining the earth pin, separates the mains input from the low voltage output circuitry and transformer laminations. The case is in impact resistant ABS in two screw together sections and incorporates a shallow recess intended for a label. External dimensions: 56.5 x 92 x 62.5mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1700	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FG41U	PSU Box and Plug	£2.850	£2.280	£1.380	£3.360

## PSU Boxes with Plug



A range of three plastic boxes with integral plug pins to suit a 13A 240V AC mains socket. The boxes are intended to house power supplies for low voltage equipment. The matt black plastic case is in two parts which should be glued together after the components have been fitted. The base part houses the plug pins; the earth is plastic and the live and neutral are brass. The live and neutral pins also incorporate plastic shrouds for safety. The top part has a shallow recess provided for a label. Dimensions are given excluding pins, which protrude 23mm from the base.

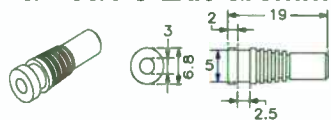
Type	External dimensions (mm)
Small	50 x 59 x 46
Medium	56 x 81.5 x 56
Large	68 x 85.5 x 61.5

Retail Unit Price each (inc. VAT).

Order Code	Type 1701	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YU29G	PSU Box Small	£1.290	£1.020	£0.801	£1.500
YU30H	PSU Box Medium	£1.370	£1.120	£0.916	£1.600
YU31J	PSU Box Large	£1.550	£1.240	£0.988	£1.830

**KEY CALL**  
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### Small Cable Exit Grommet



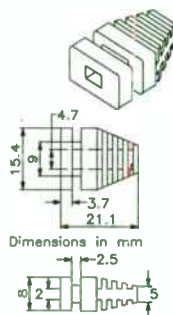
A neat, flexible cable exit grommet, moulded in black plastic. Although intended for use with the Small PSU box (YU29G), the grommet will find uses in many other applications.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JP42V	Small PSU Grommet	1+ £0.085 25+ £0.062 100+ £0.052	1+ £0.100

### Cable Exit Grommet

A neat, flexible cable exit grommet, moulded in black plastic. Although intended for use with the above Medium and Large PSU boxes (YU30H and YU31J), the grommet will find uses in many other applications. Requires a 9 x 5mm rectangular slot.

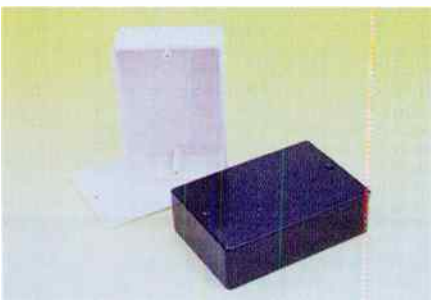


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JM16S	PSU Grommet	1+ £0.127 25+ £0.094 100+ £0.067	1+ £0.150

## GENERAL PURPOSE

### Small Plastic Boxes

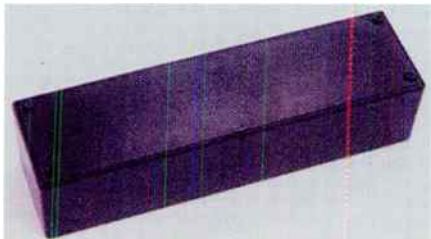


Small plastic box available in black or white. Size: 114 x 76 x 38mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LF01B	Box PB1 White	1+ £1.550 25+ £1.120 100+ £0.926	1+ £1.830
LH14Q	Box PB1 Black	1+ £1.550 25+ £1.120 100+ £0.926	1+ £1.830

### Small Narrow Box



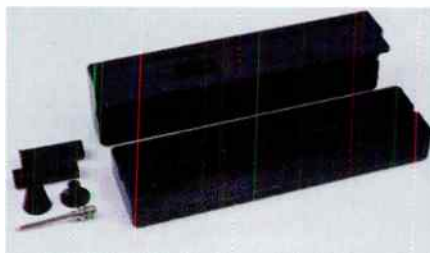
This small box conveniently fills the gap between matchbox sized plastic cases and the more 'conventionally' sized hand-held boxes where the

latter may be too unwieldy for certain uses. The moulded black plastic box is 124mm long by 33mm wide by 30mm deep, internal; 120mm long by 30mm wide by 25mm deep. It has a removable lid which forms a good seal, and is secured with four self-tapping screws, supplied. Ideal for small, hand-held probes, miniature circuits or even as a housing for the protection of a block of screw terminals serving as a junction box for a number of cables etc.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FT31J	Small Narrow Box	1+ £0.808 25+ £0.645 100+ £0.530	1+ £0.950

### Probe Box



A small box designed for use as logic probes etc. The black injection moulded box comes in a total of seven parts, comprising left and right shell halves, a top panel, a pair of internal fixing pillars which join both shells together, and a moulded probe boss and fixing grommet. A metal probe is included. The top panel includes a rectangular cutout 17 x 10mm, 33mm from one end, which has recessed edges on the underside into which a piece of coloured display filter or celluloid can be glued. The shell halves have a central hole in each end, 5mm diameter for the probe boss, and 4mm for cable entry. Four countersunk screws are provided for fitting. The box has rounded edges and corners. External dimensions, 130 x 34 x 30mm. Internal, 126 x 26 x 26mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JX57M	Logic Probe Box	1+ £1.720 25+ £1.510 100+ £1.140	1+ £2.030

### Transparent Box



A transparent box manufactured in smoked plastic. The two halves of the box slide together and guides are provided to hold a PCB in place. There is sufficient room for a 9V PP3 type battery. Additionally the two halves may be cut-down lengthways to make the box shorter. Ideal for hand held devices such as infra-red remote controls and other similar projects.

External Dimensions (mm)  
141.5 x 57 x 23.5

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU94C	Transparent Box	1+ £5.020 10+ £4.680 25+ £4.310	1+ £5.910

### Panel Mounted DIN Cases

Bowthorpe



A range of glass fibre reinforced black plastic cases that have excellent mechanical and electrical properties. The cases are moulded in one piece and have a rear matching black panel that is secured by four M2 screws. The front of the case has a removable bezel that can be used to hold in place a red filter screen, which is supplied with the kit. Alternatively an aluminium panel can be used (supplied with kit) which is held in place by four M2 screws. Internally the cases are lined with guiding grooves to take PCBs, cards etc. The kit includes two clamps that are attached to the sides of the case, and are used to provide a secure fixture in a panel cut-out.

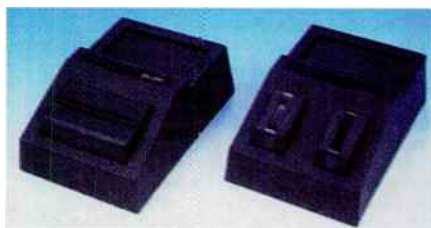
Manufacturer's Code	External dimensions mm	MPS Code		
Width	Height	Depth		
N3421	48	48	116.5	CW00A
N3422	72	72	116.5	CW01B
N3423	96	48	138.5	CW02C
N3424	96	96	138.5	CW03D
N3425	144	72	138.5	CW04E
N3426	144	144	138.5	CW05F

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CW00A	DIN Case 48x48	1+ £1.270 10+ £0.920 25+ £0.410	1+ £1.320
CW01B	DIN Case 72x72	1+ £14.740 10+ £12.640 25+ £11.810	1+ £17.330
CW02C	DIN Case 96x48	1+ £12.140 10+ £11.440 25+ £11.080	1+ £14.270
CW03D	DIN Case 96x96	1+ £13.010 10+ £12.750 25+ £12.170	1+ £15.290
CW04E	DIN Case 144x72	1+ £16.480 10+ £15.140 25+ £14.830	1+ £19.370
CW05F	DIN Case 144x144	1+ £19.950 10+ £18.470 25+ £17.690	1+ £23.450

### Foot Switches

Re-An



A pair of tough moulded plastic foot switches that are extremely robust and reliable. Available in double and single switch format, they also form the ideal basis for effects units, as they include a 6.35mm (1/4in.) jack socket, and one or two switches. Dimensions: 125 x 87 x 47mm (max).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YK74R	Single Foot Switch	1+ £9.540 10+ £7.650 25+ £6.810	1+ £11.210
YK75S	Double Foot Switch	1+ £10.400 10+ £8.370 25+ £7.650	1+ £12.230

**Free delivery for all Maplin MPS Business Account Holders!**

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## Waterproof Boxes



A range of external waterproof boxes in a self-extinguishing, light-grey thermoplastic material which is highly resistant to impact, heat and chemical and atmospheric agents. The medium size is also available with a transparent polycarbonate cover. All boxes are sealed and rated to IP55.

11

### Internal dimensions:

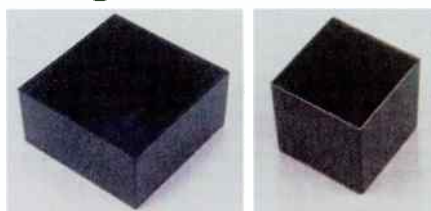
Small	100 x 100 x 50mm
Medium	150 x 110 x 70mm
Large	240 x 190 x 90mm

Retail Unit Price each (inc. VAT).

Order Code	Type 1727	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YM90X	Small Waterproof Box	£2.850	£2.400	£2.130	£3.360
YM91Y	Medm Waterproof Box	£4.160	£3.540	£3.220	£4.890
YM92A	Large Waterproof Box	£11.270	£9.410	£8.480	£13.250
YM93B	Medm Waterproof Clear	£7.630	£6.400	£5.820	£8.970

## POTTING BOXES

### Potting Boxes



A range of Potting Boxes for use with our Potting Compound (see end of Tools section). Boxes are moulded in black ABS.

Internal dimensions (mm):

Type	Length	Width	Height
Cube	23	23	24
Miniature	28	18	14
Small	38	38	19
Medium	48	48	29
Large	73	48	34
Extra Large	98	58	24

Wall thickness is 1mm (except Extra Large where it is 1.3mm). Length and width are a fraction less at base of box as sides taper slightly. Dimensions shown are measured at top of box.

Retail Unit Price each (inc. VAT).

Order Code	Type 1864	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FD96E	Potting Box Cube	£0.365	£0.333	£0.260	£0.430
LH56L	Potting Box Min	£0.263	£0.229	£0.166	£0.310
LH57M	Potting Box Small	£0.365	£0.312	£0.250	£0.430
FD97F	Potting Box Medium	£0.382	£0.364	£0.270	£0.450
LH59P	Potting Box Large	£0.493	£0.437	£0.354	£0.580
FD98G	Potting Box Ex Large	£0.595	£0.478	£0.416	£0.700

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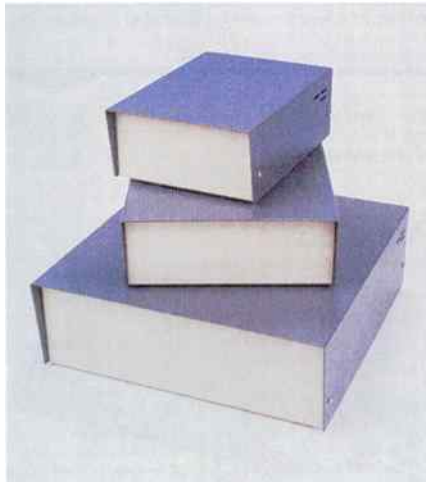
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## METAL ENCLOSURES

### INSTRUMENT CASES

## Aluminium Instrument Cases



A range of superbly finished instrument cases having a two-part construction and including a chassis. The cases have a visor-shaped top with ventilation slots punched in the sides. Top and sides section is finished in glossy grey/blue hammertone and the base, front and rear section is finished in cream gloss. The base is fitted with self-adhesive feet. The chassis which fits into the base of the box is 10mm high.

The following sizes are available (mm)

Model	Width	Depth	Height
235	100	150	100
212	150	100	75
231	150	150	75
236	150	150	100
222	200	125	75
226	200	125	100
237	200	150	100
233	250	150	75
238	300	150	100

Retail Unit Price each (inc. VAT).

Order Code	Type 1726	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XY41U	Blue Case 235	£7.590	£7.210	£6.630	£9.920
XY43W	Blue Case 212	£7.130	£6.780	£6.420	£8.380
XY44X	Blue Case 231	£8.030	£7.630	£7.230	£9.440
XB67X	Blue Case 236	£8.920	£8.480	£8.030	£10.490
XY45Y	Blue Case 222	£8.920	£8.480	£8.030	£10.490
XY46A	Blue Case 226	£8.920	£8.480	£8.030	£10.490
XY47B	Blue Case 237	£11.600	£11.020	£10.440	£13.640
XY48C	Blue Case 233	£9.820	£9.330	£8.840	£11.540
XY49D	Blue Case 238	£12.500	£11.870	£11.250	£14.690

## Aluminium Instrument Cases



A range of superbly finished cases having a two part construction. The visor-shaped top is finished in matt grey hammertone and has ventilation slots punched in the sides. The base, front and rear are finished in cream. The base is fitted with self-adhesive feet.

The following sizes are available (mm):

Model	Width	Depth	Height
S2:39	250	200	75
S2:40	250	250	75
S2:41	150	200	75
S2:42	200	250	75
S2:43	300	250	75
S2:44	300	300	75
S2:45	300	300	100

Retail Unit Price each (inc. VAT).

Order Code	Type 1726	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
KR10L	Grey Case S2:39	£11.600	£11.020	£10.440	£13.640
KR11M	Grey Case S2:40	£12.500	£11.870	£11.250	£14.690
KR12N	Grey Case S2:41	£8.920	£8.480	£8.030	£10.490
KR13P	Grey Case S2:42	£9.820	£9.330	£8.840	£11.540
KR14Q	Grey Case S2:43	£12.500	£11.870	£11.250	£14.690
KR15R	Grey Case S2:44	£15.170	£14.420	£13.660	£17.830
KR16S	Grey Case S2:45	£16.070	£15.270	£14.470	£18.890

## Steel Instrument Cases



A very attractive range of superbly finished instrument cases with a 1mm thick galvanised steel base which has ventilation slots and 4 fixing holes for mounting a PCB. The 1mm thick steel cover is powdercoated and baked in an attractive dark grey leatherette polyester finish. There are ventilation slots in the top rear of the cover. A 1mm thick front panel in anodised aluminium is supplied along with a 1mm thick zinc-passivated steel rear panel. A set of screws and 4 self adhesive feet are provided.

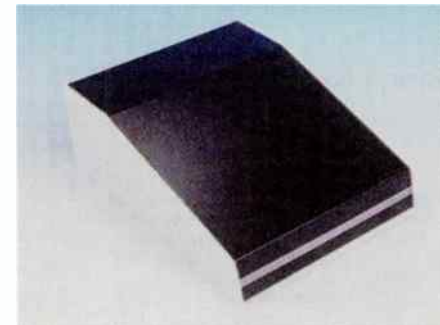
The following sizes are available (mm)

Model	Width	Depth	Height
1105	125	155	58
1108	125	155	89
1605	175	155	58
1608	175	155	89
2105	225	175	58
2108	225	175	89

Retail Unit Price each (inc. VAT).

Order Code	Type 1727	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XJ25C	Steel Case 1105	£7.130	£6.780	£6.420	£8.380
XJ26D	Steel Case 1108	£7.490	£7.120	£6.750	£8.810
XJ27E	Steel Case 1605	£7.590	£7.210	£6.830	£8.920
XJ28F	Steel Case 1608	£8.920	£8.480	£8.030	£10.490
XJ29G	Steel Case 2105	£9.820	£9.330	£8.840	£11.540
XJ30H	Steel Case 2108	£11.600	£11.020	£10.440	£13.640

## Sloping Front Cases



High quality sloping front all-aluminium construction cases. Top is finished in a matt black stove enamel with a narrow brushed aluminium trim at the front

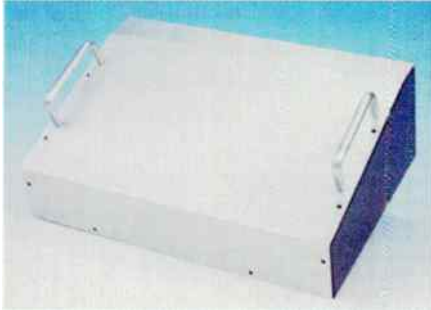
(which could be lettered with a name for example). Base is finished in a textured light stone colour. The control area slopes at 15° from the horizontal. Self-adhesive feet are supplied. The following sizes are available (mm).

Model	Width	Height		Length	Length Base	
		Rear	Front		of Front	of Top
103	165	76	33	160	56	211
108	431	76	33	160	56	213

Retail Unit Price each (inc. VAT).

Order Code	Type 1770	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XY59P 1	Console 103	£14.280	£13.580	£12.860	£16.793
XY60Q 2	Console 108	£20.540	£19.520	£18.490	£24.140

## Steel Sloping Front Case



A sloping front case with a 1mm thick steel base epoxy painted in dark grey and baked at 190°C. The top part is made in 1mm thick anodised aluminium. The control area slopes at 15° from the horizontal. The box is supplied with aluminium handles and self-adhesive feet. An internal chassis is also available and must be ordered separately. The chassis is 0.8mm thick galvanised steel and supplied with fixing screws.

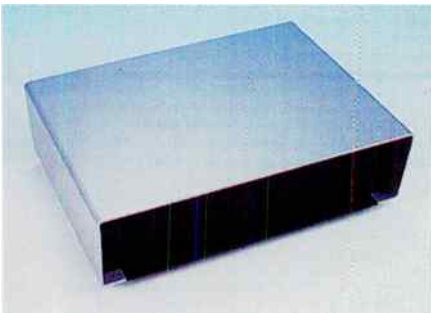
Dimensions (mm)	
Width	300
Depth	205
Height at front	60
Height at rear	100
Length of top	40
Length of front	165
Chassis	280 x 190
Chassis height	20

Retail Unit Price each (inc. VAT).

Order Code	Type 1772	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XJ36P 2	Sloping Case 3020	£16.480	£14.360	£12.950	£19.370
XJ35Q	Sloping Case Chassis	£3.890	£3.330	£3.070	£4.580

## G-Range Cases

Vero



A range of beautifully finished cases featuring a black PVC clad aluminium alloy upright front panel surrounded by a sloping visor. The case top which slides on over the front and rear panels and is fixed by four screws through the feet on the base is 14swg (2mm thick) solid aluminium alloy etched and anodised to give a superb hard glistening silver finish. The front and rear panels are also removable and although the working surfaces, front, rear and base are totally accessible for drilling and component assembly, the fastenings that hold the box together are completely hidden when the box is assembled.

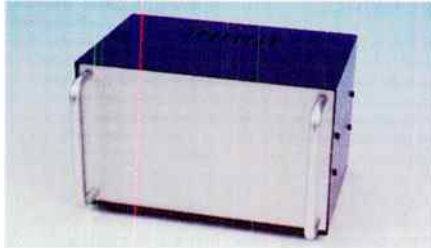
The boxes are available in two sizes:

Overall dimensions (mm)			
Type	Width	Depth	Height
3G	224	176	64
4B	304	210	84

Retail Unit Price each (inc. VAT).

Order Code	Type 1775	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XQ09K 2	G-Range 3G	£24.000	£22.800	£22.200	£28.200
XQ10L 3	G-Range 4B	£31.000	£29.450	£28.670	£36.430

## Steel Instrument Cases with Handles



Very attractive, high quality instrument cases manufactured in 1mm thick sheet steel. The case is made as two half-cases, with ventilation holes punched in each half, then painted in dark grey epoxy and baked at 190°C. The front panel is 1mm thick anodised aluminium and the rear panel is 1mm thick zinc passivated steel. All models are supplied with natural-finish aluminium handles and self-adhesive feet. Chassis are also available and must be ordered separately. They are manufactured in 0.8mm galvanised steel and are supplied with fixing screws.

The following sizes are available (mm).

Model	Width	Depth	Height
2012/130	200	130	120
2012/250	200	250	120
2408/160	240	160	80
2610/180	260	180	100
2610/280	260	280	100
3012/200	310	200	120

Chassis	Width	Depth
2012/130	192	88
2012/250	192	208
2408/160	233	118
2610/180	255	152
2610/280	255	246
3012/200	303	168

Retail Unit Price each (inc. VAT).

Order Code	Type 1773	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XJ31J 2	Steel Case 2012/130	£13.880	£12.330	£11.500	£16.310
XJ32K 4	Steel Case 2012/250	£18.220	£16.180	£15.190	£21.410
XJ33L 2	Steel Case 2408/160	£13.880	£12.480	£11.600	£16.310
XJ34M 3	Steel Case 2610/180	£16.480	£14.670	£13.680	£19.370
XJ38R 5	Steel Case 2610/280	£19.950	£17.640	£16.490	£23.450
XJ37S 4	Steel Case 3012/200	£20.390	£18.360	£17.120	£23.960
XJ39N	Chassis 2012/130	£2.420	£1.980	£1.830	£2.850
XJ41U	Chassis 2408/160	£2.850	£2.350	£2.130	£3.360
XJ42V	Chassis 2610/180	£3.720	£3.020	£2.870	£4.380
XJ43W	Chassis 2610/280	£6.930	£6.140	£5.620	£8.150
XJ44X	Chassis 3012/200	£5.890	£5.150	£4.730	£6.930



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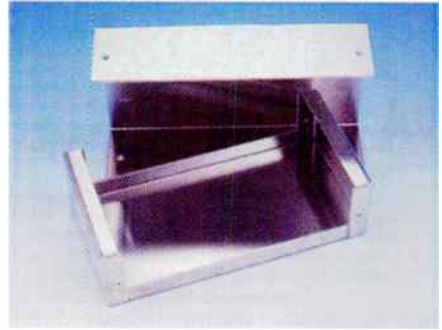
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## GENERAL CASES

### Aluminium Boxes



A range of low cost aluminium boxes with lid.

Type	Length mm (in.)	Width mm (in.)	Height mm (in.)
AB12	76 (3in.)	51 (2in.)	25 (1in.)
AB11	102 (4in.)	64 (2 1/2in.)	51 (2in.)
AB9	102 (4in.)	70 (2 3/4in.)	38 (1 1/2in.)
AB28	102 (4in.)	70 (2 3/4in.)	64 (2 1/2in.)
AB23	102 (4in.)	102 (4in.)	64 (2 1/2in.)
AB7	133 (5 1/4in.)	70 (2 3/4in.)	38 (1 1/2in.)
AB10	133 (5 1/4in.)	102 (4in.)	38 (1 1/2in.)
AB24	133 (5 1/4in.)	102 (4in.)	64 (2 1/2in.)
AB13	152 (6in.)	102 (4in.)	51 (2in.)
AB31	152 (6in.)	114 (4 1/2in.)	76 (3in.)
AB15	203 (8in.)	152 (6in.)	76 (3in.)
PC25	298 (11 3/4in.)	152 (6in.)	51 (2in.)
PC24	298 (11 3/4in.)	253 (10in.)	51 (2in.)
PC26	398 (15 5/8in.)	253 (10in.)	51 (2in.)

Retail Unit Price each (inc. VAT).

Order Code	Type 1728	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
LF08J	Box AB7	£2.040	£1.940	£1.840	£2.400
LF10L	Box AB9	£1.680	£1.600	£1.520	£1.980
LF11M	Box AB10	£2.480	£2.360	£2.240	£2.920
LF12N	Box AB11	£1.770	£1.680	£1.590	£2.080
LF13P	Box AB12	£1.320	£1.260	£1.190	£1.560
LF14Q	Box AB13	£3.020	£2.870	£2.720	£3.550
XB71N	Box AB15	£5.350	£5.080	£4.820	£6.290
LF15R	Box AB23	£2.570	£2.450	£2.320	£3.030
LF16S	Box AB24	£3.020	£2.870	£2.720	£3.550
LH10L	Box AB28	£2.040	£1.940	£1.840	£2.400
XB69A	Box AB31	£4.000	£3.800	£3.600	£4.700
KR55K 1	Box PC24	£7.130	£6.780	£6.420	£8.380
KR56L	Box PC25	£5.790	£5.500	£5.210	£6.810
KR57M 2	Box PC26	£9.820	£9.330	£8.840	£11.540

## Chassis



Aluminium chassis with four sides and corner plates, and aluminium base panel.

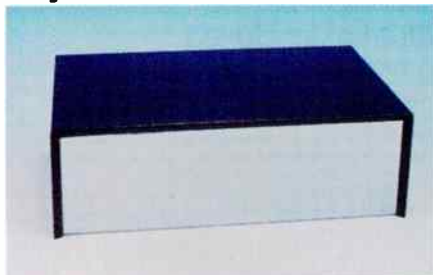
Dimensions:

Type No.	Length	Height	Width
AC64	152.5	63.5	102
AC86	203	63.5	152.5

Retail Unit Price each (inc. VAT).

Order Code	Type 1732	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XB56L	Chassis AC64	£2.490	£2.370	£2.250	£2.930
XB68V	Chassis AC86	£3.440	£3.270	£3.100	£4.050

## Vinyl-Effect Boxes



A range of very low cost aluminium boxes consisting of a 'U' shaped base and an aluminium cover of black painted finish giving a vinyl looking effect.

Type No.	Dimensions (mm)		
	Width	Depth	Height
WB1	127	63.5	57
WB2	152	114	44
WB3	203	127	51
WB4	230	133	63.5
WB5	279	159	76
WB6	279	190	89
WB7	305	159	133

Retail Unit Price each (inc. VAT).

Order Code	Type 1734	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
LF02C	Case WB1 Vinyl	£2.920	£2.780	£2.640	£3.440
LH37S	Case WB2 Vinyl	£4.000	£3.800	£3.600	£4.700
LH38R	Case WB3 Vinyl	£4.450	£4.230	£4.010	£5.240
LH39N 1	Case WB4 Vinyl	£5.610	£5.340	£5.060	£6.600
LH40T 1	Case WB5 Vinyl	£6.230	£5.930	£5.610	£7.330
LH41U 2	Case WB6 Vinyl	£7.590	£7.210	£6.830	£8.920
LH42V 2	Case WB7 Vinyl	£10.260	£9.750	£9.240	£12.060

## Diecast Boxes

Boss



Aluminium alloy diecast boxes finished in grey hammertone. The boxes have close-fitting flanged lids to provide fully screened enclosures. The box has guide slots for holding 1.5mm thick PCBs. Fixing screws are supplied.

Type	Internal (mm)	External (mm)
M5001/11	46 x 46 x 27	50 x 50 x 31
M5002	96 x 46 x 21	100 x 50 x 25
M5003/13	108 x 58 x 27	112 x 62 x 31
M5004	116 x 61 x 36	120 x 65 x 40
M5007	116 x 91 x 56	120 x 95 x 60
M5005	146 x 76 x 46	150 x 80 x 50
M5006	186 x 106 x 56	190 x 110 x 60

Retail Unit Price each (inc. VAT).

Order Code	Type 1731	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GU61R	Box DCM5001	£3.040	£2.750	£2.520	£3.580
LH70M	Box DCM5002	£4.000	£3.600	£3.300	£4.700
GU62S	Box DCM5003	£4.600	£4.140	£3.800	£5.410
LH71N	Box DCM5004	£5.300	£4.770	£4.370	£6.230
LH72P	Box DCM5007	£7.090	£6.390	£5.850	£8.340
LH73Q	Box DCM5005	£6.640	£5.980	£5.480	£7.810
LH74R	Box DCM5006	£10.600	£9.540	£8.740	£12.460

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## Extruded Aluminium Interlocking Boxes



A very versatile range of boxes which can interlock with one another to form racks of separately cased and screened circuits. PCBs slide into grooves inside the boxes and power transistors may be fitted to the special heatsinks and the pcb, and both then slide into the box together in their own slots. The special heatsink then dissipates the heat through the outer box.

Five different size boxes are available and any side on one will interlock with any side on any other size. Accessories available include the slide-in heatsinks in two widths, angle brackets which slide onto the sides of the boxes for permanent fixing, rubber foot in continuous lengths which slides into the grooves in the boxes, and gaskets to make the boxes waterproof.

## Boxes

The CAN style box is available in two lengths 40mm for circuit boards 55 x 40mm and 80mm for circuit boards 55 x 80mm. The CCN style box is available in three lengths, 80mm, 160mm and 220mm, to suit circuit boards 100 x 80mm, 100 x 160mm and 100 x 220mm. Up to 30mm space above circuit board gives room for transformers etc. Supplied in natural aluminium with two end plates and eight self-tapping screws.

Thermal resistance case to air:

CAN40	8.3°C/W
CAN80	6.5°C/W
CCN80	3.7°C/W
CCN160	2.9°C/W
CCN220	2.2°C/W

Retail Unit Price each (inc. VAT).

Order Code	Type 1757	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YN53H	Box CAN40	£3.720	£3.170	£2.810	£4.380
YN49D	Box CAN80	£4.590	£3.960	£3.540	£5.400
YN50E	Box CCN80	£6.760	£5.770	£5.250	£7.950
YN51F 1	Box CCN160	£10.400	£8.640	£7.960	£12.230
YN52G 1	Box CCN220	£13.440	£11.080	£10.080	£15.800

## Mounting Lugs



Extruded aluminium mounting bracket for fixing housings to walls, panels etc. The bracket slides into any external slot on the boxes and is retained by the end plates. Supplied in natural aluminium in two lengths: 40mm and 80mm. A 5.2mm diameter hole is drilled in the middle of one face.

Retail Unit Price each (inc. VAT).

Order Code	Type 1752	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FE36P	Lug 40	£0.595	£0.437	£0.385	£0.700
FE37S	Lug 80	£0.689	£0.510	£0.448	£0.810

## Heatsinks

Extruded aluminium heatsink bracket for mounting power semiconductors, including those with T03, T0220 cases (but not high-top T03 types - in our range these are: 2SJ48-50 and 2SK133-135). The heatsink slides into the special receiving slots on the inside of every box. It can be both pcb mounted and in thermal contact with the box if correctly mounted. Heatsink is drilled to suit T03 case. Fix transistor with mounting kit and 6BA bolts. Supplied in natural aluminium in two lengths: 20mm and 40mm (note 20mm is not wide enough to seat whole T03 transistor).



Retail Unit Price each (inc. VAT).

Order Code	Type 1765	Price each exc. VAT			inc. VAT each
		1+	30+	150+	
FE38R	Sink 20	£1.720	£1.380	£1.220	£2.030
FE39N	Sink 40	£2.160	£1.670	£1.500	£2.540

## Gaskets



Oil resistant nitrile bonded cork gaskets to BS F66 and ASTM F104. Coated one side with a pressure sensitive adhesive. Thickness 1mm. Supplied in pairs in two sizes to suit CAN or CCN boxes. Please note, gaskets may be supplied with centre removed.

Retail Unit Price each (inc. VAT).

Order Code	Type 1766	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FE40T	Gasket CAN	£0.859	£0.676	£0.604	£1.010
FE41U	Gasket CCN	£1.550	£1.190	£1.030	£1.830

## Rubber Foot



Black extruded rubber foot which slides into any external slot on any box. It is retained when the end plates are attached. Sold in 1m lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 1768	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
XR93B	Rubber Foot	£2.160	£1.740	£1.580	£2.540

See Stock Code Index For More Price Breaks

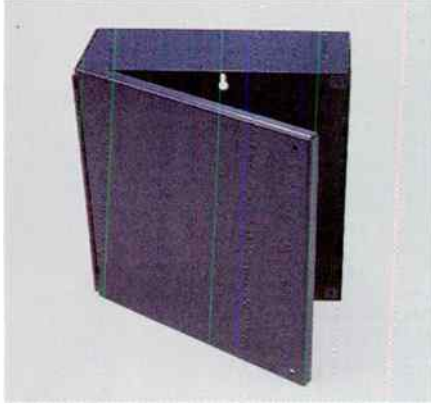
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**Wallbox**



A large, plain undrilled case, measuring 250mm square by 100mm deep. The flanged lid is hinged along the length of one side, and is secured in the closed position by two 2BA round-head screws, not supplied. Although primarily intended to be mounted on a wall, the case may find applications in many other areas where a tough, durable enclosure is required, but it is not really suitable for use outdoors. The case is finished in grey enamel.

Retail Unit Price each (inc. VAT).

Order Code	Type 1776	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YJ11M 5	Wallbox Plain	£14,740	£11,290	£9,830	£17,330

**RACK MOUNTING CASES**

**19in. Rack Cases**

Vero



- ★ Ventilated or unventilated versions
- ★ Part assembled
- ★ Styled handle design
- ★ Steel construction with durable paint finish
- ★ Clear anodised front panels

These cases offer a flexible approach to 19in. mounting solutions. A choice of vented or unvented top covers, with only two cover release screws allows easy access and cooling capability. The ergonomically designed handles fitted to clear anodised front panels ensures a stylish finish to the units. The top covers and handles are available separately.

**Specification**

19in. Rack Cases					
Type	L x W x H mm	Part No.	Order Code		
1U	350 482 44.45	519-113515G	MF39N		
2U	350 482 88.9	519-114545B	MF40T		
3U	350 482 133.35	519-115515H	MF41U		

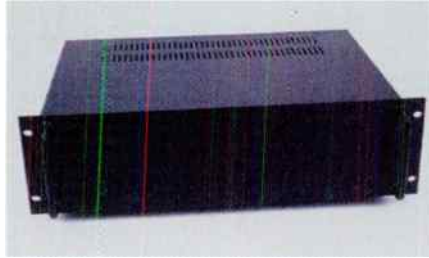
**Accessories**

Ventilated top cover	503-232965H	MF42V
Unventilated top cover	503-323966F	MF43W
Grey handles	503-232981K	MF44X

Retail Unit Price each (inc. VAT).

Order Code	Type 17303	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MF39N 1	19in 1U 350mm Case	£26,060	£24,760	£24,110	£30,630
MF40T 1	19in 2U 350mm Case	£34,000	£32,300	£31,450	£39,950
MF41U 1	19in 3U 350mm Case	£38,980	£36,930	£35,950	£45,570
MF42V	19 Vent Top Cover	£8,700	£8,270	£8,360	£10,230
MF43W	19 Unvent Top Cover	£8,000	£7,600	£7,400	£9,400
MF44X	Grey Handles	£5,460	£5,190	£5,050	£6,420

**Standard Rack Mounting Instrument Cases**



A range of high quality rack mounting cases, fabricated mild steel and finished in a hard wearing semi-matt black epoxy coating. The base plate is punched with a matrix of holes for securing PCBs, transformers etc, and the top cover is provided with ventilation slots to assist cooling. The black anodised aluminium front panel has two handles and there are four holes punched to facilitate fixing the case in a rack. The cases are supplied flat packed and are easy to assemble.

Available in 1U, 2U, 3U and 4U standard sizes.

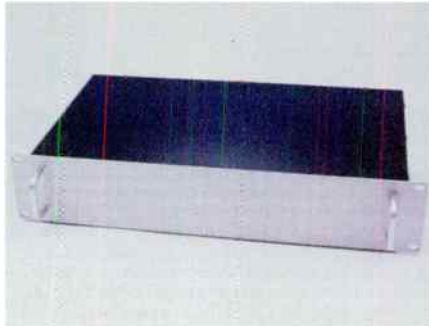
**Dimensions (mm):**

Type	External	Internal	Front panel
1U	437 x 42 x 305	432 x 40 x 293	483 x 44
2U	437 x 80 x 305	432 x 78 x 293	483 x 88
3U	437 x 122 x 305	432 x 120 x 293	483 x 132
4U	437 x 168 x 305	432 x 166 x 293	483 x 177

Retail Unit Price each (inc. VAT).

Order Code	Type 1791	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XM69A 7	19in Rack Case 1U	£27,770	£23,730	£20,290	£32,630
XM69B 8	19in Rack Case 2U	£30,370	£26,010	£22,420	£35,690
XM70M 10	19in Rack Case 3U	£36,450	£30,170	£24,920	£42,830
XM71N 12	19in Rack Case 4U	£38,180	£31,210	£27,320	£44,870

**Standard Rack Style Instrument Cases**



A range of high quality heavy-duty instrument cases for mounting in 483mm (19in.) equipment racks, with fixing slots pre-punched in the ends of the front panel. The case is manufactured from 1mm thick sheet steel painted with high grade black epoxy and baked at 190°C. Ventilation holes are punched in the front and rear of the top and base panels. The front panel is 3mm thick anodised aluminium to which natural-finish aluminium handles are fitted. A 1mm thick galvanised steel sub-panel is fitted approx. 9mm behind the rear of the aluminium front panel to provide extra rigidity, and for fixing front panel components so that fixing-nuts and bushes do not show. The top and base panels can be removed separately for easy access to the interior.

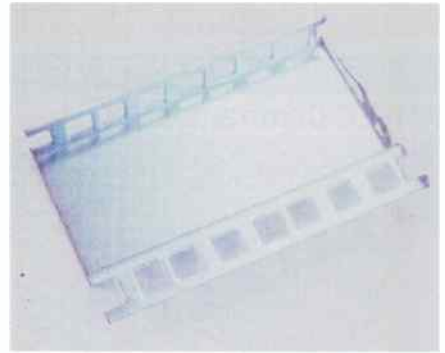
Three sizes available (dimensions in mm).

Type	Width	Depth	Height	Front panel	
				Width	Height
4809	440	250	80	483	88
4813	440	250	120	483	132
4817	440	350	165	483	177

Retail Unit Price each (inc. VAT).

Order Code	Type 1792	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XJ24B 7	19in Case 4809	£31,240	£27,420	£25,760	£36,710
XJ23A 9	19in Case 4813	£34,710	£30,960	£28,710	£40,790
XM12N 12	19in Case 4817	£49,470	£42,500	£39,280	£58,130

**Standard Rack Mounting Rail**



A 1.5m long, plain steel rail which is punched to accept the mounting 'ears' of standard rack frames.

Rails may be fitted into an enclosure or attached to a frame, producing a free standing assembly which can contain up to eleven 3U racks. The front rails should have the special captive nuts attached for anchoring the front panels at their edges.

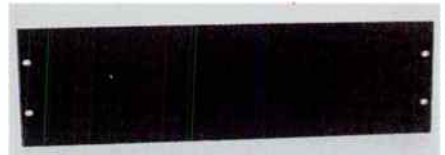
Additional adaptor brackets are available which will enable non-standard items to be included in the structure, such as cassette tape decks and similar equipment, or shelves made for these.

Fitting hardware comprising 4 x M6 caged nuts, 4 x M6 x 12mm zinc plated pan-head slotted bolts, and 4 x nylon safety washers, are also required for fitting 483mm (19in.) style cases.

Retail Unit Price each (inc. VAT).

Order Code	Type 1704	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
GK41U 3	19in Rack Strip	£9,970	£8,010	£7,180	£11,720
ZB00A	19in Rack Bracket	£3,460	£2,600	£2,030	£4,070
KW35Q	19in Rack Hardware	£2,160	£1,630	£1,610	£2,540

**Undrilled Standard Rack Mounting Panels**



Plain black painted aluminium 483mm (19in.) rack panels undrilled except for the standard four rack mounting holes at the corners. Panels are 3mm thick. Available in sizes 1U, 2U, 3U and 4U.

Retail Unit Price each (inc. VAT).

Order Code	Type 1795	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
ZA96E	Front Panel 1U	£5,630	£4,370	£3,330	£6,620
ZA97F	Front Panel 2U	£7,370	£5,770	£4,890	£8,660
ZA98G 1	Front Panel 3U	£9,540	£7,700	£6,510	£11,210
ZA99H 1	Front Panel 4U	£11,710	£9,570	£8,430	£13,760

**Rack Mounting Jackfield**



A 482mm wide x 89mm (2U) high black painted, front panel which will fit into a 483mm (19in.) racking system. The panel includes 32, 11mm diameter holes for jack sockets, signal lamps, switches etc. Each location has an adjacent rectangular, white printed label area for writing its identity. Made from 1.7mm thick steel and includes 13mm deep folded edges top and bottom for strength.

Retail Unit Price each (inc. VAT).

Order Code	Type 1787	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
KW61R 1	Rack Jackfield	£10,400	£8,270	£7,490	£12,230

## EUROCARD SUB-RACK SYSTEMS (DIN 41494)

### VERO KM6EC SYSTEM

#### KM6EC Cardframes



- ★ EMC conversion
- ★ Lightweight accurate assembly
- ★ Backplane or DIN41612 mounting

This lightweight range of IEC297-3 cardframes provides an economic solution for backplane or DIN 41612 connector mounting. Options include EMC conversion with the addition of top and bottom covers, and copper fingers fitted to the conductively finished frame.

#### Specification

Type	L x W x H mm	Part No.	Order Code
Backplane Mounting	240 84bp 3u	956-241020L	MF45Y
DIN 41612	240 84bp 3u	956-241029D	MF46A

Retail Unit Price each (inc. VAT).

Order Code	Type 17304	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MF45Y	KM6EC 3U 240mm	£22.780	£21.640	£21.070	£26.770
MF46A	KM6EC 3U 240mm	£23.970	£22.780	£22.180	£28.170

#### KM6EC Front Panels

VERO



- ★ IEC 297-3 and DIN 41494 compatible
- ★ Includes handle and idents (not on 84bp type)
- ★ Horizontal grain and plastic screw retainer
- ★ Conductive edges

These 3U front panels are available in a number of widths and can be mixed within the 84bp aperture, for blanking or PCB retention (see accessories).

#### Specification

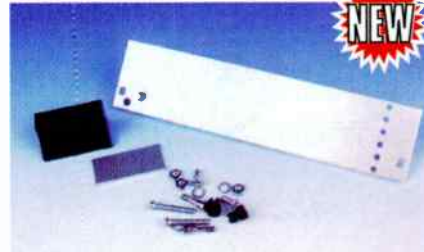
Type	L x W x H mm	Part No.	Order Code
4hp	2.5 19.9 3u	957-235348K	MF49D
5hp	2.5 25.0 3u	957-235349H	MF50E
6hp	2.5 30.1 3u	957-235351K	MF51F
10hp	2.5 50.4 3u	957-235355B	MF52G
84hp	2.5 426.3 3u	957-236065F	MF53H
84hp (EMC)		957-202694C	MF54J

Retail Unit Price each (inc. VAT).

Order Code	Type 17304	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MF49D	4HP Front Panel	£3.760	£3.570	£3.480	£4.420
MF50E	5HP Front Panel	£3.770	£3.590	£3.500	£4.440
MF51F	6HP Front Panel	£4.420	£4.200	£4.090	£5.200
MF52G	10HP Front Panel	£5.300	£5.030	£4.900	£6.230
MF53H	84HP Front Panel	£10.330	£9.820	£9.560	£12.140
MF54J	84HP EMC Front Panel	£20.700	£19.670	£19.160	£24.330

## KM6EC Accessories

VERO



- ★ 84bp tapped and insulation strips
- ★ EMC conversion kits and closing angles
- ★ PCB mounting brackets

These accessories allow a very flexible approach to cardframe packaging solutions. Insulating strips can be used in conjunction with the backplane cardframes and tapped strips are required to retain the front panels. EMC conversion kits and EMC copper fingers offer high levels of attenuation when used with the EMC front panel and rear closing panel.

Description	Part No.	Order Code
84bp tapped strip	950-2021001E	MF47B
160mm PCB guide	950-232662J	MF48C
84bp extrusion kit	956-242870C	MF55K
3u rear closing angle	956-243237J	MF56L
EMC conversion kit	950-240553G	MF57M
EMC copper fingers	930-238243F	MF58N
3U closing panel	950-202694C	MF59P
Card mounting brackets	173-232669L	MF60Q
Insulating strip	950-10014H	MF61R

Retail Unit Price each (inc. VAT).

Order Code	Type 17307	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MF47B	84HP Tapped Strip	£2.830	£2.690	£2.620	£3.330
MF48C	160mm PCB Guide	£3.560	£3.390	£3.300	£4.190
MF55K	Extrusion Kit 84HP	£6.330	£6.020	£5.860	£7.440
MF56L	3U Rear Cl Angle	£0.995	£0.950	£0.925	£1.170
MF57M	EMC Conversion Kit	£26.920	£25.580	£24.900	£31.640
MF58N	EMC Copper Fingers	£4.650	£4.420	£4.310	£5.470
MF59P	3U Closing Panel	£20.700	£19.670	£19.160	£24.330
MF60Q	Card Mounting Brackets	£2.260	£2.150	£2.090	£2.660
MF61R	Insulating Strip	£0.765	£0.729	£0.710	£0.900

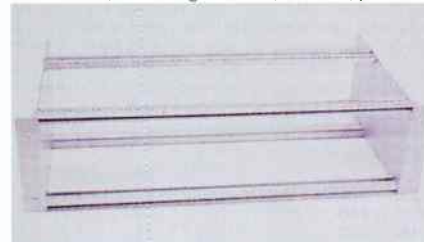
## FRAMES & ENCLOSURES

### Eurocard Sub-Rack Systems (Din 41494)

A very high quality modular sub-rack system (conforming to DIN 41494) for housing Eurocard modules and cards. The user can tailor the layout of the sub-rack to suit a particular application. As well as the sub-rack units themselves, a wide range of accessories are available, including mounting plates for DIN 41612 connectors.

### Sub-Rack Frames & Enclosures

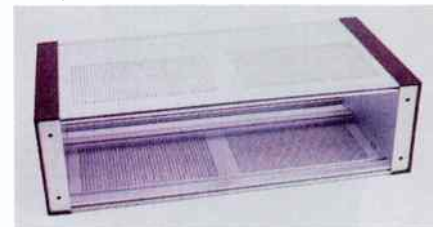
A range of standard 483mm (19in.), 84E, 3U/single height eurocard sub-racks. All three types are modular and are constructed from anodised aluminium panels and extrusion. A wide range of accessories, such as guide rails, handles, plates,



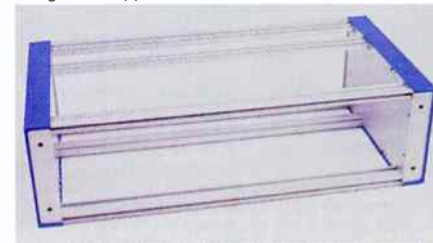
covers, etc. are available separately. The basic version is a 'skeleton sub-rack', which has four horizontal fixing bars, two side plates and standard rack mounting 'ears'. The 'free standing sub-rack' is as the 'skeleton sub-rack', but also has two rear panel fixing bars, two extra mounting 'ears' and two carrying handle/end cheeks.

The 'enclosed sub-rack' is as the 'free standing sub-rack', but also has top and bottom panels. These panels are punched to assist ventilation.

Type	Dimensions (mm):
Skeleton Sub-rack	483 x 132 x 237
Free Standing Sub-rack	486 x 136 x 243
Enclosed Sub-rack	486 x 136 x 243



Sub-racks are supplied flat packed and assembly fixings are supplied.



Retail Unit Price each (inc. VAT).

Order Code	Type 17304	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XM74R	2 19in Skeleton Rack	£24.290	£22.790	£20.910	£26.550
XM76H	3 19in Free Std Rack	£34.710	£30.690	£29.080	£40.790
XM75S	5 19in Enclosed Rack	£63.360	£57.170	£55.140	£74.450

## Sub-rack Accessories

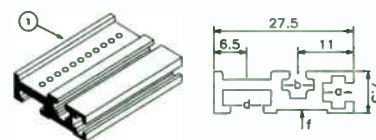
The following sub-rack accessories are available, as indicated in the exploded drawings.

#### Item

1. Horizontal Mounting Rail, 84E/17 inch extruded anodised aluminium, punched with 84 holes, for use as an extra mounting rail, to allow extra panels, etc, to be fitted to the sub-rack.
2. Connector Mounting Plate, 84E/17 inch punched anodised aluminium plate, for mounting DIN 41612 connectors on horizontal support rails. Two are required.



3. Case Handles, manufactured from silver/grey ABS plastic, these handles, which may be fitted to



the sub-rack mounting 'ears', provide a convenient way to lift the sub-rack or remove it from an enclosure. Supplied in pairs with fixing screws.

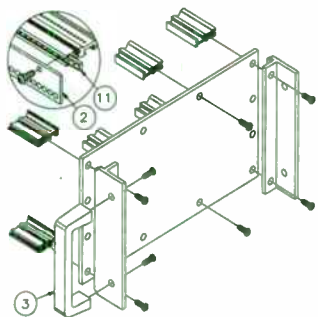
4. Front Panel 4E (20-3mm) wide x 3U high anodised aluminium panel.



5. Front Panel 5E (25-4mm) wide x 3U high anodised aluminium panel.



6. Front Panel 10E (50-8mm) wide x 3U high anodised aluminium panel.



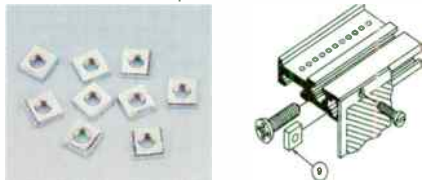
13..Plastic Fixing Attachment, fixing bracket for attaching eurocards to front panels.



14. Panel Locking Posts, metal locking posts for use with front panels as a quick release panel fixing. Post is fitted to panel and engages with a slot in the horizontal mounting rail, the outer collar is then tightened to secure the panel. Supplied in pairs. One pair required for 4E and 5E panels, two pairs required for 10E and 20E panels.



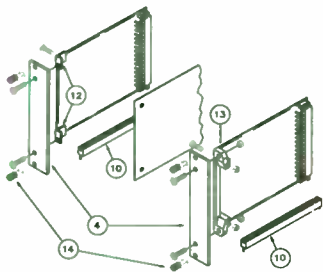
7. Front Panel 20E (102mm) wide x 3U high anodised aluminium panel.



8. Front/Rear Panel 84E (432mm) wide x 3U high anodised aluminium panel.  
9. M3 Square Nut, zinc coated square nut tapped to accept M3 bolts, intended to fit the aperture in horizontal mounting rail. Supplied in packs of 100.



10. Eurocard Guide Rail, black plastic eurocard guide rails which clip into the assembled sub-rack. Sub-racks are supplied without guides, therefore must be ordered separately. Guides are supplied in pairs.



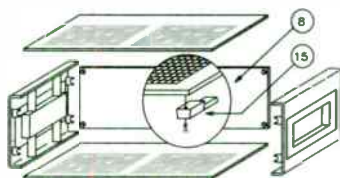
11. Threaded Panel Mounting Rail, 84E/432mm steel rail with 84 holes tapped to accept M3 bolts, may be used in place of individual M3 square nuts. Panel mounting rail slides into the aperture on horizontal mounting rail.



12. Metal Fixing Attachment, fixing bracket for attaching eurocards to front panels. Supplied in pairs.



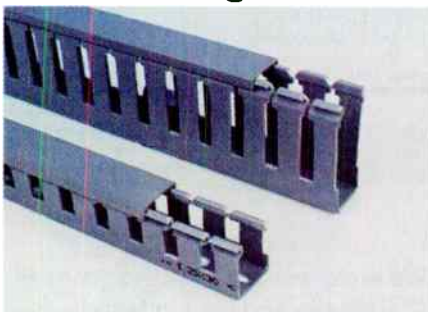
15. Sub-rack Tilt Leg, plastic folding leg (front) and rubber foot (rear). Intended for use with enclosed sub-rack to ensure good airflow through sub-rack and to allow front of sub-rack to be tilted upward at a convenient angle. Two required per sub-rack.



Retail Unit Price each (inc. VAT).

Order Code	Type 1794	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JP24B	Horizontal Mtg Rail	£5.020	£4.430	£4.160	£5.910
JP25C	Connector Mtg Plate	£3.020	£2.350	£2.030	£3.560
JP26D	Case Handles	£4.160	£3.690	£3.120	£4.890
JP41U	Front Panel 4E	£1.290	£1.040	£0.884	£1.520
JP29G	Front Panel 5E	£1.550	£1.240	£1.140	£1.830
JP28F	Front Panel 10E	£2.160	£1.610	£1.460	£2.540
JP27E	Front Panel 20E	£3.720	£2.600	£1.760	£4.380
JP33L	Front/Rear Panel 84E	£7.800	£6.610	£6.040	£9.170
JP34M	M3 Square Nut 100	£3.460	£3.170	£2.970	£4.070
JP30H	Eurocard Guide Rail	£1.550	£1.240	£0.988	£1.830
JP31I	Thrd Panel Mtg Rail	£2.590	£2.440	£2.280	£3.050
JP32K	Metal Fixing Attmnt	£1.120	£0.936	£0.780	£1.320
JP35Q	Plas Fixing Attmnt	£0.859	£0.791	£0.708	£1.010
JP36P	Panel Locking Posts	£1.550	£1.310	£1.140	£1.830
JP38R	Sub-Rack Tilt Leg	£2.590	£2.180	£1.930	£3.050

## Conduit Racking

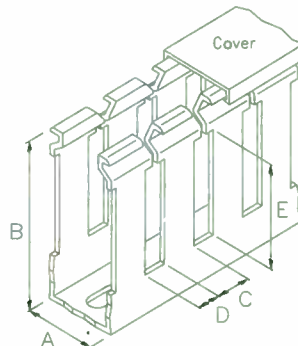


Plastic slotted conduit which is useful for forming wiring around rack type applications quickly and easily without the prolific use of cable ties. Each cable slot is approximately 8mm wide and 36mm deep (60mm depth conduit). As supplied the conduit can be used with cables up to 8mm in diameter. Larger cables may be accommodated by snapping

out sections of the conduit. The conduit has additional slots in the base of the channel for fixing purposes. Fixing slots are two sizes: Large slots – 6mm x 14mm; Small slots – 4mm x 8mm approx. Available in two sizes: 25 x 60mm and 25 x 30mm. Sold in 2m lengths.

### Dimensions in mm:

Size	A	B	C	D	E
25 x 60	25	60	12	8	36
25 x 30	25	30	12	8	13-5



Retail Unit Price each (inc. VAT).

Order Code	Type 1794	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CJ44X	Conduit Racking 25x60	£4.240	£4.030	£3.630	£4.990
CW57M	Conduit Racking 25x30	£2.540	£2.190	£1.990	£2.990

## ACCESSORIES

### FEET

## Cabinet Feet



Black soft synthetic rubber feet 15-9mm dia. 4BA clearance mounting hole. Supplied in packs of four.

Retail Unit Price each (inc. VAT).

Order Code	Type 1834	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FW19V	Feet Cab	£0.212	£0.170	£0.150	£0.250

## Small Cabinet Feet



A small black PVC cabinet foot that attaches by means of a hole drilled in a panel. The foot push fits into the hole and locks into place. Height of foot when fitted, 8mm. Diameter, 10mm. Panel hole diameter, 6-8mm. Supplied in packs of four.

Retail Unit Price each (inc. VAT).

Order Code	Type 1834	Price each exc. VAT			inc. VAT each
		1+	25+	125+	
JU45Y	Small Cab Feet	£0.417	£0.300	£0.230	£0.490

**All Customers**  
No additional freight  
charges for heavy items

## Stick-on Feet



Flexible black synthetic rubber stick-on feet with a strong adhesive backing. Will adhere to most surfaces. Available in three sizes.

Small: 8mm dia., 2.2mm thick  
 Large: 12.7mm dia., 3.2mm thick  
 Square: 21mm square, 9mm thick  
 Domed: 15mm dia., 8mm thick  
 Supplied in packs of four.

Retail Unit Price each (inc. VAT).

Order Code	Type 1840	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FE32K	Stick-On Feet Small	£0.272	£0.218	£0.176	£0.320
FW38R	Stick-On Feet Large	£0.340	£0.260	£0.208	£0.400
FD75S	Stick-On Feet Square	£0.544	£0.458	£0.385	£0.640
BP58N	Stick-On Feet Domed	£0.331	£0.210	£0.180	£0.390

## Heavy-Duty Foot

Re-An



Large heavy-duty plastic moulded cabinet foot with 2BA fixing hole. Overall diameter: 37mm. Height: 15mm. Supplied singly.

Retail Unit Price each (inc. VAT).

Order Code	Type 1855	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FW39N	HD Foot	£0.255	£0.200	£0.170	£0.300

## Rectangular Handle

West Hyde

This attractive handle has a ground, de-burred and black anodised finish, and is available in three standard heights for 483mm (19in.) rack mounted equipment. Supplied with screws and washers. Overall height 40mm.



Manufacturer's Code	Fixing To suit	Overall		Order Code
		centres (mm)	length (mm)	
RS10254	1U	25	40	CW16S
RS10554	2U	55	69	CW17T
RS10884	3U	88	102	CW18U

Retail Unit Price each (inc. VAT).

Order Code	Type 1854	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
CW16S	1U Handle	£3.820	£3.350	£3.000	£4.490
CW17T	2U Handle	£3.650	£3.400	£3.000	£4.290
CW18U	3U Handle	£4.240	£3.700	£3.150	£4.990

## Large Rubber Foot



Large heavy-duty rubber foot with metal insert. 5mm or 2BA fixing hole. Size: 38mm dia., 10.6mm thick. Sold singly.

Retail Unit Price each (inc. VAT).

Order Code	Type 1843	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FP02C	Large Rubber Foot	£0.331	£0.300	£0.250	£0.390

## Castors



A heavy duty castor with a 50mm (2in.) diameter synthetic rubber wheel connected via a ball race to a 54mm square mounting plate. Fixing by four corner holes 40 x 40 x 6.8mm. dia. Supplied in pairs only.

Retail Unit Price each (inc. VAT).

Order Code	Type 1860	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FX96E	Castors	£4.240	£2.570	£1.980	£4.990

## HANDLES

### Plastic Handle

Cliff



A strong handle moulded from glass filled nylon and with an elegant matt black appearance with very high strength. The handle has a black plastic insert and is supplied with fixing bolts. Fixing centres: 63mm. Overall size: 89 x 38 x 8mm. Bolts require 4BA hole. 4BA nuts not supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type 1865	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FG42V	Plastic Handle	£0.842	£0.750	£0.650	£0.990

## Oval Cross-Sectional Handle

West Hyde

A high quality aluminium handle with a comfortable grip and a black anodised finish. Supplied with screws (M5 x 12) and washers. Overall height 40mm.



Manufacturer's Code	Fixing centres (mm)	Overall length (mm)	MPS Code
ROA0884	88	96	CW20W
ROA1204	120	128	CW21X

Retail Unit Price each (inc. VAT).

Order Code	Type 1857	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
CW19V	Handle 63	£4.160	£3.590	£3.170	£4.890
CW20W	Handle 96	£4.460	£3.990	£3.270	£5.250
CW21X	Handle 128	£5.020	£4.430	£3.850	£5.910

## Extra Large Rubber Foot



An extra-large heavy-duty rubber foot with 6mm fixing hole. Size: 38mm dia., 20mm thick. Sold singly.

Retail Unit Price each (inc. VAT).

Order Code	Type 1844	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FS25C	Extra Large Foot	£0.391	£0.320	£0.280	£0.460

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

## Heavy-Duty Strap Handle with Recess Plate

Cliff



This is a high quality all-plastic assembly designed for use on all types of portable instrumentation. The design and materials give a breaking strength above 200kg. Fixing is by four woodscrews or suitable nuts and bolts. The recess plate permits flush mounting so cabinets can be stacked. Supplied in black matt only. Fits recess size 210 x 85mm, 15mm deep. Overall size is 250 x 110mm. Comes as four pieces, screws are not supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type 1872	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
BK29G	HD Strap + Recess	£4.500	£3.650	£3.100	£5.290

**Carrying Handle**



Strap-type carrying handle, with chrome end pieces and fixing bolts and black plastic handle. Overall length with handle fully retracted 165mm approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 1875	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FW81C	Handle	£1.690	£1.260	£1.120	£1.950

**Heavy-Duty Strap Handle**

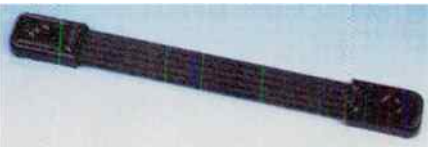


A heavy duty strap-type flexible carrying handle. Moulded in a smart, ribbed black flexible plastic with an internal steel reinforcement strip. The end pieces are moulded in a tough black plastic and each should be fixed with two 5mm diameter countersunk screws or bolts. Rectangular snap-in covers are supplied to hide the screw heads for a nice clean appearance. Provided that the fixing method chosen - taking care to select suitably large wood screws or nuts and washers as appropriate - is adequate, the handle will lift up to 15kg. Overall length when fitted, 280mm. Overall width 30.3mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1877	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FW82D	HD Strap Handle	£1.430	£1.030	£0.780	£1.690

**Heavy-Duty Strap Handle**

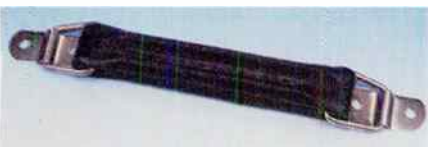


A heavy duty strap-type flexible carrying handle. Moulded in a smart black ribbed flexible PVC with a strong heat treated sprung steel carrier strip. End pieces are black painted steel. Fixing is by means of two countersunk M5 steel bolts or screws (not supplied). Overall length with handle fully retracted: 255mm. Fixing centres: 213 x 5mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 1878	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
LJ70N	Black Strap Handle	£1.600	£1.040	£0.770	£1.890

**Leather Strap Handle**



A very strong 12 to 15mm thick leather strap handle with chrome-plated fixing cleats. Handle size 165 x 28mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1880	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FR27E	Strap Handle Leather	£4.240	£3.500	£3.100	£4.990

**Flexible Handle**

Cliff



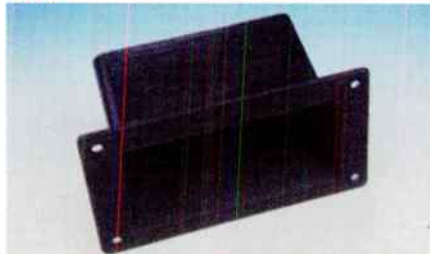
A flexible handle in matt black glass filled nylon for extra strength despite its slim and stylish appearance. Rated at 27.2kg loading capacity. It is provided with two recessed screw holes suitable for self tapper No.8, 2BA etc. Length 179mm, width 25mm, height 20mm. Fixing centres: 155 x 5.4mm diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type 1883	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FG79L	Flex Handle	£1.010	£0.780	£0.670	£1.190

**Recess Handle**

Re-An



A flush fitting cabinet handle made from tough black impact and shatterproof material ideal for amplifier cabinets and other heavy casings. Cut-out required: 48 x 105mm. Total depth in cabinet: 75mm. Bezel dimensions: 134 x 68mm. Fixing centres: 118.5 x 54mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1885	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
LH08J	Recess Handle	£0.672	£0.570	£0.400	£0.790

**Large Cabinet Handle**

Cliff



A heavy duty bar handle, which is designed for use on large, heavy, wood or metal cabinets. It comprises a front and back-plate which are snapped together prior to fixing into the cabinet. The mounting flange is provided with a moulded sealing rib which will give a reasonable airtight seal on cloth or plastic covered cabinets. If a watertight seal is required, then a sealing compound should be used under the flange. A moulded recess in the bar can accept a name plate or trade logo. Overall size 210 x 165mm. Cut-out 164 x 122mm. Depth 50mm maximum. Nameplate 73 x 16mm approx., and 1.5mm deep. Manufacturer's Code CH-2

Retail Unit Price each (inc. VAT).

Order Code	Type 1889	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CW30H	Large Cab Handle	£2.540	£2.090	£1.720	£2.990

**Heavy Duty Handle**



A metal heavy duty flushfitting black cabinet handle with a strong 25.4mm bar. Ideal for speaker cabinets and other very heavy casings. Cut-out required: 235 x 120mm. Total depth in cabinet: 70mm. Bezel dimensions: 161 x 280mm. Fixing centres: 85 x 85 x 85 x 140mm (5.5mm clear).

Retail Unit Price each (inc. VAT).

Order Code	Type 1851	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
LH11M	Heavy Duty Handle	£3.900	£3.220	£2.960	£4.590

**Flight Case Handle**



A heavy-duty flip handle as used on flight cases. Fits cut-out size 128 x 75 x 10mm deep. Overall size 154 x 100mm. A matching backing plate to provide an extra strong fixing is also available.

Retail Unit Price each (inc. VAT).

Order Code	Type 1893	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YL05F	Flip Handle	£2.800	£2.150	£1.600	£3.290
FS26D	Flip Hndle Backplate	£0.842	£0.610	£0.470	£0.990

**FIXINGS**

**Recess Plate**



A recess plate to allow flush mounting of our jack sockets and some other panel mounting components. Overall diameter: 44mm. Overall depth: 8mm. Fixing centres: 36mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1861	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HH23A	Recess Plate	£0.212	£0.170	£0.140	£0.250

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)



## Recess Dish



A 1mm thick, black-finish recess dish ideal for fixing panel mounting components on wooden cabinets. The dish requires a cut-out 115 x 65mm and has 6 fixing holes 4mm clear punched around the edge. Overall size: 136 x 89 x 15.5mm deep. May be internally or externally mounted.

Retail Unit Price each (inc. VAT).

Order Code	Type 1932	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS34M	Recess Dish	£1.46†	£1.040	£0.666	£1.720

## Ventilation Grille

Re-An



Manufactured in black in a specially heat-resistant nylon. Fits cut-out size 142 x 35mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1963	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FX06G	Cool Grille	£0.638	£0.470	£0.380	£0.750

## Plastic Cabinet Corner

Re-An



Moulded in extra tough black nylon, it is designed to protect the corners of portable cabinets.

Retail Unit Price each (inc. VAT).

Order Code	Type 1995	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FX04E	Cab Corner Large	£0.212	£0.170	£0.140	£0.250

## Metal Cabinet Corners



High quality chromed metal corner protectors available for two or three-sided fixing.

Retail Unit Price each (inc. VAT).

Order Code	Type 1995	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FX94C	Corner Two-Side	£0.680	£0.610	£0.540	£0.800
FX95D	Corner Three-Side	£0.553	£0.480	£0.420	£0.650

## Heavy Duty Cabinet Corners



Heavy-duty zinc-plated metal corner protectors available with two or three-sided fixing. The three-sided fixing is also available with a recess in one side for stacking.

Retail Unit Price each (inc. VAT).

Order Code	Type 1992	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS28F	HD Cab Corner 2 Side	£0.842	£0.600	£0.500	£0.990
FS29G	HD Cab Corner 3 Side	£0.842	£0.650	£0.520	£0.990
FS30H	HD Cab Corner Stack	£0.842	£0.630	£0.480	£0.990

## Cabinet Corner/Foot



Moulded from rigid black PE, they are designed for use on ply or chipboard cabinets. Fixing is by countersunk screws, and screw holes are rebated to avoid abrasion. They are available in two sizes, approx heights are 85mm and 55mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1994	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BK25C	Cab Corner/Foot Lge	£0.672	£0.520	£0.430	£0.790
BK26D	Cab Corner/Foot Sm	£0.587	£0.460	£0.350	£0.690

## Trim and Corner



An attractive extrusion and separate corner piece for use on cabinet corners. Extrusion is 40 x 40mm by 3mm thick and sold in 1m lengths. Corner height is 93mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1993	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FP03D	Trim Extrusion	£1.660	£1.550	£1.200	£2.190
FP04E	Trim Corner	£0.587	£0.440	£0.310	£0.690

## Small Hinge



A small chromed, permanently joined hinge. Overall size 49 x 41mm. Two per pack.

Retail Unit Price each (inc. VAT).

Order Code	Type 1997	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS33L	Mini Hinge Pack	£1.090	£0.930	£0.820	£1.290

## Strut Hinges



Chrome-plated strut hinge. Overall size (excluding strut) 77 x 37mm. Two per pack.

Retail Unit Price each (inc. VAT).

Order Code	Type 1991	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS32K	Lrg Strut Hinge Pack	£1.600	£1.050	£0.850	£1.890

## Small Lift-Off Hinge



A small chromed hinge, overall size 47 x 39mm. Two per pack.

Retail Unit Price each (inc. VAT).

Order Code	Type 1998	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YL24B	Small Lift-Off Hinge	£1.690	£1.380	£1.150	£1.990

## Lift-Off Hinge



A chromed lift-off hinge, overall size 57 x 45mm. Two per pack.

Retail Unit Price each (inc. VAT).

Order Code	Type 1999	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YL04E	Lift Off Hinge	£1.690	£1.150	£0.850	£1.990

**Drawbolt Catch**



A chrome steel drawbolt type catch with a sprung lever action to hold it closed securely yet remain in the open position when required. Fitted using five countersunk M3 size screws (not supplied). Overall size: 63 x 35mm. Two per pack.

Retail Unit Price each (inc. VAT).

Order Code	Type 1913	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JY66W	Drawbolt Catch	£3.820	£3.040	£2.370	£4.480

**Padlock Catch**

A chrome steel drawbolt type catch with a sprung lever action to hold it closed securely yet remain in the open position when required. Fitted using five M3 size screws (not supplied). The lever can be secured to the hasp and ring with a padlock, the pin of which must not exceed 6mm dia. Overall size: 95 x 50mm. Two per pack.



Retail Unit Price each (inc. VAT).

Order Code	Type 1914	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JY67X	Padlock Catch	£2.540	£1.800	£1.280	£2.990

**Lockable Catch**



A spring loaded lockable catch. Overall size: 55 x 33mm. Supplied with two keys. Two per pack.

Retail Unit Price each (inc. VAT).

Order Code	Type 1916	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YL25C	Lockable Catch	£2.280	£1.750	£1.500	£2.690

**Locking Catch**



A chrome steel drawbolt type catch with a sprung lever action to hold it closed securely. Fitted using four countersunk M5 size screws (not supplied). The

lever can be locked in the closed position with one of the two keys supplied. Overall size: 92 x 50mm. Two per pack.

Retail Unit Price each (inc. VAT).

Order Code	Type 1919	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JY68Y	Locking Catch	£3.390	£2.650	£2.100	£3.990

**GENERAL**

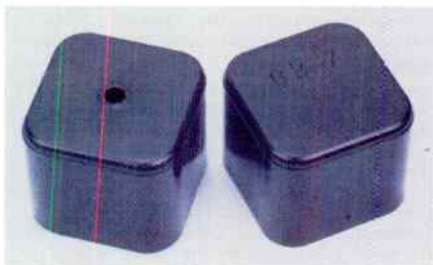
**Aluminium Sheet**

Aluminium sheet having one side coated with a protective polythene layer to prevent scratching. Two sizes are available: 18swg 295 x 195mm (11.6 x 7.7in.) 16swg 490 x 295mm (19.3 x 11.6in.)

Retail Unit Price each (inc. VAT).

Order Code	Type 1973	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
LH12N	Ally Sheet 18 Swg	£2.970	£2.910	£2.720	£3.490
LH13P	Ally Sheet 16 Swg	£5.630	£4.640	£4.280	£6.620

**4 x 'AA' Ni-Cd Battery Pack Box**



A battery pack box for permanently housing 4 x 'AA' tagged Ni-Cd cells; Comprising two plastic box-halves and a grommet. Tagged cells are hardwired and then fitted into the box-halves, leadout wires pass through the grommet and cable exit hole, the two box halves are then either taped or glued together. Intended for use with radio control receiver equipment, but equally suited for use in other applications. Dimensions: 54 x 32 x 32mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 11916	Price each exc. VAT			inc. VAT each
		1+			1+
DX38G	4AA Batt Pack Box	£0.595			£0.700

**Camera & Modulator Housing**

Camera housing made specifically to house the AY16S CCD Camera and LT37S Modulator and suitable for internal and sheltered external applications. Designed to be mounted on any vertical wall, the unit is adjustable in both horizontal and vertical axes, giving a coverage of +10° to -30° (from 90° horizontal) and 160° left to right.



Retail Unit Price each (inc. VAT).

Order Code	Type 10990	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AG00A	Security Camera Case	£19.560	£15.250	£13.750	£22.990

**Business Account Holders**  
**No Delivery Charges for any order**

**FANS**

**PAPST FANS & ACCESSORIES**

**Equipment Fans**

Papst



A range of high quality axial fans that are available in both AC and DC versions. The DC versions have a fibreglass reinforced plastic housing with a plastic impeller and are equipped with a precision ball-bearing system for higher ambient temperature operation and a long service life. The motor has an electronically commutated external rotor with electronic protection against blocking and reverse polarity. The AC versions are of all-metal construction for proven strength and durability. Aluminium alloy is used for the external housing. All metal surfaces, that may be subjected to corrosion, are permanently protected by electrophorescent baked enamel that is impervious to impact and abrasion. The shaded-pole motor, with external rotor, is fitted with either precision ball-bearings or a sleeve type bearing. The sleeve type is very insensitive to vibrational and shock loading, and features sintered metal bearings for quiet operation and a long service life.

For all models, air exhaust is over the struts, rotational direction is clockwise looking at the rotor. The fans have CSA, UL, and VDE approvals. A range of suitable finger guards are also available.



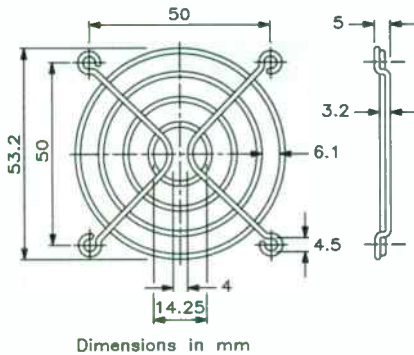
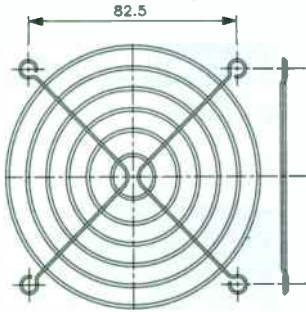
Dimensions Model	H mm	x mm	W mm	x mm	D mm	Fixing centres mm	Weight grams
612:	60	60	25			50	85
8312:	80	80	32			71.5	170
3312:	92	92	32			82.5	190
4312:	119	119	32			104.8	220
8550N: AC	80	80	38			71.5	480
4650N: AC	119	119	38			104.8	550

**Specification**  
**12V DC (voltage range 6V to 15V) types**

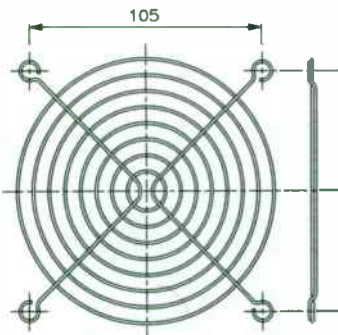
Model:	612	8312	3312
Max. air flow (free air) cfm:	23.3	31.8	47.0
Noise dB(A):	40	36	37
Power requirements W:	2.5	2.2	2.4
Speed revs per min:	5300	3300	3000
Ambient temperature range:	-20°C to +75°C (+65°C for 612)		
Service life at max. ambient temperature (hours):	25,000	25,000	25,000
Service life at 40°C (hours):	55,000	70,000	70,000

50 Hz AC Types are 8550N & 4650N

## Guards for Papst Fans



Manufacturer's Code	MPS Code	Manufacturer's matching guard Code	MPS Code
612	DB02C	LZ28CP	DB03D
8312	DB04E	LZ22K	DB06G
3312	DB07H	LZ23K	DB09K
8550N	DB05F	LZ22K	DB06G
4650N	DB11M	LZ30K	DB12N



Retail Unit Price each (inc. VAT).

Order Code	Type 1817	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DB02C	Fan 612	£23.420	£23.150	£22.370	£27.530
DB04E	Fan 8312	£18.650	£18.470	£17.890	£21.920
DB07H	Fan 3312	£20.390	£20.290	£19.720	£23.960
DB05F	Fan 8550N	£20.390	£20.290	£19.720	£23.960
DB11M	Fan 4650N	£18.650	£18.470	£17.890	£21.920
DB03D	Guard LZ28CP	£2.240	£2.200	£2.150	£2.640
DB06G	Guard LZ22K	£1.890	£1.760	£1.640	£2.230
DB09K	Guard LZ23K	£2.160	£2.080	£1.950	£2.540
DB12N	Guard LZ30K	£2.160	£1.980	£1.860	£2.540



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MPS Account Holders receive FREE DELIVERY on all orders.

## Thermal Controller Module PCM 001



The thermal controller module continuously monitors temperature and provides speed control for 12V or 24V DC fans and blowers, resulting in lower noise and power savings. The unit can service several fans, in fact up to six where the distribution control module is also used. Up to 15W of power can be distributed by this unit. Temperature sensing is a remote thermistor on a twin core wire lead, attached to the controller by screw terminals, as are the power input and fan output connections. The controller is extremely small and measures only 65 x 30 x 17mm. Fixing is by 2 x M3 holes 57mm apart at the end flanges.

There are two possible operating temperature ranges of 20 to 40°C, and 35 to 55°C, and this is chosen by connecting the sensor leads to the appropriate terminals on the controller module. The controller module will have a wire link between terminals 3 and 4, which is only necessary for one of the two ranges:

### Range 1 – 20 to 40°C

Remove wire link from between terminals 3 and 4, and connect sensor leads between terminals 2 and 4.

### Range 2 – 35 to 55°C

Leave link between terminals 3 and 4, and connect sensor between 1 and 4.

Fan speed will be regulated over the chosen range to obtain the airflow required to keep temperature near or below the minimum end of the range. The fan will run at half speed at or below the minimum temperature setting and at full speed at or above the maximum, the speed will increase and decrease in a linear fashion between the two settings. Please note: Thermistor CR05F will also be required.

Retail Unit Price each (inc. VAT).

Order Code	Type 1828	Price each exc. VAT		inc. VAT each
		1+	5+	
GX16S	Control Mod PCM001	£34.710	£29.130	£40.790

## Noise Reduction Kit For Computer PSUs



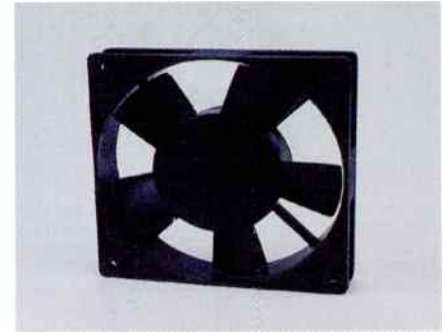
A noise reduction kit which uses a PCM 001 thermal controller, with 12V power lead terminated in a 2-pin PCB plug, remote thermistor assembly with lead, miniature 60mm 12V DC fan and sundry fittings (tie-wraps and tie-bases) to replace the existing power supply unit fan in a computer's PSU module. Once fitted, the system will reduce fan noise by maintaining a fan speed to that only necessary to remove the heat generated in the case. Fitting instructions are supplied for installation in Amstrad 2286 and 2386 machines. Ideal for the home or office environment where fan noise can be annoying.

Retail Unit Price each (inc. VAT).

Order Code	Type 1834	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
AJ66W 1	Amstrad Noise Kit	£43.390	£41.570	£40.520	£50.990

## 12Vdc & 230Vac AXIAL

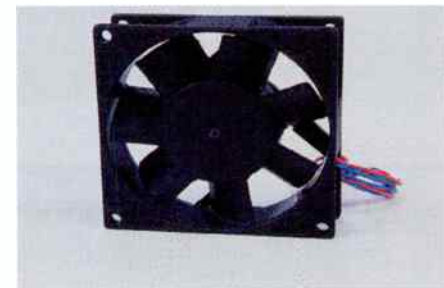
## Brushless 12V DC Axial Fans



A range of 12V DC axial fans with plastic housings and blades to UL49V-0. These fans have brushless motors for long life. Slimline style. Connection is by 300mm flying leads, red is positive, blue is negative.

### Specification

Type:	40mm
Operating Voltage:	10-2V to 13-8V
Rated Voltage:	12V
Current:	160mA
Noise Level:	35dBA
Max Airflow:	210 litres/min
Continuous Life:	20000 hrs @ 40°C
Operating Temperature:	-10°C to +70°C
Insulation Resistance:	10MΩ @ 500V DC
DC Dielectric Strength:	5mA @ 500V AC
Weight:	40g
Overall Size:	40 x 40 x 20mm



Fixing Centres: 32 x 32 x dia 3-5mm

### Specification

Type:	60mm
Operating Voltage:	10-2V to 13-8V
Rated Voltage:	12V
Current:	200mA
Noise Level:	35dBA
Max Airflow:	420 litres/min
Continuous Life:	60000 hrs @ 40°C
Operating Temperature:	-10°C to +70°C
Insulation Resistance:	10MΩ @ 500V DC
DC Dielectric Strength:	5mA @ 500V AC
Weight:	110g



Overall Size: 60 x 60 x 25.5mm  
Fixing Centres: 50 x 50 x dia 4-2mm

### Specification

Type:	80mm
Operating Voltage:	10-2V to 18-8V
Rated Voltage:	12V
Current:	180mA
Noise Level:	31dBA
Max Airflow:	900 litres/min
Continuous Life:	60000 hrs @ 25°C
Operating Temperature:	-10°C to +70°C
Insulation Resistance:	10MΩ @ 500V DC
DC Dielectric Strength:	5mA @ 500V AC
Weight:	140g
Overall Size:	80 x 80 x 25.5mm
Fixing Centres:	71.5 x 71.5 x dia 4-5mm



**Specification**

Type:	92mm
Operating Voltage:	10.2V to 13.8V
Rated Voltage:	12V
Current:	300mA
Noise Level:	35dBA
Max Airflow:	1200 litres/min
Continuous Life:	60000 hrs @ 25°C
Operating Temperature:	-10°C to +70°C
Insulation Resistance:	DC 10MΩ @ 500V DC
DC Dielectric Strength:	5mA @ 500V AC
Weight:	150g
Overall Size:	92 x 92 x 25.5mm
Fixing Centres:	82.5 x 82.5 x dia 4.5mm

**Specification**

**Specification**

	80mm	120mm
Power consumption	13W	22W
Continuous life	20,000 to 40,000 hours at 40°C	
Motor current	85mA	140mA
Stall current	105mA	180mA
Noise level	33dBA	45dBA
Max. airflow	28CFM	80CFM
Speed	2700rpm	2650rpm
Overall size	80 x 80 x 38mm	119 x 119 x 38mm
Fixing centres	71.5 x 71.5	105 x 105
	4.5mm clear	4.5mm clear
Operating temp	-10°C to +60°C	

Retail Unit Price each (inc. VAT).

Order Code	Type 1810	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YP46A	Standard 80mm Fan	£13.440	£9.360	£7.180	£15.800
WY08J1	Standard 120mm Fan	£13.880	£9.830	£8.070	£16.310

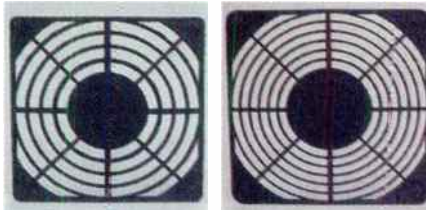


Type:	120mm
Operating Voltage:	10.2V to 13.8V
Rated Voltage:	12V
Current:	380mA
Noise Level:	42dBA
Max Airflow:	2200 litres/min
Continuous Life:	60000 hrs @ 25°C
Operating Temperature:	-10°C to +70°C
Insulation Resistance:	10MΩ @ 500V
DC Dielectric Strength:	5mA @ 500V AC
Weight:	200g
Overall Size:	119.5 x 119.5 x 25.5mm
Fixing Centres:	104.8 x 104.8 x dia 4.5mm

Retail Unit Price each (inc. VAT).

Order Code	Type 1806	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YZ41U	40mm 12V Fan	£9.970	£7.330	£6.140	£11.720
YZ38R	60mm 12V Fan	£9.970	£7.380	£6.190	£11.720
YP40T	80mm 12V Fan	£10.400	£7.850	£6.660	£12.230
YZ38N	92mm 12V Fan	£10.840	£8.120	£6.810	£12.740
YZ40T	120mm 12V Fan	£12.140	£9.310	£7.910	£14.270

**Plastic Finger Guards**

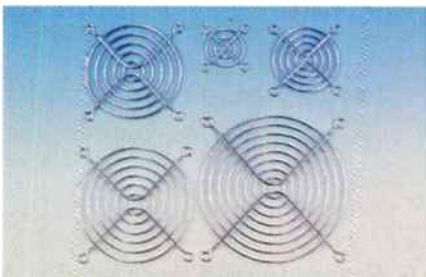


Plastic finger guards that press-fit onto the above fans. Available to suit 80 and 120mm fans.

Retail Unit Price each (inc. VAT).

Order Code	Type 1810	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JU26D	80mm Plastic Guard	£0.859	£0.676	£0.468	£1.010
JU27E	120mm Plastic Guard	£1.020	£0.832	£0.624	£1.210

**Chromed Steel Finger Guards**



Heavily chromed steel finger guards that fit any standard fan. Available to suit 40, 60, 80, 92 and 120mm types.

Retail Unit Price each (inc. VAT).

Order Code	Type 1815	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JU25C	40mm Fan Guard	£0.859	£0.676	£0.526	£1.010
JU23A	60mm Fan Guard	£0.859	£0.708	£0.572	£1.010
FS19V	80mm Fan Guard	£1.120	£0.884	£0.697	£1.320
JU24B	92mm Fan Guard	£1.200	£0.988	£0.780	£1.420
FS20W	120mm Fan Guard	£1.290	£1.010	£0.749	£1.520

**230V Mains**



A 230V ac mains axial fan for cooling, extraction, intake, ventilation etc. Available in two standard sizes 80mm (3in.) and 120mm (4 1/2in.). The fans feature an impedance protected shaded-pole motor with a sintered iron sleeve bearing. The frame is diecast aluminium with steel impeller all finished in black epoxy paint. The 120mm unit has five blades and the 80mm has nine blades. The 120mm fan has solder tag connections and one fixing hole is 2BA (M5) clear for earth connection. The 80mm fan has 280mm flying leads for connection inside equipment only, and a hole in the chassis is tapped M4 for earth connection.

## IP Ratings

FIRST NUMBER Protection against solid objects	SECOND NUMBER Protection against liquids	THIRD NUMBER Protection against mechanical shock
0 No Protection	0 No Protection	0 No Protection
1 Protected against solid objects over 50 mm, eg accidental touch by hands	1 Protected against vertically falling drops of water	1 Impact 0.225 joule
2 Protected against solid objects over 12mm , eg fingers	2 Protected against direct sprays of water up to 15° from the vertical	2 Impact 0.375 joule
3 Protected against solid objects over 2.5mm (tools + wires)	3 Protected against sprays 60° from the vertical	3 Impact 0.50 joule
4 Protected against solid objects over 1mm (tools + small wires)	4 Protected against water sprayed from all directions - limited ingress permitted	5 Impact 2.00 joules
5 Protected against dust - limited ingress (no harmful deposit) permitted	5 Protected against low pressure jets of water from all directions -	7 Impact 6.00 joules
6 Totally protected against dust	6 Protected against strong jets of water, eg for use on shipdecks - limited ingress permitted	9 Impact 20.000 joules
	7 Protected against the effects of immersion between 15cm and 1m	<b>Note;</b> The third digit is not specified by the British Standards Institute but is used by some International Standards to indicate resistance to impact
	8 Protected against long periods of immersion under pressure	



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## Filters, Suppression & EMC Products

### Mains Protection

#### 13A Pulse Protector

Bowthorpe



These single way 13A surge protectors are ideal for use with electrical and electronic equipment that is now being supplied fitted with moulded plugs. When plugged into a standard socket the units will provide protection against transients on the mains electrical supply thus preventing electronic equipment from malfunctioning. PP1 is fitted with a multipurpose neon that verifies that the protection unit is intact, power is 'ON' and operation is normal, and that vital earth connection is present.

In the rare event of a high energy strike destroying the internal surge protection, Model PP1 will disconnect power to the associated equipment. Should the light go out, the unit must be replaced to restore power and full protection. This model is ideal for non-essential equipment such as computer games, TVs, VCRs, photocopiers, test equipment, electronic scales, etc.

Model PP3 has an audible alarm to announce when the unit needs replacing, when the internal surge protection is overloaded due to severe surge. In such an event, the unit must be replaced to restore surge protection. However, power to the associated equipment will continue WITHOUT surge protection. The unit is ideal for business computers, telephone exchanges, fax machines, modems, or any equipment that must be continually powered. In both models, the internal three mode surge/spike suppressors, have a response time of less than 10ns with a maximum surge rating of 4-5kA. Both models commence clamping below 600V, are noise free in operation and automatically reset after a transient has passed. Incoming and outgoing surges are dissipated so 'no fault found' service calls are reduced and equipment performance improved.

Protection: L-N, L-E, N-E  
 Voltage rating: 220 to 240V AC 50Hz  
 Maximum current: 13A  
 Maximum current surge handling B/20µs: 4500A  
 Response time: <10ns  
 Thermal fuse: Operates @ 100°C  
 Housing: Flame retardant  
 ABS rating UL94 V-O  
 Plug and socket connections: Conforms to BS1363

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CX64U	Pulse Protector PP1	£12.750	£10.650	£9.950	£14.990
CX65V	Pulse Protector PP3	£17.010	£14.100	£13.150	£19.990



**24**  
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#### Three Way Surge Protected Adaptor

Bowthorpe



Used in the same way as an ordinary adaptor to supply surge protected power to three appliances. Manufactured from a white flame retardant moulding and fitted with a 13A fuse.

**Specification**  
 Working Voltage: 230V AC  
 Max Current: 13A  
 Max Surge Current: 2500A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CH67X	3 Way Surge Adaptor	£17.010	£16.500	£16.000	£19.990

#### Spike Protectors

Bowthorpe



Over 80% of unexplainable equipment problems occur as a result of power surges or radio frequency interference. This is the easy way to make sure that your electronic equipment always receives a clean power supply.

The Spike Protector provides you with fully protected outlets with intersocket protection and an earth connector, all encased in a flame retardant housing. The protector comes in three versions - 4 sockets with power switch and filter strip and a choice of 4 sockets or 6 sockets without power switch. All are fitted with a neon lamp that, when lit, indicates that the protection unit is intact and that the supply fuse is not ruptured.

It protects all types of electronic equipment - including computers and modems, fax machines, electronic cash registers and EPOS systems, medical equipment, and telephone exchanges - from power surges and RFI noise from sources such as lightning, fluorescent lights, vacuum cleaners, lifts, power tools, etc. The spike protector is supplied with 2m of cable and a fitted 13A fused plug. It meets BS6651 1992 Appendix C and allows the user to comply with BS6396 by fitting a 7A fuse.

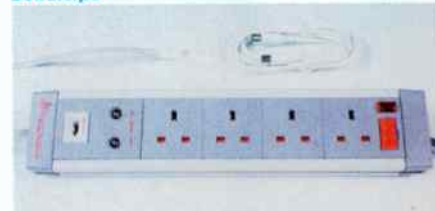
**Specification**  
 Working voltage: 230V AC  
 Max current: 13A (13A fuse fitted)  
 Max surge current handling: 6500A  
 RFI average attenuation (BJ84F only): -50dB (1 to 30MHz)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BJ84F	4-Way + Filter Strip	£59.560	£57.000	£56.000	£69.990
KR41U	4W Spike Protector	£25.520	£23.500	£22.000	£29.990
BJ83E	6-Way Surge Strip	£34.030	£32.500	£31.500	£39.990

#### Multimedia Surge Protector

Bowthorpe

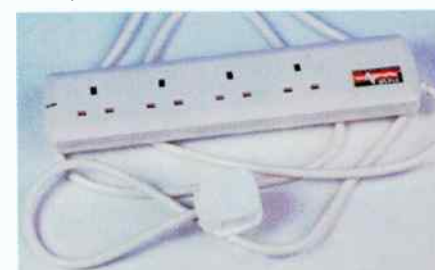


All the facilities of the 4 way Spike Protector with the added benefit of a telephone protection jack and coax protection jacks for video equipment. Supplied with a coax extension lead approximately 2m in length.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CH65V	Multi M Surge Prot	£68.070	£65.000	£62.500	£79.990

#### 4 Way Surge Protected Extension Lead



A 4 way distribution board fitted with 2m of cable and a 13A mains plug. This unit is fitted with anti surge protection designed to safeguard sensitive electrical equipment such as computers, Hi-Fi equipment, etc. For added protection this unit has thermal fusing.

Caution: The protection circuit includes double pole/neutral fusing which makes this product unsuitable for use in some rural areas where the supply has an earthed neutral conductor (PEN). If in doubt, please consult your local electricity supplier.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VJ96G	4w Surge & Spike	£14.450	£13.020	£11.990	£16.990

#### PCB Mounting Mains Filters

Bulgin



PCB mounting mains filter modules containing mains inlet filters which incorporate an interference filter for the exclusion of unwanted noise from the mains supply or to prevent equipment introducing noise spikes into the mains circuit. The combined capacitive and inductive filter is sealed for board washing and includes the Earth connection together with the Line and Neutral to cover all possible interference sources.

Overall Dimensions 40.0 x 35.0 x 20mm high  
 Working Voltage 250VAC  
 Current Rating 1A and 6A  
 UL, CSA, VDE & SEMKO approved.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
CT75S	PCB Mount Filter 1A	£8.060	£7.660	£7.260	£9.480
CT76H	PCB Mount Filter 6A	£7.040	£6.690	£6.340	£8.280

## Chassis Mount Mains Filters

Bulgin



A range of base mounting mains RF filters with current ratings of 3A, 6A & 10A. Connections are via 6.3mm solder tags.

Overall Dimensions 58.8 x 28.2 x 20.8mm high  
Mounting Holes 37.0mm centres  
UL, CSA, VDE & SEMKO approved.

Retail Unit Price each (inc. VAT).

Order Code	Type 12199	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
CT77J	Chassis Mnt Fltr 3A	£10.030	£9.520	£9.020	£11.790
CT78K	Chassis Mnt Fltr 6A	£10.030	£9.520	£9.020	£11.790
CT79L	Chassis Mnt Fltr 10A	£10.030	£9.520	£9.020	£11.790

## Vertical Snap Fit Switched & Fused Mains Inlet Filter

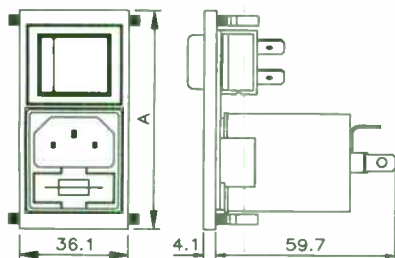
Bulgin

Vertical snap fit panel mounting Euro style RF filtered mains inlets, available with built in fuseholder and choice of single or double pole switch. Each item is individually terminated giving flexibility of interconnection by 6.3 mm solder tags. Rated current 6A. Fuseholder accepts 20 x 5mm fuse UL, CSA & VDE approved.



Dimensions mm

	Single Pole	Double Pole	depth
Cut Out	34.4 x 56.6	34.4 x 70.1	59.7



SP Switch, A = 58.9mm  
DP Switch, A = 72.3mm

Retail Unit Price each (inc. VAT).

Order Code	Type 12160	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
CT82D	DP Sw IEC Inlet Fltr	£14.240	£13.530	£12.810	£16.740
CT83E	SP Sw IEC Inlet Fltr	£13.540	£12.870	£12.190	£15.920

## Filtered Mains Inlet

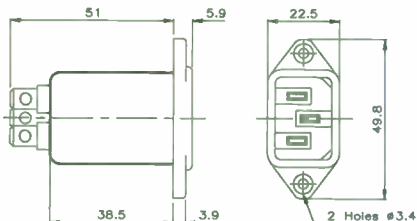
Bulgin



A flange mounting Euro style mains power inlet which has an integral interference filter for the exclusion of unwanted noise from the mains supply, or to prevent equipment introducing noise spikes into the mains circuit. The filter circuit includes the

Earth connection together with the Line and Neutral to cover all possible interference sources. UL, CSA, VDE & SEMKO approved.

Working Voltage 250VAC 50Hz  
Current Rating 6A  
Earth Leakage Current <0.35mA  
Cut Out 28.5 x 21.0  
Fixing Centres 40.0



Retail Unit Price each (inc. VAT).

Order Code	Type 12182	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
CT80B	IEC Inlet Filter	£8.910	£8.470	£8.020	£10.480

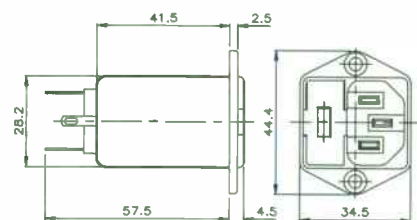
## Fused Mains Inlet Filter

Bulgin



A flange mounting Euro style mains power inlet with built in fuseholder and RF filter. The fuseholder accepts 5 x 20mm fuse cartridge. The rated current is 6A. Connections are by 6.3mm solder tags. UL, CSA & VDE approved.

Cut Out 29.25 x 33.25  
Fixing Centres 36.0



Retail Unit Price each (inc. VAT).

Order Code	Type 12180	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
CT81C	Fused IEC Inlet Fltr	£10.870	£10.330	£9.790	£12.780

## Horizontal Snap Fit Filtered Switched Mains Inlet

Bulgin



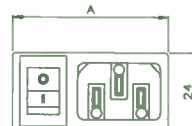
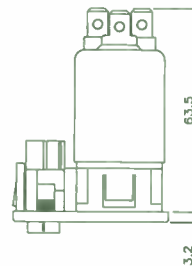
New low profile Euro style mains inlets with built in filter and plain or illuminated single or double pole switching. This low profile mini bezel design allows fitting into standard 1U racking front panels.

Rated Current 6A

Polysnap modules fit 1.5mm panel thickness.

UL, CSA & VDE approved.

Each element is individually terminated for flexibility of interconnection.



SP Switch, A=48.5  
DP Switch, A=57.5

Dimensions mm

	Single Pole	Double Pole	depth
Cut Out	21.3 x 45.9	21.3 x 54.9	63.5

Retail Unit Price each (inc. VAT).

Order Code	Type 12159	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
CT85G	Snapfit Fltr 1P Illum	£10.530	£10.010	£9.480	£12.380
CT84F	Snapfit Fltr 1P Sw	£10.030	£9.520	£9.020	£11.790
CT86T	Snapfit Fltr 2P Sw	£10.700	£10.170	£9.630	£12.580
CT87U	Snapfit Fltr 2P Illum	£11.140	£10.580	£10.020	£13.090

## Connectors

### Filtered D Subminiature Solder Bucket Connectors



A filtered range of solder bucket termination 'D' subminiature connectors, incorporating turned contacts, bright tin finish and grounding indents to guarantee full shielding integrity for protection against RF/EMI. Signal filtration is achieved via a 1nF capacitor from each contact to ground. Feed-through technology in the capacitor elements enhances rejection levels in the VHF and UHF bands. Fully potted construction ensures maximum resistance to hazardous environments. Interchangeable with all 'D' subminiature connectors of comparable pin count and complying dimensionally with BS 9523, MIL-C-24308 or HE 501.

Mating cycles: 250  
Wire accommodation: ≤0.5mm (20AWG)  
Contact material: Copper alloy  
Current rating: 5A  
Working voltage: 200V DC or AC peak  
Contact resistance: 5 x 103Ω max  
Insulation resistance: ≥5 x 104Ω  
Insulation Material: High impact epoxy and GF polyester

Retail Unit Price each (inc. VAT).

Order Code	Type 11838	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KE25C	Fltr D Plug 9Way	£4.670	£4.450	£4.200	£5.490
KE26D	Fltr D Plug 15Way	£6.370	£5.950	£5.700	£7.490
KE27E	Fltr D Plug 25Way	£9.600	£9.020	£8.650	£11.290
KE28F	Fltr D Plug 37Way	£13.180	£12.600	£11.950	£15.490
KE29G	Fltr D Skt 9Way	£5.090	£4.820	£4.600	£5.990
KE30H	Fltr D Skt 15Way	£7.050	£6.750	£6.400	£8.290
KE31J	Fltr D Skt 25Way	£11.050	£10.550	£10.050	£12.990
KE32K	Fltr D Skt 37Way	£14.280	£13.600	£12.900	£16.790

## Probe Kit

### EMI Sniffer Probe Kit



The kit comes with two probes; one detects the electric component of an electro-magnetic field, ScanEM-E, the second, ScanEM-H, reacts to the magnetic component. The ScanEM can pin-point the exact source of the offending radiation differentiating between electric and magnetic components. These two near-field probes only provide relative measurements. The LEDs on the probes are spaced 1dB (on dBV scale) apart. This gives a window of 5dB that moves up and down with the level dial. The ScanEM-E has a total voltage range of 5mV/m to 500mV/m while with ScanEM-H it is more complex and frequency dependent.

#### Specification

	ScanEM-E	ScanEM-H
Field:	Electric	Magnetic
Frequency Range:	10MHz to 1GHz	100kHz to 100MHz
Sensitivity:	5mV/m to 500mV/m	Frequency dependent
Indication:	5 LED level bar 1dB/LED	5 LED level bar 1dB/LED
Dimensions:	148 x 30 x 20mm	148 x 30 x 20mm
Weight:	60g	60g
Batteries:	2 x 'AAA' supplied	2 x 'AAA' supplied

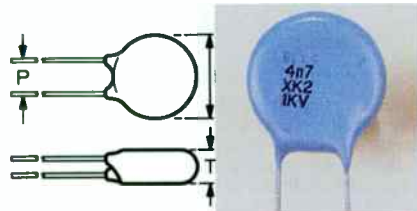
Retail Unit Price each (inc. VAT).

Order Code	Type 11524	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
GU99H1	Scan EM Kit	£280.840	£275.000	£268.000	£329.990

## Capacitors & Suppressors

### High Voltage Ceramic Disc

Universe



Standard disc ceramic capacitors for general purpose use in high voltage circuits.

Tolerance:  $\pm 10\%$   $\leq 470\text{pF}$   
 $-20+80\%$   $\geq 1000\text{pF}$

Insulation resistance: 10,000M $\Omega$  min.

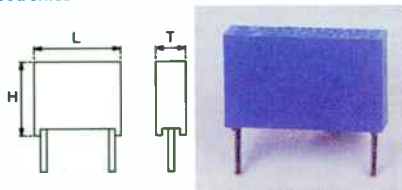
Value (pF)	Voltage (V DC)	Case size (mm)		Temp coefficient	Power factor (max)
		D	T		
10	500	5	4	5	0
100	500	10	4	5	0
470	500	5	4	5	+10-10%
1000	500	5	4	5	+22-56%
1000	1000	6	4	5	+22-56%
4700	500	8	4	5	+22-56%
4700	1000	10	4	5	+22-56%
10,000	500	8	4	5	+22-82%
10,000	1000	10	4	5	+22-82%

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 321	Price each exc. VAT			inc. VAT each
		10+	50+	1000+	1+
BX05F	HV Disc 10	£0.060	£0.030	£0.020	£0.130
BX07H	HV Disc 100	£0.060	£0.030	£0.020	£0.130
BX10L	HV Disc 470	£0.060	£0.030	£0.020	£0.130
BX12N	HV Disc 1000	£0.060	£0.030	£0.020	£0.130
JL03D	1000V Disc 1000pF	£0.090	£0.040	£0.020	£0.160
BX14Q	HV Disc 4700	£0.060	£0.030	£0.020	£0.150
HY18U	1000V Disc 4700pF	£0.090	£0.049	£0.030	£0.190
BX15R	HV Disc 10,000	£0.060	£0.030	£0.020	£0.190
JL04E	1000V Disc 10,000pF	£0.090	£0.070	£0.030	£0.220

## Metallised Class X2 Film

Arcotronics



A metallised film PETP (polyethylene terephthalate) and impregnated paper dual dielectric moulded in flame-retardant polypropylene. The capacitors are designed to suppress electrical interference from domestic appliances and should be connected directly across the mains (class X2). Approved to EN132 400 with IMQ approval (275V AC). Fully approved to UL1414, UL1283 and CSA C22.2 No.1 (250V AC).

The following values are available:

Value ( $\mu\text{F}$ )	Length (mm)	Height (mm)	Thickness (mm)	Voltage (V)
0-01	18	11	5	250
0-022	18	11	5	250
0-033	18	11	5	250
0-047	18	11	5	250
0-1	18	12	6	250
0-22	26.5	16	7	250
0-47	32	20	10	250
1-0	32	22	13	250
2-2	33	32	18	250

Tolerance:  $\pm 20\%$   
 Insulation resistance:  $> 15 \times 10^9 \Omega$  @ 20°C  
 Power factor:  $\leq 130 \times 10^{-4}$  @ 10kHz  
 Lead pitch  $< 0.22\mu\text{F}$ : 15mm  
 Lead pitch  $< 0.22\mu\text{F}$ : 22-5mm  
 Lead pitch  $> 0.22\mu\text{F}$ : 27-5mm

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 381	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
FT34M	IS Cap 0.033 $\mu\text{F}$	£0.137	£0.124	£0.105	£0.372
CH46A	IS Cap 2.2 $\mu\text{F}$	£1.490	£1.290	£1.090	£2.290

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 381	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
JR31J	IS Cap 0.01 $\mu\text{F}$	£0.130	£0.118	£0.100	£0.372
JR32K	IS Cap 0.022 $\mu\text{F}$	£0.124	£0.113	£0.095	£0.372
JR33L	IS Cap 0.047 $\mu\text{F}$	£0.122	£0.102	£0.087	£0.372
JR34M	IS Cap 0.1 $\mu\text{F}$	£0.168	£0.140	£0.120	£0.432
JR35Q	IS Cap 0.22 $\mu\text{F}$	£0.272	£0.227	£0.194	£0.696
JR36P	IS Cap 0.47 $\mu\text{F}$	£0.516	£0.430	£0.369	£1.176
JR37S	IS Cap 1.00 $\mu\text{F}$	£0.779	£0.650	£0.557	£1.896

## Class Y Suppression - Metallised Polypropylene



A range of Class Y metallised polypropylene film capacitors for 275V AC, and housed in a thermoplastic self-extinguishing case to UL94, class V-0. Approved to VDS, SEMKO, OVE, NEMKO, DEMKO, FI, UL, CSA, EN132400 (pending).

**Specification**  
 Tolerance:  $\pm 20\%$   
 Temperature range: -25°C to +85°C  
 Test voltage: 2700V for 2 seconds  
 Insulation resistance: 15,000M $\Omega$  @ 20°C 100V DC

Value	Dimensions L x H x W mm	Pitch mm	Order Code
1000pF	13 x 9.5 x 4.3	10	JA93B
2200pF	13 x 9.5 x 4.3	10	JA94C
4700pF	13 x 11 5.6	10	JA95D
10000pF	18 x 11 x 5.5	15	JA96E
22000pF	18 x 13 x 7	15	JA97F
Lead diameter:	0.6mm ( $\leq 4700\text{pF}$ ) 0.8mm ( $> 4700\text{pF}$ )		

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 10720	Price each exc. VAT			inc. VAT each
		5+	25+	50+	1+
JA93B	KNB2520 1000pF	£0.160	£0.145	£0.123	£0.408
JA94C	KNB2520 2200pF	£0.160	£0.145	£0.123	£0.408
JA95D	KNB2520 4700pF	£0.174	£0.158	£0.134	£0.456
JA96E	KNB2520 10nF	£0.186	£0.169	£0.143	£0.552
JA97F	KNB2520 22nF	£0.216	£0.196	£0.166	£0.624

## Metallised Polypropylene

ICW

A high quality metallised polypropylene capacitor for use at very high continuous AC or DC voltages. They meet the requirements of BS2135 for Class X or Class Y use at 250V AC mains.



Tolerance:  $\pm 10\%$  (K)  
 Working voltage: 1000V DC, 500V AC  
 Power factor:  $< 1.5 \times 10^{-3}$  at 1kHz  
 Pulse rating: 0-1 $\mu\text{F}$  and 0-22 $\mu\text{F}$  70V/ $\Omega\text{s}$  max  
 0-47 $\mu\text{F}$  and 1 $\mu\text{F}$  40V/ $\Omega\text{s}$  max

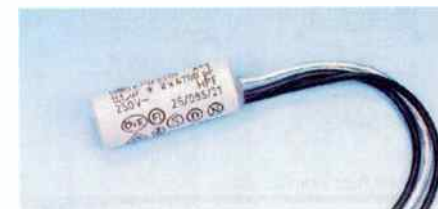
The following values are available:

Value	Length (mm)	Dia. max (mm)
0-1 $\mu\text{F}$	28	15
0-22 $\mu\text{F}$	28	18
0-47 $\mu\text{F}$	45	19
1 $\mu\text{F}$	45	28

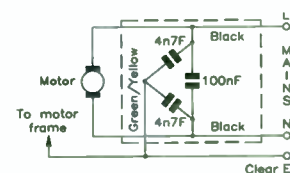
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 382	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
FA21X	HV Cap 0.1 $\mu\text{F}$	£0.910	£0.774	£0.690	£1.738
FA22Y	HV Cap 0.22 $\mu\text{F}$	£1.314	£1.195	£1.011	£2.148
FA23A	HV Cap 0.47 $\mu\text{F}$	£2.040	£1.855	£1.569	£3.348
FA24B	HV Cap 1 $\mu\text{F}$	£3.475	£3.159	£2.673	£5.388

## Motor Suppressor



For radio suppression of small electric motors and domestic appliances. 250V AC. Connect as close as possible to the source of interference. 100nF + 4.7nF + 4.7nF.



Retail Unit Price each (inc. VAT).

Order Code	Type 501	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HW07H	Delta Cap	£1.320	£0.796	£0.663	£1.560

## Contact Suppressor

A 120Ω resistor (±30% tolerance) and 0.1μF (±20% tolerance) capacitor connected in series. Connect directly across switch or relay contacts etc. to suppress interference when switching reactive loads. Also useful as a snubber network in SCR and triac protection. Max voltage 250V AC.



Retail Unit Price each (inc. VAT).

Order Code	Type 496	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YR90X	R-C Network	£2.560	£2.140	£1.790	£3.010

## Transient Suppressors

These devices are simply connected directly across the power supply. They have a very high resistance up to the  $V_m$  voltage shown in the table below and therefore usually may be ignored, but the moment a transient spike appears on the supply line which exceeds  $V_m$ , the impedance of the device drops immediately to a very low level while it dissipates the unwanted energy. Choose the suppressor to have a  $V_m$  voltage equal to or above the voltage of the power supply it is to be connected across. For example, Suppressor 5-5V DC is ideal for 5V logic power supplies, while both Suppressor 250V AC and Suppressor 275V AC can be connected directly across the UK mains supply.



Type	Device marking	Continuous voltage (max)	Peak current*	Clamping voltage*
		$V_m$ AC	$V_m$ DC	
5-5V DC	0821	4V	5-5V	100A
14V DC	1821	10V	14V	250A
18V DC	2221	14V	18V	250A
22V DC	2721	17V	22V	250A
26V DC	3321	20V	26V	250A
31V DC	3921	25V	31V	250A
38V DC	4721	30V	38V	250A
56V DC	6822	40V	56V	250A
130V AC	1305	130V	175V	2500A
250V AC	250L	250V	330V	2500A
275V AC	275L	275V	369V	2500A

DC types: Average power dissipation 0-25W max  
Diameter 8-25mm ±0.75mm  
Lead pitch 4-5mm ±1.5mm

AC types: Average power dissipation 0-4W max  
Diameter 11-25mm ±1.25mm  
Lead pitch 7-5mm ±1mm

Please note that the use of DC and AC in the description is simply an indication of its most likely use. All types can be used equally in AC or DC circuits up to the  $V_m$  stated.

\* Current ratings are for a typical transient pulse where peak current is reached in 8μs and the pulse has decayed to 50% of its peak value after a further 12μs. It is a standard method of rating these devices and is usually described as an 8/20μs current wave rating.

For voltage transient suppressors with low clamping voltages, and near instantaneous response times see Table 21 in Semiconductors Section.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 499	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
CP67X	Suppressor 5.5VDC	£0.264	£0.220		£0.780
CP68Y	Suppressor 14VDC	£0.250	£0.208		£0.630
CP69A	Suppressor 18VDC	£0.200	£0.167		£0.630
CP70M	Suppressor 22VDC	£0.217	£0.181		£0.630
CP71N	Suppressor 26VDC	£0.289	£0.241		£0.630
CP72P	Suppressor 31VDC	£0.220	£0.183		£0.500
CP73Q	Suppressor 38VDC	£0.200	£0.167		£0.500
CP74R	Suppressor 56VDC	£0.300	£0.250		£0.780
CP75S	Suppressor 130VAC	£0.286	£0.239		£0.780
HW13P	Suppressor 250VAC	£0.320	£0.280	£0.230	£0.700
CP76H	Suppressor 275VAC	£0.328	£0.273		£0.780

## Chokes

### RF Suppressor Chokes

Designed for use at 250V AC these small heavy current rf chokes are ideal for the suppression of motor-driven appliances and in input circuits of power units. Inductance is approximately 6μH. PVC sleeve is colour coded. Three types are available.

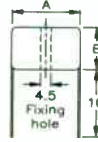
Rating	Length	Diameter	Colour code
1 Amp	15mm	5.1mm	White
2 Amp	19mm	5.1mm	Yellow
3 Amp	23mm	7.6mm	Black

Retail Unit Price each (inc. VAT).

Order Code	Type 487	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HW04E	RF Supp Choke 1A	£0.382	£0.323	£0.273	£0.450
HW05F	RF Supp Choke 2A	£0.417	£0.343	£0.293	£0.490
HW06GRF	Supp Choke 3A	£0.510	£0.364	£0.303	£0.600

## Bobbin Type Inductors

Newport Components



These inductors use a novel bobbin core manufactured from a material with a high saturation flux density. The high current capability makes these devices suitable for power-line applications, and they are ideal for use in switching regulators and filters. They have low temperature dependence and can be used at high currents. Each component is finished with a flame retardant heat shrink sleeve. For additional mechanical stability, these inductors may be mounted using an M4 non-magnetic bolt (e.g. nylon).

Type	A (mm)	B (mm)
14-104-54	24	14.5
14-224-35	24	14.5
14-334-28	24	14.5

Type	Inductance μH ±10% @ 1kHz	DC Resistance mΩ	DC Current A
14-104-54	100	24	5.4
14-224-35	220	106	3.5
14-334-28	330	165	2.8

Retail Unit Price each (inc. VAT).

Order Code	Type 3621	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AH21X	14-104-54	£2.800	£1.920	£1.600	£3.300
AH22Y	14-224-35	£2.800	£1.920	£1.600	£3.300
AH23A	14-334-28	£2.800	£1.920	£1.600	£3.300

## High Current Toroids



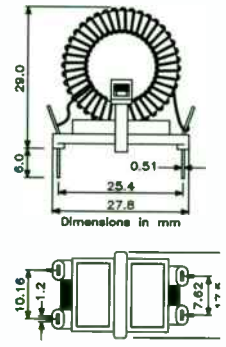
High current chokes wound on toroids designed primarily for use in switched mode power supplies. Two types are available:  
Inductance: 150μH. Max current: 5A intermittent, 3A continuous.  
Inductance: 300μH. Max current: 8A intermittent, 5A continuous.

Retail Unit Price each (inc. VAT).

Order Code	Type 3631	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JL72P	5A 150μH Choke	£3.550	£2.780	£2.310	£4.180
JL73Q	8A 300μH Choke	£5.940	£4.420	£3.680	£6.980

## High Current Toroidal Inductors

Newport Components



A range of high current vertically mounted toroidal inductors, designed for use in switching power supply and power line filtering circuits. Suitable for any application requiring high current handling with minimal EMI emissions.

The inductors are mounted on a plastic base having UL94-V0 rating and secured by a cable tie.

Type	Inductance (@ 1kHz) (μH ±10%)	DC Resistance (mΩ max.)	DC Current (Continuous) (A max.)
19104B	100	65	2.2
19334B	330	120	1.0
19474B	470	145	0.8

Type	Q	at frequency (kHz)	Nominal self-resonant frequency (MHz)
19104B	100	50	12-3
19334B	90	10	1.7
19474B	90	10	1.3

Retail Unit Price each (inc. VAT).

Order Code	Type 3635	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BU55K	Toroid 19104	£3.310	£2.560	£2.130	£3.900
BU57M	Toroid 19334	£3.310	£2.560	£2.130	£3.900
BU58N	Toroid 19474	£3.310	£2.560	£2.130	£3.900

## Ferrites

### EMC/RF Ferrite Kit



A kit comprising a selection of the cable EMI suppressors, toroidal cores, bead cores, anti-parasitic beads and wide band choke cores described in this section. Housed in a transparent component box, and offering a considerable saving compared to individual prices.

Order Code	Quantity	Type
AN83E	1	Component Box
AF92A	2	Flat Cable Suppressor 25.4mm
AG94C	2	Flat Cable Suppressor 33.5mm
AG95D	10	Toroidal Core 12.7mm
AN75S	5	Toroidal Core 22mm
AN76H	2	Bead Core 25.9mm
AN77J	10	Bead Core 14.22mm
AN78K	15	Bead Core 12mm
AN80B	5	Bead Core 4mm
AN79L	25	Bead Core Taped Type
AN81C	25	Wide Band Choke 7MHz
AN82D	25	Wide Band Choke 500kHz
LB62S	5	Anti-parasitic Beads

Retail Unit Price each (inc. VAT).

Order Code	Type 13435	Price each exc. VAT		inc. VAT each
		1+	1+	1+
GT10L	EMC/RF Ferrite Kit	£25.520		£29.990

## Anti-Parasitic Beads

Small ferrite beads which may be threaded on to wires to add impedance for the suppression of unwanted parasitic oscillations or to provide screening. Max. dia. 4.2mm. Max. length 5.5mm. Min. hole dia. 1.8mm. Packed in tens.



- Fig 1. 1.5 turns
- Fig 2. 2 x 1.5 turns
- Fig 3. 2 turns
- Fig 4. 2.5 turns
- Fig 5. 3 turns

The following table shows the approximate impedance ( $\Omega$ ) for various types of windings and at selected frequencies

Figure	10MHz	50MHz	100MHz
(AN81C)	$\Omega$	$\Omega$	$\Omega$
Fig. 1	150	300	350
Fig. 2	150	300	350
Fig. 3	210	450	475
Fig. 4	300	640	560
Fig. 5	350	750	580

### (AN82D)

Fig. 1	140	400	480
Fig. 2	140	400	480
Fig. 3	200	600	600
Fig. 4	300	870	650
Fig. 5	370	980	670

Retail Unit Price each (inc. VAT).

Retail Unit Price each (inc. VAT).

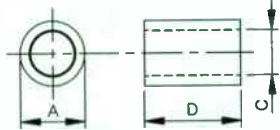
Order Code	Type	Price each exc. VAT	inc. VAT each
LB62S	A/P Beads	1+ 25+ 100+ £0.595 £0.366 £0.305	1+ £0.700

## Bead Cores



A range of ferrite cores for EMI suppression on round cables. AN80B supplied in packs of 10.

Order Code	Suitability Frequency	Max Cable dia. mm
AN76H	100kHz to 2MHz	12mm
AN77J	100kHz to 2MHz	6mm
AN78K	300kHz to 7MHz	5mm
AN80B	100kHz to 2MHz	1.2mm



Order Code	A	D	C
AN76H	25.9	29	12.7
AN77J	14.22	28	6.35
AN78K	12	20	5.6
AN80B	4	6	2

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN80B	Bead Core 2mmID	1+ 25+ 100+ £0.536 £0.014 £0.012	1+ £0.630

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN76H	Rnd Cbl Slv 12.7mmID	1+ 5+ 10+ £1.140 £0.516 £0.430	1+ £1.340
AN77J	Rnd Cbl Slv 7mmID	£0.944 £0.108 £0.090	£1.110
AN78K	Rnd Cbl Slv 5.6mmID	£0.638 £0.061 £0.061	£0.750

## Wide Band Choke Core



A choice of two wide band choke cores intended for PCB mounting to filter externally induced EMI.

Order Code	Practical Frequency Range
AN81C	300kHz to 7MHz
AN82D	10kHz to 500kHz

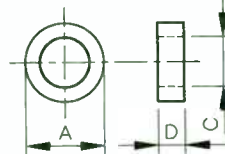
Dimensions	
Diameter:	6mm
Length:	10mm
Hole diameter:	0.85mm
Pitch (opposite holes):	3.5mm

## Toroidal Coils



A range of toroidal cores suitable applications include: coupling transformer, balancing coil, fixed coil EMI filter coil etc.

AG95D suitable for 100kHz to 2MHz  
AN74R suitable for 10kHz to 500kHz  
AN75S suitable for 100kHz to 2MHz



Dimensions mm	A	D	C
AG95D	12.7	6.35	7.9
AN74R	12.7	6.35	7.9
AN75S	22	6.4	13.7

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AG95D	TCORE12.7mm 0.1-2MHz	£0.468 £0.047 £0.039	£0.550
AN74R	Tc12.7mm 10-500K	£0.391 £0.320 £0.250	£0.460
AN75S	TCORE22mm 0.1-2MHz	£0.672 £0.490 £0.290	£0.790

## FX4054 Ferrite Toroid

A general purpose nylon coated toroid made from 3E2 grade high permeability manganese-zinc ferrite material; suitable for use in a wide range of applications, including interference suppression, inductors, transformers, etc.



## Mechanical Specification

Inside diameter:	13.4mm
Outside diameter:	23.6mm
Thickness:	7.6mm

## Magnetic Specification

Initial inductance factor:	3472nH
Residual plus eddy loss factor:	<15 x 10 <sup>-6</sup>
Curie point:	>130°C
Effective length of magnetic path:	57.0mm
Core factor:	1.81mm <sup>-1</sup>
Effective volume of core:	1790mm <sup>3</sup>
Effective area of core:	31.5mm <sup>2</sup>
$\mu_{tor}$ at +25 to +70°C:	>5000

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JR84F	FX 4054	1+ 25+ 100+ £2.050 £1.290 £0.970	1+ £2.420

## Ferrite EMC Filters

### Cure Radio Interference

One of the easiest ways of curing interference is with these special ferrite rings selected for the purpose. Simply wind a few turns of any hi-fi lead, TV down lead, or mains lead, around the ring. Interfering radio signals are then prevented from travelling into the equipment. As supplied by

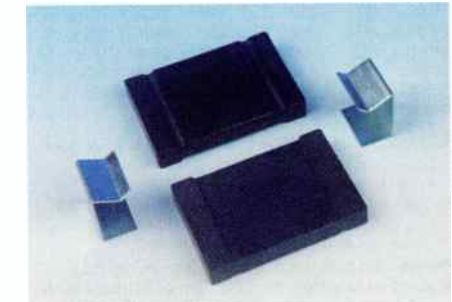


us to BBC, DTI and TV rental companies etc.

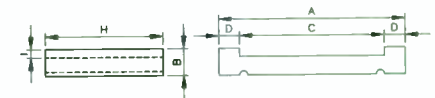
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AM35Q	Ferrite Filter	1+ 10+ 25+ £2.540 £2.490 £2.290	1+ £2.990

## EMI Suppressor For Flat Cables



A coice of two EMI ferrite suppressors for flat cables, designed to have a practical frequency range of 100kHz to 2MHz. The suppressor comes in two halves which are clamp round the cable by two supplied spring clips



AF92A is for 25.4mm flat cables  
AG94C is for 33.5mm flat cables

### Dimensions

	AF92A	AG94C
Cores	38 x 25.4 x 6.35mm	45 x 28.5 x 6.35mm
A	38mm	45mm
B	6.35mm	6.35mm
C	26.6mm	34.4mm
D	5.75mm	5.25mm
H	25.4mm	28.5mm
I	0.8mm	0.8mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AF92A	Flt Cbl Core 25.4mm	£2.380 £0.986 £0.822	£2.800
AG94C	Flt Cbl Core 33.5mm	£2.980 £1.080 £0.900	£3.510





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## FIXINGS

### NUTS & BOLTS

#### SCREW SIZES

The size of a metric screw is defined by the numbers M5, M4, M3, M2.5 etc, where the number after the M is the overall diameter of the thread in mm., and by the length in mm.  
 6mm = 1/4in. approx, 9mm = 3/8in. approx,  
 12mm = 1/2in. approx and 40mm = 1 1/2in. approx.  
 For comparison the overall diameter of the thread in BA sizes is as follows:  
 8BA = 2.25mm, 6BA = 2.85mm,  
 4BA = 3.68mm, 2BA = 4.78mm,  
 0BA = 6.12mm.  
 In No. screws:  
 No.8 = 4-25mm, No.6 = 3-6mm,  
 No.4 = 3mm, No.2 = 2-25mm.

#### Countersunk Head Metric Steel Bolts

Zinc plated steel countersunk-head bolts with Pozidrive head available in the following sizes. All sizes in mm. All types in packs of ten.

M5	M4	M3	M2.5	M2
		6	6	6
	10	10	10	10
		12	12	12
		16		
	20	20	20	
	30	30		
40		40		

Retail Unit Price each (inc. VAT).

Order Code	Type 1702	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JC61C	M5 40mm Pozidrive Screw	£0.382	£0.326	£0.287	£0.450
JC73Q	M4 10mm Pozidrive Screw	£0.161	£0.134	£0.118	£0.190
JC75S	M4 20mm Pozidrive Screw	£0.212	£0.181	£0.160	£0.250
JC76H	M4 30mm Pozidrive Screw	£0.255	£0.217	£0.191	£0.300
BF36P	M3 6mm Pozidrive Screw	£0.170	£0.145	£0.127	£0.200
LR57M	M3 10mm Pozidrive Screw	£0.170	£0.145	£0.128	£0.200
BF37S	M3 12mm Pozidrive Screw	£0.170	£0.145	£0.128	£0.200
JC70M	M3 16mm Pozidrive Screw	£0.161	£0.137	£0.121	£0.190
JC71N	M3 20mm Pozidrive Screw	£0.255	£0.217	£0.191	£0.300
JC72P	M3 30mm Pozidrive Screw	£0.425	£0.362	£0.319	£0.500
LR58N	M3 40mm Pozidrive Screw	£1.120	£1.000	£0.900	£1.320
BF39N	M2.5 6mm Pozidrive Screw	£0.187	£0.159	£0.140	£0.220
JC68Y	M2.5 10mm Pozidrive Screw	£0.170	£0.145	£0.128	£0.200
BF40T	M2.5 12mm Pozidrive Screw	£0.170	£0.145	£0.128	£0.200
JC69A	M2.5 20mm Pozidrive Screw	£0.374	£0.333	£0.270	£0.440
BF41U	M2 6mm Pozidrive Screw	£0.246	£0.209	£0.185	£0.290
JC66W	M2 10mm Pozidrive Screw	£0.221	£0.188	£0.166	£0.260
JC67X	M2 12mm Pozidrive Screw	£0.510	£0.434	£0.383	£0.600

#### Countersunk Head Metric Brass Bolts

Nickel-plated brass countersunk head bolts with slotted head available in the following sizes. All sizes in mm.  
 M3 x 6; M3 x 10; M3 x 12. All types in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1703	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JY36P	M3 6mm Screw	£0.442	£0.376	£0.332	£0.520
JY37S	M3 10mm Screw	£0.442	£0.376	£0.332	£0.520
JY38R	M3 12mm Screw	£0.442	£0.376	£0.332	£0.520

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#### Panel Head Metric Steel Bolts

Zinc-plated steel panel head bolts with Pozidrive head available in the following sizes.  
 All sizes in mm. All types in packs of ten.



M5	M4	M3	M2.5	M2
	6	6	6	6
10	10	10	10	10
12	12	12	12	12
16	16	16		
20	20	20	20	
25	25	25		
	30	30		
40	40	40		

Retail Unit Price each (inc. VAT).

Order Code	Type 1705	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JY07H	M5 10mm Steel Screw	£0.221	£0.188	£0.166	£0.260
JY08J	M5 12mm Steel Screw	£0.238	£0.201	£0.178	£0.280
JY09K	M5 16mm Steel Screw	£0.263	£0.224	£0.197	£0.310
JY10L	M5 20mm Steel Screw	£0.263	£0.224	£0.197	£0.310
JY11M	M5 25mm Steel Screw	£0.280	£0.238	£0.210	£0.330
JY12N	M5 40mm Steel Screw	£0.408	£0.347	£0.306	£0.480
JY13P	M4 6mm Steel Screw	£0.212	£0.181	£0.160	£0.250
JY14Q	M4 10mm Steel Screw	£0.212	£0.181	£0.160	£0.250
JY15R	M4 12mm Steel Screw	£0.212	£0.181	£0.160	£0.250
JY16S	M4 16mm Steel Screw	£0.221	£0.188	£0.166	£0.260
JY17T	M4 20mm Steel Screw	£0.221	£0.188	£0.166	£0.260
JY18U	M4 25mm Steel Screw	£0.221	£0.188	£0.166	£0.260
JY19V	M4 30mm Steel Screw	£0.297	£0.253	£0.223	£0.350
JY20W	M4 40mm Steel Screw	£0.510	£0.434	£0.383	£0.600
JY21X	M3 6mm Steel Screw	£0.170	£0.145	£0.128	£0.200
JY22Y	M3 10mm Steel Screw	£0.170	£0.145	£0.128	£0.200
JY23A	M3 12mm Steel Screw	£0.170	£0.145	£0.128	£0.200
JY24B	M3 16mm Steel Screw	£0.170	£0.145	£0.128	£0.200
JY25C	M3 20mm Steel Screw	£0.170	£0.145	£0.128	£0.200
JY26D	M3 25mm Steel Screw	£0.212	£0.181	£0.160	£0.250
JY27E	M3 30mm Steel Screw	£0.306	£0.260	£0.230	£0.360
JY28F	M3 40mm Steel Screw	£0.340	£0.289	£0.255	£0.400
JY29G	M2.5 6mm Steel Screw	£0.170	£0.145	£0.128	£0.200
JY30H	M2.5 10mm Steel Screw	£0.170	£0.145	£0.128	£0.200
JY31J	M2.5 12mm Steel Screw	£0.170	£0.145	£0.128	£0.200
JY32K	M2.5 20mm Steel Screw	£0.365	£0.310	£0.274	£0.430
JY33L	M2 6mm Steel Screw	£0.221	£0.188	£0.166	£0.260
JY34M	M2 10mm Steel Screw	£0.340	£0.289	£0.255	£0.400
JY35O	M2 12mm Steel Screw	£0.340	£0.289	£0.255	£0.400

#### Panel Head Metric Brass Bolts

Nickel-plated brass panel head bolts with slotted head available in the following sizes. All sizes in mm.  
 M3 x 6; M3 x 10; M3 x 12; M3 x 16.  
 All types in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1707	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BF51F	Isobolt M3 6mm	£0.348	£0.295	£0.260	£0.410
HY30H	Isobolt M3 10mm	£0.348	£0.297	£0.262	£0.410
BF52G	Isobolt M3 12mm	£0.417	£0.354	£0.313	£0.490
JD16S	Isobolt M3 16mm	£41.700	£0.354	£0.313	£49.000

#### Metric Steel Full Nuts

Zinc-plated steel full nuts supplied in the following sizes.



M5, M4, M3, M2.5, M2.  
 All types supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1710	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JD59P	Steel Nut M5	£0.127	£0.109	£0.096	£0.150
JD60Q	Steel Nut M4	£0.127	£0.109	£0.096	£0.150
JD61R	Steel Nut M3	£0.127	£0.109	£0.096	£0.150
JD62S	Steel Nut M2.5	£0.127	£0.109	£0.096	£0.150
JD63T	Steel Nut M2	£0.127	£0.109	£0.096	£0.150

#### Metric Brass Full Nut

Nickel-plated brass M3 full nut. Supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1713	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BF58N	Isobnut M3	£0.357	£0.307	£0.271	£0.420

#### Metric Steel Washers

Zinc-plated steel plain washers available in the following sizes:



M5, M4, M3, M2.5, M2  
 All types supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1714	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JD74R	Steel Washer M5	£0.127	£0.109	£0.096	£0.150
JD75S	Steel Washer M4	£0.127	£0.109	£0.096	£0.150
JD76H	Steel Washer M3	£0.127	£0.109	£0.096	£0.150
JD77J	Steel Washer M2.5	£0.127	£0.109	£0.096	£0.150
JD78K	Steel Washer M2	£0.127	£0.109	£0.096	£0.150

#### Metric Brass Washer

Nickel-plated brass M3 plain washer. Supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1716	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BF62S	Isowasher M3	£0.144	£0.122	£0.108	£0.170

#### Metric Spring Washers

Zinc-plated steel spring washers available in the following sizes:



M5, M4, M3, M2.5, M2  
 All types supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1717	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JD94C	Springwash M5	£0.110	£0.094	£0.083	£0.130
JD95D	Springwash M4	£0.110	£0.094	£0.083	£0.130
JD96E	Springwash M3	£0.110	£0.094	£0.083	£0.130
JD97F	Springwash M2.5	£0.110	£0.094	£0.083	£0.130
JD98G	Springwash M2	£0.110	£0.094	£0.083	£0.130

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## Metric Shakeproof Washers

Zinc-plated steel shakeproof washers in the following sizes:  
M5, M4, M3, M2.5, M2  
All types available in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1718	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BF42V	Isoshake M5	£0.110	£0.094	£0.083	£0.130
BF43W	Isoshake M4	£0.110	£0.094	£0.083	£0.130
BF44X	Isoshake M3	£0.110	£0.094	£0.083	£0.130
BF45Y	Isoshake M2.5	£0.110	£0.094	£0.083	£0.130
LR61R	Isoshake M2	£0.110	£0.094	£0.083	£0.130

## Metric Solder Tags

Heavily tinned solder tags available in the following sizes:  
M5, M4, M3, M2.5  
All types supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1721	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
LR62S	Isotag M5	£0.365	£0.260	£0.228	£0.430
LR63T	Isotag M4	£0.365	£0.260	£0.228	£0.430
LR64U	Isotag M3	£0.365	£0.260	£0.228	£0.430
LR65V	Isotag M2.5	£0.365	£0.260	£0.228	£0.430

## BA Round-Head Bolts



Nickel-plated brass round-head bolts. The following sizes are available.

2BA 12.7mm (1/2in.)  
2BA 25.4mm (1in.)  
4BA 6.35mm (1/4in.)  
4BA 12.7mm (1/2in.)  
4BA 25.4mm (1in.)  
4BA 38.1mm (1 1/2in.)

6BA 4.76mm (3/16in.)  
6BA 6.35mm (1/4in.)  
8BA 6.35mm (1/4in.)  
6BA 12.7mm (1/2in.)  
8BA 12.7mm (1/2in.)  
6BA 25.4mm (1in.)  
All types supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1724	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BF02C	Bolt 4BA 1/4in.	£0.417	£0.354	£0.313	£0.490
BF03D	Bolt 4BA 1/2in.	£0.348	£0.297	£0.262	£0.410
BF04E	Bolt 4BA 1in.	£0.434	£0.372	£0.328	£0.510
LR52G	Bolt 4BA 1 1/2in.	£0.714	£0.604	£0.533	£0.840
JR71N	Bolt 6BA 3/16in.	£0.851	£0.723	£0.638	£1.000
BF05F	Bolt 6BA 1/4in.	£0.314	£0.268	£0.237	£0.370
BF06G	Bolt 6BA 1/2in.	£0.425	£0.362	£0.319	£0.500
BF07H	Bolt 6BA 1in.	£0.527	£0.450	£0.397	£0.620
BF08J	Bolt 8BA 1/4in.	£0.655	£0.557	£0.491	£0.770

Retail Unit Price each (inc. VAT).

Order Code	Type 1724	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
BF00A	Bolt 2BA 1/2in.	£0.544	£0.458	£0.401	£0.640
BF01B	Bolt 2BA 1in.	£0.774	£0.666	£0.609	£0.910

## Countersunk-Head BA Bolts



Zinc-plated steel countersunk-head bolts. The following sizes are available:

4BA 12.7mm (1/2in.)  
6BA 6.35mm (1/4in.)  
6BA 12.7mm (1/2in.)  
6BA 25.4mm (1in.)  
8BA 12.7mm (1/2in.)

All types supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1725	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BF10L	C/S Screw 4BA 1/2in.	£0.212	£0.178	£0.157	£0.250
LR56L	C/S Screw 6BA 1/4in.	£0.170	£0.145	£0.128	£0.200
BF12N	C/S Screw 6BA 1/2in.	£0.161	£0.131	£0.104	£0.190
BF13P	C/S Screw 6BA 1in.	£0.425	£0.362	£0.319	£0.500
LR00A	C/S Screw 8BA 1/2in.	£0.246	£0.210	£0.185	£0.290

## Panel Bolt

A Nickel-plated slotted panel headed steel bolt. Available size 4BA 12.7mm (1/2in.).  
Supplied individually.



Retail Unit Price each (inc. VAT).

Order Code	Type 1729	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BF14Q	Panel Screw	£0.331	£0.282	£0.249	£0.390

Retail Unit Price each (inc. VAT).

Order Code	Type 1729	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
LR75S	C/S Panel Screw	£0.119	£0.094	£0.079	£0.140

## BA Full Nuts

Nickel-plated brass full nuts available in the following sizes.  
2BA, 4BA, 6BA, 8BA  
All types supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1730	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BF16S	Nut 2BA	£0.221	£0.188	£0.166	£0.260
BF17T	Nut 4BA	£0.187	£0.159	£0.140	£0.220
BF18U	Nut 6BA	£0.187	£0.159	£0.140	£0.220
BF19V	Nut 8BA	£0.161	£0.137	£0.121	£0.190

## BA Washers

Nickel-plated brass washers available in the following sizes.  
2BA, 4BA, 6BA, 8BA  
All types supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1743	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BF20W	Washer 2BA	£0.161	£0.137	£0.121	£0.190
BF21X	Washer 4BA	£0.161	£0.137	£0.121	£0.190
BF22Y	Washer 6BA	£0.161	£0.137	£0.121	£0.190
BF23A	Washer 8BA	£0.127	£0.109	£0.096	£0.150

## Cup Washer

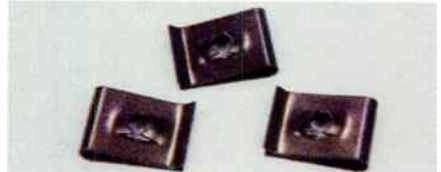
A chrome-plated steel cup washer for use with our domed countersunk panel screw. Sold in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1731	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JX78K	Cup Washer	£0.425	£0.362	£0.319	£0.500

## Spring Clip



A black finish panel-fixing spring clip nut for use where it would be impractical or impossible to hold a nut still while turning the screw. 4BA & M4 sizes supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1744	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BP34M	M4 Clip Nut	£0.842	£0.716	£0.632	£0.990

Retail Unit Price each (inc. VAT).

Order Code	Type 1744	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JX59P	Spring Clip	£0.859	£0.728	£0.624	£1.010

## BA Shakeproof Washers

Zinc-plated steel shakeproof washers available in the following sizes.  
2BA, 4BA, 6BA, 8BA  
All types supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1746	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BF24B	Shake 2BA	£0.127	£0.109	£0.096	£0.150
BF25C	Shake 4BA	£0.127	£0.109	£0.096	£0.150
BF26D	Shake 6BA	£0.127	£0.109	£0.096	£0.150
LR01B	Shake 8BA	£0.136	£0.116	£0.102	£0.160

## BA Solder Tags

A heavily tinned solder tag available in the following sizes.  
2BA, 4BA, 6BA, 8BA  
All supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1748	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
BF27E	Tag 2BA	£0.280	£0.171	£0.146	£0.330
BF28F	Tag 4BA	£0.280	£0.171	£0.146	£0.330
BF29G	Tag 6BA	£0.280	£0.171	£0.146	£0.330
LR02C	Tag 8BA	£0.280	£0.171	£0.146	£0.330

Maplin is opening new stores all the time.  
Call for latest details

## Nylon BA Bolts

An ivory finish nylon cheese-head bolt available in the following sizes.

- 2BA x 12.7mm (1/2in.)
- 2BA x 25.4mm (1in.)
- 4BA x 12.7mm (1/2in.)
- 4BA x 25.4mm (1in.)
- 6BA x 12.7mm (1/2in.)
- 6BA x 25.4mm (1in.)

All types supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1750	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BF70M	Nyl 2BA 1/2in.	£0.893	£0.760	£0.670	£1.050
BF71N	Nyl 2BA 1in.	£1.120	£0.952	£0.840	£1.320
BF72P	Nyl 4BA 1/2in.	£0.893	£0.760	£0.670	£1.050
BF73Q	Nyl 4BA 1in.	£1.010	£0.861	£0.760	£1.190
BF75S	Nyl 6BA 1/2in.	£0.893	£0.760	£0.670	£1.050
BF76H	Nyl 6BA 1in.	£1.010	£0.861	£0.760	£1.190

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## Nylon BA Nuts

Ivory finish nylon nuts available in the following sizes. 2BA, 4BA, 6BA  
All types supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1752	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BF78K	Nyl Nut 2BA	£0.851	£0.723	£0.638	£1.000
BF79L	Nyl Nut 4BA	£0.808	£0.687	£0.606	£0.950
BF80B	Nyl Nut 6BA	£0.808	£0.687	£0.606	£0.950

## Nylon BA Washers

Ivory finish nylon washers available in the following sizes.

- 2BA, 4BA, 6BA
- All types supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1753	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BF82D	Nyl Washer 2BA	£0.340	£0.289	£0.255	£0.400
BF83E	Nyl Washer 4BA	£0.340	£0.289	£0.255	£0.400
BF84F	Nyl Washer 6BA	£0.340	£0.289	£0.255	£0.400

## Nylon Metric Nut and Bolt

An ivory finish M3 metric-thread nylon full nut and M3 x 12mm countersunk bolt. Supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1754	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JX79L	Nyl C/S Bolt M3x12mm	£0.774	£0.658	£0.581	£0.910
JX80B	Nylon Nut M3	£0.655	£0.557	£0.491	£0.770

## Call and Collect

Maplin has more stores Nationwide than ever before.  
See the maps at the front of the catalogue for the nearest one to you.

## Self-Tapping Screws

Steel self-tapping screws available in the following sizes.

- No.8 x 9.5mm (3/8in.)
- No.8 x 12.7mm (1/2in.)
- No.6 x 9.5mm (3/8in.)
- No.6 x 12.7mm (1/2in.)
- No.2 x 4.76mm (3/16in.)
- No.2 x 9.5mm (3/8in.)
- No.4 x 6.35mm (1/4in.)
- No.4 x 9.5mm (3/8in.)
- No.4 x 12.7mm (1/2in.)



Retail Unit Price each (inc. VAT).

Order Code	Type 1756	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BF68Y	Slf-Tr No.8 x 3/8in	£0.221	£0.188	£0.166	£0.260
BF69A	Slf-Tr No.8 x 1/2in	£0.221	£0.188	£0.166	£0.260
BF67X	Slf-Tr No.6 x 1/2in	£0.221	£0.188	£0.166	£0.260
FE68Y	Slf-Tr No.4 x 1/4in	£0.238	£0.202	£0.178	£0.280
BF65V	Slf-Tr No.4 x 3/8in	£0.221	£0.188	£0.166	£0.260
BF66W	Slf-Tr No.4 x 1/2in	£0.221	£0.188	£0.166	£0.260
BF64U	Slf-Tr No.2 x 3/16in	£0.221	£0.188	£0.166	£0.260

Retail Unit Price each (inc. VAT).

Order Code	Type 1758	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
LF67X	Slf-Tr No.6 x 3/8in	£0.221	£0.188	£0.166	£0.260
LF68Y	Slf-Tr No.2 x 3/8in	£0.221	£0.188	£0.166	£0.260

## Japanned Woodscrew

A No. 4 x 12.7mm (1/2in.) black japanned woodscrew with a slotted round head.  
Supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1758	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
LB99H	Bk Wdscrw No4 1/2in	£0.246	£0.210	£0.185	£0.290

## Large Handwheel Bolt

A handwheel bolt ideal for fixing portable frames or legs etc. Matt black knob with 35mm long bolt is supplied with T-nut internally threaded to fit bolt. Nut requires a 10mm hole in the woodwork and spikes pull into wood when bolt first tightened to ensure secure fixing. Knob diameter: 45mm. Knob height: 14mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1760	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YL23A	Hand Wheel Bolt	£0.893	£0.760	£0.670	£1.050

## Small Handwheel Bolt



A six sided scolloped handwheel bolt, ideal for fixing portable frames or legs, etc. Supplied with T-

nut. Matt black knob with M6 x 20mm bolt. Knob diameter 40mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1759	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JU48C	Hand Wheel M6x20mm	£0.774	£0.624	£0.541	£0.910

## Brass Studding



A 152mm (6in.) length of screwed brass rod. Available in 2BA, 4BA and 6BA.

Retail Unit Price each (inc. VAT).

Order Code	Type 1761	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
FW13P	Studding 2BA	£0.589	£0.586	£0.517	£0.810
FW14Q	Studding 4BA	£0.774	£0.658	£0.581	£0.910
FW15R	Studding 6BA	£0.851	£0.723	£0.638	£1.000

## CLIPS

### Hose Clips



A range of high quality worm-driven hose clips featuring 'High Grip' construction, and manufactured to BS5315:1991 standard. Made from heavily zinc plated mild steel - ideal for a wide range of applications including domestic, automotive and industrial. Available in bandwidth sizes of 10 and 13mm.

Adjustment Limits (mm dia.)	Band Size (mm)	Maximum Torque (nm)	Order Code
9.5 to 12	10	3	AR75S
11 to 16	10	3	AR76H
17 to 25	13	3	AR77J
25 to 35	13	5	AR78K
30 to 40	13	5	AR79L

Retail Unit Price each (inc. VAT).

Order Code	Type 6886	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
AR75S †	Hose Clip 12mm	£0.425	£0.364	£0.333	£0.500
AR76H	Hose Clip 16mm	£0.476	£0.374	£0.339	£0.560
AR77J	Hose Clip 25mm	£0.510	£0.437	£0.396	£0.600
AR78K	Hose Clip 35mm	£0.510	£0.437	£0.396	£0.600
AR79L †	Hose Clip 40mm	£0.561	£0.478	£0.437	£0.660

## Terry Clip

Available in 12.7mm (1/2in.) diameter.  
Supplied in packs of ten.



Retail Unit Price each (inc. VAT).

Order Code	Type 1901	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JX76H	Terry Clip 1/2in.	£1.310	£1.120	£0.989	£1.550

† = While Stocks Last

**SPACERS**

**Round Clearance**

**Harwin**  
Circuit board mounting spacers, 4BA, 6BA, M3 or M4 clearance nickel-plated brass tubes. Available in the following sizes.

- 4BA x 3-18mm (1/4in.)
- 6BA x 3-18mm (1/4in.)
- 4BA x 6-35mm (1/4in.)
- 6BA x 6-35mm (1/4in.)
- 4BA x 12-7mm (1/2in.)
- 6BA x 12-7mm (1/2in.)
- M3 x 3-18mm (1/4in.)
- M3 x 6-35mm (1/4in.)
- M3 x 12-7mm (1/2in.)
- M4 x 12-7mm (1/2in.)



Retail Unit Price each (inc. VAT).

Order Code	Type 1763	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FW30H	4BA Spacer 1/8in.	£0.995	£0.874	£0.749	£1.170
FW31J	4BA Spacer 1/4in.	£1.020	£0.884	£0.760	£1.210
FW32K	4BA Spacer 1/2in.	£1.370	£1.120	£0.968	£1.620
FW33L	6BA Spacer 1/8in.	£0.995	£0.874	£0.749	£1.170
FW34M	6BA Spacer 1/4in.	£1.020	£0.884	£0.791	£1.210
FW35Q	6BA Spacer 1/2in.	£1.120	£0.968	£0.822	£1.320
FG32K	M3 Spacer 1/8in.	£1.080	£0.947	£0.796	£1.280
FG33L	M3 Spacer 1/4in.	£1.020	£0.884	£0.791	£1.210
FG34M	M3 Spacer 1/2in.	£1.250	£1.070	£0.905	£1.480
FG37S	M4 Spacer 1/2in.	£1.370	£1.120	£0.968	£1.620

**Hex Clearance**

**Harwin**  
A rigid PVC spacer, 12-7mm long, with a hexagonal cross-section. Spacer is 6-35mm (approx) across flats and the central hole is 2-8mm diameter. 6BA or M2-5 screws will pass through the hole. Supplied in packs of ten (colour may be white).



Retail Unit Price each (inc. VAT).

Order Code	Type 1764	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FE68A	Hex Clear Spacer	£0.774	£0.658	£0.581	£0.910

**Round Threaded**



**Harwin**  
Nickel-plated brass spacers with the centre hole tapped to accept a 4BA, 6BA, M3 or M4 screw. Length of the 4BA and 6BA types, is 12-7mm (1/2in.), the M3 and M4 types is 14mm. Overall diameter of 4BA, 6BA and M4 is 6-35mm (1/4in.) and M3 is 4-75mm. Supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1767	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
LR71N	Threaded Spacer 4BA	£1.290	£1.140	£0.999	£1.520
LR72P	Threaded Spacer 6BA	£1.120	£0.988	£0.884	£1.320
FG38R	Threaded Spacer M3	£1.200	£1.020	£0.926	£1.420
FG39N	Threaded Spacer M4	£1.290	£1.120	£0.957	£1.520

**Hex Threaded**

**Harwin**  
Nickel-plated brass spacers with the centre hole tapped to accept a 6BA screw. Supplied in packs of ten. Two lengths available: 6-35mm (1/4in.) long. 22-23mm (7/8in.) long. Width across flats 4.9mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1768	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FD10L	6BA Tapped Spacr 1/4	£1.120	£0.936	£0.884	£1.320
JG20W	6BA Tapped Spacr 7/8	£1.640	£1.400	£1.230	£1.930

**Insulated**



A range of insulated spacers with brass inserts and cross-head M3 bolts with spring washer at both ends. Bolts are 5mm long. Spacers are available in seven lengths 10mm, 15mm, 20mm, 25mm and 30mm. Overall diameter 8mm. Sold in packs of four.

Retail Unit Price each (inc. VAT).

Order Code	Type 1771	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FS36P	M3 Insulted Spacer 10	£1.020	£0.895	£0.801	£1.210
FS37S	M3 Insulted Spacer 15	£1.020	£0.895	£0.801	£1.210
FS38R	M3 Insulted Spacer 20	£1.120	£0.936	£0.832	£1.320
FS39N	M3 Insulted Spacer 25	£1.200	£0.978	£0.864	£1.420
FS40T	M3 Insulted Spacer 30	£1.290	£1.030	£0.926	£1.520

**Rubber Coupling**

For use with spring-lines, the coupler drastically reduces transmission of acoustic shocks and vibrations to the springs. The coupler has an M4 stud on each end.

- Dimensions in mm:**
- Rubber length: 9
  - Rubber diameter: 9-5
  - Overall length: 29



Retail Unit Price each (inc. VAT).

Order Code	Type 1773	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FB88G	Rubber Coupling	£1.460	£1.180	£0.988	£1.720

**Snap Rivets**



Small plastic rivets which may be used as a quick and cheap alternative to screws and nuts for holding together panels, pcbs onto brackets and chassis etc, providing the fixture is reasonably permanent. The rivet comes in two parts, the head and sleeve. The sleeve pushes through holes in the items to be attached, and the pin is pushed into the sleeve. The insertion of the pin makes the sides of

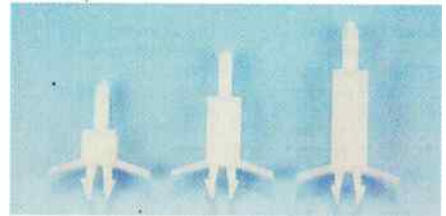
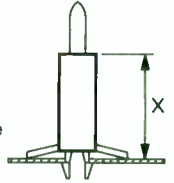
the sleeve splay out, providing a secure grip. Requires 3mm minimum hole diameter. Supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1800	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BK67U	Snap Rivet	£0.774	£0.624	£0.500	£0.910

**Stand-Offs**

A range of plastic snap-in stand-offs which eliminate the need for nuts and bolts when mounting printed circuit boards etc. The bottom snaps permanently into a chassis hole 5mm dia. in any chassis with a thickness 1mm to 2.5mm. The top snaps into a 4mm dia. hole in the circuit board which can be removed and re-fitted as required. These stand-offs provide mechanically secure, insulated mounting, yet boards can be quickly removed. Short and medium types are also available in packs of 40.



Type	Dimension X (mm)	Overall length (mm)
Short	9	22
Medium	15	28
Long	20	33

Retail Unit Price each (inc. VAT).

Order Code	Type 6383	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AQ05F	Stand Off-Short 40Pk	£2.540	£2.150	£1.980	£2.990
AQ06G	Stand Off Med 40Pk	£2.540	£2.150	£1.980	£2.990

Retail Unit Price each (inc. VAT).

Order Code	Type 6383	Price each exc. VAT			inc. VAT each
		1+	100+	1000+	
JK44X	Standoff Short	£0.127	£0.072	£0.057	£0.150
JK45Y	Standoff Medium	£0.127	£0.072	£0.057	£0.150
JK46A	Standoff Long	£0.127	£0.072	£0.057	£0.150

**PCB Guide**



A moulded nylon support and guide for vertically mounted pcbs. Guide is push fixed and requires an 8 x 4mm mounting slot. Overall height: 39mm, width: 8mm, thickness: 4-5mm. The guide has a slot for a pcb on each side and slots are 3mm deep.

Retail Unit Price each (inc. VAT).

Order Code	Type 1892	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
XX31J	PCB Guide	£0.476	£0.385	£0.312	£0.560

**All Customers**  
No additional freight charges for heavy items

## GROMMETS

### Waterproof Cable Glands

**Gewiss**

A range of four high quality cable glands which offer both mechanical anchorage and environmental sealing. Fixing is by means of a hexagonal nut fitted on the inside of the enclosure. The gland is tightened externally and facilitates cable removal/fitting when the gland is fitted. The two bigger sizes feature a dual-sized gland so that two ranges of cable diameter can be accommodated. (For the larger sizes, the inner gland is removed, but for smaller cables it is left in place.) The body is manufactured from a very tough grey nylon.



**Comparison chart for cable glands**

**All Dimensions in mm:**

Order Code	Panel Cut-out	Max. Panel Thickness	Hex Nut Size
JR76H	15.2	5	19 A/F
JZ40T	20.4	6	24 A/F
JZ41U	28.3	7	32 A/F
JZ42V	37	7	41 A/F

	Cable dia. range	Overall length (before tightening)
JR76H	5 to 8mm	30mm
JZ40T	9 to 12.5mm	40mm
JZ41U	8 to 10mm (S) 17 to 20mm (L)	50mm
JZ42V	13.5mm to 15mm (S) 21 to 26mm (L)	55mm

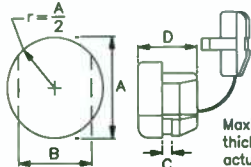
S-smaller gland within larger gland; L-larger gland only.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 1783	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JZ76H	15mm Cap Black	£0.127	£0.089	£0.057	£0.150
JZ40T	Gland 9 - 12.5mm	£0.561	£0.416	£0.307	£0.660
JZ41U	Gland 8 - 20mm	£0.689	£0.541	£0.478	£0.810
JZ42V	Gland 13.5 - 26mm	£1.020	£0.874	£0.770	£1.210

### Strain Relief Grommets

A range of moulded black nylon strain-relief grommets which eliminate the need for knot tying, screw-down cable clamps etc. Simply place cable in grommet, squeeze closed and snap into chassis cut-out. Five sizes are available.



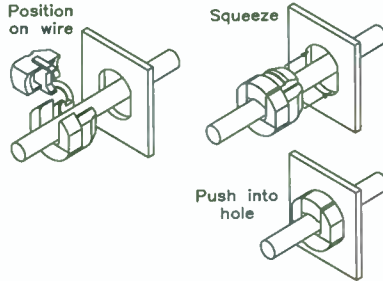
**All Dimensions in mm:**

**B - to stop twisting**

**C - max chassis thickness**

Type	To fit cable	B	A	C	D
F31	Twin Mains DS	9.9	11.0	1.6	10.3
5R2	Min Mains	11.5	12.7	2.5	11.0
6W2	Twin 6A Mains/ Cotton Mains	11.8	12.7	2.3	11.0
6R1	C6A Mains	14.0	15.9	1.6	14.8
7R3	HD Mains/ 4-Core Mains	16.5	19.8	3.2	19.0

Supplied individually.



**Retail Unit Price each (inc. VAT).**

Order Code	Type 1780	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
LR47B	SR Grommet F31	£0.093	£0.062	£0.042	£0.110
LR48C	SR Grommet 5R2	£0.093	£0.062	£0.042	£0.110
LR49D	SR Grommet 6W2	£0.093	£0.062	£0.042	£0.110
JH23A	SR Grommet 6R1	£0.110	£0.087	£0.057	£0.130
LR50E	SR Grommet 7R3	£0.161	£0.124	£0.084	£0.190

### Grommet Pliers



A pair of grommet pliers specifically designed to quick and easily insert strain relief grommets LR47B/48C/49D/50E and JH23A.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 10415	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP43W	S/R Grommet Plier	£4.240	£3.380	£3.100	£4.990

### Grommets

A range of black PVC grommets for preventing cables chaffing when passing through panels.



Order Code	Hole Dia (mm)	Chassis Hole dia (mm)	Thkns (mm)	Overall Dia (mm)	Overall Thkns (mm)
JX64U	4.0	6.4	1.6	9.5	6.4
JX65V	6.4	9.5	1.6	14.2	4.9
JX62S	6.4	9.5	2.4	14.2	7.0
JX63T	9.5	12.5	1.6	17.0	7.0
JX66W	15.5	20.0	1.6	24.0	7.5

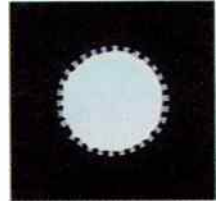
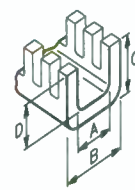
Supplied in packs of ten.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 1777	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JX64U	Std Grommet 4.0mm	£0.340	£0.270	£0.213	£0.400
JX65V	Std Grommet 6.4mm	£0.391	£0.292	£0.260	£0.460
JX62S	Thk Grommet 6.4mm	£0.425	£0.302	£0.260	£0.500
JX63T	Std Grommet 9.5mm	£0.510	£0.448	£0.391	£0.600
JX66W	Std Grommet 15.5mm	£0.774	£0.624	£0.552	£0.910

### Flexible Grommet Strip

**Bowthorpe**



A unique continuous grommet strip ideal for all shapes and sizes of holes in panels. Easily cut with scissors and fitted without the aid of tools or adhesives, it can be used on any type of panel material. Available in white polythene in three sizes:

Size	Dimensions (mm)			For panel thickness		
	A	B	C	D	mm	swg
A	1.4	3.8	4	2.5	0.4 to 1.3	27 to 18
B	2.3	4.5	4	2.5	1.3 to 2.1	16 and 14
C	3.3	5.6	4	2.5	2.1 to 3.3	12 and 10

Sold per metre (max length in one piece 25m).

**Retail Unit Price each (inc. VAT).**

Order Code	Type 1786	Price each exc. VAT			inc. VAT each
		1+	25+	125+	
BL74R	Flexigrommet A	£0.425	£0.354	£0.312	£0.500
BL75S	Flexigrommet B	£0.510	£0.416	£0.364	£0.600
BL76H	Flexigrommet C	£0.595	£0.458	£0.401	£0.700

### PVC Beading

**Bowthorpe**

A flexible, black PVC beading of slotted section intended to provide a protective edging to metal panels, chassis and covers etc, will also protect persons coming into contact with metal edges, for example. May have to be glued in position if firm fixing is required. Sold per metre.



**Retail Unit Price each (inc. VAT).**

Order Code	Type 1996	Price each exc. VAT			inc. VAT each
		1+	75+	150+	
XR78K	PVC Beading Section	£0.314	£0.228	£0.198	£0.370

### Cable Sealing Grommets



PVC grommets for providing a seal around cables when passing through panels.

Type	Cable Size (mm)	Chassis Hole Dia (mm)	Panel Thkns (mm)	Overall Dia (mm)	Overall Thkns (mm)
JX77J	up to 11	16	1.5	19	6.4
JX72P	up to 14	19	1.5	25.5	8
JX73Q	up to 19	25.5	2.4	36.5	9.5

Supplied in packs of ten.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 1788	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JX77J	Seal Grommet 16.0mm	£0.944	£0.874	£0.728	£1.110
JX72P	Seal Grommet 19.0mm	£0.944	£0.874	£0.728	£1.110
JX73Q	Seal Grommet 25.5mm	£1.290	£1.040	£0.936	£1.520

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## Cable Exit Grommet with Sleeve



A cable exit grommet with protective sleeve, ideal to prevent chafing when cables exit an enclosure. The grommet will accept cables up to 5.1mm diameter. Panel hole diameter 8.7mm, panel thickness 1.6mm. Sleeve length 42.9mm. Supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1790	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JX71N	Sv Grommet 5.1mm	£0.953	£0.728	£0.614	£1.120

## Cable Exit Gland with Sleeve



A sealed cable exit gland combined with a coiled strain relief sleeve designed to prevent chafing when cables exit an enclosure. The gland contains a rubber grommet which will accept cables up to 5mm diameter, but this may be removed so that the whole gland will accommodate a 10mm diameter loom. The threaded sleeve part screws into the gland and squeezes a separate plastic collet ring to grip the cable. The gland body has a 12mm long thread and is attached to the enclosure with a nut, and includes a neoprene sealing washer. Requires a panel hole diameter of 15mm (5/8in.). Maximum panel thickness is 4mm. Sleeve length is 50mm. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type 1792	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JZ43W	Cable Exit Gland	£0.859	£0.676	£0.572	£1.010

## Cable Exit Grommet Large



A cable exit grommet for use with large diameter cables. The grommet is tapered and should be trimmed to accommodate the cable it is protecting. Suitable for cable diameters 8 to 16mm. Panel hole diameter 20mm, panel thickness 1.8mm. Supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1793	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JX70M	Lrg Grommet 8-16mm	£0.953	£0.676	£0.582	£1.120

## Hole Plugs

Moulded nylon plugs which snap-lock with finger pressure into holes in chassis which are to be blanked off. Two sizes are available. Colour: black.



Dimensions in mm:

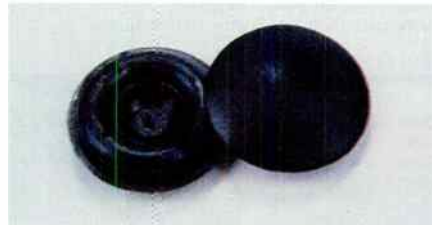
Type	Fits hole dia.	Head dia.	Overall height	Max chassis thickness
1/4in.	6.35	7.94	7.94	1.57
3/8in.	9.53	11.91	10.32	3.18

Supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1795	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JX60Q	Hole Plug 1/4in.	£0.595	£0.473	£0.431	£0.700
JX61R	Hole Plug 3/8in.	£0.774	£0.624	£0.530	£0.910

## Blanking Grommets



A range of black PVC grommets for blanking-off holes in panels.

Type	Chassis Hole Dia (mm)	Panel Thkns (mm)	Overall Dia (mm)	Overall Thkns (mm)
JX67X	15.5	1.6	22.0	7.5
JX68Y	20.0	1.6	25.5	9.3
JX69A	25.4	1.6	32.0	9.0

Supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1797	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JX67X	Blank Grommet 15.5mm	£0.774	£0.718	£0.624	£0.910
JX68Y	Blank Grommet 20.0mm	£0.774	£0.718	£0.624	£0.910
JX69A	Blank Grommet 25.4mm	£1.120	£0.889	£0.801	£1.320

## KNOB

### PLASTIC

## Matt Finish Knob For 3mm Spindle

An attractive matt black finish grub screw secured knob with serrated finger-grip sides and a narrow skirt. It is similar in style to the K14 range but is designed to fit 3mm shafts, and makes an excellent replacement for knobs fitted to some types of manufactured equipment. External diameter 12mm max., height 12mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1799	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JZ86T	Knob 3mm Spindle	£0.280	£0.218	£0.188	£0.330

## Low-Height Knob

Small knob with serrated sides and spun aluminium insert with arrow-head pointer. Diameter: 21mm. Height: 13mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1802	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FX99H	Knob RN82	£0.365	£0.297	£0.240	£0.430

## Small Ridged Knobs



Two knobs with white pointer line and a skirt. Sides have narrow raised ridges for a firm grip. Fitted with a spun aluminium insert. KB3 has recess for control fixing nut. KB4: Diameter 20mm. Height 17mm. KB3: Diameter 35mm. Height 22mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1803	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW87U	Knob KB4	£0.476	£0.396	£0.302	£0.560
RW86T	Knob KB3	£0.561	£0.468	£0.416	£0.660

## Recessed Knob

A knob with a deeply recessed spun aluminium insert marked with a black line. Side is serrated. Knob has a recess for control fixing nut. Diameter 24mm. Height 16mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1805	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FC34M	Knob 41001	£0.485	£0.391	£0.354	£0.570

## Skirted and Unskirted Pair



An identical pair of knobs except that one has a skirt and one has not. Both are fitted with a spun aluminium cap and have serrated sides. They have a recess for control fixing nut. Skirted M2 version has a white indicator spot on the skirt.

M1: Diameter 19mm. Height 16mm.  
M2: Diameter 25mm. Height 16mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1807	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW88V	Knob M1	£0.655	£0.510	£0.406	£0.770
RW89W	Knob M2	£0.655	£0.510	£0.406	£0.770

## Heavy Duty Pointer Knob

A pointer knob with white line giving a very firm grip for heavy switches etc. Diameter: 27mm. Height: 16mm. Has recess for control fixing nut.



Retail Unit Price each (inc. VAT).

Order Code	Type 1812	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FD76H	Knob HDP	£0.476	£0.344	£0.281	£0.560

## Mirror Finished Pair

cliff



A matching pair of knobs with a mirror-finish chrome insert and white pointer spot on the skirt. Sides are wide ridged and both types have a recess for control fixing nuts.

M3: Diameter 26mm. Height 15mm.  
M4: Diameter 36mm. Height 17mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1809	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
RW90X	Knob M3	£0.510	£0.391	£0.322	£0.600
RX00A	Knob M4	£0.859	£0.708	£0.614	£1.010

## Calibrated and Pointer Pair



A matching pair of knobs with a spun aluminium insert and a wide aluminium skirt. Sides are serrated. Type F11 has a black indicator line on the skirt and type F10 is calibrated 0 to 9-8. Both types have recess for control fixing nut.

Retail Unit Price each (inc. VAT).

Order Code	Type 1818	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
RW78K	Knob F10	£0.859	£0.708	£0.572	£1.010
HB26D	Knob F11	£0.859	£0.708	£0.572	£1.010

## Pointer Knob

Standard pointer knob with white line. Length 32mm. Width (max) 19mm. Height 13mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1809	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
RW75S	Knob BK12	£0.365	£0.292	£0.240	£0.430

## Type A

A matt finish, black knob with white line. Knob will only fit with line at right angles to the length of the pot. Flared sides. Size of base: 20 x 14mm. Size at top: 16 x 8mm.



Height: 13-5mm. Shaft depth: 8mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1847	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
RX22Y	Slide Knob A	£0.280	£0.218	£0.171	£0.330

## Calibrated and Pointer Pair



A matching pair of knobs with a spun aluminium skirt. Sides are serrated. Type PK2 has a black arrowhead on the skirt and type NK2 is numbered 0 to 10 on the skirt. Both types have recess for control fixing nut.

Both types: Diameter 37mm. Height 15mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1810	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
RX01B	Knob NK2	£0.740	£0.624	£0.468	£0.870
RX02C	Knob PK2	£0.740	£0.624	£0.468	£0.870

## Fluted Range



A range of black fluted knobs with white indicator line, narrow skirt and spun aluminium insert. All types have recess for control fixing nut except K7A.

K7A: Diameter 19mm. Height 12mm.  
K7B: Diameter 27mm. Height 16mm.  
K7C: Diameter 33mm. Height 16mm.  
K7D: Diameter 45mm. Height 21mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1819	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
YX01B	Knob K7A	£0.561	£0.426	£0.312	£0.660
YX02C	Knob K7B	£0.655	£0.478	£0.354	£0.770
YX03D	Knob K7C	£0.740	£0.552	£0.396	£0.870
YX04E	Knob K7D	£0.825	£0.645	£0.530	£0.970

## Type B

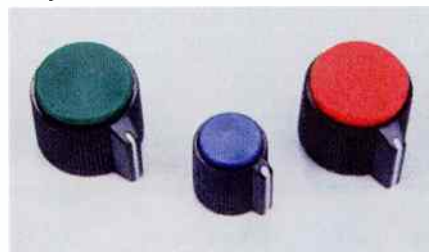
A miniature version of our Type A knob. Size of base: 12 x 8-5mm. Size at top: 9 x 4-5mm. Height: 9mm. Black with a white line. Shaft depth: 6mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1848	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
YG09K	Slide Knob B	£0.280	£0.218	£0.171	£0.330

## Pointer Knobs with Coloured Caps



A range of attractive knobs with pointer bar with a white line. Knobs have serrated sides and coloured cap. Knobs are available in two sizes with blue, green, red or yellow caps.

RN15: Length 15mm. Width 13mm. Height 13mm.  
RN18: Length 23mm. Width 19-3mm. Height 16-5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1814	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FE74R	Knob RN15 Blue	£0.391	£0.292	£0.228	£0.460
FE75S	Knob RN15 Green	£0.391	£0.292	£0.228	£0.460
FE76H	Knob RN15 Red	£0.391	£0.292	£0.228	£0.460
FE77J	Knob RN15 Yellow	£0.391	£0.292	£0.228	£0.460
FD65V	Knob RN18 Blue	£0.476	£0.344	£0.281	£0.560
FD66W	Knob RN18 Green	£0.476	£0.344	£0.281	£0.560
FD67X	Knob RN18 Red	£0.476	£0.344	£0.281	£0.560
FD68Y	Knob RN18 Yellow	£0.476	£0.344	£0.281	£0.560

## Matt Finish Range



An attractive range of matt black finish knobs with serrated finger-grip sides and a narrow skirt. The top of the knob features a shallow channel which matches in with the serrated finger-grip pattern. One end of the channel has a square, white pointer dot which complements a square cut-out or recess in the skirt. Knob K14D has a recess for a control fixing nut.

K14A: Diameter 15mm. Height 14mm.  
K14B: Diameter 19-5mm. Height 15mm.  
K14C: Diameter 24mm. Height 20mm.  
K14D: Diameter 35mm. Height 17mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1822	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FK38R	Knob K14 A	£0.391	£0.302	£0.250	£0.460
FK39N	Knob K14 B	£0.476	£0.396	£0.322	£0.560
FK40T	Knob K14 C	£0.476	£0.396	£0.322	£0.560
FK41U	Knob K14 D	£0.561	£0.448	£0.374	£0.660

## Type F

A matt finish knob with serrated top and white line. Knob will only fit with line at right angles to the length of the pot. Size of base: 22-5 x 10-5mm.

Height: 11mm. Shaft depth: 8-5mm. Available in the following colours: Black, Blue, Green, Grey and Red.



Retail Unit Price each (inc. VAT).

Order Code	Type 1843	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
RX24B	Slide Knob F Bk	£0.238	£0.198	£0.156	£0.280
RX25C	Slide Knob F Blue	£0.238	£0.198	£0.156	£0.280
RX26D	Slide Knob F Green	£0.238	£0.198	£0.156	£0.280
RX27E	Slide Knob F Grey	£0.238	£0.198	£0.156	£0.280
RX28F	Slide Knob F Red	£0.238	£0.198	£0.156	£0.280

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**ALUMINIUM**

**Brushed Aluminium Range**



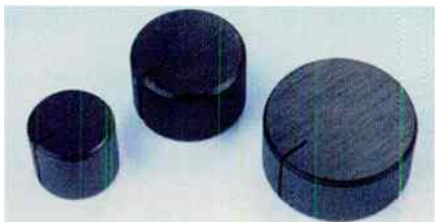
Very attractive solid brushed aluminium knob with a groove cut as an indicator line. All sizes except K8A have a recess for control fixing nut.

- K8A: Diameter 15mm. Height 14mm.
- K8B: Diameter 22mm. Height 14mm.
- K8C: Diameter 28mm. Height 14mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1833	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
YR64U	Knob K8A	£1.120	£0.916	£0.822	£1.320
YR65V	Knob K8B	£1.460	£1.090	£0.957	£1.720
YR66W	Knob K8C	£1.720	£1.480	£1.250	£2.030

**Black Aluminium Range**



A range of knobs identical to the K8 series, except that they have a matt black finish.

Retail Unit Price each (inc. VAT).

Order Code	Type 1834	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
RK88W	Knob K10A	£1.120	£0.916	£0.822	£1.320
RK90X	Knob K10B	£1.460	£1.090	£0.957	£1.720
RK91Y	Knob K10C	£1.720	£1.480	£1.250	£2.030

**COLLET**

**10mm Knob**

Re-An

Base diameter 10mm, height 14mm. Available for the following spindle diameters: 4mm (JZ45Y) and 3-175mm (1/8in.) (JZ46A). Caps available in red, white, grey and black.



Retail Unit Price each (inc. VAT).

Order Code	Type 1827	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JZ45Y	10mm Collet 4 Knob	£0.655	£0.530	£0.458	£0.770
JZ46A	10mm Collet 1/8 Knob	£0.655	£0.530	£0.458	£0.770
JZ61R	10mm Cap Red	£0.093	£0.067	£0.045	£0.110
JZ65V	10mm Cap White	£0.093	£0.067	£0.045	£0.110
JZ66W	10mm Cap Grey	£0.093	£0.067	£0.045	£0.110
JZ67X	10mm Cap Black	£0.093	£0.067	£0.045	£0.110

**15mm Knob**

Re-An

Base diameter 15mm, height 14mm. Available for the following spindle diameters: 4mm (JZ48C), 3-175mm (1/8in.) (JZ49D), 6mm (JZ50E), 6-35mm (1/4in.) (JZ47B). Caps available in red, green, yellow, blue, white, grey, orange, beige and black.



Retail Unit Price each (inc. VAT).

Order Code	Type 1830	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JZ48C	15mm Collet 4 Knob	£0.655	£0.530	£0.458	£0.770
JZ49D	15mm Collet 1/8 Knob	£0.655	£0.530	£0.458	£0.770
JZ50E	15mm Collet 6 Knob	£0.655	£0.530	£0.458	£0.770
JZ47B	15mm Collet 1/4 Knob	£0.655	£0.530	£0.458	£0.770
JZ68Y	15mm Cap Red	£0.127	£0.089	£0.057	£0.150
JZ69A	15mm Cap Green	£0.127	£0.089	£0.057	£0.150
JZ70M	15mm Cap Yellow	£0.127	£0.089	£0.057	£0.150
JZ71N	15mm Cap Blue	£0.127	£0.089	£0.057	£0.150
JZ72P	15mm Cap White	£0.127	£0.089	£0.057	£0.150
JZ73Q	15mm Cap Grey	£0.127	£0.089	£0.057	£0.150
JZ74R	15mm Cap Orange	£0.127	£0.089	£0.057	£0.150
JZ75S	15mm Cap Beige	£0.127	£0.089	£0.057	£0.150
JZ76H	15mm Cap Black	£0.127	£0.089	£0.057	£0.150

**Collet Knob Nut Spanner**

Re-An

A box spanner designed for tightening or loosening collet knobs as used on 4mm diameter spindles. Shaft length 140mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1831	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CK39H	Nut Spinner	£5.630	£5.150	£4.680	£6.620

**21mm Knob**

Re-An

Base diameter 21mm, Height 17mm. Available for 6-35mm (1/4in.) and 6mm diameter shafts. Caps available in black, red, green, yellow, blue, white and grey. Knob base is recessed to hide control fixing nut.



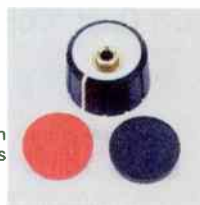
Retail Unit Price each (inc. VAT).

Order Code	Type 1835	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JZ51F	21mm Collet 1/4 Knob	£0.740	£0.614	£0.520	£0.870
FC95D	21mm Collet 6 Knob	£0.723	£0.590	£0.500	£0.850
JZ77J	21mm Cap Black	£0.127	£0.089	£0.057	£0.150
JZ78K	21mm Cap Red	£0.127	£0.089	£0.057	£0.150
JZ79L	21mm Cap Green	£0.127	£0.089	£0.057	£0.150
JZ80B	21mm Cap Yellow	£0.127	£0.089	£0.057	£0.150
JZ81C	21mm Cap Blue	£0.127	£0.089	£0.057	£0.150
JZ82D	21mm Cap White	£0.127	£0.089	£0.057	£0.150
JZ83E	21mm Cap Grey	£0.127	£0.089	£0.057	£0.150

**28mm Knob**

Re-An

Base diameter 28mm, Height 17mm. Available for 6-35mm (1/4in.) diameter shaft only. Caps available in red and black. Knob base is recessed to hide control fixing nut.



Retail Unit Price each (inc. VAT).

Order Code	Type 1837	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JZ52G	28mm Collet Knob	£0.825	£0.760	£0.686	£0.970
JZ84F	28mm Cap Red	£0.187	£0.124	£0.094	£0.220
JZ85G	28mm Cap Black	£0.187	£0.124	£0.094	£0.220

**Numbered Skirts and Stator for 15mm Collet Knobs**

Re-An



These plug into the base of the knob, and have on them black numerals set against a clear background. There are two versions available: one is numbered from 1 to 10 (JZ54J); the other 1 to 12 (JZ53H). A stator is also available (JZ55K). This is a black, adhesive-backed disc with one white segment which is fitted to the panel, allowing the figure dial to rotate over it. Thus only one of the numbers on the figure dial stands out clearly against the white segment of the stator whilst the remaining numbers 'disappear' against the black background.

Retail Unit Price each (inc. VAT).

Order Code	Type 1839	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JZ54J	Skirt 1 - 10	£0.340	£0.270	£0.218	£0.400
JZ53H	Skirt 1 - 12	£0.340	£0.270	£0.218	£0.400
JZ55K	Stator	£0.425	£0.354	£0.292	£0.500

**Nut Covers for 10mm and 15mm Knobs**

Re-An

These plug into the base of the knob and hide the potentiometer fixing nut. Three types are available: black with white line, for 10 and 15mm knobs (JZ56L and JZ57M respectively) and black, for 15mm knobs only (JZ58N).



Retail Unit Price each (inc. VAT).

Order Code	Type 1842	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JZ58N	No Line 15mm Cover	£0.221	£0.186	£0.114	£0.260
JZ57M	Lined 15mm Cover	£0.255	£0.208	£0.176	£0.300
JZ56L	Lined 10mm Cover	£0.255	£0.208	£0.176	£0.300

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**



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## Low Cost 'Collet' Knobs

Re-An

An attractive black silk-finish plastic knob in a style similar to true collet knobs, but having grub-screw fixing for standard 6-35mm (1/4in.) shaft. The knob has an integral nut-cover, and seven different colour caps are available separately to plug in the top of the knob body. Has recess for control fixing nut.



Diameter: 19mm. Height: 21mm (with cap). Caps are engraved with white indicator line. (White cap has black line.)

Retail Unit Price each (inc. VAT).

Order Code	Type 1845	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YG40T	Low-Cost Collet Knob	£0.425	£0.349	£0.307	£0.500
QY00A	LC Cap Black	£0.093	£0.084	£0.079	£0.110
QY01B	LC Cap Blue	£0.093	£0.084	£0.079	£0.110
QY02C	LC Cap Green	£0.093	£0.084	£0.079	£0.110
QY03D	LC Cap Grey	£0.093	£0.084	£0.079	£0.110
QY04E	LC Cap Red	£0.093	£0.084	£0.079	£0.110
QY05F	LC Cap White	£0.093	£0.084	£0.079	£0.110
QY06G	LC Cap Yellow	£0.093	£0.084	£0.079	£0.110

## ACCESSORIES

### DIALS

## Aluminium Dial

Jackson

Dial incorporates a ball drive type 4511F. Output shaft fits standard 6-3mm (1/4in.) shaft. Unit has an aluminium scale printed 0 to 100 in 180° and a 25-4mm (1in.) solid aluminium diamond knurled knob. Dial diameter: 44mm (1 3/4in.)



Retail Unit Price each (inc. VAT).

Order Code	Type 1856	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
HB45Y	Aluminium Dial	£13.010	£11.710	£10.920	£15.290

## Vernier Dials



Heavy black phenolic base and black printed aluminium scale. Moulded knob has fluted grips and internal parts are phosphor bronze and brass for long life. No backlash, positive logging, 'large' dial can be read to a tenth of each scale division. Planetary slow motion drive. Fits standard 6-3mm (1/4in.) shaft. Scale marked 0 to 100 in 180°. Please note that only the 'large' dial has a true vernier scale.

Type	Dial diameter	Reduction ratio (approx.)
Vernier Dial Small	36mm	6-3:1
Vernier Dial Medium	50mm	7-5:1
Vernier Dial Large	70mm	8-1:1

Retail Unit Price each (inc. VAT).

Order Code	Type 1857	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RX39N	Vernier Dial Small	£5.200	£4.530	£4.160	£6.110
RX40T	Vernier Dial Medium	£6.500	£5.570	£5.100	£7.640
RX41U	Vernier Dial Large	£11.710	£10.670	£9.830	£13.760

## MISCELLANEOUS

### Spindle Coupler

Brass spindle coupling. Precision turned from brass rod for extending all types of 6-35mm (1/4in.) spindles. Four flush-fitting grub screws ensure non-slip trouble-free operation. Length 15mm. Outer diameter 9-5mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1855	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RX29G	Spindle Coupler	£2.160	£1.830	£1.510	£2.540

### Extension Spindle



Brass extension spindle that fits all 6-35mm (1/4in.) spindles. Spindle retainer has two 6BA screws and extension spindle is 64mm long x 6-35mm (1/4in.).

Retail Unit Price each (inc. VAT).

Order Code	Type 1854	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RX30H	Ext Spindle	£1.720	£1.530	£1.410	£2.030

### Nylon Rod



6-35mm (1/4in.) dia. rod for extending spindles. Strong and slightly flexible. It is supplied in 152mm (6in.) lengths (nominal).

Retail Unit Price each (inc. VAT).

Order Code	Type 1852	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RX38R	Nylon Rod	£0.510	£0.374	£0.275	£0.600

### Steel Cord Drive

Jackson



A brass bush (panel cut-out 9-53mm.) through which a standard 6-35mm (1/4in.) shaft revolves in a ball race. Spindle extends at rear of bush to allow flywheel to be fitted. Total length: 62mm. Length from front of bush: 36mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1853	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RX46A	Cord Drive Steel	£4.760	£3.910	£3.490	£5.600

## Brass Bush

Jackson

A brass bush (panel cut-out 9-53mm) to support long spindle in front panel or guide spindle fixed in sub-chassis through front panel. Suits standard 6-35mm (1/4in.) spindles. Overall length: 13-5mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1854	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RX31J	Brass Bush	£0.689	£0.552	£0.448	£0.810

## Drive Cord

A nylon covered spunglass-cored drive cord. Non-stretch and non-slip. Diameter: 0-56mm. Breaking strain: 4-54kg Sold per metre.



Retail Unit Price each (inc. VAT).

Order Code	Type 1855	Price each exc. VAT			inc. VAT each
		1+	25+	200+	1+
BL73Q	Drive Cord	£0.161	£0.104	£0.084	£0.190

## Epicyclic Ball Drive Type 4511F

Jackson

A powerful friction drive with a reduction ratio of approx 6:1. Fits standard 6-3mm (1/4in.) shafts and knobs. Two grub screws for fixing shaft. Base of shaft tapped with two 8BA threaded holes for direct fixing of Rotary Pointer. Shaft length: 26-7mm. Overall length: 47mm. Output torque: 1-8kgm.cm. (26oz.in.) to 2-7kgm.cm. (38oz.in.). Input torque: <216gm.cm. (3oz.in.)



Retail Unit Price each (inc. VAT).

Order Code	Type 1858	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RX42V	Ball Drive	£4.590	£3.910	£3.550	£5.400

## Miniature Type Ball Drive

Jackson

A small friction drive with a reduction ratio of approx. 10:1. Fits standard 6-3mm (1/4in.) shafts and knobs. Two grub screws for fixing shaft. Mounting bracket has two 8BA clearance holes on 20mm centres. Shaft length: 17mm. Overall length: 32-5mm. Output torque: 570gm.cm. (8oz.in.) minimum.



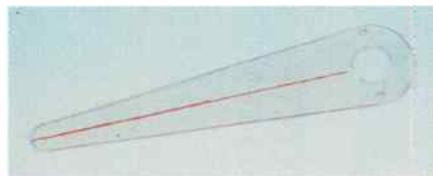
Retail Unit Price each (inc. VAT).

Order Code	Type 1866	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
HB42V	Mini Ball Drive	£3.290	£2.750	£2.500	£3.870

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## Ball Drive Pointer

Jackson



A perspex pointer, transparent with a crimson hair line. Fits the ball drive type 4511F. Length of pointer: 86mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1855	Price each exc. VAT	inc. VAT each
HB47B	Ball Drive Pointer	1+ 22.160 10+ 22.030 25+ 21.710	1+ 22.540

## Cord Tension Springs

Jackson

Springs have 3-2mm (1/16in.) inside diameter loops at each end. Three sizes are available.

Length (between loop centres)	Number of coils
8mm	6
12-7mm	14
21-4mm	26

Retail Unit Price each (inc. VAT).

Order Code	Type 1871	Price each exc. VAT	inc. VAT each
HB48C	Spring Short	1+ 20.246 10+ 19.8 25+ 19.156	1+ 20.290
HB49D	Spring Medium	1+ 20.246 10+ 19.8 25+ 19.156	1+ 20.290
HB50E	Spring Long	1+ 20.246 10+ 19.8 25+ 19.156	1+ 20.290

## Aluminium Sheet

Aluminium sheet having one side coated with a protective polythene layer to prevent scratching.

Two sizes are available:  
18swg 295 x 195mm (11.6 x 7.7in.)  
16swg 490 x 295mm (19.3 x 11.6in.)

Retail Unit Price each (inc. VAT).

Order Code	Type 1873	Price each exc. VAT	inc. VAT each
LH12N	Aly Sheet 18 Swg	1+ 22.970 10+ 22.910 25+ 22.720	1+ 23.490
LH13P 1	Aly Sheet 16 Swg	1+ 25.630 10+ 24.640 25+ 24.280	1+ 26.620

## PC Bracket with 9-Way D-Type Cut-out

Vero



A standard PC bracket with cut-out for 9-way D-type connector as used in the pc Teletext Decoder Interface Kit, LT97F.

Retail Unit Price each (inc. VAT).

Order Code	Type 11653	Price each exc. VAT	inc. VAT each
DT14Q	PC Bracket 9Way DType	1+ 22.540	1+ 22.990

## 15W Amplifier Bracket



A pre-formed bracket for use with the 15W and 20W Power Amplifiers, LT23A and GE13P.

Retail Unit Price each (inc. VAT).

Order Code	Type 10431	Price each exc. VAT	inc. VAT each
YC36P	15W Amp Bracket	1+ 21.260	1+ 21.490

## 37 Way PC Bracket



A standard PC blanking plate that has been modified to accept a 37 way D connector.

Retail Unit Price each (inc. VAT).

Order Code	Type 10411	Price each exc. VAT	inc. VAT each
CR45Y	PC Bracket 37 Way D	1+ 22.540	1+ 22.990

## Windspeed and Direction Kit Spares



Spare parts for the Windspeed and Direction Kit including plastic parts, wind speed shaft, ball race, pointer shaft, pointer, tail fin, mounting bar, mast clamp and end caps.

Retail Unit Price each (inc. VAT).

Order Code	Type 10410	Price each exc. VAT	inc. VAT each
GK14Q 1	W/S Plastic Parts	1+ 29.350	1+ 29.990
JL77J	W/S Shaft	1+ 22.280	1+ 22.690
JL78K	W/S Ball Race	1+ 25.090	1+ 25.990
YT69A	W/S Pointer Shaft	1+ 21.260	1+ 21.490
JL83E	W/S Pointer	1+ 22.970	1+ 23.490
JL84F	W/S Tail Fin	1+ 21.430	1+ 21.890
YT70M	W/S Mounting Bar	1+ 23.390	1+ 23.990
JL87U	W/S Mast Clamp	1+ 22.110	1+ 22.490
JL88V	W/S End Cap	1+ 20.161	1+ 20.190

## Cabinet Assembly Block



A white plastic cabinet assembly block that provides a convenient and easy way of fixing wooden cabinet panels together. The 30 x 14 x 14mm block has two countersunk 4-5mm holes on one face and one countersunk 4-5mm hole on the other face. Ideal for use in loudspeaker cabinets. Supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1874	Price each exc. VAT	inc. VAT each
JX74R	Modesty Block White	1+ 20.774 10+ 20.624 100+ 20.520	1+ 20.910

## Metal 'L' Bracket

A plated, right-angled steel 'L' shaped bracket which can be used in a variety of different roles including that of a cabinet corner protector. Each side is 31mm long with a 5mm dia. hole at 21-5mm away from the angle, and a half-round end. Width is 18mm. Colour silver.



Retail Unit Price each (inc. VAT).

Order Code	Type 1876	Price each exc. VAT	inc. VAT each
JP12N	L Corner	1+ 20.246 25+ 19.8 100+ 19.156	1+ 20.290

## Cabinet Shelf Support



A white plastic shelf support, as used with self-assembly furniture. Spigot diameter, 5.9mm. Spigot length, 6.9mm. Supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1878	Price each exc. VAT	inc. VAT each
JX75S	Shelf Support	1+ 20.510 25+ 20.344 100+ 20.270	1+ 20.600

## Geiger Sponge Block



A handy block of hygroscopic sponge (90 x 14 x 12mm approx) with one self-adhesive long edge, ideal for use as safe packing - to stop batteries moving around in their compartment, for example.

Retail Unit Price each (inc. VAT).

Order Code	Type 11685	Price each exc. VAT	inc. VAT each
FS04E	Sponge Block	1+ 20.246	1+ 20.290

## Self-Adhesive Pads

A small foam pad 25 x 12mm (1mm thick) with a strong adhesive coating on both sides. Adhesive will bond to most materials. Supplied in strips of ten pads.



Retail Unit Price each (inc. VAT).

Order Code	Type 1897	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HB22Y	Quickstick Pads	£0.221	£0.136	£0.109	£0.260

## Velcromounts



A versatile self-adhesive mounting and fixing system consisting of two nylon tapes, one covered in thousands of tiny loops, the other in thousands of tiny hooks. When pressed together, the hooks grip the loops forming a tight secure closure capable of resisting very strong lateral pulls. Yet to separate the strips, you simply peel them apart. The strips have a strong pressure-sensitive adhesive backing and are ideal for securing the grille in front-loading loudspeaker cabinets for example. The strips are 25mm (1in. approx.) wide and sold in separate 1m lengths of hooks and loops or in packs of four pairs of 25mm squares. Colour of both parts is black.

Retail Unit Price each (inc. VAT).

Order Code	Type 1903	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE45Y	4prs 1in. Velcro	£0.340	£0.260	£0.193	£0.400
FE46A	Velcro Hooks 1m	£1.020	£0.884	£0.749	£1.210
FE47B	Velcro Loops 1m	£1.020	£0.884	£0.749	£1.210

## Cam Lock



A quality product containing parts manufactured from brass, steel and alloy materials. The body is finished in chrome with a polished bezel. Suitable for use with metal cabinets, tool boxes and drawers with a panel thickness of up to 4mm. The body is 12.5mm diameter across the threads and 10mm across the flat surfaces. Diameter of bezel is 15mm. The blade is 19mm long from the centre line by 10mm wide. Overall length of lock is 22mm. Two keys provided.

Retail Unit Price each (inc. VAT).

Order Code	Type 3026	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CJ13P	Cam Lock	£1.990	£1.510	£1.310	£2.340

## Tumbler Lock



A quality product containing parts manufactured from brass, steel and alloy materials. The barrel is finished in chrome with a polished bezel. The lock is a separate item with a chrome finished body that fits into the barrel, after mounting, in any one of four positions. The tumblers of the lock are made from brass, steel and bronze. Suitable for use with metal cabinets, tool boxes and drawers with a panel thickness of up to 5mm. The barrel is 19.5mm diameter across the threads and 16mm across the flat surfaces. Diameter of bezel is 21.5mm. The blade is 32mm long from the centreline by 15.5mm wide. Overall length of lock when assembled is 29mm. Two keys provided.

Retail Unit Price each (inc. VAT).

Order Code	Type 3029	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CJ14Q	Tumbler Lock	£1.720	£1.410	£1.190	£2.030

## LABELLING

### PRINTED LABELS

## Mains Warning Label



A self-adhesive label bearing the legend "WARNING Disconnect the mains supply before removing this cover" printed in black on a yellow background. Size 50 x 25mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1984	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
WH48C	Mains Warning Label	£0.255	£0.166	£0.136	£0.300

## High Voltage Warning Label

A self adhesive label with the legend 'DANGER: High Voltage' in black on a yellow background. Size: 50mm square.



Retail Unit Price each (inc. VAT).

Order Code	Type 4452	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DM55K	HV Warning Label	£0.859	£0.801	£0.676	£1.010

## 'Quality Control' Write-on Labels

Brady

A range of write-on labels designed for quality control processes such as BS5750, ISO9000 etc. The peel off, self-adhesive, labels are made from

vinyl cloth, and are primarily designed for indoor use.



Label Size	Label Size (mm)	Number Per Card	Manufacturer's Code	MPS Code	Description	Size Code
Code B	38 x 16	14				B
Code C	38 x 12	18				B
W0-1	CY36P	Rejected				B
W0-2	CY37S	Accepted				B
W0-7	CY38R	Batch No.				B
W0-10	CY39N	Calibration				B
W0-24	CY40T	Blank				B
W0-34	CY41U	Serial No.				C
W0-38	CY42V	Tested				B
W0-52	CY43W	Inspected by				B
W0-574	CY44X	Serviced by				B
W0-575	CY45Y	Not calibrated				B
W0-576	CY46A	Calibration not required				B
W0-572	CY47B	Tested for electrical safety				B

Sold per card.

Retail Unit Price each (inc. VAT).

Order Code	Type 1896	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CY36P	Rejected Label	£0.740	£0.645	£0.593	£0.870
CY37S	Accepted Label	£0.740	£0.645	£0.593	£0.870
CY38R	Batch No. Label	£0.740	£0.645	£0.593	£0.870
CY39N	Calibration Label	£0.740	£0.645	£0.593	£0.870
CY40T	Blank Label	£0.740	£0.645	£0.593	£0.870
CY41U	Serial No. Label	£0.740	£0.645	£0.593	£0.870
CY42V	Tested Label	£0.740	£0.645	£0.593	£0.870
CY43W	Inspected By Label	£0.740	£0.645	£0.593	£0.870
CY44X	Serviced By Label	£0.740	£0.645	£0.593	£0.870
CY45Y	Not Calibrated Label	£0.740	£0.645	£0.593	£0.870
CY46A	Calibration Not Regd	£0.740	£0.645	£0.593	£0.870
CY47B	Tested Elect Safety	£0.740	£0.645	£0.593	£0.870

## 'Warning' Labels

Brady

A range of self-adhesive, electrical warning labels that are made from vinyl cloth, and are suitable for use on a wide range of electrical and electronic equipment, and apparatus. The labels are primarily intended for indoor use.



Label Size	Label Size (mm)	MPS Code	Description (on label)	Size Code	Number Per Card
Code A	32 x 11				
Code B	41 x 15				
Code C	38 x 19				
Code D	57 x 25				
CY48C	110V	A			20
CY49D	240V	A			20
CY50E	415V	A			20
CY51F	Beware	B			5
CY52G	Warning - This equipment must be earthed	C			11
CY53H	Danger - Isolate mains supply before removing cover	D			8

Sold per card.

Retail Unit Price each (inc. VAT).

Order Code	Type 1898	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CY48C	110V Label	£0.953	£0.874	£0.728	£1.120
CY49D	240V Label	£0.953	£0.874	£0.728	£1.120
CY50E	415V Label	£0.953	£0.874	£0.728	£1.120
CY51F	Beware Label	£0.995	£0.936	£0.780	£1.170
CY52G	Earth Warning Label	£0.995	£0.936	£0.780	£1.170
CY53H	Isolated Mains Label	£1.290	£1.140	£1.010	£1.520

means fast service and best value for money

**LABELLING MACHINES**

**Kroy DuraType 240 Labelling Machine**



Marking personal property, floppy disks or producing control panel legends for prototype equipment are examples of where the ability to generate high-quality labels would be essential. The DuraType 240, is an easy-to-use text editor and thermal label printer, which can be powered 'in the field' by 4 'D' cells (alkaline recommended, not included) or a 9V DC mains adaptor (supplied). Text (upper and lower case), numbers and a large range of special symbols are entered via a moisture-resistant rubber membrane keyboard. As the legend is typed in, it is displayed on a 16-character LCD dot matrix screen. Up to 255 characters can be held in the machine's print buffer at any one time. Multi-language prompts are possible. There is one font built into the machine (Helvetica), which is available in two sizes (10 and 24 point). Other fonts are available in 'Typestyle' memory cards, which slot into the machine.

Once entered text can be edited, arrow keys guide the cursor to the screen text which may be deleted, typed over or inserted. Print features include adjustable density, bold, underline, mirror-image, boxing, vertical columnar (90° rotation) and repeat printing. The DuraType 240 uses recyclable 'supply cartridges', which each contain a reel of 12.7mm wide self-adhesive labelling. Once the cartridge of the desired background colour has been loaded and locked into position, a press of the 'print' key starts the 240dpi thermal printer. Once the legend has been printed, it can be spooled on by the 'feed' button and cut by means of a lever built into the print cartridge. The black text produced by the DuraType 240 does not fade or rub away, and is designed to last in a punishing office or development lab environment. Housed in a robust white console housing, DuraType 240 is designed to be maintenance free. The unit is supplied with a 7.5m black-on-clear supply cartridge for immediate use.

Dimensions: 200mm (w) x 230mm (d) x 130mm (h)  
Weight: 2.1kg (with batteries), 1.5kg (without)

Retail Unit Price each (inc. VAT).

Order Code	Type 10219	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
BP16S	240 Label Machine	£165.950	£158.000	£149.000	£195.000

**We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers**

**DuraType 240 Supply Cartridges**



A range of supply cartridges, each containing a 15m length of 12.7mm wide labelling tape. Three versions are available – black-on-clear, black-on-white and black-on-yellow.

Retail Unit Price each (inc. VAT).

Order Code	Type 10221	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BP17T	Tape Black On Clear	£17.010	£15.160	£14.500	£19.990
BP18U	Tape Black On White	£17.010	£15.160	£14.500	£19.990
BP19V	Tape Black On Yellow	£17.010	£15.160	£14.500	£19.990

**Kroy 240ST Shrink Tubing Labelling System**



A very similar unit to BP16S above, except that it can be used to print onto heatshrink sleeving. Cables can now be professionally labelled with considerable ease. Only upper-case characters are available, since these are the most used for labelling wires, and the boxing and mirror-image functions have been excluded for similar reasons. The cabinet colour in this instance is grey. In other respects, including feature provision, the machines are identical. Tubing supply cartridges of 3.2mm, 4.8mm and 6.2mm are available, in addition to 12mm-wide black-on-white and black-on-yellow tape cartridges similar to those available for BP16S.

**Specification**

Character size: 8, 10, 12 and 16 point medium-weight font  
Nominal tubing diameter: 3.2mm, 4.8mm and 6.2mm  
Print tape: 12.7mm wide  
Dimensions: 200mm (w) x 230mm(d) x 130mm (h)  
Weight: 2.1kg (incl batteries)

Retail Unit Price each (inc. VAT).

Order Code	Type 10222	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
BP20W	240ST Label Machine	£365.950	£355.000	£342.000	£430.000

**DuraType 240ST Tape Supply Cartridges**



A range of supply cartridges, each containing a 15m length of 12.7mm wide labelling tape. Three versions are available – black-on-clear, black-on-white and black-on-yellow.

Retail Unit Price each (inc. VAT).

Order Code	Type 10223	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BP21X	ST Tape Black On Wht	£17.010	£15.950	£14.500	£19.990
BP22Y	ST Tape Black On Yel	£17.010	£15.950	£14.500	£19.990

**DuraType 240ST Shrink Tubing Supply Cartridges**



A range of four supply cartridges containing heatshrink sleeving, suitable for use with BP20W above. 1/4in. (6.2mm) sleeving is available in black-on-white and black-on-yellow versions. Two other sizes, 3/16in. (4.2mm) and 1/8in. (3.2mm), are only available in black-on-yellow and black-on-white versions respectively.

Retail Unit Price each (inc. VAT).

Order Code	Type 10224	Price each exc. VAT			inc. VAT each
		1+			1+
BP23A	Tube 1/4 Black On Wht	£18.710			£21.990
BP24B	Tube 1/4 Black On Yel	£18.710			£21.990
BP26D	Tube 1/8 Black On Yel	£17.010			£19.990
BP25C	Tube 1/8 Black On Wht	£17.010			£19.990

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## MODELLING FITTINGS

### NUTS & BOLTS

#### Socket Head Cap Screws

Great Planes



Each pack contains 4 top quality screws with socket shaped heads containing a hole for the hex wrench indicated in the table.

Order Code	Size	Length		Hex Wrench Size Needed
		mm	inch	
GQ73Q	2	6-35	1/4	5/64
GQ74R	2	12-7	1/2	5/64
GQ75S	2	19	3/4	5/64
GQ76H	4	6-35	1/4	3/32
GQ77J	4	12-7	1/2	3/32
GQ78K	4	19	3/4	3/32
GQ79L	4	25-4	13/4	3/32
GQ80B	4	32	1 1/4	3/32
GQ81C	4	38	1 1/2	3/32
GQ82D	6	6-35	1/4	7/64
GQ83E	6	12-7	1/2	7/64
GQ84F	6	19	3/4	7/64
GQ85G	6	25-4	13/4	7/64
GQ86T	6	32	1 1/4	7/64
GQ87U	6	38	1 1/2	7/64
GQ88V	8	12-7	1/2	9/64
GQ89W	8	19	3/4	9/64
GQ90X	8	25-4	13/4	9/64
GQ91Y	8	32	1 1/4	9/64
GQ92A	8	38	1 1/2	9/64

Retail Unit Price each (inc. VAT).

Order Code	Type 11477	Price each exc. VAT			inc. VAT each 1+
		1+	+	+	
GQ73Q	Screw 2-56x1/4 4Pk	£0.689			£0.810
GQ74R	Screw 2-56x1/2 4Pk	£0.689			£0.810
GQ75S	Screw 2-56x3/4 4Pk	£0.689			£0.810
GQ76H	Screw 4-40x1/4 4Pk	£0.689			£0.810
GQ77J	Screw 4-40x1/2 4Pk	£0.689			£0.810
GQ78K	Screw 4-40x3/4 4Pk	£0.689			£0.810
GQ79L	Screw 4-40x1 4Pk	£0.689			£0.810
GQ80B	Screw 4-40x1 1/4 4Pk	£0.774			£0.910
GQ81C	Screw 4-40x1 1/2 4Pk	£0.859			£1.010
GQ82D	Screw 6-32x1/4 4Pk	£0.689			£0.810
GQ83E	Screw 6-32x1/2 4Pk	£0.689			£0.810
GQ84F	Screw 6-32x3/4 4Pk	£0.689			£0.810
GQ85G	Screw 6-32x1 4Pk	£0.689			£0.810
GQ86T	Screw 6-32x1 1/4 4Pk	£0.774			£0.910
GQ87U	Screw 6-32x1 1/2 4Pk	£0.774			£0.910
GQ88V	Screw 8-32x1/2 4Pk	£0.689			£0.810
GQ89W	Screw 8-32x3/4 4Pk	£0.689			£0.810
GQ90X	Screw 8-32x1 4Pk	£0.689			£0.810
GQ91Y	Screw 8-32x1 1/4 4Pk	£0.689			£0.810
GQ92A	Screw 8-32x1 1/2 4Pk	£0.859			£1.010

#### Socket Head Screws

Great Planes



Each pack contains 4 top quality screws (supplied in metric sizes) with socket shaped heads containing a hole for a 2-8mm (7/64in.) hex wrench.

Order Code	Size
GQ93B	3-5 x 15mm
GQ94C	3-5 x 20mm
GQ95D	3-5 x 25mm
GQ96E	3-5 x 30mm

Retail Unit Price each (inc. VAT).

Order Code	Type 11461	Price each exc. VAT 1+	inc. VAT each 1+
GQ93B	Screw 3.5x15mm 4Pk	£0.859	£1.010
GQ94C	Screw 3.5x15mm 4Pk	£0.859	£1.010
GQ95D	Screw 3.5x25mm 4Pk	£0.859	£1.010
GQ96E	Screw 3.5x30mm 4Pk	£0.859	£1.010

#### Button Head Metal Screws

Great Planes



Each pack contains 8 top quality screws with dome shaped heads containing a hole for the hex wrench indicated in the table.

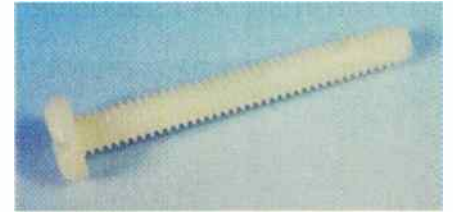
Order Code	Size	Length		Hex Wrench Size Needed
		mm	inch	
GQ97F	2	9-5	3/8	-050
GQ98G	2	12-7	1/2	-050
GQ99H	4	12-7	1/2	1/16
GY00A	4	19	3/4	1/16
GY01B	4	25-4	1	1/16
GY02C	6	12-7	1/2	5/64
GY03D	6	19	3/4	5/64
GY04E	6	25-4	1	5/64
GY05F	8	12-7	1/2	3/32
GY06G	8	19	3/4	3/32
GY07H	8	25-4	1	3/32

Retail Unit Price each (inc. VAT).

Order Code	Type 11487	Price each exc. VAT 1+	inc. VAT each 1+
GQ97F	Screw #2x3/8 8Pk	£1.120	£1.320
GQ98G	Screw #2x1/2 8Pk	£1.120	£1.320
GQ99H	Screw #4x1/2 8Pk	£1.120	£1.320
GY00A	Screw #4x3/4 8Pk	£1.120	£1.320
GY01B	Screw #4x1 8Pk	£1.120	£1.320
GY02C	Screw #6x1/2 8Pk	£1.120	£1.320
GY03D	Screw #6x3/4 8Pk	£1.120	£1.320
GY04E	Screw #6x1 8Pk	£1.120	£1.320
GY05F	Screw #8x1/2 8Pk	£1.120	£1.320
GY06G	Screw #8x3/4 8Pk	£1.120	£1.320
GY07H	Screw #8x1 8Pk	£1.120	£1.320

#### Wing Bolts

Great Planes



Each pack contains 4 high quality nylon wing bolts. Sizes shown in the table.

Order Code	Size	Length	
		mm	inches
HZ03D	10-32	50-8	2
HZ04E	1/4-20	50-8	2

Retail Unit Price each (inc. VAT).

Order Code	Type 11487	Price each exc. VAT 1+	inc. VAT each 1+
HZ03D	NyBolt 10-32x2 4Pk	£0.859	£1.010
HZ04E	NyBolt 1/4-20x2 4Pk	£0.859	£1.010

#### Hex Nuts

Great Planes

Each pack contains 8 hex nuts.



Order Code	Size	Wrench Size
GY08J	2-56	3/16
GY09K	4-40	1/4
GY10L	6-32	5/16
GY11M	8-32	11/32

Retail Unit Price each (inc. VAT).

Order Code	Type 11457	Price each exc. VAT 1+	inc. VAT each 1+
GY08J	Hex Nut 2-56 8Pk	£0.425	£0.500
GY09K	Hex Nut 4-40 8Pk	£0.425	£0.500
GY10L	Hex Nut 6-32 8Pk	£0.425	£0.500
GY11M	Hex Nut 8-32 8Pk	£0.425	£0.500

#### Blind Nuts

Great Planes



Each pack contains the quantity of blind nuts shown.

Order Code	Size	No. in Pack
GY12N	2	4
GY13P	4	4
GY14Q	4	24
GY15R	6	4
GY16S	6	24
GY17T	8	4

Retail Unit Price each (inc. VAT).

Order Code	Type 11456	Price each exc. VAT 1+	inc. VAT each 1+
GY12N	Blind Nut 2-56 4Pk	£0.510	£0.600
GY13P	Blind Nut 4-40 4Pk	£0.510	£0.600
GY14Q	Blind Nut 4-40 24Pk	£2.590	£3.050
GY15R	Blind Nut 6-32 4Pk	£0.510	£0.600
GY16S	Blind Nut 6-32 24Pk	£2.590	£3.050
GY17T	Blind Nut 8-32 4Pk	£0.510	£0.600



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## Nylon Insert Lock Nuts

### Great Planes

Each pack contains 4 steel lock nuts with nylon inserts. Sizes shown in the table.



Order Code	Size	Use Wrench Size	
		mm	inch
GY18U	2-56	6.4	1/4
GY19V	4-40	6.4	1/4
GY20W	6-32	8.0	5/16
GY21X	8-32	8.8	11/32

Retail Unit Price each (inc. VAT).

Order Code	Type 11669	Price each exc. VAT 1+	inc. VAT each 1+
GY18U	NyLock Nut 2-56 4Pk	£0.595	£0.700
GY19V	NyLock Nut 4-40 4Pk	£0.595	£0.700
GY20W	NyLock Nut 6-32 4Pk	£0.595	£0.700
GY21X	NyLock Nut 8-32 4Pk	£0.595	£0.700

## Threaded Brass Inserts

### Great Planes



These top quality brass inserts are simple to install - drill the appropriate size hole into the surface that is to receive the insert, apply a small amount of epoxy adhesive to the outside of the threaded insert and install until flush, using a standard screwdriver. Each pack contains four Brass Threaded Inserts of the size indicated in the table.

Order Code	Threaded insert	Drill size needed	
		mm	inches
GY22Y	4-40	6.4	1/4
GY23A	6-32	6.4	1/4
GY24B	8-32	6.4	1/4
GY25C	10-32	9.5	3/8
GY26D	1/4-20	8.0	5/16

Retail Unit Price each (inc. VAT).

Order Code	Type 11674	Price each exc. VAT 1+	inc. VAT each 1+
GY22Y	Thrd Insert 4-40 4Pk	£1.120	£1.320
GY23A	Thrd Insert 6-32 4Pk	£1.120	£1.320
GY24B	Thrd Insert 8-32 4Pk	£1.120	£1.320
GY25C	Thrd Insrt 10-32 4P	£1.550	£1.830
GY26D	Thrd Ins 1/4-20 4P	£1.990	£2.340

## Flat Washers

### Great Planes



Each pack contains 8 flat steel washers.

Order Code	To fit sizes	
	Bolts	Screws
GY27E	2-56	No 2
GY28F	4-40	No 4
GY29G	6-32	No 6
GY30H	8-32	No 8

Retail Unit Price each (inc. VAT).

Order Code	Type 11688	Price each exc. VAT 1+	inc. VAT each 1+
GY27E	Flat Washer #2 8Pk	£0.425	£0.500
GY28F	Flat Washer #4 8Pk	£0.425	£0.500
GY29G	Flat Washer #6 8Pk	£0.425	£0.500
GY30H	Flat Washer #8 8Pk	£0.425	£0.500

## Lock Washers

### Great Planes

Each pack contains 8 steel lock washers.



Order Code	To fit sizes	
	Bolts	Screws
GY31J	2-56	No 2
GY32K	4-40	No 4
GY33L	6-32	No 6
GY34M	8-32	No 8

Retail Unit Price each (inc. VAT).

Order Code	Type 11673	Price each exc. VAT 1+	inc. VAT each 1+
GY31J	Lock Washer #2 8Pk	£0.425	£0.500
GY32K	Lock Washer #4 8Pk	£0.425	£0.500
GY33L	Lock Washer #6 8Pk	£0.425	£0.500
GY34M	Lock Washer #8 8Pk	£0.425	£0.500

## Blind Nut and Bolt Sets

### Great Planes



Each pack includes 4 complete nut and bolt sets (comprising socket head bolt, blind nut and washer) and the appropriate size hex wrench.

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Order Code	Size	Length	
		mm	inch
GY35Q	2	12.7	1/2
GY36P	4	19	3/4
GY37S	4	25.4	1
GY38R	4	31.7	1 1/4
GY39N	6	25	1
GY40T	6	31.7	1 1/4

Retail Unit Price each (inc. VAT).

Order Code	Type 11480	Price each exc. VAT 1+	inc. VAT each 1+
GY35Q	N&BSet 2-56x1/2 4Pk	£1.290	£1.520
GY36P	N&BSet 4-40x3/4 4Pk	£1.290	£1.520
GY37S	N&BSet 4-40x1 4Pk	£1.290	£1.520
GY38R	N&BSet 4-40x1 1/4 4Pk	£1.290	£1.520
GY39N	N&BSet 6-32x1 4Pk	£1.290	£1.520
GY40T	N&BSet 6-32x1 1/4 4Pk	£1.290	£1.520

## Lock Nut and Bolt Sets

### Great Planes



Each pack includes 4 complete nut and bolt sets (comprising socket head bolt, lock nut and washer) and the appropriate size hex wrench.

Order Code	Size	Length	
		mm	inch
GY41U	2-56	12.7	1/2
GY42V	4-40	19	3/4
GY43W	4-40	25.4	1
GY44X	4-40	31.7	1 1/4
GY45Y	6-32	25	1
GY46A	6-32	31.7	1 1/4

Retail Unit Price each (inc. VAT).

Order Code	Type 11485	Price each exc. VAT 1+	inc. VAT each 1+
GY41U	N&BSet 2-56x1/2 4Pk	£1.290	£1.520
GY42V	N&BSet 4-40x3/4 4Pk	£1.290	£1.520
GY43W	N&BSet 4-40x1 4Pk	£1.290	£1.520
GY44X	N&BSet 4-40x1 1/4 4Pk	£1.290	£1.520
GY45Y	N&BSet 6-32x1 4Pk	£1.290	£1.520
GY46A	N&BSet 6-32x1 1/4 4Pk	£1.290	£1.520

## Steel Clevis

### Great Planes



These good quality hardened steel threaded clevises have a stepped clevis pin to reduce friction. Design includes barbs to hold the nylon retainer (included) in place.

Order Code	Size	No in pack
GY47B	2-56	2
GY48C	2-56	12
GY49D	4-40	2
GY50E	4-40	12

Retail Unit Price each (inc. VAT).

Order Code	Type 11673	Price each exc. VAT 1+	inc. VAT each 1+
GY47B	ThrsClevis 2-56 2Pk	£0.859	£1.010
GY48C	ThrsClevis 2-56 12Pk	£4.300	£5.090
GY49D	ThrsClevis 4-40 2Pk	£1.120	£1.320
GY50E	ThrsClevis 4-40 12Pk	£4.760	£5.600

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## Standard Nylon Clevis

Great Planes



These good quality nylon clevises, designed for use with standard 2-56 threaded pushrods, feature a hex shank for an easy grip while threading and barbs to keep the retainer (included) in place.

Retail Unit Price each (inc. VAT).

Order Code	Type 11671	Price each exc. VAT 1+	inc. VAT each 1+
GY51F †	NyClev 2-56 2Pk	£0.595	£0.700
GY52G †	NyClev 2-56 12Pk	£2.850	£3.360

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## Nylon Swivel Clevis

Great Planes



A nylon swivel clevis to fit 3/32in. aileron torque rods (pushrods and aileron torque rods not included). Pack contains 2 sets.

Retail Unit Price each (inc. VAT).

Order Code	Type 11651	Price each exc. VAT 1+	inc. VAT each 1+
GY65V †	NySwivClev 2Pk	£0.859	£1.010

## Snap Links



This pack of 22 snap links can come in useful for any number of jobs. They can be used as servo horns, for example, or linked together to build a complex linkage. A single snap link can even be folded in half and snapped together to make an instant clevis.

Retail Unit Price each (inc. VAT).

Order Code	Type 11661	Price each exc. VAT 1+	inc. VAT each 1+
DX87U †	Snap Links	£0.510	£0.600

## Solder Clevis

Great Planes



A quality, hardened steel solder clevis with a stepped clevis pin to reduce friction. Design includes barbs to hold the nylon retainer (included) in place.

Order Code	Size	Fits Wire/Cable No.	No. in Pack
GY53H	2-56	1-9 (.074in.)	2
GY54J	2-56	1-9 (.074in.)	12
GY55K	4-40	2-4 (.095in.)	2
GY56L	4-40	2-4 (.095in.)	12

Retail Unit Price each (inc. VAT).

Order Code	Type 11472	Price each exc. VAT 1+	inc. VAT each 1+
GY53H †	SldrClev 2-56 2Pk	£0.859	£1.010
GY54J †	SldrClev 2-56 12Pk	£4.330	£5.090
GY55K †	SldrClev 4-40 2Pk	£1.120	£1.320
GY56L †	SldrClev 4-40 12Pk	£5.630	£6.620

## COUPLERS

### Threaded Couplers

Great Planes



Each pack contains 2 threaded couplers, designed to be soldered onto a cable/wire end (e.g., to produce a screw-on pushrod).

Order Code	Size	To Fit Wire/Cable Size (mm)	No. in Pack
GY57M	2-56	1.6 (1/16in.)	2
GY58N	2-56	1.9 (.074in.)	2
GY59P	4-40	2.4 (.095in.)	2

Retail Unit Price each (inc. VAT).

Order Code	Type 11452	Price each exc. VAT 1+	inc. VAT each 1+
GY57M †	Couplr 2-56 1/16 2Pk	£0.689	£0.810
GY58N †	Couplr 2-56 .074 2Pk	£0.689	£0.810
GY59P †	Couplr 4-40 .095 2Pk	£1.120	£1.320

## BALL LINK SETS

### Threaded Ball Links

Great Planes



These packs contain the complete set of parts necessary to form a ball link between a control pushrod and its servo arm. A full assembly comprises 1 threaded coupler (to be soldered to the end of the pushrod - not included), 1 nylon ball link (screws onto threaded coupler) and 1 threaded ball joint to be bolted to servo arm (not included) with the included hex nut and washer. Full instructions included.

Order Code	Size	No in pack
GY60Q	2-56	1 set
GY61R	2-56	6 sets
GY62S	1.6mm (1/16")	1 set
GY63T	1.6mm (1/16")	6 sets

Retail Unit Price each (inc. VAT).

Order Code	Type 11672	Price each exc. VAT 1+	inc. VAT each 1+
GY60Q †	BLink Set 2-56	£1.120	£1.320
GY61R †	BLink Set 2-56 6Pk	£5.200	£6.110
GY62S †	BLink Set 1/16	£1.120	£1.320
GY63T †	BLink Set 1/16 6Pk	£5.200	£6.110

## Ball Link Sockets

Great Planes



These quality nylon Ball Link Sockets are designed for use in the control systems of remote controlled aircraft. Shaft fits onto a 2-56 threaded rod. Pack contains four ball link sockets.

Retail Unit Price each (inc. VAT).

Order Code	Type 11667	Price each exc. VAT 1+	inc. VAT each 1+
GY64U †	BLink Sckts 4Pk	£0.859	£1.010

## Swivel Ball Links

Great Planes



The bolt-on Swivel Ball Link comprises link, bush, socket head hex bolt and lock nut.

Order Code	Size	No. in Pack
GY66W	4-40	1 Set
GY67X	4-40	4 sets

Retail Unit Price each (inc. VAT).

Order Code	Type 11450	Price each exc. VAT 1+	inc. VAT each 1+
GY66W	Swiv BLink 4-40	£1.120	£1.320
GY67X †	Swiv BLink 4-40 4Pk	£4.160	£4.890

## PUSHROD CONNECTORS

### Screw-Lock Pushrod Connectors

Great Planes



These packs contain sets of the components needed to make a sound screw-lock connection between pushrod and servo arm. Each set comprises 1 pushrod block with pushrod securing socket-head nut, 1 removable nylon retainer and 1 metal permanent retainer (to allow a choice of fixings).

Order Code	No. in pack
GY68Y	2
GY69A	12

Retail Unit Price each (inc. VAT).

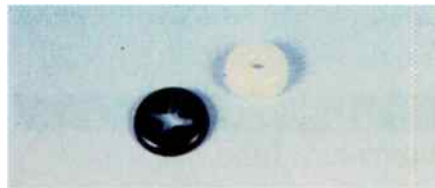
Order Code	Type 11666	Price each exc. VAT 1+	inc. VAT each 1+
GY68Y †	Pushrod Conns 2Pk	£1.120	£1.320
GY69A †	Pushrod Conns 12Pk	£5.200	£6.110



**RETAINERS**

**Retainers for Screw Lock Pushrod Connectors**

Great Planes



These value packs each contain 12 Retainers (removeable or permanent), designed to be used with a suitable size screw (not included) to secure the pushrod block to its servo arm.

Order Code	Pack Contents
GY70M	12 Removeable Nylon Retainers
GY71N	12 Metal Permanent Retainers

Retail Unit Price each (inc. VAT).

Order Code	Type 11600	Price each exc. VAT	inc. VAT each
	1+		1+
GY70M	Nylon Retainers 12Pk	£0.689	£0.810
GY71N	Metal Retainers 12Pk	£1.120	£1.320

**SPLIT COUPLING SLEEVES**

**Split Coupling Sleeves**

Great Planes



These split coupling sleeves are the quick and convenient way to solder together two wires or cables to form a very secure join.

Order Code	Size	To Fit Wire/Cable	No. In Pack
GY84F	2	1.9mm (-074in.)	4
GY85G	4	2.4mm (-095in.)	4

Retail Unit Price each (inc. VAT).

Order Code	Type 11470	Price each exc. VAT	inc. VAT each
	1+		1+
GY84F	Spl Sleeve 2.56 4Pk	£0.595	£0.700
GY85G	Spl Sleeve 4.40 4Pk	£0.595	£0.700

**PUSHRODS**

**Flexible Pushrods**

Great Planes



A pack of two complete flexible Pushrod assemblies, each 915mm in length, used to connect control surfaces on model aircraft. Each assembly includes an outer guide tube, inner pushrod, 150mm threaded steel rod, 25mm threaded stud and a pair of nylon clevises with retainers.

Retail Unit Price each (inc. VAT).

Order Code	Type 11609	Price each exc. VAT	inc. VAT each
	1+		1+
LJ52G	915mm Flex PRod Pr	£3.460	£4.070

**CONTROL LINKAGES**

**Control Horns**

Great Planes



Each pack contains 2 nylon Control Horns with spacers to allow some flexibility in attaching to control surfaces, etc., and fixing screws.

Order Code	Size	mm	inch
GY72P	Small	19	3/4
GY73Q	Large	29	1 1/8

Retail Unit Price each (inc. VAT).

Order Code	Type 11670	Price each exc. VAT	inc. VAT each
	1+		1+
GY72P	Cont Horns SmI 2Pk	£0.595	£0.700
GY73Q	Cont Horns Lge 2Pk	£0.595	£0.700

**90° Nylon Bellcrank**

Great Planes



This pack contains two complete bellcrank assemblies, comprising 90° nylon bellcrank, metal bush, steel bolt and hex nut, split ring and metal washer.

Retail Unit Price each (inc. VAT).

Order Code	Type 11691	Price each exc. VAT	inc. VAT each
	1+		1+
GY74R	Nylon Bellcrank 2Pk	£0.859	£1.010

**Bell Crank Type 1**

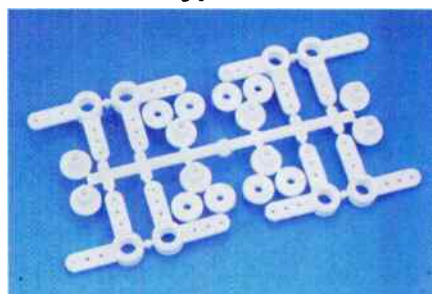


Pack contains 2 bell cranks (arms approx 23mm long) with bushes.

Retail Unit Price each (inc. VAT).

Order Code	Type 11693	Price each exc. VAT	inc. VAT each
	1+		1+
DX96E	Bell Crank Type 1	£0.510	£0.600

**Bell Crank Type 2**



Pack contains 8 bell cranks (arms approx 17mm long) with bushes.

Retail Unit Price each (inc. VAT).

Order Code	Type 11684	Price each exc. VAT	inc. VAT each
	1+		1+
DX97F	Bell Crank Type 2	£0.510	£0.600

**Crank Set**



T cranks are ideal for use in elevators in radio controlled aircraft or any situation where two control surfaces are working in opposition. Pack contains 2 large T cranks and 2 straight cranks with 4 bushes.

Retail Unit Price each (inc. VAT).

Order Code	Type 11682	Price each exc. VAT	inc. VAT each
	1+		1+
DX88V	Large T Crank	£0.510	£0.600

**Strap Eye Bolt**



This plastic eyelet on a thread is a very handy little item if you want to create a small anchor-point. Simply drill a hole approx 5mm in diameter, push in the eyelet and screw on the supplied nut to hold it firmly in place.

Retail Unit Price each (inc. VAT).

Order Code	Type 11685	Price each exc. VAT	inc. VAT each
	1+		1+
DX96T	Strap Eye Bolt	£0.340	£0.400

Maplin is opening new stores all the time. Call for latest details

**All Customers**  
No additional freight charges for heavy items

## HINGES

### Ultra Grip CA Hinges

Great Planes



Lightweight but durable fibre hinges specifically designed to be slotted into the control surfaces and leading edges of model aircraft and fixed with a thin cyanoacrylate adhesive. Simple to install – cut appropriately sized slots into the trailing edge and control surface, apply slow drying cyanoacrylate adhesive to the hinge and slide into place. Available in two sizes.

control surface, apply slow drying cyanoacrylate or epoxy adhesive to the hinge and slide into place. Available in two sizes.

Order Code	Hinge Size		No. in Pack
	mm	inches	
GY80B	Small 25 x 3	1 x 1/8	6
GY81C	Small 25 x 3	1 x 1/8	15
GY82D	Medium 44 x 3	1 3/4 x 1/8	6
GY83E	Medium 44 x 3	1 3/4 x 1/8	15

Retail Unit Price each (inc. VAT).

Order Code	Type 11992	Price each exc. VAT	inc. VAT each
GY80B	Small PwHinge 6Pk	£1.720	£2.030
GY81C	Small PwHinge 15Pk	£3.020	£3.560
GY82D	Med PwHinge 6Pk	£2.160	£2.540
GY83E	Med PwHinge 15Pk	£3.460	£4.070

## RIGID PLASTIC SHEET

### Plasticard



A high quality plastic sheet supplied in 22.85 x 33cm sheets, available in a range of thicknesses and three colours.

Order Code	Colour	Thickness (mm)
GZ66W	White	0.25
GZ67X	White	0.38
GZ68Y	White	0.5
GZ69A	White	0.76
GZ70M	White	1
GZ71N	White	1.5
GZ72P	White	2
GZ73Q	Clear	0.25
GZ74R	Clear	0.5
GZ75S	Clear	1
GZ76H	Clear	2
GZ77J	Black	0.5

Retail Unit Price each (inc. VAT).

Order Code	Type 11485	Price each exc. VAT	inc. VAT each
GZ66W	0.25mm Wh Plasticard	£0.255	£0.300
GZ67X	0.38mm Wh Plasticard	£0.425	£0.500
GZ68Y	0.5mm Wh Plasticard	£0.425	£0.500
GZ69A	0.76mm Wh Plasticard	£0.595	£0.700
GZ70M	1mm Wh Plasticard	£0.774	£0.910
GZ71N	1.5mm Wh Plasticard	£1.120	£1.320
GZ72P	2mm Wh Plasticard	£1.370	£1.620
GZ73Q	0.25mm Clr Plasticard	£0.595	£0.700
GZ74R	0.5mm Clr Plasticard	£0.774	£0.910
GZ75S	1mm Clr Plasticard	£1.290	£1.520
GZ76H	2mm Clr Plasticard	£1.810	£2.130
GZ77J	0.5mm Blk Plasticard	£0.595	£0.700

## Mirror Styrene



If you want to add a mirror or intricate mirrored shape to your model and want to avoid the expense and hassle of cutting glass, this sheet of mirror-

finish styrene will do the trick. It can easily be cut to almost any shape and the styrene backing ensures rigidity. Supplied in a sheet measuring approximately 280 x 196mm (11 1/4 x 7 3/4in.).

Retail Unit Price each (inc. VAT).

Order Code	Type 11657	Price each exc. VAT	inc. VAT each
GZ78K	Mirror Styrene	£3.020	£3.560

## METAL TUBE

### Aluminium Tube

K & S



High quality aluminium tubing, ideal for a range of modelling applications. Supplied in 305mm lengths.

Order Code	Outside Diameter (mm)
HZ09K	1.6
HZ10L	2.4
HZ11M	3.2
HZ12N	4
HZ13P	4.8
HZ14Q	5.6
HZ15R	6.4
HZ16S	7.1

Retail Unit Price each (inc. VAT).

Order Code	Type 11482	Price each exc. VAT	inc. VAT each
HZ09K	1.6x305mm Al Tube	£0.340	£0.400
HZ10L	2.4x305mm Al Tube	£0.425	£0.500
HZ11M	3.2x305mm Al Tube	£0.425	£0.500
HZ12N	4x305mm Al Tube	£0.425	£0.500
HZ13P	4.8x305mm Al Tube	£0.510	£0.600
HZ14Q	5.6x305mm Al Tube	£0.510	£0.600
HZ15R	6.4x305mm Al Tube	£0.595	£0.700
HZ16S	7.1x305mm Al Tube	£0.689	£0.810

## Copper Tube

K & S



High quality copper tubing, ideal for a range of modelling applications. Supplied in 305mm lengths.

Order Code	Outside Diameter
HZ17T	1.6
HZ18U	2.4
HZ19V	3.2
HZ20W	4

Retail Unit Price each (inc. VAT).

Order Code	Type 11476	Price each exc. VAT	inc. VAT each
HZ17T	1.6x305mm Cu Tube	£0.510	£0.600
HZ18U	2.4x305mm Cu Tube	£0.595	£0.700
HZ19V	3.2x305mm Cu Tube	£0.689	£0.810
HZ20W	4x305mm Cu Tube	£0.689	£0.810

† This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

Order Code	Hinge Size		No in Pack
	mm	inches	
GY75S	19 x 25	3/4	24
GY76H	50 x 229	2 x 9	24

Retail Unit Price each (inc. VAT).

Order Code	Type 11573	Price each exc. VAT	inc. VAT each
GY75S	UltraHinge 3/4x1 24Pk	£2.590	£3.050
GY76H	UltraHinge 2x9 24Pk	£2.590	£3.050

## Pinned Hinges

Great Planes

These top quality nylon hinges are specially designed to connect control surfaces to the trailing edges of wings, tailplanes of model aircraft. Easy to install – simply cut approx 16mm (5/8") slots into the trailing edge and control surface, apply slow drying cyanoacrylate or epoxy adhesive to the hinge and slide into place. Approximate overall size of hinge: 28 x 20mm. Three pack sizes available.



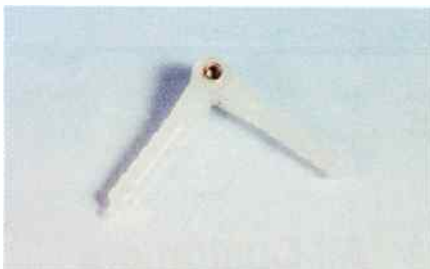
Order Code	No in Pack
GY77J	6
GY78K	15
GY79L	36

Retail Unit Price each (inc. VAT).

Order Code	Type 11572	Price each exc. VAT	inc. VAT each
GY77J	Std NylHinge 6Pk	£1.290	£1.520
GY78K	Std NylHinge 15Pk	£2.590	£3.050
GY79L	Std NylHinge 36Pk	£5.200	£6.110

## Pivot Point Hinges

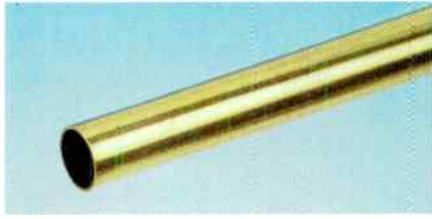
Great Planes



These top quality nylon Pivot Point Hinges are specifically designed to connect control surfaces to the trailing edges of wings, tailfins and tailplanes of model aircraft. Easy to install – simply drill the appropriately sized hole into the trailing edge and

**Round Brass Tube**

K & S



High quality round brass tubing, ideal for a range of modelling applications. Supplied in 305mm lengths.

Order Code	Outside diameter (mm)
HZ23A	1.6
HZ24B	2.4
HZ25C	3.2
HZ26D	4
HZ27E	4.8
HZ28F	5.6
HZ29G	6.4
HZ30H	7.1
HZ31J	7.9
HZ32K	8.7
HZ33L	9.5
HZ34M	10.3
HZ35Q	11.1
HZ36P	11.9
HZ37S	12.7
HZ38R	13.5
HZ39N	14.3
HZ40T	15.1
HZ41U	15.9
HZ42V	16.7

Retail Unit Price each (inc. VAT).

Order Code	Type 11421	Price each exc. VAT 1+	inc. VAT each 1+
HZ23A	1.6x305mm Br Tube	£0.595	£0.700
HZ24B	2.4x305mm Br Tube	£0.595	£0.700
HZ25C	3.2x305mm Br Tube	£0.689	£0.810
HZ26D	4x305mm Br Tube	£0.689	£0.810
HZ27E	4.8x305mm Br Tube	£0.774	£0.910
HZ28F	5.6x305mm Br Tube	£0.774	£0.910
HZ29G	6.4x305mm Br Tube	£0.859	£1.010
HZ30H	7.1x305mm Br Tube	£0.944	£1.110
HZ31J	7.9x305mm Br Tube	£1.020	£1.210
HZ32K	8.7x305mm Br Tube	£1.120	£1.320
HZ33L	9.5x305mm Br Tube	£1.200	£1.420
HZ34M	10.3x305mm Br Tube	£1.460	£1.720
HZ35Q	11.1x305mm Br Tube	£1.550	£1.830
HZ36P	11.9x305mm Br Tube	£1.640	£1.930
HZ37S	12.7x305mm Br Tube	£1.720	£2.030
HZ38R	13.5x305mm Br Tube	£1.890	£2.230
HZ39N	14.3x305mm Br Tube	£1.990	£2.340
HZ40T	15.1x305mm Br Tube	£2.160	£2.540
HZ41U	15.9x305mm Br Tube	£2.330	£2.740
HZ42V	16.7x305mm Br Tube	£2.510	£2.950

**Square Brass Tube**

K & S



High quality square-section brass tubing, ideal for a range of modelling applications. Supplied in 305mm lengths.

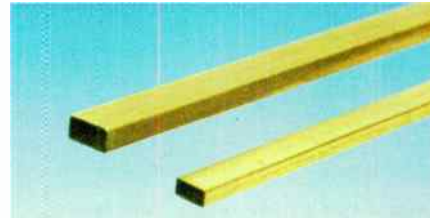
Order Code	Outside Diameter (mm)
HZ43W	1.6
HZ44X	2.4
HZ45Y	3.2
HZ46A	4
HZ47B	4.8
HZ48C	5.6
HZ49D	6.4

Retail Unit Price each (inc. VAT).

Order Code	Type 11473	Price each exc. VAT 1+	inc. VAT each 1+
HZ43W	1.6x305mm Br SqTube	£0.859	£1.010
HZ44X	2.4x305mm Br SqTube	£0.944	£1.110
HZ45Y	3.2x305mm Br SqTube	£1.020	£1.210
HZ46A	4x305mm Br SqTube	£1.120	£1.320
HZ47B	4.8x305mm Br SqTube	£1.370	£1.620
HZ48C	5.6x305mm Br SqTube	£1.460	£1.720
HZ49D	6.4x305mm Br SqTube	£1.640	£1.930

**Rectangular Brass Tube**

K & S



High quality rectangular-section brass tubing, ideal for a range of modelling applications. Supplied in 305mm lengths.

Order Code	Dimensions (mm)
LJ01B	2.4 x 4.8 x 305
LJ02C	3.2 x 6.4 x 305
LJ03D	4 x 7.9 x 305
LJ04E	4.8 x 9.5 x 305

Retail Unit Price each (inc. VAT).

Order Code	Type 11658	Price each exc. VAT 1+	inc. VAT each 1+
LJ01B	2.4x4.8x305mm BrTube	£1.640	£1.930
LJ02C	3.2x6.4x305mm BrTube	£1.890	£2.230
LJ03D	4x7.9x305mm BrTube	£2.070	£2.440
LJ04E	4.8x9.5x305mm BrTube	£2.070	£2.440

**METAL ROD**

**Brass Rod**

K & S



High quality round brass rods, ideal for a range of modelling applications. Supplied in 305mm lengths.

Order Code	Outside Diameter (mm)
HZ50E	0.5
HZ51F	0.8
HZ52G	1.2
HZ53H	1.6
HZ60Q	1.8
HZ59P	2
HZ54J	2.4
HZ58N	2.9
HZ55K	3.2
HZ56L	4
HZ57M	4.8

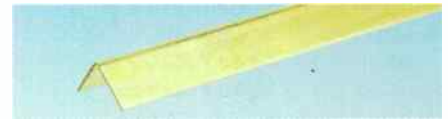
Retail Unit Price each (inc. VAT).

Order Code	Type 11455	Price each exc. VAT 1+	inc. VAT each 1+
HZ50E	0.5x305mm Br Rod	£0.161	£0.190
HZ51F	0.8x305mm Br Rod	£0.161	£0.190
HZ52G	1.2x305mm Br Rod	£0.255	£0.300
HZ53H	1.6x305mm Br Rod	£0.340	£0.400
HZ60Q	1.8x305mm Br Rod	£0.340	£0.400
HZ59P	2x305mm Br Rod	£0.510	£0.600
HZ54J	2.4x305mm Br Rod	£0.510	£0.600
HZ58N	2.9x305mm Br Rod	£0.510	£0.600
HZ55K	3.2x305mm Br Rod	£0.689	£0.810
HZ56L	4x305mm Br Rod	£0.944	£1.110
HZ57M	4.8x305mm Br Rod	£1.020	£1.210

**METAL ANGLE**

**Brass Angle**

K & S



High quality brass angle, ideal for a range of modelling applications.

Order Code	Dimensions mm
HZ61R	3.2 x 3.2 x 305
HZ62S	4 x 4 x 305
HZ63T	4.8 x 4.8 x 305
HZ64U	5.6 x 5.6 x 305
HZ65V	6.4 x 6.4 x 305

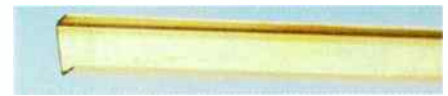
Retail Unit Price each (inc. VAT).

Order Code	Type 11471	Price each exc. VAT 1+	inc. VAT each 1+
HZ61R	3.2x3.2x305mm Br Ang	£0.689	£0.810
HZ62S	4x4x305mm Br Ang	£0.774	£0.910
HZ63T	4.8x4.8x305mm Br Ang	£0.689	£0.810
HZ64U	5.6x5.6x305mm Br Ang	£0.774	£0.910
HZ65V	6.4x6.4x305mm Br Ang	£0.774	£0.910

**METAL CHANNEL**

**Brass Channel**

K & S



High quality brass channel, ideal for a range of modelling applications. Supplied in 305mm lengths.

Order Code	Depth (mm)
HZ66W	3.2
HZ67X	4
HZ68Y	4.8
HZ69A	5.6
HZ70M	6.4

Retail Unit Price each (inc. VAT).

Order Code	Type 11485	Price each exc. VAT 1+	inc. VAT each 1+
HZ66W	3.2x305mm Br Chan	£0.859	£1.010
HZ67X	4x305mm Br Chan	£0.944	£1.110
HZ68Y	4.8x305mm Br Chan	£0.774	£0.910
HZ69A	5.6x305mm Br Chan	£0.774	£0.910
HZ70M	6.4x305mm Br Chan	£0.859	£1.010

## METAL STRIP

### Brass Strip

K & S



High quality brass strip, ideal for a range of modelling applications.

Order Code	Dimensions (mm)
HZ71N	0.4 x 6.4 x 305
HZ72P	0.4 x 12.7 x 305
HZ74R	0.4 x 19 x 305
HZ73Q	0.4 x 25.4 x 305
HZ75S	0.4 x 50.8 x 305
HZ76H	0.6 x 6.4 x 305
HZ77J	0.6 x 12.7 x 305
HZ78K	0.6 x 19 x 305
HZ79L	0.6 x 25.4 x 305
HZ80B	0.6 x 50.8 x 305
HZ81C	0.8 x 6.4 x 305
HZ82D	0.8 x 12.7 x 305
HZ83E	0.8 x 19 x 305
HZ84F	0.8 x 25.4 x 305
HZ85G	0.8 x 50.8 x 305
HZ86T	1.6 x 6.4 x 305
HZ87U	1.6 x 12.7 x 305
HZ88W	1.6 x 19 x 305
HZ89V	1.6 x 25.4 x 305
HZ90X	1.6 x 50.8 x 305

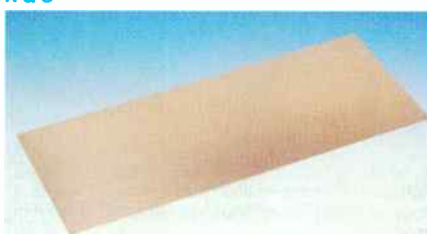
Retail Unit Price each (inc. VAT).

Order Code	Type 11458	Price each exc. VAT 1+	inc. VAT each 1+
HZ71N	0.4x6.4x305mm BrStr	£0.425	£0.500
HZ72P	0.4x12.7x305mm BrStr	£0.510	£0.600
HZ73Q	0.4x25.4x305mm BrStr	£0.689	£0.810
HZ74R	0.4x19x305mm BrStr	£0.595	£0.700
HZ75S	0.4x50.8x305mm BrStr	£1.290	£1.520
HZ76H	0.6x6.4x305mm BrStr	£0.510	£0.600
HZ77J	0.6x12.7x305mm BrStr	£0.595	£0.700
HZ78K	0.6x25.4x305mm BrStr	£1.020	£1.210
HZ79L	0.6x19x305mm BrStr	£0.859	£1.010
HZ80B	0.6x50.8x305mm BrStr	£1.890	£2.230
HZ81C	0.8x6.4x305mm BrStr	£0.595	£0.700
HZ82D	0.8x12.7x305mm BrStr	£0.689	£0.810
HZ83E	0.8x25.4x305mm BrStr	£1.120	£1.320
HZ84F	0.8x19x305mm BrStr	£0.859	£1.010
HZ85G	0.8x50.8x305mm BrStr	£2.070	£2.440
HZ86T	1.6x6.4x305mm BrStr	£0.859	£1.010
HZ87U	1.6x12.7x305mm BrStr	£1.290	£1.520
HZ88V	1.6x19x305mm BrStr	£1.720	£2.030
HZ89W	1.6x25.4x305mm BrStr	£2.240	£2.640
HZ90X	1.6x50.8x305mm BrStr	£3.630	£4.270

## METAL SHEET

### Brass Sheet

K & S



Order Code	Dimensions (mm)
HZ91Y	0.1 x 102 x 254
HZ92A	0.25 x 102 x 254
HZ93B	0.4 x 102 x 254
HZ94C	0.8 x 102 x 254

Retail Unit Price each (inc. VAT).

Order Code	Type 11454	Price each exc. VAT 1+	inc. VAT each 1+
HZ91Y	0.1x102x254mm Br Sht	£1.550	£1.830
HZ92A	0.25x102x254 Br Sht	£1.550	£1.830
HZ93B	0.4x102x254mm Br Sht	£2.070	£2.440
HZ94C	0.8x102x254mm Br Sht	£3.610	£4.480

### Assorted Brass Shim



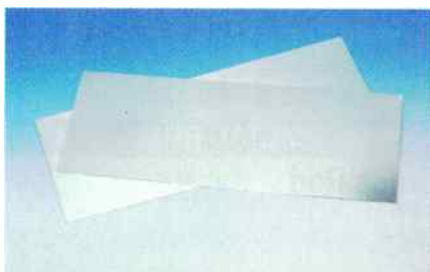
A pack of 4 small sheets of Brass Shim, ideal for use in packing etc. Pack contains 1 sheet approx 150 x 55mm each of .001, .002 and .003 gauge and 1 sheet approx 100 x 100mm of .005 gauge good quality brass.

Retail Unit Price each (inc. VAT).

Order Code	Type 11689	Price each exc. VAT 1+	inc. VAT each 1+
HZ99H	Assorted Brass Shim	£3.110	£3.660

### Tin Sheet

K & S



A single sheet of high quality, easy solder tin - ideal for a wide range of hobby applications. Dimensions: 0.2 x 102 x 254mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 11656	Price each exc. VAT 1+	inc. VAT each 1+
HZ95D	0.2x102x254mm TinSht	£1.020	£1.210

## Aluminium Sheet

K & S



Each pack contains a single sheet of high quality aluminium - ideal for a wide range of hobby applications.

Order Code	Dimensions (mm)
HZ96E	0.4 X 102 X 254
HZ97F	0.8 X 102 X 254
HZ98G	1.6 X 102 X 254

Retail Unit Price each (inc. VAT).

Order Code	Type 11655	Price each exc. VAT 1+	inc. VAT each 1+
HZ96E	0.4x102x254mm Al Sht	£1.120	£1.320
HZ97F	0.8x102x254mm Al Sht	£1.550	£1.830
HZ98G	1.6x102x254mm Al Sht	£2.330	£2.740

## Copper Sheet

K & S



A sheet of high quality copper, ideal for all forms of model-making. Dimensions: 0.6 x 102 x 254mm

Retail Unit Price each (inc. VAT).

Order Code	Type 11658	Price each exc. VAT 1+	inc. VAT each 1+
LJ00A	0.6x102x254mm Cu Sht	£4.160	£4.890



Sales: 01702 554000

Fax: 01702 554001

Customer Services : 01702 554002

Technical: 01702 556001

Account Enquiries : 01702 554187

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RS12750

BS EN ISO 9002

Stockholding and Supply

Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System



Stockist of Assessed Capability

YOUR GUARANTEE OF QUALITY & SERVICE

**CARAVAN FITTINGS**

**Pair of Nuts, Bolts and Washers**



A pair of high tensile zinc plated towball fittings including nut, bolt and washer, in either 55mm, 65mm, 75mm or 100mm.

Order Code	Type
WD92A	2 x 55mm Nut, Bolt & Washer
WD93B	2 x 65mm Nut, Bolt & Washer
WE04E	2 x 75mm Nut, Bolt & Washer
WE05F	2 x 100mm Nut, Bolt & Washer

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD92A	2x55mm Tow Fittings	£3.020	£3.560
WD93B	2x65mm Tow Fittings	£3.020	£3.560
WE04E	2x75mm Tow Fittings	£3.020	£3.560
WE05F	2x100mm Tow Fittings	£3.020	£3.560

**50mm Tow Ball**



A heavy duty UK forged metal 50mm tow ball.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD97F	50mm Towball	£5.200	£6.110

**Tow Ball Cover**

It is important that the tow ball is covered whenever it is not in use. This lightweight and tough black plastic tow ball cover is just the job for all 50mm tow balls.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD88V	Towball Cover	£1.720	£2.030

**Tow Ball Boot**



This top quality moulded protective tow ball boot completely encloses any 50mm tow ball and features an integral red hazard reflector.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD90X	Tow Ball Boot	£3.020	£3.560

**Tow-Tekta**



Don't damage your car by reversing into your caravan's tow hitch – use the Tow-Tekta to guide the tow hitch safely and easily into position over your towball. This strong metal plate has a high quality paint finish and incorporates heavy duty socket mountings that will keep your sockets safely out of harm's way. Easy to fit, simply use your existing towball mounting to place the Tow-Tekta between your car and its towball.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD98G	Tow-Tekta	£7.800	£9.170

**Breakaway Safety Cable**

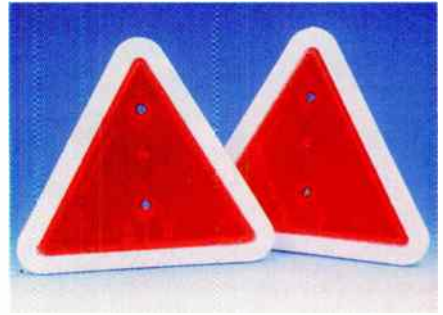


Put safety first with this small but essential piece of equipment. If your caravan or trailer should become unhitched while you're on the move, the breakaway safety cable will apply the brake and bring it to a halt.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD94C	Breakaway Cable	£3.020	£3.560

**Warning Triangles**

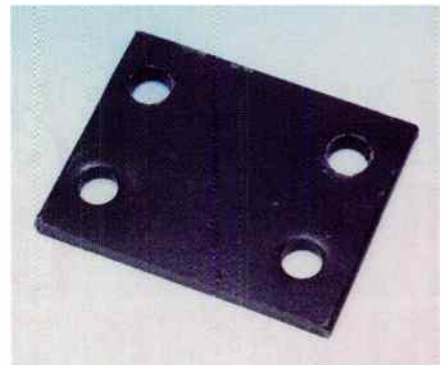


A pair of top quality plastic rear trailer reflectors that can be screwed to the tail board. Complete with a contrasting white surround for increased visibility.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD05G	Warning Triangles	£2.590	£3.050

**Drop Plates**



It's vital that your caravan or trailer has a safe horizontal connection with your car when it's on the move, but cars come in different heights. The solution is a drop plate – a strong metal plate that allows you to offset the towball from your car's mounting point to compensate for the difference in height. Available in three sizes: 50mm, 75mm or 100mm.

Order code	Type
WD99H	50mm Drop Plate
WE00A	75mm Drop Plate
WE01B	100mm Drop Plate

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD99H	50mm Drop Plate	£3.460	£4.070
WE00A	75mm Drop Plate	£3.890	£4.580
WE01B	100mm Drop Plate	£4.330	£5.090



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## Spacer Block



Need a little more clearance between your car and its towball? One of these quality metal spacer blocks should do the job. Available in 12mm or 25mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WED2C†	12mm Spacer Block	£2.590	£3.050
WED3D†	25mm Spacer Block	£4.330	£5.090

## 60mph Sticker



A weather resistant self-adhesive sticker, ideal for a caravan or trailer.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD95D†	60 MPH Sticker	£0.859	£1.010

## 'GB' Sticker



A weather resistant self-adhesive sticker for your caravan or trailer.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD96E†	GB Sticker	£0.859	£1.010

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## Fuseholders

### Modular Fused Terminal Blocks

Camden



One, three, and five-way terminal blocks complete with inline fuseholder. The three and five way blocks are fitted with rear mounting screws through the second (earth) terminal and have an anti rotation spigot. The one way fused block (or any multiple) can be interlocked with the three and five way for additional fused circuits. The 20 x 5 fuse (not supplied) is housed in the pull up latch making it easy to replace.

Moulded in flame retardant UL94-V0 Polymide 66 the blocks have a maximum working temperature of 125°C.

Rating Fuseholder 13A Terminal 13A  
Voltage Fuseholder 250VAC Terminal 450VAC

Retail Unit Price each (inc. VAT).

Order Code	Type 11643	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RY21X	Fused-Term Block 1W	£0.468	£0.360	£0.335	£0.550
GU72P	Fused Terminal Block	£0.587	£0.470	£0.435	£0.690
RY22Y	Fused-Term Block 5W	£0.757	£0.612	£0.567	£0.890

### Flush Fitting 20mm Type

A flush-mounting 20mm panel fuseholder with screwdriver release to meet the latest safety regulations. Rated 10A at 250V. Overall length 33mm (plus 5.5mm tag). Bezel diameter 16mm. Panel cut-out 12mm diameter flattened to 11mm on opposing sides to provide anti-twisting lock.



Retail Unit Price each (inc. VAT).

Order Code	Type 382	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
KU33L	Fuseholder 20 Flush	£0.757	£0.545	£0.374	£0.890

### 20mm Type

A panel mounting 20mm fuseholder with screwdriver release to meet the latest safety regulations. Rated 10A at 250V AC. Contact resistance 10mΩ at 1A. Insulation resistance 100MΩ at 500V DC. Insulation will withstand 1500V AC for 1 minute between terminals. Overall length 40mm (plus 6mm tag). Bezel diameter 15mm. Panel cut-out 12.5mm diameter flattened to 11.5mm on opposing sides to provide anti-twisting lock.



Retail Unit Price each (inc. VAT).

Order Code	Type 380	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RX96E	Saluseholder 20	£0.842	£0.677	£0.556	£0.990

### Panel Mounting 20mm Fuse Holder



A black round 5 x 20mm panel mounting fuse holder. The fuse fits into the cap which is screwed onto the holder. The panel hole clearance is 12mm diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type 11649	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GU73Q	Panel Fuseholder	£0.297	£0.230	£0.210	£0.350

### Snap Fit Panel Fuseholder

Camden



Finger release panel fuseholder with quick and economical snap fitting. Snap fits a range of panel thickness from 1.0 to 3.5mm and has an anti rotation spigot.

Rated at 10A 250VAC. UL and CSA approved.

#### Dimensions mm

Fuse Size	Fixing Hole dia	Cap dia	Overall Length
20 x 5	11.5	17.0	43.0

Retail Unit Price each (inc. VAT).

Order Code	Type 12124	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CT90X	SnpFit Fhldr 20x5	£0.638	£0.460	£0.405	£0.750

### Fuseholder Insulating Boot

Bulgin

A pliable PVC insulating boot for enclosing and covering cables connected to the terminals at the rear of any of our panel mounting cartridge fuseholders.



Retail Unit Price each (inc. VAT).

Order Code	Type 438	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FT35Q	Fuseholder-Boot	£0.417	£0.293	£0.253	£0.490

### Panel Mounting Bayonet Fixing Fuse Holders



Two panel mounting bayonet fixing fuse holders; one with a round face and the other square. The fuse, 5 x 20mm, fits into a removable cap.

having bayonet fittings, which latches into the bayonet holder. It is latched using a small bladed screwdriver.

Retail Unit Price each (inc. VAT).

Order Code	Type 11646	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GU76H	PMnt Fhldr Rnd 5x20	£0.936	£0.830	£0.780	£1.100
GU77J	PMnt Fhldr Sq 5x20	£0.936	£0.830	£0.780	£1.100

### 20mm Panel Mount Fuseholder

Bussmann

A panel mount fuseholder that has a threaded cap fuse carrier, and has SEMKO, UL and CSA approval.



#### General Specification

Electrical rating:	250V, 6-3A, 2-5W
Contact resistance:	≤10mΩ
Insulation resistance:	≥10MΩ
Dielectric strength:	≥2000V AC
Flammability rating:	UL94V0
Panel cut-out:	12.7mm diameter flattened to 11mm on one side.
Overall length:	37mm

Manufacturer's Code HTC 35M.

Retail Unit Price each (inc. VAT).

Order Code	Type 4225	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DA59P	20mm PMount FHold	£0.502	£0.384	£0.263	£0.590

### PCB Bayonet Fixing Fuse Holders



PCB mounting fuse holders, one horizontal and the other vertical. The fuse, 5 x 20mm, fits into a removable cap, having bayonet fittings, which latches into the bayonet holder. It is latched using a small bladed screwdriver. Pin spacing is 11mm for both holders.

Retail Unit Price each (inc. VAT).

Order Code	Type 11647	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GU78K	PCMnt Fhldr Vert	£1.010	£0.950	£0.890	£1.190
GU79L	PCMnt Fhldr Horiz	£1.010	£0.950	£0.890	£1.190

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## 20mm PCB Type Fuseholder

**Bussmann**

A PCB mounting fuseholder that has Semko, UL and CSA approval. The fuseholder has a bayonet fixing cap fuse carrier, and is available in either vertical or horizontal PCB mounting.



### General Specification

Electrical rating: 250V, 6-3A, 2-5W  
 Contact resistance: ≤10mΩ  
 Insulation resistance: ≥10MΩ  
 Dielectric strength: ≥2000V AC  
 Flammability rating: UL94VO  
 Fixing pin spacing: 10mm  
 Overall length: 33.1mm (excluding pins)  
 Diameter: 13mm, flattened on one side to 11.3mm

Manufacturer's Code	Type	Order Code
HTC 45M	Vertical	DA60Q
HTC 50M	Horizontal	DK75S

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DA60Q	20mm PCB F.Hold Vert	£0.510	£0.404	£0.323	£0.600
DK75S	20mm PCB F.Hold Hor	£0.510	£0.404	£0.323	£0.600

## 6A 31mm (1 1/4in.) Type

A panel mounting 31mm fuseholder with a flush fitting, square red coloured cap bearing the legend 'FUSE' in black. Fuse cartridge is simply inserted into the cap which pushes into the body, but the latch must align with slot in bevel. Only a small narrow screwdriver or similar tool can be pushed down into the slot to release the latch in order to gain access to the fuse. Restrain the cap to prevent it flying out of the body. Complies with BS standards. Max rating 6A @ 250V AC. Length: 50mm. Bezel 16mm x 16mm square. Panel cut-out 15mm (3/8in.).



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FA39N	1.1/4 Clickcatch F.H	£0.757	£0.545	£0.384	£0.899

## 10A 31mm (1 1/4in.) Type

A panel mounting 31mm fuseholder with screwdriver release to meet the latest safety regulations. Rated 10A at 250V AC. Contact resistance 10mΩ at 1A. Insulation resistance 100MΩ at 500V DC. Insulation will withstand 1500V AC for 1 minute between terminals. Overall length 48mm (plus 6mm tag). Bezel diameter 18mm. Panel cut-out 15mm diameter flattened to 13.5mm on opposing sides to provide anti-twisting lock.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FD77J	10A Fuseholder 1.1/4	£0.842	£0.626	£0.515	£0.930

## 31mm (1 1/4in.) Panel Mount Fuseholders

**Bussmann**



A panel mounting 31-175mm (1 1/4in.) fuseholder with screwdriver release, that has VDE and SEMKO approvals. Two types are available: HTB 341 is held in place by a hex nut; HTB 941 is a snap-in mount.

### General Specification

Rating: 250V at 10A  
 Insulation resistance: 10,000MΩ  
 Contact resistance: 0.005Ω maximum at 1A  
 Standoff voltage: 480V/mil at 3-175mm (0.125in.) thickness  
 Terminals: Tin-plated brass  
 Moulded components: High temperature, flame retardant, thermoplastic; UL component recognised; 94VO; mounting nut, spacer – black polycarbonate 45mm  
 Overall length: 45mm  
 Panel thickness: 7-62mm (0.3in.) maximum  
 Cut-out HTB-341: 12.8mm diameter, flattened to 11.7mm on opposing sides.  
 HTB-941: 14.3mm diameter, flattened to 12.7mm on opposing sides.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DA63T	Fuseholder Hex Nut	£0.936	£0.788	£0.697	£1.100
DA64U	Fuseholder Snap-In	£0.936	£0.788	£0.697	£1.100

## In-Line Fuseholders

**Bulgin**



In-car type fuseholder moulded from clear plastic in two parts. These screw-together items house two collars and a spring.

### Dimensions

Fuse Type	Length	Dia.	Manufacturers Code
1 1/4 x 1/4	62	15	FX0180
20 x 5	50	15	FX0380

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RC70M	In-Line F.H	£0.978	£0.859	£0.798	£1.150
RC71N	In-Line Fuse Holder	£0.978	£0.828	£0.768	£1.150

## Sealed In-Line Fuseholders

**Bulgin**



The popular in line fuseholder range has been extended to offer sealed versions. Offering IP66 protection when correctly assembled the clear plastic two part body has an 'O' ring seal and the cable seals are stage cuttable grommets. Maximum Rating 10A 250V

### Dimensions mm

Fuse Type	Length inc. seals	Body Dia
1 1/4 x 1/4	91.0	16.5
20 x 5	79.2	16.5

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CT88V	Std In Line 1.1/4x1/4	£1.780	£1.510	£1.350	£2.100
CT89W	Std In Line 20x5	£1.780	£1.450	£1.310	£2.100

## Chassis Mounting 31mm (1 1/4in.) Fuseholders Lugged Type



Heavy duty 31mm fuseholder with 6-35mm (1 1/4in.) spade lugs. Nickel-plated clips rated at 30A. There is a 4mm dia. recessed fixing hole and two 3mm dia. plugs on the underside of the holder to locate the holder onto additional holes drilled in the chassis, which prevents unwanted movement. Overall size: 66mm long, 22mm high, 12mm wide.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
KL30H	1.25 FH With Lugs	£0.502	£0.313	£0.232	£0.590

## Screw Type



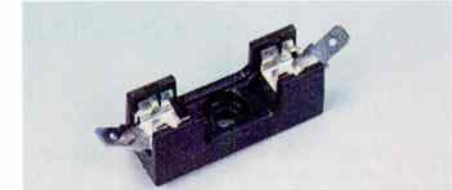
Chassis mounting moulded 31mm fuseholder with tinned phosphor-bronze clip. Single 6BA clear fixing hole. Size: 41mm long, 16mm high, 12mm wide.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RX50E	1.25 FH With Screws	£0.936	£0.788	£0.697	£1.100

## 40° Lugged Fuseholder

**Bussmann**



Chassis mounting 31mm (1 1/4in.) fuseholder with 4-7mm (3/16in.) 'quick connect' lugs at an angle of 40°. Rated at 300V 15A (UL) or 13A (CSA). The holder requires a 3-9mm mounting hole and a 2-4mm pin hole, which prevents unwanted movement. Overall size: 50-8mm long x 14-3mm high x 12-7mm wide.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DA65V	Fuseholder 40 LUG	£0.468			£0.550

## 20mm Fuse Block

Bussmann



A quality PCB mounting fuse block for 20mm fuses with an optional protective cover.

### General Specification

Electrical rating:	250V, 6-3A, 1-6W
Contact resistance:	≤10mΩ
Insulation resistance:	≥10MΩ
Dielectric strength:	≥2000V AC
Flammability rating:	UL94V1, cover UL94VO
Fixing pin spacing:	23mm
Overall length:	24mm, 26.5mm with cover
Height (excluding lugs):	13mm, 15mm with cover
Width:	8mm, 9mm with cover
<b>Manufacturer's Code</b>	<b>Type</b>
HTC 15M	Fuse block
HTC 140M	Cover
	<b>Order Code</b>
	DA61R
	DA62S

Retail Unit Price each (inc. VAT).

Order Code	Type 430	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DA61R	20mm Fuse Block	£0.153	£0.111	£0.076	£0.180
DA62S	Fuse Block Cover	£0.170	£0.076	£0.053	£0.200

## 20mm Chassis Mounting Fuseholder



A chassis mounting moulded 20mm fuseholder with a 3mm dia. recessed fixing hole. Size 40mm long, 14mm high, 11mm wide.

Retail Unit Price each (inc. VAT).

Order Code	Type 432	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
KC01B	Chassis FH 20mm	£0.212	£0.152	£0.111	£0.250

## Fuse Block Covers



Covers designed to fit 20mm or 32mm (1 1/4") fuse blocks for added protection.

Overall Dimensions:  
 For 20mm version (VJ56L) 24 x 8 x 13mm External  
 21.8 x 6 x 11.4mm Internal  
 For 32mm version (VJ57M) 33.5 x 12 x 15mm External  
 30.9 x 9.6 x 13mm Internal

Retail Unit Price each (inc. VAT).

Order Code	Type 13329	Price each exc. VAT			inc. VAT each
		1+	50+	100+	
VJ56L	20mm Fuse Cover	£0.212	£0.150	£0.135	£0.250
VJ57M	1,14 Fuse Cover	£0.297	£0.210	£0.185	£0.350

## PCB 20mm Fuse Holder



Black PCB 5 x 20mm fuse holder with pin spacing of 22mm. The fuse is contained in the cap which snaps into the fuse holder.

Retail Unit Price each (inc. VAT).

Order Code	Type 11950	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GU74R	PCB Fuseholder	£0.102	£0.090	£0.085	£0.120
GU75S	PCB Fuseholder Lid	£0.034	£0.025	£0.023	£0.040

## 20mm PCB Type with Cover



A high quality PCB-mounting fuseholder for 20mm fuses equipped with a snap-fitting transparent cover, so that although the live contacts are screened safely, the state of the fuse can be seen clearly. Contacts rated at 6-3A; lead pitch 23-5mm; overall dimensions with cover (excluding lugs): 27mm long x 16mm high x 9mm wide.

Retail Unit Price each (inc. VAT).

Order Code	Type 6273	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
KU29G	PCB FH With Cover	£0.204			£0.240

## Fuse Clips 20mm Type 1

Bulgin

Tinned brass clips for 20mm fuses. The lugs are on a 2.54 x 2.54mm (0.1 x 0.1in.) matrix and will fit into 1.5mm dia. holes. Two clips are required per fuse.



Retail Unit Price each (inc. VAT).

Order Code	Type 435	Price each exc. VAT			inc. VAT each
		1+	100+	500+	
WH49D	20mm Fuse Clip Type1	£0.068	£0.030	£0.024	£0.080

## 20mm Type 2

Tin-plated spring brass fuse clips rated for currents up to 10A. Two required per fuse. The lugs have a lead pitch of 5mm (0.18in.) and will fit into 1.5mm dia. holes. Overall dimensions (excluding pins): 10mm high x 4.5mm x 5.5mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 437	Price each exc. VAT			inc. VAT each
		1+	100+	500+	
KU27E	20mm Fuse Clip Type2	£0.068	£0.030	£0.024	£0.080

## 31mm (1 1/4in.) Fuse Clip

Tin-plated spring brass fuse clips rated for currents up to 15A. Two required per fuse. The lugs have a lead pitch of 7mm (0.28in.) and will fit into 2mm dia. holes. Overall dimensions (excluding pins): 11.5mm high x 7mm x 8mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 439	Price each exc. VAT			inc. VAT each
		1+	100+	500+	
KU28F	1.25 Fuse Clip	£0.076	£0.036	£0.027	£0.090

## 10x38mm Fuse Clips



A set of two clips and holding down plates allow these clips to be used up to 30A giving a secure and professional fit.

Dimensions:  
 Height: 18mm  
 Width: 14mm  
 Depth: 13mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 13330	Price each exc. VAT			inc. VAT each
		1+	100+	500+	
VJ47B	38mm PCB Fuse Clip	£0.842	£0.690	£0.580	£0.990

## Fuse Clips for PCBs

Bussmann

Two types of fuse clips, with end stops, for PCB mounting. The clip material is spring bronze with a bright tin finish.



### Specification

Fuse diameter:	6-35mm (1/4in.)	5mm
Current rating:	15A	10A
Tab spacing:	7-62mm	5mm
Hole diameter for tabs:	1-8mm max	1-8mm max
Overall length with fuse		
22-2mm:	25-4mm	—
25-4mm:	28-6mm	—
31-8mm:	35mm	—
20mm:	—	22-2mm

<b>Manufacturer's Code</b>	<b>Fuse Diameter</b>	<b>Order Code</b>
1A4534-06	6-35mm	DA66W
1A3399-10	5mm	DA67X

Retail Unit Price each (inc. VAT).

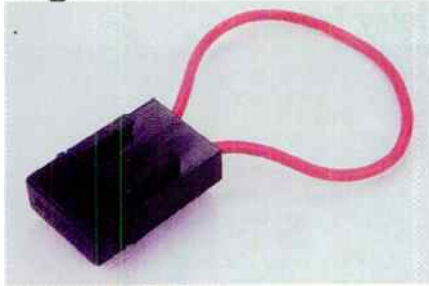
Order Code	Type 445	Price each exc. VAT			inc. VAT each
		1+	100+	500+	
DA66W	Fuse Clip 0.25in	£0.085	£0.061	£0.045	£0.100
DA67X	Fuse Clip 5mm	£0.102	£0.076	£0.059	£0.120



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**Plug-in In-Line Fuse Holder**



A black nylon in-line fuseholder suitable for use with the plug-in type fuses becoming increasingly common in vehicle electrical systems. To use, cut the red wire connected between both terminals to give lead-outs to each terminal. Access to the fuse is by means of a snap-fit lid on the top of the holder, and several of these holders can be fitted together by virtue of a tongue and groove moulded into opposite sides of the casing. Suitable for currents up to 15A. Dimensions of body (lid closed): 27mm long, 37.5mm high, 18mm wide.

Retail Unit Price each (inc. VAT).

Order Code	Type 444	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
KU34M	Plug-In Fuseholder	£0.842	£0.525	£0.444	£0.990

**In-Line Type**



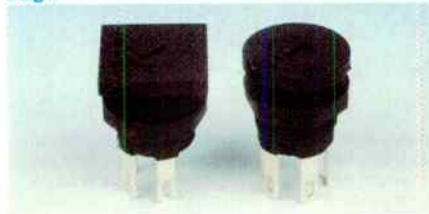
Bayonet-action in-line car type fuseholder with moulded body, suitable for 31mm (1 1/4in.) fuses. Length 52mm, diameter 14mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 443	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
DR79L	Car Fuseholder	£0.331	£0.170	£0.150	£0.390

**Panel Mounting Voltage Selectors**

Belgin



Two panel mounting voltage selectors with either a round face or a square face. Panel cut-out is 13mm diameter. Use a small bladed screwdriver to change the voltage settings.

Retail Unit Price each (inc. VAT).

Order Code	Type 11634	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
GU80B	PMount VSelector Sq	£1.350	£1.070	£0.980	£1.590
GU81C	PMount VSelector Rnd	£1.350	£1.070	£0.980	£1.590

**38mm DIN Mounting Fuse Holder**

Gould



A single pole fuseholder, DIN rail mounting to fit 10 x 38mm fuses. With UR (UL recognised), CSA, Bureau Veritas and Lloyds Register of Shipping approvals. Can carry up to 25A at 500Vac (32A at 400Vac). Cable size 16mm.

Dimensions: Height 78mm  
Width 17.5mm  
Depth 59mm (incl lever)

Retail Unit Price each (inc. VAT).

Order Code	Type 13323	Price each exc. VAT			inc. VAT each 1+
		1+	10+	50+	
VJ46A	38mm Din Fuse Hld	£2.540	£2.110	£1.840	£2.990

**Fuse Tester Continuity Tester**



An ingenious screwdriver tester that can be used to detect continuity and therefore used for checking fuses or lamps. Continuity tests can be made by holding the tip of the screwdriver on a fuse then touching the cap of the screwdriver and the cap of the fuse with your hand. If the fuse is OK, the screwdriver will light. The same principle can be used with lamps, leads and anything else that is conductive.

Other uses include short circuit tests, tracking broken cables, microwave oven radiation testing and television emission tests. The device uses two silver or alkaline batteries (supplied), with a battery life of approximately 5 hours continuous use.

Dimensions 136 x 20mm (L x W) including clip. NB Not suitable for direct connection with live circuitry.

Retail Unit Price each (inc. VAT).

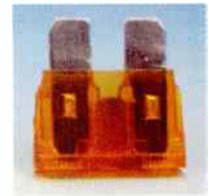
Order Code	Type 7020	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
AS26D	Continuity Tester	£6.380	£5.750	£5.250	£7.500

**Fuses**

**Blade Type**

**Blade-Type Fuses**

Fuses intended as standard plug-in replacements for fuses fitted in recent European cars.



Retail Unit Price each (inc. VAT).

Order Code	Type 10140	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
CN83E	Blade Fuse 3A	£0.246	£0.200	£0.180	£0.290
CN84F	Blade Fuse 4A	£0.246	£0.200	£0.180	£0.290
CN85G	Blade Fuse 5A	£0.246	£0.200	£0.180	£0.290
CN86T	Blade Fuse 7.5A	£0.246	£0.200	£0.180	£0.290
CN87U	Blade Fuse 10A	£0.246	£0.200	£0.180	£0.290
CN88V	Blade Fuse 15A	£0.246	£0.200	£0.180	£0.290
CN89W	Blade Fuse 20A	£0.246	£0.200	£0.180	£0.290
CN90X	Blade Fuse 25A	£0.246	£0.200	£0.180	£0.290
DR81C	Blade Fuse 35A	£0.246	£0.200	£0.180	£0.290
DR80B	Blade Fuse 30A	£0.246	£0.200	£0.180	£0.290

**Mini Blade Car Fuses**

A range of miniature blade fuses for car use. Transparent, coloured bodies denote the rating. Rated at 32V. Sold Individually.

Available in the following ratings: 3A, 5A, 7.5A, 10A, 15A, 20A, 25A, 30A



Retail Unit Price each (inc. VAT).

Order Code	Type 13329	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
VJ48C	Mini Blade Fuse 3A	£0.246	£0.185	£0.155	£0.290
VJ49D	Mini Blade Fuse 5A	£0.246	£0.185	£0.155	£0.290
VJ50E	Mini Blade Fuse 7.5A	£0.246	£0.185	£0.155	£0.290
VJ51F	Mini Blade Fuse 10A	£0.246	£0.185	£0.155	£0.290
VJ52G	Mini Blade Fuse 15A	£0.246	£0.185	£0.155	£0.290
VJ53H	Mini Blade Fuse 20A	£0.246	£0.185	£0.155	£0.290
VJ54J	Mini Blade Fuse 25A	£0.246	£0.185	£0.155	£0.290
VJ55K	Mini Blade Fuse 30A	£0.246	£0.185	£0.155	£0.290

**See Car Products Section for our range of specialist car fuses**



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## Standard Glass

### 20mm Quickblow Type

Glass tube fuses with nickel-finish brass end caps overall size 20 x 5mm diameter. Fuses rupture within 2 minutes max (1s typical) at 25°C at twice the rated current. Rupture capacity 35A or 20 times the rated current whichever is greater.



Available in the following ratings:

50mA, 63mA, 80mA, 100mA, 125mA, 160mA, 200mA, 250mA, 315mA, 400mA, 500mA, 630mA, 800mA, 1A, 1.25A, 1.6A, 2A, 2.5A, 3.15A, 4A, 5A, 6.3A, 10A.

**PLEASE NOTE : THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10**

Price each shown, but sold only in multiples of 10.

Order Code	Type 451	Price each exc. VAT			inc. VAT each
		10+	50+	100+	
GJ46A	20mm QB 63ma 10 PK	£0.119	£0.090	£0.080	£0.140
GJ46E	20mm QB 5A 10 PK	£0.068	£0.061	£0.058	£0.080
GJ95D	20mm QB 4A 10 PK	£0.068	£0.061	£0.058	£0.080
GJ86T	20mm QB 400ma 10 PK	£0.068	£0.061	£0.058	£0.080
GJ94C	20mm QB 3.15A 10 PK	£0.068	£0.061	£0.058	£0.080
GJ02C	20mm QB 50ma 10 PK	£0.170	£0.140	£0.130	£0.200
GJ93B	20mm QB 2.5A 10 PK	£0.068	£0.061	£0.058	£0.080
GJ85G	20mm QB 315ma 10 PK	£0.068	£0.061	£0.058	£0.080
GG26D	20mm QB 2A 10 PK	£0.068	£0.061	£0.058	£0.080
GJ82A	20mm QB 1.6A 10 PK	£0.068	£0.061	£0.058	£0.080
GJ84F	20mm QB 250ma 10 PK	£0.068	£0.061	£0.058	£0.080
GJ86G	20mm QB 10A 10 PK	£0.068	£0.061	£0.058	£0.080
GJ97F	20mm QB 6.3A 10 PK	£0.068	£0.061	£0.058	£0.080
GJ83E	20mm QB 200ma 10 PK	£0.068	£0.061	£0.058	£0.080
GJ91Y	20mm QB 1.25A 10 PK	£0.068	£0.061	£0.058	£0.080
GJ80B	20mm QB 160ma 10 PK	£0.068	£0.061	£0.058	£0.080
GJ79L	20mm QB 125mA 10PK	£0.068	£0.061	£0.058	£0.080
GJ90X	20mm QB 1A 10 PK	£0.068	£0.061	£0.058	£0.080
GJ72P	20mm QB 100ma 10 PK	£0.068	£0.061	£0.058	£0.080
GJ89W	20mm QB 800ma 10 PK	£0.068	£0.061	£0.058	£0.080
GJ61R	20mm QB 80ma 10 PK	£0.119	£0.090	£0.080	£0.140
GJ88V	20mm QB 630ma 10 PK	£0.068	£0.061	£0.058	£0.080
GJ87U	20mm QB 500ma 10 PK	£0.068	£0.061	£0.058	£0.080

### 20mm Time Delay Type



Glass tube fuses with nickel-finish brass end caps, overall size 20 x 5mm diameter. Fuses will not rupture for 5s min (up to 3A rating), 12s min (over 3A) at twice the rated current. Rupture capacity 35A or 20

times the rated current whichever is greater.

Available in the following ratings:

50mA, 63mA, 80mA, 100mA, 125mA, 160mA, 200mA, 250mA, 315mA, 400mA, 500mA, 630mA, 800mA, 1A, 1.25A, 1.6A, 2A, 2.5A, 3.15A, 5A, 6.3A, 10A.

**PLEASE NOTE: THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10**

Price each shown, but sold only in multiples of 10.

Order Code	Type 452	Price each exc. VAT			inc. VAT each
		10+	50+	100+	
GL57M	20mm A/S 630ma 10 PK	£0.127	£0.110	£0.100	£0.150
GL56L	20mm A/S 500ma 10 PK	£0.127	£0.110	£0.100	£0.150
GL67X	20mm A/S 10A 10 PK	£0.127	£0.110	£0.100	£0.150
GL55K	20mm A/S 400ma 10 PK	£0.127	£0.110	£0.100	£0.150
GL54J	20mm A/S 315ma 10 PK	£0.127	£0.110	£0.100	£0.150
GL66W	20mm A/S 6.3A 10 PK	£0.127	£0.110	£0.100	£0.150
GL53H	20mm A/S 250ma 10 PK	£0.127	£0.110	£0.100	£0.150
GL65V	20mm A/S 5A 10 PK	£0.127	£0.110	£0.100	£0.150
GL64U	20mm A/S 3.15A 10 PK	£0.127	£0.110	£0.100	£0.150
GL52G	20mm A/S 200ma 10 PK	£0.127	£0.110	£0.100	£0.150
GK40T	20mm A/S 80ma 10 PK	£0.212	£0.190	£0.175	£0.250
GL63T	20mm A/S 2.5A 10 PK	£0.127	£0.110	£0.100	£0.150
GL82S	20mm A/S 2A 10 PK	£0.127	£0.096	£0.090	£0.150
GK39N	20mm A/S 63ma 10 PK	£0.212	£0.190	£0.175	£0.250
GL51F	20mm A/S 160ma 10 PK	£0.127	£0.110	£0.100	£0.150
GL61R	20mm A/S 1.6A 10 PK	£0.127	£0.110	£0.100	£0.150
GJ89H	20mm A/S 50ma 10 PK	£0.212	£0.190	£0.175	£0.250
GL50E	20mm A/S 125ma 10 PK	£0.127	£0.110	£0.100	£0.150
GL60Q	20mm A/S 1.25A 10 PK	£0.127	£0.110	£0.100	£0.150
GL59P	20mm A/S 1A 10 PK	£0.127	£0.110	£0.100	£0.150
GL58N	20mm A/S 800ma 10 PK	£0.127	£0.110	£0.100	£0.150
GL35Q	20mm A/S 100ma 10 PK	£0.127	£0.110	£0.100	£0.150

### 1 1/4in. (31mm) Quickblow Type

Glass tube fuses with nickel-finish brass end caps overall size 31.8 x 6.35mm (1 1/4 x 1/4 in.) diameter.

Fuses rupture within 2 minutes max (1s typical) at 25°C at twice the rated current and will not rupture within 4 hours at 110% of the rated current. Rupture capacity 35A or 20 times the rated current whichever is greater.

Available in the following ratings:

100mA, 160mA, 250mA, 500mA, 630mA, 800mA, 1A, 1.25A, 1.6A, 2A, 2.5A, 3.15A, 4A, 5A, 6.3A, 10A, 15A.

**PLEASE NOTE: THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10**

Price each shown, but sold only in multiples of 10.

Order Code	Type 461	Price each exc. VAT			inc. VAT each
		10+	50+	100+	
GL77J	1.1/4 QB 2A 10 PK	£0.076	£0.060	£0.055	£0.090
GL68Y	1.1/4 QB 100ma 10 PK	£0.076	£0.060	£0.055	£0.090
GL76H	1.1/4 QB 1.6A 10 PK	£0.076	£0.060	£0.055	£0.090
GL75S	1.1/4 QB 1.25A 10 PK	£0.076	£0.060	£0.055	£0.090
GL84F	1.1/4 QB 15A 10 PK	£0.076	£0.060	£0.055	£0.090
GL83E	1.1/4 QB 10A 10 PK	£0.076	£0.060	£0.055	£0.090
GL74R	1.1/4 QB 1A 10 PK	£0.076	£0.060	£0.055	£0.090
GL82D	1.1/4 QB 6.3A 10 PK	£0.076	£0.060	£0.055	£0.090
GL73Q	1.1/4 QB 800ma 10 PK	£0.076	£0.060	£0.055	£0.090
GL72P	1.1/4 QB 630ma 10 PK	£0.076	£0.060	£0.055	£0.090
GL81C	1.1/4 QB 5A 10 PK	£0.076	£0.060	£0.055	£0.090
GL71N	1.1/4 QB 500ma 10 PK	£0.076	£0.060	£0.055	£0.090
GL80B	1.1/4 QB 4A 10 PK	£0.076	£0.060	£0.055	£0.090
GL70M	1.1/4 QB 250ma 10 PK	£0.076	£0.060	£0.055	£0.090
GL79L	1.1/4 QB 3.15A 10 PK	£0.076	£0.060	£0.055	£0.090
GL69A	1.1/4 QB 160ma 10 PK	£0.076	£0.060	£0.055	£0.090
GL78K	1.1/4 QB 2.5A 10 PK	£0.076	£0.060	£0.055	£0.090

### 1 1/4in. (31mm) Time Delay Type



Glass tube fuses with nickel-finish brass end caps, overall size 31.8 x 6.35mm (1 1/4 x 1/4 in.) diameter. Fuses will not rupture for 5s min (up to 3A rating), 12s min (over 3A) at twice the rated current. Rupture capacity 35A or 20 times the rated current whichever is greater.

Available in the following ratings:

100mA, 160mA, 250mA, 500mA, 630mA, 800mA, 1A, 1.25A, 1.6A, 2A, 2.5A, 3.15A, 5A, 6.3A, 10A, 15A.

**PLEASE NOTE: THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10**

Price each shown, but sold only in multiples of 10.

Order Code	Type 462	Price each exc. VAT			inc. VAT each
		10+	50+	100+	
GL85G	1.1/4 A/S 100ma 10PK	£0.187	£0.160	£0.145	£0.220
GG25C	1.1/4 A/S 15A 10 PK	£0.187	£0.160	£0.145	£0.220
GG21X	1.1/4 A/S 10A 10 PK	£0.187	£0.160	£0.145	£0.220
GL98G	1.1/4 A/S 6.3A 10 PK	£0.187	£0.160	£0.145	£0.220
GL97F	1.1/4 A/S 5A 10 PK	£0.187	£0.160	£0.145	£0.220
GL96E	1.1/4 A/S 3.15A 10PK	£0.187	£0.160	£0.145	£0.220
GL95D	1.1/4 A/S 2.5A 10 PK	£0.187	£0.160	£0.145	£0.220
GL94C	1.1/4 A/S 2A 10 PK	£0.187	£0.160	£0.145	£0.220
GL93B	1.1/4 A/S 1.6A 10 PK	£0.187	£0.160	£0.145	£0.220
GL92A	1.1/4 A/S 1.25A 10PK	£0.187	£0.160	£0.145	£0.220
GL91Y	1.1/4 A/S 1A 10PK	£0.187	£0.160	£0.145	£0.220
GL90X	1.1/4 A/S 800ma 10PK	£0.187	£0.160	£0.145	£0.220
GL89W	1.1/4 A/S 630ma 10PK	£0.187	£0.160	£0.145	£0.220
GL88V	1.1/4 A/S 500ma 10PK	£0.187	£0.160	£0.145	£0.220
GL87U	1.1/4 A/S 250ma 10PK	£0.187	£0.160	£0.145	£0.220
GL86T	1.1/4 A/S 160ma 10PK	£0.187	£0.160	£0.145	£0.220

### Fuse Kit



A handy fuse kit containing 18 of the most popular fuse types. Ideal for the person who requires convenient access to a range of fuses, such as maintenance or repair technicians. Each compartment is clearly labeled with the type and size of fuse it contains. The robust plastic container prevents fragile fuses from being damaged and has a close fitting lid to prevent spillage. Contains 10 each of the following fuses:

20mm QB 500mA, 1A, 1.6A, 2A, 2.5A, 3.15A, 4A, 5A, 6.3A, 10A  
 20mm TD 1A, 2A, 3.15A, 5A  
 1 1/4in QB 1A, 2A, 5A, 10A

Retail Unit Price each (inc. VAT).

Order Code	Type 17384	Price each exc. VAT	inc. VAT each
MS00A	Fuse Kit	£17.010	£19.990

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## Professional Glass

### 20mm Fast Acting Glass Fuses

**Bussmann**

A range of glass body, fast acting 5mm x 20mm fuses with electroplated end caps. The fuses are designated to IEC (pub. 127) Sheet II, BS4265, and have SEMKO and VDE approval, except 8A and 10A (ratings outside Standard requirements). Rated at 250V AC, with a breaking capacity of 35A (maximum) (250V AC) or 10x rated current.



Available in the following ratings: 200mA, 250mA, 500mA, 1A, 1.6A, 2A, 3.15A, 5A, 6.3A, 8A, 10A

PLEASE NOTE: THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10

Price each shown, but sold only in multiples of 10.

Order Code	Type 454	Price each exc. VAT			inc. VAT each 10+
		10+	50+	100+	
CZ74R	Fast Act Glass 200mA	£0.085	£0.070	£0.065	£0.100
CZ75S	Fast Act Glass 250mA	£0.085	£0.070	£0.065	£0.100
CZ76H	Fast Act Glass 500mA	£0.085	£0.070	£0.065	£0.100
CZ77J	Fast Act Glass 1A	£0.085	£0.070	£0.065	£0.100
CZ78K	Fast Act Glass 1.6A	£0.085	£0.070	£0.065	£0.100
CZ79L	Fast Act Glass 2A	£0.085	£0.070	£0.065	£0.100
CZ80B	Fast Act Glass 3.15A	£0.085	£0.070	£0.065	£0.100
CZ81C	Fast Act Glass 5A	£0.085	£0.070	£0.065	£0.100
CZ82D	Fast Act Glass 6.3A	£0.085	£0.070	£0.065	£0.100
CZ83E	Fast Act Glass 8A	£0.085	£0.070	£0.065	£0.100
CZ84F	Fast Act Glass 10A	£0.085	£0.070	£0.065	£0.100

### 20mm Time-Lag (T) Glass Fuses

**Bussmann**

A range of glass body, time-lag (T) 5mm x 20mm fuses with electroplated end caps. The fuses are designated to IEC (pub. 127) Sheet III, BS4265 and have SEMKO, VDE and UL approval. Rated at 250V AC, with a breaking capacity of 35A maximum (250V AC) or 10x rated current.



Available in the following ratings: 50mA, 63mA, 100mA, 125mA, 160mA, 200mA, 250mA, 315mA, 400mA, 500mA, 630mA, 1A, 1.25A, 1.6A, 2A, 2.5A, 3.15A, 5A, 6.3A.

PLEASE NOTE: THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10

Price each shown, but sold only in multiples of 10.

Order Code	Type 455	Price each exc. VAT			inc. VAT each 10+
		10+	50+	100+	
CZ85G	Time Lag Glass 50mA	£0.144	£0.130	£0.120	£0.170
CZ86T	Time Lag Glass 63mA	£0.144	£0.130	£0.120	£0.170
CZ87U	Time Lag Glass 100mA	£0.144	£0.130	£0.120	£0.170
CZ88V	Time Lag Glass 125mA	£0.144	£0.130	£0.120	£0.170
CZ89W	Time Lag Glass 160mA	£0.144	£0.130	£0.120	£0.170
CZ90X	Time Lag Glass 200mA	£0.144	£0.130	£0.120	£0.170
CZ91Y	Time Lag Glass 250mA	£0.144	£0.130	£0.120	£0.170
CZ92A	Time Lag Glass 315mA	£0.144	£0.130	£0.120	£0.170
CZ93B	Time Lag Glass 400mA	£0.144	£0.130	£0.120	£0.170
CZ94C	Time Lag Glass 500mA	£0.144	£0.130	£0.120	£0.170
CZ95D	Time Lag Glass 630mA	£0.144	£0.130	£0.120	£0.170
CZ96E	Time Lag Glass 1A	£0.144	£0.130	£0.120	£0.170
CZ97F	Time Lag Glass 1.25A	£0.144	£0.130	£0.120	£0.170
CZ98G	Time Lag Glass 1.6A	£0.144	£0.130	£0.120	£0.170
CZ99H	Time Lag Glass 2A	£0.144	£0.130	£0.120	£0.170
DA00A	Time Lag Glass 2.5A	£0.144	£0.130	£0.120	£0.170
DA01B	Time Lag Glass 3.15A	£0.144	£0.130	£0.120	£0.170
DA02C	Time Lag Glass 5A	£0.144	£0.130	£0.120	£0.170
DA03D	Time Lag Glass 6.3A	£0.144	£0.130	£0.120	£0.170

### 1 1/4in. (31mm) Fast Acting Glass Fuses

**Bussmann**

A range of glass body, fast acting, low breaking capacity 6 x 31mm (1 1/4 x 1 1/4in.) fuses with electroplated end caps, suitable for instruments, electronic circuits and small appliances. The fuses comply to BS2905A.



Available in the following ratings: 250mA, 500mA, 750mA, 1A, 1.25A, 1.5A, 2A, 2.5A, 3A, 5A, 7.5A, 10A, 12A, 15A.

PLEASE NOTE: THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10

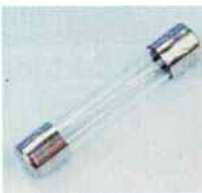
Price each shown, but sold only in multiples of 10.

Order Code	Type 464	Price each exc. VAT			inc. VAT each 10+
		10+	50+	100+	
DA20W	1.25 FIA Glass 250mA	£0.119	£0.100	£0.090	£0.140
DA21X	1.25 FIA Glass 500mA	£0.119	£0.100	£0.090	£0.140
DA22Y	1.25 FIA Glass 750mA	£0.119	£0.100	£0.090	£0.140
DA23A	1.25 FIA Glass 1A	£0.119	£0.100	£0.090	£0.140
DA24B	1.25 FIA Glass 1.25A	£0.119	£0.100	£0.090	£0.140
DA25C	1.25 FIA Glass 1.5A	£0.119	£0.100	£0.090	£0.140
DA26D	1.25 FIA Glass 2A	£0.119	£0.100	£0.090	£0.140
DA27E	1.25 FIA Glass 2.5A	£0.119	£0.100	£0.090	£0.140
DA28F	1.25 FIA Glass 3A	£0.119	£0.100	£0.090	£0.140
DA29G	1.25 FIA Glass 5A	£0.119	£0.100	£0.090	£0.140
DA30H	1.25 FIA Glass 7.5A	£0.119	£0.100	£0.090	£0.140
DA31J	1.25 FIA Glass 10A	£0.119	£0.100	£0.090	£0.140
DA32K	1.25 FIA Glass 12A	£0.119	£0.100	£0.090	£0.140
DA33L	1.25 FIA Glass 15A	£0.119	£0.100	£0.090	£0.140

### 1 1/4in. (31mm) Time-Lag Glass Fuses

**Bussmann**

A range of glass body, time-lag, low breaking capacity 6 x 31mm (1 1/4 x 1 1/4in.) fuses with electroplated end caps, suitable for 250V AC.



Available in the following ratings: 800mA, 1A, 1.25A, 1.6A, 2A, 2.5A, 3.15A, 4A, 5A, 6.3A.

PLEASE NOTE: THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10

Price each shown, but sold only in multiples of 10.

Order Code	Type 465	Price each exc. VAT			inc. VAT each 10+
		10+	50+	100+	
DA34M	1.25 T/L Glass 800mA	£0.246	£0.205	£0.190	£0.290
DA35Q	1.25 T/L Glass 1A	£0.246	£0.205	£0.190	£0.290
DA36P	1.25 T/L Glass 1.25A	£0.246	£0.205	£0.190	£0.290
DA37S	1.25 T/L Glass 1.6A	£0.246	£0.205	£0.190	£0.290
DA38R	1.25 T/L Glass 2A	£0.246	£0.205	£0.190	£0.290
DA39N	1.25 T/L Glass 2.5A	£0.246	£0.205	£0.190	£0.290
DA40T	1.25 T/L Glass 3.15A	£0.246	£0.205	£0.190	£0.290
DA41U	1.25 T/L Glass 4A	£0.246	£0.205	£0.190	£0.290
DA42V	1.25 T/L Glass 5A	£0.246	£0.205	£0.190	£0.290
DA43W	1.25 T/L Glass 6.3A	£0.246	£0.205	£0.190	£0.290

## Professional Ceramic

### 20mm Fast Acting Ceramic Fuses

**Bussmann**

A range of ceramic body, fast acting 5mm x 20mm fuses with electroplated end caps. The fuses are designated to IEC (pub. 127) Sheet I, BS4265, and have SEMKO and UL approval. Rated at 250V AC, with a high breaking capacity of 1500A at 250V AC.



Available in the following ratings: 500mA, 1A, 2A, 3.15A, 5A, 6.3A.

PLEASE NOTE: THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10

Price each shown, but sold only in multiples of 10.

Order Code	Type 457	Price each exc. VAT			inc. VAT each 1+
		10+	50+	100+	
DA06F	Fast Act Cer 500mA	£0.153	£0.130	£0.120	£0.180
DA06G	Fast Act Cer 1A	£0.153	£0.130	£0.120	£0.180
DA07H	Fast Act Cer 2A	£0.153	£0.130	£0.120	£0.180
DA08J	Fast Act Cer 3.15A	£0.153	£0.130	£0.120	£0.180
DA09K	Fast Act Cer 5A	£0.153	£0.130	£0.120	£0.180
DA10L	Fast Act Cer 6.3A	£0.153	£0.130	£0.120	£0.180

### 20mm Ultra Rapid Ceramic Fuses

**Siba**



A range of ceramic bodied very fast acting fuses with a cut off time of less than one tenth of a cycle at 10, times overload, designed to protect thyristors, rectifiers, and any semiconductors sensitive to overload. UL recognised (up to 5A) Rated at 250Vac with a breaking capacity of 300kA ( up to 5A ) 1500A ( 6.3A - 10A ).

Available in the following ratings: 500mA, 1A, 2A, 3.15A, 5A, 6.3A, 10A.

PLEASE NOTE : THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10

Price each shown, but sold only in multiples of 10.

Order Code	Type 13315	Price each exc. VAT			inc. VAT each 1+
		10+	50+	100+	
VJ14Q	20mm U/Q Ceram 500mA	£0.502	£0.460	£0.390	£0.590
VJ15R	20mm U/Q Ceramic 1A	£0.502	£0.460	£0.390	£0.590
VJ16S	20mm U/Q Ceramic 2A	£0.502	£0.460	£0.390	£0.590
VJ17T	20mm U/Q Ceram.3.15A	£0.502	£0.460	£0.390	£0.590
VJ18U	20mm U/Q Ceramic 5A	£0.502	£0.460	£0.390	£0.590
VJ19V	20mm U/Q Ceram.6.3A	£0.502	£0.460	£0.390	£0.590
VJ20W	20mm U/Q Ceramic 10A	£0.502	£0.460	£0.390	£0.590

### 20mm Time-Lag (T) Ceramic Fuses

**Bussmann**

A range of ceramic body, time-lag (T) 5mm x 20mm fuses with electroplated end caps. The fuses are designated to IEC (pub. 127) Sheet V, BS4265 and have SEMKO, and UL approval. Rated at 250V AC, with a high breaking capacity of 1500A at 250V AC.

Available in the following ratings: 1A, 1.25A, 1.6A, 2A, 2.5A, 3.15A, 4A, 5A, 6.3A.

PLEASE NOTE: THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10

Price each shown, but sold only in multiples of 10.

Order Code	Type 458	Price each exc. VAT			inc. VAT each 10+
		10+	50+	100+	
DA11M	Time Lag Cer 1A	£0.161	£0.145	£0.135	£0.190
DA12N	Time Lag Cer 1.25A	£0.161	£0.145	£0.135	£0.190
DA13P	Time Lag Cer 1.6A	£0.161	£0.145	£0.135	£0.190
DA14Q	Time Lag Cer 2A	£0.161	£0.145	£0.135	£0.190
DA15R	Time Lag Cer 2.5A	£0.161	£0.145	£0.135	£0.190
DA16S	Time Lag Cer 3.15A	£0.161	£0.145	£0.135	£0.190
DA17T	Time Lag Cer 4A	£0.161	£0.145	£0.135	£0.190
DA18U	Time Lag Cer 5A	£0.161	£0.145	£0.135	£0.190
DA19V	Time Lag Cer 6.3A	£0.161	£0.145	£0.135	£0.190

## 1 1/4in (31mm) Quick Blow Ceramic Fuse

Siba



A range of ceramic bodied fast acting fuses UL recognised ( 1A - 6.3A ). Rated at 500Vac with a breaking capacity of 10kA ( values up to 10A ), 1500A for 12.5A,16A at rated voltage.

Available in the following ratings:  
500mA, 1A, 2A, 3A, 5A, 7A, 10A, 12.5A, 16A.

PLEASE NOTE : THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10.

Price each shown, but sold only in multiples of 10.

Order Code	Type 13317	Price each exc. VAT			inc. VAT each 1+
		10+	50+	100+	
VJ21X	1,1/4 Q.Ceram.500mA	£0.212	£0.190	£0.165	£0.250
VJ22Y	1,1/4 Q.Ceram.1A	£0.212	£0.190	£0.165	£0.250
VJ23A	1,1/4 Q.Ceram.2A	£0.212	£0.190	£0.165	£0.250
VJ24B	1,1/4 Q.Ceram.3A	£0.212	£0.190	£0.165	£0.250
VJ25C	1,1/4 Q.Ceram.5A	£0.212	£0.190	£0.165	£0.250
VJ26D	1,1/4 Q.Ceram.7A	£0.212	£0.190	£0.165	£0.250
VJ27E	1,1/4 Q.Ceram.10A	£0.212	£0.190	£0.165	£0.250
VJ28F	1,1/4 Q.Ceram.12.5A	£0.212	£0.190	£0.165	£0.250
VJ29G	1,1/4 Q.Ceram.16A	£0.842	£0.780	£0.720	£0.990

## 1 1/4in (31mm) Ultra Rapid Ceramic Fuse

Siba



A range of ceramic bodied very fast acting fuses with a cut off time of less than one tenth of a cycle at 10 times overload, designed to protect thyristors, rectifiers and any semiconductors sensitive to overload. UL recognised ( up to 12.5A ). Rated at 500Vac with a breaking capacity of 50kA.

Available in the following ratings:  
1A, 2A, 3A, 5A, 6.3A, 10A, 12.5A, 16A.

PLEASE NOTE : THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10.

Price each shown, but sold only in multiples of 10.

Order Code	Type 13318	Price each exc. VAT			inc. VAT each 1+
		10+	50+	100+	
VJ30H	1,1/4 U/R.Ceram.1A	£0.842	£0.780	£0.720	£0.990
VJ31J	1,1/4 U/R.Ceram.2A	£0.842	£0.780	£0.720	£0.990
VJ32K	1,1/4 U/R.Cer.3.15A	£0.842	£0.780	£0.720	£0.990
VJ33L	1,1/4 U/R.Ceram.5A	£0.842	£0.780	£0.720	£0.990
VJ34M	1,1/4 U/R.Ceram.6.3A	£0.842	£0.780	£0.720	£0.990
VJ35Q	1,1/4 U/R.Ceram.10A	£0.842	£0.780	£0.720	£0.990
VJ36P	1,1/4 U/R.Cer.12.5A	£0.842	£0.780	£0.720	£0.990
VJ37S	1,1/4 U/R.Ceram.16A	£0.842	£0.780	£0.720	£0.990

## 1 1/4in (31mm) Slow Blow Ceramic Fuse

Siba



A range of ceramic bodied slow blowing fuses UL recognised ( 3.15A - 16A ). Rated at 500Vac ( up to 10A ) 440Vac ( 12.5A, 16A ) with a breaking capacity of 1500A at rated voltage. Up to 10A, breaking capacity is 10kA at 440Vac.

Available in the following ratings :  
1A, 2A, 3A, 15A, 5A, 6.3A, 10A, 12.5A, 16A.  
PLEASE NOTE : THESE FUSES ARE ONLY AVAILABLE IN MULTIPLES OF 10.

Price each shown, but sold only in multiples of 10.

Order Code	Type 13319	Price each exc. VAT			inc. VAT each 1+
		10+	50+	100+	
VJ38R	1,1/4 S/B.Ceram.1A	£0.502	£0.460	£0.390	£0.590
VJ39N	1,1/4 S/B.Ceram.2A	£0.502	£0.460	£0.390	£0.590
VJ40T	1,1/4 S/B.Cer.3.15A	£0.502	£0.460	£0.390	£0.590
VJ41U	1,1/4 S/B.Ceram.5A	£0.502	£0.460	£0.390	£0.590
VJ42V	1,1/4 S/B.Ceram.6.3A	£0.502	£0.460	£0.390	£0.590
VJ43W	1,1/4 S/B.Ceram.10A	£0.502	£0.460	£0.390	£0.590
VJ44X	1,1/4 S/B.Cer.12.5A	£0.502	£0.460	£0.390	£0.590
VJ45Y	1,1/4 S/B.Ceram.16A	£0.502	£0.460	£0.390	£0.590

## Plug

### 1in. (25.4mm) Type Domestic Mains Fuses

Standard electrical plug fuses to BS1362. Size 25.4 x 6.4mm ( 1 x 1/4in. )

Available in the following ratings:

2A, 3A, 5A, 7A, 10A, 13A.

Please note: These fuses are only available in packs of 10.

Retail Unit Price each (inc. VAT).

Order Code	Type 4525	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
AR36P	Plug Fuse 2A 10 Pk	£1.260	£0.990	£0.899	£1.490
AR37S	Plug Fuse 3A 10 Pk	£1.260	£0.990	£0.899	£1.490
AR38R	Plug Fuse 5A 10 Pk	£1.260	£0.990	£0.899	£1.490
AR39N	Plug Fuse 7A 10 Pk	£1.260	£0.990	£0.899	£1.490
AR40T	Plug Fuse 10A 10 Pk	£1.260	£0.990	£0.899	£1.490
AR41U	Plug Fuse 13A 10 Pk	£1.260	£0.990	£0.899	£1.490

## Industrial

### 38mm Cartridge Fuses (gL)



A range of European style industrial fuses manufactured in accordance with IEC 269-2, NFC63-210 and UNE 21-103. Approved by Bureau Veritas and Lloyds Register of shipping. Rated at 500Vac Breaking capacity 120kA Sold individually.

Available in the following ratings:  
2A, 4A, 6A, 10A, 16A, 20A, 25A, 32A.

Retail Unit Price each (inc. VAT).

Order Code	Type 13326	Price each exc. VAT			inc. VAT each 1+
		10+	50+	100+	
PE20W	38mm Cart/Fuse G2A	£0.417	£0.360	£0.320	£0.490
PE21X	38mm Cart/Fuse G4A	£0.417	£0.360	£0.320	£0.490
PE22Y	38mm Cart/Fuse G6A	£0.417	£0.360	£0.320	£0.490
PE23A	38mm Cart/Fuse G10A	£0.417	£0.360	£0.320	£0.490
PE24B	38mm Cart/Fuse G16A	£0.417	£0.360	£0.320	£0.490
PE25C	38mm Cart/Fuse G20A	£0.417	£0.360	£0.320	£0.490
PE26D	38mm Cart/Fuse G25A	£0.417	£0.360	£0.320	£0.490
PE27E	38mm Cart/Fuse G32A	£0.417	£0.360	£0.320	£0.490

## 38mm Motor Rated Fuses (aM)



A range of European style fuses designed for inductive loads and rated aM (Motor Rated). Sold individually.

Available in the following ratings:  
2A, 4A, 6A, 10A, 16A, 20A, 25A, 32A

Retail Unit Price each (inc. VAT).

Order Code	Type 13327	Price each exc. VAT			inc. VAT each 1+
		10+	50+	100+	
PE28F	38mm Cart/Fuse M2A	£0.468	£0.400	£0.360	£0.550
PE29G	38mm Cart/Fuse M4A	£0.468	£0.400	£0.360	£0.550
PE30H	38mm Cart/Fuse M6A	£0.468	£0.400	£0.360	£0.550
PE31J	38mm Cart/Fuse M10A	£0.468	£0.400	£0.360	£0.550
PE32K	38mm Cart/Fuse M16A	£0.468	£0.400	£0.360	£0.550
PE33L	38mm Cart/Fuse M20A	£0.502	£0.460	£0.390	£0.590
PE34M	38mm Cart/Fuse M25A	£0.502	£0.460	£0.390	£0.590
PE35Q	38mm Cart/Fuse M32A	£0.502	£0.460	£0.390	£0.590

## European 'D' Fused



A range of European style bottle fuses. General purpose high breaking capacity ceramic fuses with VDE approval designed to conform to IEC 269 and VDE 0636. Insulating class VDE0110C. Rated at 500v ac/dc. Characteristic gL (General Line). Available in 2 sizes, Size D11 (E27) or D111 (E33)

Available in the following ratings:  
Size D11 - 2A, 4A, 6A, 10A, 16A, 20A, 25A  
Size D111 - 35A, 50A, 63A

Retail Unit Price each (inc. VAT).

Order Code	Type 13324	Price each exc. VAT			inc. VAT each 1+
		1+	25+	50+	
PE10L	Euro Bot/Fuse D112A	£0.502	£0.405	£0.380	£0.590
PE11M	Euro Bot/Fuse D114A	£0.502	£0.405	£0.380	£0.590
PE12N	Euro Bot/Fuse D116A	£0.468	£0.370	£0.340	£0.550
PE13P	Euro Bot/Fuse D1110A	£0.417	£0.330	£0.305	£0.490
PE14Q	Euro Bot/Fuse D1116A	£0.417	£0.330	£0.305	£0.490
PE15R	Euro Bot/Fuse D1120A	£0.417	£0.330	£0.305	£0.490
PE16S	Euro Bot/Fuse D1125A	£0.417	£0.330	£0.305	£0.490
PE17T	Eur Bot/Fuse D1135A	£0.638	£0.570	£0.540	£0.750
PE18U	Eur Bot/Fuse D1150A	£0.638	£0.570	£0.540	£0.750
PE19V	Eur Bot/Fuse D1163A	£0.638	£0.570	£0.540	£0.750

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**PCB**

## 'Microtron' Subminiature Axial Lead Fuses

Bussmann



A range of subminiature axial lead fuses that have an excellent short-circuit performance. The fuses are designed to safely interrupt 50A at 125V AC (60V AC for 7A and 10A types). This performance is achieved at power factors as low as 97%. The 0.297 x 0.122 in. (diameter), high-temperature, plastic body fits the standard 0.4in. centreline-to-centreline holes. The body is hermetically sealed to allow the device to be exposed to a wide variety of aqueous and chemical circuit board washing solutions. U.L. recognition and CSA certified. Sold individually.

**General Specification**

Typical opening times: 4hrs minimum at 100%  
5s maximum at 250%

Interrupt capability:

50A at 125V AC,  
300A at 125V DC  
(60V for 7A and 10A)

Body material:

High temperature plastic with a UL94VO rating

**Available in the following ratings:**

125mA, 250mA, 500mA, 1A, 2A, 3A, 5A, 7A, 10A.

Retail Unit Price each (inc. VAT).

Order Code	Type 488	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
DA50E	Submin Fuse 125mA	£0.502	£0.424	£0.389	£0.590
DA51F	Submin Fuse 250mA	£0.502	£0.424	£0.389	£0.590
DA52G	Submin Fuse 500mA	£0.502	£0.424	£0.389	£0.590
DA53H	Submin Fuse 1A	£0.502	£0.424	£0.389	£0.590
DA54J	Submin Fuse 2A	£0.502	£0.424	£0.389	£0.590
DA55K	Submin Fuse 3A	£0.502	£0.424	£0.389	£0.590
DA56L	Submin Fuse 5A	£0.502	£0.424	£0.389	£0.590
DA57M	Submin Fuse 7A	£0.502	£0.424	£0.389	£0.590
DA58N	Submin Fuse 10A	£0.502	£0.424	£0.389	£0.590

## Slow Blow Subminiature Axial Lead Fuses



A range of slow blow axial subminiature fuses (Overall size 7.1 x 3.2mm) for use in applications where space requirements are at a premium. The moulded construction provides mechanical strength. UL recognised and CSA approved. Rated at 125v ac/dc. Sold individually.

Available in the following ratings:  
1A, 2A, 3A, 5A, 7A.

Retail Unit Price each (inc. VAT).

Order Code	Type 13321	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
PE05F	Submini/Ax SBlow 1A	£0.417	£0.345	£0.310	£0.490
PE06G	Submini/Ax SBlow 2A	£0.417	£0.345	£0.310	£0.490
PE07H	Submini/Ax SBlow 3A	£0.417	£0.345	£0.310	£0.490
PE08J	Submini/Ax SBlow 5A	£0.417	£0.345	£0.310	£0.490
PE09K	Submini/Ax SBlow 7A	£0.417	£0.345	£0.310	£0.490

**Thermal**

## Thermal Fuses



A range of thermal fuses which will protect any equipment or appliance from excessive temperature rise by cutting off the supply, since they are connected into a circuit in the same way as an 'ordinary' fuse would be. These thermal fuses offer a low impedance when operational, but will go open circuit if their temperature range threshold is exceeded. They will serve to protect equipment from heat damage if the source of excess heat originates within the equipment itself as the result of a fault,

cutting off the power where the ordinary fuse fails to do so because the current load is not great enough, yet there is enough power being converted to heat to start a fire.

These devices are extensively applied in industry in the manufacture of sandwich toasters, water heaters, hair curlers etc. They are not resettable and must be replaced if 'blown'. NOTE: when installing any of these devices never solder directly to the wire leads - you must use screw terminals, terminal blocks or crimped on connectors. Size of body: 14mm long x 4mm dia. Lead length (each end): 34mm. Rating: 240V @ 10A max. Rupture current: 40A (resistive), 20A (inductive). Open circuit breakdown voltage: 1200V AC. Opening threshold temperature tolerance: +0°C -4°C.

**General Purpose Range**

A range of thermal fuses covering a wide range of operating temperatures, available as follows: 91°C, 128°C, 152°C, 167°C, 184°C, 192°C, 229°C, 240°C

**Audio Equipment Range**

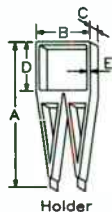
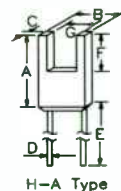
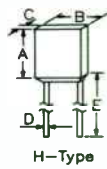
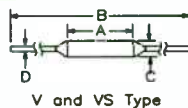
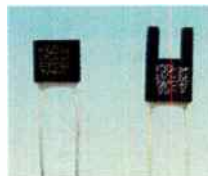
Especially formulated for applications in audio equipment, test instruments, etc. Operating temperatures, available as follows: 72°C, 110°C

Retail Unit Price each (inc. VAT).

Order Code	Type 470	Price each exc. VAT			inc. VAT each 1+
		1+	10+	100+	
RA61R	Thermal Fuse 72C	£0.459	£0.374	£0.354	£0.540
RA14Q	Thermal Fuse 91C	£0.459	£0.374	£0.354	£0.540
RA64U	Thermal Fuse 110C	£0.459	£0.374	£0.354	£0.540
RA15R	Thermal Fuse 128C	£0.459	£0.374	£0.354	£0.540
RA17T	Thermal Fuse 152C	£0.459	£0.374	£0.354	£0.540
RA18U	Thermal Fuse 167C	£0.459	£0.374	£0.354	£0.540
RA19V	Thermal Fuse 184C	£0.459	£0.374	£0.354	£0.540
RA20W	Thermal Fuse 192C	£0.459	£0.374	£0.354	£0.540
RA22Y	Thermal Fuse 229C	£0.459	£0.374	£0.354	£0.540
RA23A	Thermal Fuse 240C	£0.459	£0.374	£0.354	£0.540

## Thermal Cut-outs

CITR



A range of low-cost, one-shot, thermal cut-outs for circuit protection applications, that are available with either radial or axial leads. They can be used to prevent overheating of electrical components such as motors, transformers and solenoids, and electronic equipment such as computers, switching power supplies etc. The cut-outs are manufactured using tin/lead-plated soft copper wire leads that are welded to a fusible alloy with a specific melting point. To prevent surface oxidation and to ensure complete cut-off function at melting point, the alloy is coated with special resins. The fusible alloy is completely insulated within the case by sealing the leads and the case with a special resin compound. The radial lead type is available in a PCB/hard wiring (H type) or screw mounting version (H-A type), and the axial lead (V type) is additionally

available in a subminiature version (VS type). Rated at 2A 250V AC (axial subminiature rated at 1A 250V AC). Approved (or in some cases pending) by UL, CSA, VDE and JEANL. A simple plug-in holder for mounting H type cut-outs is available that is made from PBT and does not require an insulation tube. Note: IEC specifications state that thermal cut-outs when conducting the detection current, and subject to the increasing rate of temperature designated by the specification, must function in the tolerance range +0°C to -10°C of the nominal operating temperature.

Type	Dimensions mm			
	A	B	C	D
H type	6	7	2.5	0.55
H-A type	11	7	2.5	0.55
V type	9	2.5Ø	145	0.58
VS type	6.4	2.0Ø	145	0.53
Holder	20	8	2.4	8

Type	Dimensions mm		
	E	F	G
H type	68	—	—
H-A type	68	4.5	3.2
Holder	0.5	—	—

Manufacturer's Code	Type	Nom. operating temp. °C	Stock Code
H100	radial	103	DA68Y
H125	radial	127	DA69A
H145	radial	150	DA70M
H110A	screw mount	117	DA77J
H130A	screw mount	136	DA78K
H160A	screw mount	165	DA79L
V125	axial	131	DA71N
V130	axial	135	DA72P
V145	axial	150	DA73Q
VS12	submin axial	128	DA74R
VS13	submin axial	135	DA75S
VS14	submin axial	150	DA76H

Retail Unit Price each (inc. VAT).

Order Code	Type 487	Price each exc. VAT			inc. VAT each 1+
		1+	10+	100+	
DA68Y	Thermal Cutout H100	£0.331	£0.268	£0.247	£0.390
DA69A	Thermal Cutout H125	£0.331	£0.268	£0.247	£0.390
DA70M	Thermal Cutout H145	£0.331	£0.268	£0.247	£0.390
DA77J	Thermal Cutout H110A	£0.331	£0.268	£0.247	£0.390
DA78K	Thermal Cutout H130A	£0.331	£0.268	£0.247	£0.390
DA79L	Thermal Cutout H160A	£0.331	£0.268	£0.247	£0.390
DA71N	Thermal Cutout V125	£0.331	£0.268	£0.247	£0.390
DA72P	Thermal Cutout V130	£0.331	£0.268	£0.247	£0.390
DA73Q	Thermal Cutout V145	£0.331	£0.268	£0.247	£0.390
DA74R	Thermal Cutout VS12	£0.331	£0.268	£0.247	£0.390
DA75S	Thermal Cutout VS13	£0.331	£0.268	£0.247	£0.390
DA76H	Thermal Cutout VS14	£0.331	£0.268	£0.247	£0.390
DA80B	Therm Cutout Holder	£0.102	£0.076	£0.061	£0.120

**Circuit Breakers**

## Auto-Reset Circuit Breaker

A useful range of compact circuit breakers with an auto-reset facility. Designed to withstand overload but to trip quickly on short circuits, the circuit breaker latches into an 'off' state under fault conditions and automatically returns to the 'on' state after a set period of time. If the fault condition still exists the unit will immediately latch 'off' again. This process of checking the circuit will continue until the fault is cleared. The range is suitable for working at voltages up to 250V AC, and offers seven rated 'holding-current' values. Connections are via two solder tags 7mm long. Overall dimensions: 29 x 12.5 x 6mm. Range available: 1.0A, 1.6A, 2.2A, 3.0A, 5.0A, 7.0A, 10.0A.



Retail Unit Price each (inc. VAT).

Order Code	Type 493	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
AK07H	Auto Breaker 1.0A	£1.090	£0.758	£0.636	£1.290
AK08J	Auto Breaker 1.6A	£1.090	£0.758	£0.636	£1.290
AK09K	Auto Breaker 2.2A	£1.090	£0.758	£0.636	£1.290
AK10L	Auto Breaker 3.0A	£1.090	£0.758	£0.636	£1.290
AK11M	Auto Breaker 5.0A	£1.090	£0.758	£0.636	£1.290
AK12N	Auto Breaker 7.0A	£1.090	£0.758	£0.636	£1.290
AK13P	Auto Breaker 10.0A	£1.090	£0.758	£0.636	£1.290

## Manual Circuit Protector Push Fit

CIFF



A push fit manual reset circuit protector typically used in power supplies, amplifiers, UPS, regulators and generators.

### Specification

**Rating:** From 4 to 16Amps  
**Input Power:** 32VDC/120VAC/240VAC  
**Dielectric Strength:** 1500VAC/1min  
**Interrupt Capacity:** @ 120VAC - 1000A  
 @ 240VAC - 200A  
 @ 25°C 105% of rated current - continuous  
 @ 25°C 106%/134% of rated current may/may not trip  
 @ 25°C 200% of rated current - trip within 1 minute

### Calibration:

@ 25°C 150% of rated current will trip within 60 minutes.  
**Contact Endurance:** @ 120VAC/150% of rated current - 500 cycles

E.g. 4amp model @ 25°C 150% of rated current will trip within 60 minutes.

**Panel cut out:** 23.8mm x 11.3mm

**Available in the following ratings:** 4A, 5A, 6A, 7A, 8A, 10A, 13A, 16A.

Retail Unit Price each (inc. VAT).

Order Code	Type 13850	Price each exc. VAT 1+	inc. VAT each 1+
GF80B	PiFit Protector 4A	£2.540	£2.990
GF81C	PiFit Protector 5A	£2.540	£2.990
GF82D	PiFit Protector 6A	£2.540	£2.990
GF83E	PiFit Protector 7A	£2.540	£2.990
GF84F	PiFit Protector 8A	£2.540	£2.990
GF85G	PiFit Protector 10A	£2.540	£2.990
GF86T	PiFit Protector 13A	£2.540	£2.990
GF87U	PiFit Protector 16A	£2.540	£2.990

## Manual Circuit Protector Screw Fit

CIFF



A screw mounted manual reset circuit protector typically used in power supplies, amplifiers, UPS, regulators and generators.

### Specification

**Rating:** From 4 to 16Amps  
**Input Power:** 32VDC/120VAC/240VAC  
**Dielectric Strength:** 1500VAC/1min  
**Interrupt Capacity:** @ 120VAC - 1000A  
 @ 240VAC - 200A  
 @ 25°C 105% of rated current - continuous  
 @ 25°C 106%/134% of rated current may/may not trip  
 @ 25°C 200% of rated current - trip within 1 minute

### Calibration:

@ 25°C 150% of rated current will trip within 60 minutes.

**Contact Endurance:** @ 120VAC/150% of rated current - 500 cycles

**Hole Cut Out:** 10mm

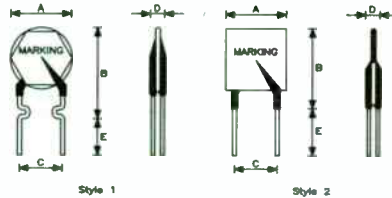
Available in the following ratings: 4A, 5A, 6A, 7A, 8A, 10A, 13A, 16A.

Retail Unit Price each (inc. VAT).

Order Code	Type 13858	Price each exc. VAT 1+	inc. VAT each 1+
GF72P	S/fit Protector 4A	£2.540	£2.990
GF73Q	S/fit Protector 5A	£2.540	£2.990
GF74R	S/fit Protector 6A	£2.540	£2.990
GF75S	S/fit Protector 7A	£2.540	£2.990
GF76H	S/fit Protector 8A	£2.540	£2.990
GF77J	S/fit Protector 10A	£2.540	£2.990
GF78K	S/fit Protector 13A	£2.540	£2.990
GF79L	S/fit Protector 16A	£2.540	£2.990

## Electronic Fuses

An overcurrent protection device offering significant advantages over normal fuses, PTC resistors, bimetal strips, etc. The device operates in a similar way to a slow-blow fuse yet is solid state and can be simply soldered into the circuit. It latches into a safe high resistance state under overload conditions yet returns to normal operation as soon as the fault is removed.



Dimension D = 3.0mm.  
 Dimension C = 5.1mm.  
 In all versions E = 7.6mm except MFR020 = 12mm.

Type	Vmax	Style	A (mm)	B (mm)
RXE020	60	1	6	12.2
RXE030	60	1	7.4	13.0
RXE050	60	1	7.9	13.7
RXE090	60	1	11.7	15.7
RUE110	30	1	8.9	14.5
RUE160	30	1	11.2	15.5
RUE400	30	2	16.0	21.1

Max operating voltage (rms) @ 20°C.

### Current and resistance ratings

Ratings @ 20°C; I<sub>h</sub> = hold current, fuse will not trip; R<sub>nom</sub> = nominal resistance; I<sub>trip</sub> = typical trip current;

Pd = typical power dissipation in tripped state.

Type	I <sub>h</sub> A rms	R <sub>nom</sub> Ω	I <sub>trip</sub> A rms	Pd W
RXE020	0.20	2.67	0.30	0.40
RXE030	0.30	1.27	0.45	0.50
RXE050	0.50	0.75	0.75	0.75
RXE090	0.90	0.34	1.35	1.00
RUE110	1.10	0.09	1.98	0.70
RUE160	1.60	0.06	2.88	0.90
RUE400	4.00	0.02	7.20	2.50

Absolute maximum interrupt current = 40A rms.  
 Resistance in tripped state = V<sup>2</sup>/PdΩ. Maximum surface temperature in tripped state = +125°C.  
 Typical reset time = <20 seconds @ 20°C.

Retail Unit Price each (inc. VAT).

Order Code	Type 430	Price each exc. VAT 1+	10+	25+	inc. VAT each 1+
CP58N	RXE020	£2.540	£2.070	£1.720	£2.990
CP59P	RXE030	£2.540	£2.120	£1.770	£2.990
CP60Q	RXE050	£2.970	£2.320	£1.920	£3.490
LUL6BY	RXE090	£2.970	£2.320	£1.920	£3.490
CP61R	RUE110	£2.970	£2.320	£1.920	£3.490
CP62S	RUE160	£3.050	£2.440	£2.220	£3.590
CP63T	RUE400	£3.820	£3.080	£2.580	£4.490



## Temperature Indicator Labels

A range of non-reversible temperature labels that are designed for monitoring rises in temperature, operating temperatures, or the failure to reach a particular temperature. Each label has 8 temperature levels which turn from grey/white to black when the indicated temperature has been reached. A black label would clearly indicate that a component or product has failed due to excessive heat, and a white label would indicate that a product has failed due to insufficient heat e.g., a fusing process. Up to 100°C, the label has an accuracy of ±1°C, and ±1% of its rating above 100°C. Sold in packs of 5, the labels are self-adhesive and very easy to use.



### Temperature ranges °C

Level A	40	43	46	49	54	60	66	71
Level B	77	82	88	93	99	104	110	116
Level C	121	127	132	138	143	149	154	160

Retail Unit Price each (inc. VAT).

Order Code	Type 495	Price each exc. VAT 1+	10+	25+	inc. VAT each 1+
KR17T	Level A Temp Label	£2.110	£1.770	£1.460	£2.490
BT41U	Level B Temp Label	£2.110	£1.770	£1.460	£2.490
BT42V †	Level C Temp Label	£2.110	£1.770	£1.460	£2.490

## Fuse Wire

A card on which is wound three pieces of fuse wire. 5A, 15A and 30A.



Price each shown, but sold only in multiples of 1.

Order Code	Type 494	Price each exc. VAT 1+	inc. VAT each 1+
HB51F	Fuse Wire	£0.331	£0.390

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 e-mail: Sales@maplin.co.uk





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## TIMERS

### DIN RAIL MOUNTING

#### DIN Rail Mounting Timers

Crouzet



H. 78.5mm W. 22.5mm D. 103.5mm  
Electronic timers in a standard 22.5mm wide case for mounting onto 35mm symmetric DIN rail to EN50022 (DIN 46277-3).

#### Features

##### ★ Four types available

- TRA - On Delay (Delay on energisation)
- TRL - Assymetrical recycler (Cyclic), pulse or pause start
- TRQ - Star Delta
- TRU - Four function timer, including: On Delay, On Pulse (Timing on impulse), Off Delay (Timing after impulse) and On pulse (Timing on energisation or Interval Timer - one shot)

- ★ Multi time range : 1s, 10s, 1m, 10m, 1h & 10h For Star Delta (TRQ): 2 sub ranges - 20s & 160s

- ★ Time ranges easily set by a front mounted switch (Two in the case of the TRL, one for pulse and one for pause)

- ★ Multi voltage: 24Vac/dc and 115 to 230Vac
- ★ LED indication of power & relay status

- ★ UL and CSA approved

#### Specification

Operating voltage 24Vac/dc & 115-230Vac, 50/60Hz

Contact rating 8A, 250Vac (res)

Contact type SPDT, AgCdO

Mechanical life >5x10<sup>6</sup> operations

Operating temperature -20°C to +60°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17935	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG23A	DIN Timer TRU	£34.970	£33.220	£31.470	£41.090
MG24B	DIN Timer TRA	£24.810	£23.570	£22.330	£29.160
MG25C	DIN Timer TRL	£42.800	£40.660	£38.520	£50.290
MG26D	DIN Timer TRQ	£40.230	£38.220	£36.210	£47.280

### 4 POLE PLUG IN

#### Miniature On Delay Timers

Crouzet



H. 27mm W. 21mm D. 69mm

On Delay timers with 4 SPDT contacts housed in a compact housing. These timers are designed for mounting into a 14 pin base and are easily set utilising a front mounted analogue dial.

#### Features

- ★ On Delay (Delay on energisation) function
- ★ Simple setting by analogue dial

#### ★ Multiple Time Ranges:

0.1s to 1s, 1s to 10s, 0.1min to 1min, 1min to 10min, 0.1h to 1h, 1h to 10h

#### ★ Available in four voltage versions:

24Vac, 24Vdc, 115Vac & 230Vac

#### ★ LED indication of power and relay status

#### Specification

##### ★ UL and CSA approved

Operating voltage 24Vdc or 24Vac, 50/60Hz or 115Vac, 50/60Hz or 230Vac, 50/60Hz

Contact rating 3A, 250Vac (Res)

Reset time (max) 100ms

Mechanical life 10<sup>7</sup> operations

Operating temperature -20°C to +60°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17935	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG27E	4 Pole Timer 24Vac	£26.260	£24.950	£23.640	£30.860
MG28F	4 Pole Timer 24Vdc	£26.260	£24.950	£23.640	£30.860
MG29G	4 Pole Timer 115vac	£26.260	£24.950	£23.640	£30.860
MG30H	4 Pole Timer 230Vac	£26.260	£24.950	£23.640	£30.860

### MOTOR DRIVEN

#### Run Back Timers

Crouzet



Motor driven run back timers designed for panel mounting applications. These timers feature a graduated setting knob allowing for quick setting and easy identification of remaining run time

#### Features

- ★ Available in single or double pole versions

- ★ 60 minute or 5 hour versions available

- ★ Operating voltage selectable between 115Vac and 230Vac

#### Specification

Operating voltage 115Vac or 230Vac

Contact rating 16A (Res), 4A (Inductive)

Power consumption 3.1VA

Mechanical life >10<sup>7</sup> operations

Operating temp -5°C to +70°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17932	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG31J	S/P R/Back 60min	£29.510	£28.040	£26.560	£34.680
MG32K	S/P R/Back 5 Hrs	£29.510	£28.040	£26.560	£34.680
MG33L	D/P R/Back 60min	£41.520	£39.450	£37.370	£48.790
MG34M	D/P R/Back 5 Hrs	£41.520	£39.450	£37.370	£48.790



**24**<sup>HR</sup>  
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## TIMESWITCHES

### ELECTROMECHANICAL

#### 7-Day Tappet Timeswitch With Power Reserve For DIN Rail Mounting

Theben



This 16A, 7-day tappet dial timeswitch comes with a 150 hour power reserve, and a summer/winter changeover switch. Additionally, there is a manual override switch to the next programme. The timer comes in a standard three module wide housing (45 x 52.5 x 60mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).

- ★ 4 hour switching minimum interval which can be increased in 1 hour steps.

- ★ Manual override switch to next programme

- ★ Permanent ON/OFF switching

- ★ Summer/winter changeover switch

#### Specification

Operating voltage: 230V ac 50Hz

Switch rating

cosφ=1: 16A

cosφ=0.6: 2A

Accuracy: ±1 sec/day at 20°C

Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17243	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB18U	DIN Rail T/sw 7Day	£56.130	£53.330	£50.520	£65.960

#### 24-Hour 20A Electro-Mechanical Time Controller

Smiths Timeguard



This plug-in base surface mount electro-mechanical timer has an 'analogue' type time display, and will control all electrical equipment up to 20A (resistive). Easily set by the captive segment setting dial, the unit has a maximum of 96 switchings per day. Conforms to 73/23/EEC and 89/336/EEC directives.

- ★ Synchronous motor driven

- ★ Manual override

- ★ Permanent ON/OFF

- ★ 15 minute minimum switching interval which can be increased in 15 minute steps

- ★ 12A inductive rating

- ★ Controls electrical appliances up to 4.8kW

- ★ 72 x 72mm plug-in base surface mount

★ **Tamper proof transparent cover**

**Specification**  
Operating voltage: 230V ac 50Hz  
Contact rating: 20A resistive  
12A inductive  
Operating temperature: -10°C to +40°C  
Dimensions: 104 x 72 x 69mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB07H	24Hr EMech T/Sw	£35.860 1+ £34.070 5+ £32.270 10+	£42.140 1+

**ELECTRONICS DIN RAIL MOUNT**

**24-Hour/7-Day 10A Timeswitch For DIN Rail Mounting**

Theben

A one channel, 10A, digital timeswitch with 8 memories for 4 ON and 4 OFF switching times. The timer features a built-in gold capacitor that provides approximately 78 hours of power reserve, and a holiday control that can interrupt the programmes for up to 45 days. The timer comes in a standard one module wide housing (45 x 17.5 x 60mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).



- ★ Easy to programme
- ★ 4 ON/OFF programmes
- ★ Minimum switching time 1 minute
- ★ 78 hours power reserve
- ★ 24 hour/7 day or several day 'free block' programming
- ★ Permanent ON/OFF switching
- ★ Override to next programme

**Specification**  
Operating voltage: 230V ac 50Hz  
Switch rating: 10A  
cos φ=1: 10A  
cos φ=0.6: 4A  
Accuracy: ±1 sec/day at 20°C  
Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB13P	DIN Rail T/Sw-17.5mm	£82.580 1+ £78.460 5+ £74.330 10+	£97.040 1+

**24-Hour/7-Day 16A Timeswitch For DIN Rail Mounting**

Theben



A 16A, digital timeswitch with preset UK time and automatic summer/winter changeover that is suitable for UK, European and USA standards. The timer features an integral Lithium cell power reserve with a 6 year life, and a holiday control that can interrupt the programmes for up to 99 days. The timer comes in a standard two module wide housing (45 x 35 x 60mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).

Available in two versions  
**MB14Q** is a single channel version with 7 ON/OFF programmes  
**MB15R** is a two channel version with 18 ON/OFF programmes which can be distributed as required over the two channels.

- ★ Easy to programme
- ★ Single channel version has 7 ON/OFF programmes
- ★ Dual channel version has 18 ON/OFF programmes
- ★ Minimum switching time 1 minute
- ★ Integral Lithium cell power reserve with 6 years life
- ★ 24 hour/7 day or several day 'free block' programming
- ★ Permanent ON/OFF switching
- ★ Override to next programme

**Specification**  
Operating voltage: 230V ac 50Hz  
Switch rating: 16A  
cos φ=1: 16A  
cos φ=0.6: 10A  
Accuracy: ±1 sec/day at 20°C  
Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB14Q	DIN Rail T/Sw 35mm	£65.940 1+ £62.640 5+ £59.350 10+	£77.480 1+
MB15R	DIN Rail T/Sw 35mm	£84.020 1+ £79.820 5+ £75.620 10+	£98.730 1+

**24-Hour Segment Timeswitch For DIN Rail Mounting - 1 Module Wide**

Theben

A 16A timeswitch with 24-hour segment dial that has a transparent tamper proof cover to protect against undesired programming intervention. The timer comes in a standard one module wide housing (45 x 17.5 x 60mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).



- ★ Easy to programme with captive segment setting
- ★ 24-hour with up to 96 ON/OFF's per day
- ★ 15 minute minimum switching interval which can be increased in 15 minute steps
- ★ Switching status indicator
- ★ Permanent ON switching

**Specification**  
Operating voltage: 230V ac 50Hz  
Switch rating: 16A  
cos φ=1: 16A  
cos φ=0.6: 4A  
Accuracy: ±1 sec/day at 20°C  
Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB16S	DIN Rail T/Sw 17.5mm	£29.730 1+ £28.250 5+ £26.760 10+	£34.940 1+

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**24-Hour 16A Segment Timeswitch For DIN Rail Mounting - 3 Module Wide**

Theben



A 16A timeswitch with 24-hour segment dial that has a transparent tamper proof cover to protect against undesired programming intervention. Additionally, there is a summer/winter changeover switch and early manual override switching for ON/OFF without affecting the programme sequence. The timer comes in a standard three module wide housing (45 x 52.5 x 60mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).

- ★ Easy to programme with captive segment setting
- ★ 24-hour with up to 48 ON/OFF's per day
- ★ 30 minute minimum switching interval which can be increased in 30 minute steps
- ★ Manual override switch to next programme
- ★ Permanent ON/OFF switching
- ★ Summer/winter changeover switch

**Specification**  
Operating voltage: 230V ac 50Hz  
Switch rating: 16A  
cos φ=1: 16A  
cos φ=0.6: 2A  
Accuracy: ±1 sec/day at 20°C  
Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB17T	DIN Rail T/Sw 52.5mm	£29.310 1+ £27.840 5+ £26.380 10+	£34.440 1+

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## ELECTRONIC PANEL MOUNT

### 7-Day Electronic Time Controller

Smiths Timeguard



This versatile digital time controller features 7-day programme selections plus holiday suspension of programmes. Easy to use 6-button programming and 1000 hours rechargeable memory back-up allow ultimate control of electrical and electronic appliances. The controller is supplied with a transparent cover to discourage tamper and reduce dust ingress. Conforms to 73/23/EEC and 89/336/EEC directives.

- ★ 72 x 72mm plug-in base surface mount
- ★ 21 ON/OFF commands per week
- ★ Shortest switching time 1 minute
- ★ Manual override and permanently ON/OFF
- ★ ON/OFF times may be repeated over a number of days without using extra memory locations
- ★ Voltage free contacts

#### Specification

Operating voltage: 230V ac 50Hz  
 Contact rating: 16A resistive (3.8kW)  
 6A inductive  
 Operating temperature: -10°C to +40°C  
 Dimensions: 104 x 72 x 69mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17216	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB08J	24Hr/Day T/Sw	£64.710	£61.480	£58.250	£76.040

### Electronic Timer Module and Power/Relay PCB

Smiths Timeguard



An electronic timer module for applications in equipment and appliances requiring accurate cost effective time control. The module is housed in an easy fit 72 x 72mm panel mount case giving permanent ON/permanent OFF/ timed selection. It can be mounted in an enclosure or cubicle, and the module can, if required, be built directly into equipment. The module has a factory fitted rechargeable battery for memory back-up (1000 hours), and requires a 24V DC supply for charging. Available in two versions.

MB09K is a 24-hour version.  
 MB10L is a 7-day version with individual day, everyday, every weekday or weekend programme selection.

- ★ 24-hour model has up to 4 ON/OFF programmes per day
- ★ 7-day model has up to 6 ON/OFF programmes per day
- ★ Simple two button programming
- ★ Shortest switch time 1 minute
- ★ Self-cancelling override
- ★ Power/relay PCB will switch up to 16A resistive load

A power supply and relay PCB (MB11M) designed for use with MB09K and MB10L is available separately. It operates from the 230V ac mains and produces the required charge current for the module battery. In addition, it provides single-pole changeover, voltage free contacts. All connections are via 6.35mm/0.25in blades.

#### Specification

Operating voltage  
 timer module: 24V dc and above  
 power/relay PCB: 230V ac 50Hz  
 Switch rating of power/relay PCB  
 resistive: 16A  
 inductive: 6A  
 Operating temperature  
 timer module: -10°C to 55°C  
 power/relay PCB: -10°C to 40°C  
 Dimensions  
 timer module: 39 x 55 x 33mm  
 housing: 72 x 72 x 34mm  
 power/relay PCB: 54 x 54 x 14mm  
 Modules and power/relay PCB conform to 72/23/EEC and 89/336/EEC directives.

Retail Unit Price each (inc. VAT).

Order Code	Type 17211	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB09K	24 Hour Timeswitch	£15.430	£14.670	£13.900	£18.140
MB10L	7 Day Timeswitch	£15.910	£15.120	£14.330	£18.700
MB11M	Power & Relay PCB	£11.960	£11.360	£10.760	£14.060

## ELECTRONIC SURFACE MOUNT

### Single Gang Fused Spur Timeswitch

Smiths Timeguard



A fused spur timeswitch with double pole contacts that is built in to a single gang surface mount housing. The timeswitch is ideal for controlling combination boilers, storage heaters, convector heaters, water heaters and lighting. Conforms to 73/23/EEC and 89/336/EEC directives. Available in two versions.

MB01B is a 24 hour model with 4 ON/OFF programmes per day.  
 MB02C is a 7 day model with 6 ON/OFF programmes per day. Additionally, there is individual day, everyday or weekend programme selections This allows up to 42 settings per week.

- ★ Switched and switched timed outputs
- ★ Integral BEAB approved double pole switch and replaceable BS1362 fuse
- ★ Simple two button programming - one recessed
- ★ Front button override facility
- ★ 1000 hours memory back-up from fitted rechargeable battery in case of supply loss or fuse blow
- ★ Minimum switching period of one minute
- ★ Voltage free contacts

#### Specification

Operating voltage: 220/240V AC 50Hz  
 Switch rating (240V AC): 6A inductive  
 13A resistive (3kW)  
 Operating temperature: -10°C to +40°C  
 Dimensions: 85 x 85 x 38mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17200	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB01B	Supply Master-24 Hr	£36.980	£34.180	£32.380	£42.280
MB02C	Supply Master-7Day	£39.350	£37.380	£35.410	£46.240



### Central Heating Mini Programmer

Smiths Timeguard



This electronic mini programmer is suitable for fully pumped or gravity fed central heating systems, and conveniently fits onto a single gang 25mm deep wall box Conforms to 73/23/EEC and 89/336/EEC directives. Available in two versions.

MB03D is a 24 hour model with up to 4 ON/OFF programmes per day.  
 MB04E is a 7 day model with individual day, everyday, every weekday or weekend programme selection with a total of 6 programmes.

- ★ Integral BEAB approved double pole switch and replaceable BS1362 fuse
- ★ Front button override facility
- ★ 1000 hours memory back-up from fitted rechargeable battery in case of supply loss or fuse blow
- ★ Minimum switching period of one minute

#### Specification

Operating voltage: 220/240V AC 50Hz  
 Switch rating (240V AC): 3A inductive  
 Operating temperature: -10°C to +40°C  
 Dimensions: 85 x 85 x 38mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17202	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB03D	Supply Master-24 Hr	£41.070	£39.020	£36.970	£48.260
MB04E	Supply Master-7Day	£44.420	£42.200	£39.980	£52.200

## COUNTERS

### MECHANICAL

### 4-Digit Tally Counter

Veeder Root



A hand-held, lightweight, thumb or finger activated counter housed in a high-impact, dust and corrosion resistant case - ideal for counting people etc. The counter will tally to 9999 and has a rotary reset knob on the side.

- ★ High contrast display figures.
- ★ Counts to 9999
- ★ Thumb or finger activated

Retail Unit Price each (inc. VAT).

Order Code	Type 17286	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MC17T	Hand Tally	£12.000	£11.400	£10.800	£14.100

**ELECTROMECHANICAL**

**Magnetically Actuated Counter**

Hengstler



A non-resettable, 6-digit totalising counter that is actuated by an exterior permanent magnet. With suitable magnets it is possible to achieve actuating distances of up to 50mm - the direction of approach of the magnet is not critical.

- ★ Contactless counting
- ★ Miniature size
- ★ Simple installation
- ★ Class IP 66 protection

**Specification**  
 Digit height: 4mm, visual  
 Operating life: 10,000,000 increments adding  
 Counting mode: adding  
 Response flux density: >10mT (100 Gauss)  
 Release flux density: <4mT (40 Gauss)  
 Actuating speed: 2m/s  
 Counting frequency: 20 digits/sec max.  
 Case: Makrolon  
 Weight: 12g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MC16S	Magnetic Counter	£12.210	£11.600	£10.990	£14.350

**12V DC Non-Resettable Mini Counter**

Hengstler



A miniature 12V dc 6-digit counter offering low power consumption and high shock stability. The counter is designed for horizontal mounting and is available in two versions - PCB mounting (MC18U) with solder pins, and panel mounting (MC19V) with 0.6mm diameter wiring posts.

- H Totalising, non-resettable
- H Low power consumption
- H Two versions - PCB or panel mounting
- H Maintenance-free operation

**Specification**  
 Voltage: 12V dc  
 Power consumption: 78mW  
 Count input: adding  
 Display: 6-digit, 4mm height  
 Operating life: 10,000,000 pulses  
 Pulse length: 50ms min  
 Counting frequency: 10Hz max.  
 Pulse duty factor: 1:1  
 Duty cycle at 25°C: 100%  
 Weight: 10g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MC18U	PCB Mini Counter 12V	£9.400	£9.940	£8.460	£11.050
MC19V	P.Mnt Mini Counter 12V	£9.400	£9.940	£8.460	£11.050

**ELECTRONIC**

**Lithium Battery-Powered Counter**

Hengstler



A sophisticated pulse counter with a high contrast 8-digit LCD display that is powered by an internal lithium battery. The case is supplied with a mounting frame and is designed to fit a DIN size 24 x 48mm panel cut-out. The reset can be manual (which can be locked) or external input.

- ★ 7mm LCD display
- ★ 7-year nominal data retention
- ★ Programmable count input
- ★ Easy installation

**Specification**  
 Display: 8-digit, LCD, 7mm  
 Amplitude thresholds input: up to 7.5kHz  
 input range: <0.7V and >5V, max 40V dc  
 Active edge: - or + edge programmable  
 Counting frequency: programmable - 7.5kHz or 30Hz (attenuated for contacts)  
 Reset lock: keylock input bridge to 0V  
 Reset: manual (lockable) external, neg active edge attenuated 30Hz  
 Cut-out: 24 x 48mm with 32mm mounting depth

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MC21X	TJCO Counter	£27.200	£25.840	£24.480	£31.960

**HOURS RUN**

**Mains Powered Panel Mounting Hour Meter**

Hengstler



This mains powered, non-resettable hour meter is driven by a low-noise synchronous motor for high reliability and long life. The 7-digit, 5mm high contrast display is housed in a rugged polycarbonate case. The meter is supplied with a plastic spring-fit collet for panel mounting installations, and is provided with two bezels for 48 x 24mm and 48 x 48 cut-outs.

- ★ Simple installation
- ★ Highly visible 7-digit display
- ★ Counts to 99999.99 hours
- ★ Accept 2.5mm cable

**Specification**  
 Display: 7-digit, 5mm high counts to 99999.99 hours  
 Supply voltage: 230V ac ±15%  
 Power consumption: 0.5VA  
 Connections: screw terminals for cables 2.5mm<sup>2</sup> max with AMP connector 6.3 x 0.8mm  
 Operating temp: -10°C to +50°C  
 Weight: 50g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MC20W	Hours Counter 230Vac	£13.290	£12.630	£11.970	£15.620

**PROGRAMMABLE LOGIC CONTROLLERS**

**PLC Starter Kit - FP1**

Matsushita



A low cost PLC (Programmable Logic Controller) kit consisting of everything the first time user needs to get started.

The PLC is a microprocessor based control system designed to replace timers, counters and relays for the control of complex systems with one compact unit.

This particular PLC is capable of accepting up to 8 inputs and supplying 6 outputs making it ideally suited to small industrial applications such as controlling lighting, machinery, motors etc. Due to its low cost it is also ideal for controlling model railways and other moderately complex systems.

**Kit contents:**  
 FP1-C14 PLC  
 NPST-GR programming software  
 Programming lead with built in RS232C/422 converter  
 Input simulator switches  
 Operation and Application manuals  
 Supply voltage 100-240Vac  
 Max current 200mA @ 200V  
 Input/Outputs (I/O) 8/6  
 Processing speed 1.6ms / logical instruction

Program capacity 900 steps  
 Memory type EEPROM

Number of commands  
 Basic 41  
 Additional 85  
 Timers/counters 128  
 Working temperature range 0°C to +55°C  
 Dimensions 120x81x74mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
SP31J	PLC Starter Kit	£349.000	£331.550	£314.100	£410.080



RS12750  
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## SENSORS

### PROXIMITY SWITCHES

#### Proximity Switches

Assemtech

Magnetic proximity switches with reliable hermetically sealed contacts in Normally Open and Changeover styles. Contacts actuate when the magnet is in close proximity to the switch. Suitable for safety systems, position sensing, level sensing, flow sensing, security and anti



tamper applications. The rectangular housing style has two slotted holes to provide easy fixing and adjustment of both switch and actuator. The cylindrical housing style are available in standard and miniature housing.



#### Panel Mounting Proximity Switch

Assemtech



Magnetic proximity switch with highly reliable hermetically sealed contacts encapsulated in an M6 threaded nickel plated brass housing. This construction enables a wide range of adjustment in through panel mounting.

Switching Voltage 470VAC  
Switching Current 0.5A max  
Switching Capacity 10VA max  
Dimensions Length 28.0mm  
Dia M6 thread  
Wire 300mm of 7/0.2 PVC  
Temperature Range -20°C to +85°C

Retail Unit Price each (inc. VAT).

Current consumption without load, max	35mA	35mA	Transmitter: 35mA Receiver: 30mA
Operating voltage	12-24Vdc		
Output transistor, max	100mA		
Response time, max	1ms		
Connection method	Cable, 2m		
Environmental protection	IP67		
Ambient temperature	-25 °C to +55 °C		
Dimensions	33x12x20mm		

Retail Unit Price each (inc. VAT).

Order Code	Type 13787	Price each exc. VAT	inc. VAT each
		1+ 5+ 10+	1+
SH04E	Sensor, NPN, UZA23	£65.270 £62.010 £58.750	£76.700
SH05F	Sensor, PNP, UZA235	£65.270 £62.010 £58.750	£76.700
SH02C	Sensor, NPN, UZA24	£62.960 £59.800 £56.650	£73.970
SH03D	Sensor, PNP, UZA245	£62.960 £59.800 £56.650	£73.970
SH00A	Sensor, NPN, UZA20	£71.890 £68.300 £64.710	£84.480
SH01B	Sensor, PNP, UZA205	£71.890 £68.300 £64.710	£84.480
SH06G	UZA811 Vertical Bkt	£2.520 £2.400 £2.270	£2.970
SH07H	UZA812 Horiz. Bkt	£3.820 £3.630 £3.440	£4.500
SH08J	UZA813 Protect Bkt	£5.600 £5.320 £5.040	£6.580

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#### Rectangular Housing

Order Code	CL27E	CL28F	SH49D
Part No	PSA	PSC	PSC
	240/30	175/30	150/30
Style	N/O	C/O	C/O
Switching Voltage	240VAC	175VAC	150VDC
Switching Current	0.5A	0.25A	1.0A
Switching Capacity	10VA	5VA	20VA
Dimensions	Switch and Actuator 30 x 20 x 7mm		

#### Cylindrical Housing

Order Code	CL30H	CL31J	CL32K
Part No	PRA	PRC	PRA
	240/30	175/30	30/10
Style	N/O	C/O	N/O
Switching Voltage	0.5A	0.25A	0.01A
Switching Current	240VAC	175VAC	30VAC
Switching Capacity	10VA	5VA	0.25VA
Dimensions			
Length mm	28.0	28.0	12.0
Diameter mm	6.0	6.0	2.5

#### Actuator Dimensions

Order Code	CL33L	CL34M
Part No	PRM	PRLM
Length mm	20.0	15.0
Diameter mm	6.0	3.0

Retail Unit Price each (inc. VAT).

Order Code	Type 12560	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CL29G	Rectangular Magnet	£1.940	£1.750	£1.450	£2.290
CL30H	Prox Sw N/O Cylind	£3.220	£2.600	£2.250	£3.790
CL31J	Prox Sw C/O Cylind	£3.900	£3.400	£2.900	£4.590
CL32K	Prox Sw N/O Small	£4.500	£3.830	£3.430	£5.290
CL33L	Cylindrical Magnet	£1.940	£1.400	£1.200	£2.290
CL34M	SmI Cylind Magnet	£0.987	£0.500	£0.420	£1.160

Retail Unit Price each (inc. VAT).

Order Code	Type 12560	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
SH49D	Prox Sw C/O 20VA	£7.140	£6.780	£6.430	£8.390
CL27E	Prox Sw N/O Rect	£3.220	£3.060	£2.900	£3.790
CL28F	Prox Sw C/O Rect	£4.070	£3.870	£3.660	£4.790

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### PHOTOELECTRIC

#### Compact Photoelectric Sensors - UZA Range

Matsushita



A range of compact photoelectric sensors for use in detecting the presence of objects using light emitted from the sensor. The sensors output a signal to inform other devices of detection. Three versions are offered, with either NPN or PNP transistor output:

#### Diffuse: A23 (NPN) & A235 (PNP)

The sensor emits a constant beam of light and when an object passes in front of the sensor, within 0.8m, it is reflected back to the sensor which then outputs a signal.

#### Retro-reflective: A24 (NPN) & A245 (PNP)

As for the Diffuse type a beam of light is emitted by the sensor but in this case the beam is reflected back to the sensor by a reflector. Only when an object breaks the beam is a signal transmitted. The advantage of the type is a greater detection distance (0.1 to 3.0m) but at a lower cost than a Through beam device.

#### Through beam: A20 (NPN) & A205 (PNP)

For the maximum sensing distance (Up to 10m) a separate transmitter and receiver are utilised. With this type of sensor when the receiver no longer detects a light source it will output a signal. An added advantage of this type of sensor is that the beam can penetrate up to 20 sheets of A4 paper and a typical application would be detecting for contents in a paper bag.

#### Mounting brackets are also available:

UZA811	Vertical mounting bracket
UZA812	Horizontal mounting bracket
UZA813	Protective mounting bracket

	A23/A235	A24/A245	A20/A205
Sensing range	0 - 8m	0.1 - 3m	0 - 10m
Emitting diode	Infrared LED	Red LED	Infrared LED
Detectable object	White paper 10x10cm	Metal, black Δ ≥50mm	Metal, black Δ ≥12mm

#### Cylindrical Photoelectric Sensors - UZC Range

Matsushita



Cylindrical or Barrel photoelectric sensors for industry standard through hole mounting. Housed in a threaded M18 plastic body these sensors are sealed to IP67 allowing use in severe industrial environments.

Three variants are available, with either NPN or PNP transistor output.

#### Diffuse type: A230 (NPN) & A2305 (PNP)

For close range applications (<12cm) the optical beam is reflected back from the object to the sensor giving an output.

#### Retro-reflective type: A250 (NPN) & A2505 (PNP)

Using a reflector the sensor is triggered when the beam is broken by an object. Ideal for applications with a range of up to 3m such as items on a conveyor belt.

#### Through beam type: A200 (NPN) & A2005 (PNP)

Where detection is required over longer distances (Up to 12m) a transmitter and receiver are utilised. When the beam is broken the receiver produces an output.

	A230/A2305	A250/A2505	A200/A2005
Sensing range	12cm	3m	12m
Emitting diode	Infrared LED	Infrared LED	Infrared LED
Detectable object	White paper 5x5cm	Metal, black Δ ≥50mm	Metal, black Δ ≥8mm

Current consumption without load, max	25mA	25mA	Transmitter: 20mA Receiver: 25mA
---------------------------------------	------	------	-------------------------------------

Operating voltage	10-30Vdc
Output transistor, max	100mA
Connection method	Cable, 2m
Environmental protection	IP67
Ambient temperature	-25 °C to +55 °C
Dimensions	M18x56mm

Retail Unit Price each (inc. VAT).

Order Code	Type 13786	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
SH11M	Sensor, NPN, UZC230	£32.050	£30.440	£28.840	£37.660
SH12N	Sensor, PNP, UZC2305	£32.050	£30.440	£28.840	£37.660
SH13P	Sensor, NPN, UZC250	£34.290	£32.580	£30.870	£40.300
SH14Q	Sensor, PNP, UZC2505	£34.290	£32.580	£30.870	£40.300
SH09K	Sensor, NPN, UZC200	£44.850	£42.600	£40.360	£52.700
SH10L	Sensor, PNP, UZC2005	£48.000	£45.600	£43.200	£56.400

**Miniature Photoelectric Sensors - UZJ Range**

Matsushita



Miniature photoelectric sensors available as Diffuse or Through Beam 'U' shaped types. These sensors use fixed focusing of the light beam enabling precise object detection in a defined sensing range and are ideal for sensing at close ranges (typ <5/8mm). Due to their compact size and different design styles these sensors are also ideal for applications where space is limited. Three different mounting versions are available in both Diffuse and Through Beam 'U' shaped variants. Each version is available with either Light ON or Dark ON output.

**Diffuse types:**

Top Sensing: Light ON (UZJ101), Dark ON (UZJ102)  
Front sensing: Light ON (UZJ111), Dark ON (UZJ112)  
L Type (Top sensing): Light ON (UZJ121), Dark ON (UZJ122)

**Through beam types, 'U' shaped:**

K Type: Light ON, (UZJ251), Dark ON (UZJ252)  
L Type: Light ON (UZJ261), Dark ON (UZJ262)  
T Type: Light ON (UZJ271), Dark ON (UZJ272)

	Diffuse	Through Beam
Rated sensing distance	8mm	5mm
Sensing range	2.5-8mm	5mm
Emitting diode	Infrared LED	Infrared LED
Detectable object	White paper 15x15mm	Metal, black Ø ≥5mm
Current consumption without load, max	25mA	30mA
Response time	0.8ms	Light ON: 20ms Dark ON: 200ms
Ambient temperature	-10 C to +55 °C	-25°C to +60 °C
Operating voltage	5-24Vdc	
Output transistor, max	NPN (Open collector), 100mA	
Connection method	Connector or solder terminals	

Retail Unit Price each (inc. VAT).

Order Code	Type 13786	Price each exc. VAT	inc. VAT each
SH15R	P/E TopSnr Light ON	£26.730 £25.390	£24.050 £31.410
SH16S	P/E TopSnr Dark ON	£26.730 £25.390	£24.050 £31.410
SH17T	P/E SideSnr Light ON	£24.950 £23.700	£22.450 £29.320
SH18U	P/E SideSnr Dark ON	£26.730 £25.390	£24.050 £31.410
SH19V	P/E EdgeSnr Light ON	£24.950 £23.700	£22.450 £29.320
SH20W	P/E EdgeSnr Dark ON	£26.730 £25.390	£24.050 £31.410
SH21X	P/E ThruB Typ Dark ON	£9.940 £9.450	£8.950 £11.650
SH22Y	P/E ThruB Typ Light ON	£10.640 £10.110	£9.580 £12.510
SH23A	P/E ThruB Typ Dark ON	£14.200 £13.490	£12.780 £16.650
SH24B	P/E ThruB Typ Light ON	£14.200 £13.490	£12.780 £16.650
SH25C	P/E ThruB Typ Dark ON	£13.250 £12.580	£11.920 £15.570
SH26D	P/E ThruB Typ Light ON	£13.250 £12.580	£11.920 £15.570

**INDUCTIVE PROXIMITY**

**Miniature Proximity Sensor - UZP Range**

Matsushita



Miniature inductive proximity sensors for use in detecting metal objects at very close range (<1.8mm). Being both compact and lightweight these sensors are ideal for confined spaces. Available in either Top or Front detection housings two variants are offered:

**Approach - ON:** A signal is output when a metal object comes within range.

**Leave - ON:** When an object leaves detection range a signal is output.

**Top detection, Approach - ON: UZP141**

**Top detection, Leave - ON: UZP151**

**Front detection, Approach - ON: UZP101**

**Front detection, Leave - ON: UZP111**

Typical applications include monitoring objects moving past a fixed point (conveyor belt) or monitoring whether a door/window is open or closed, making these sensors ideal for alarm systems.

Operating voltage	12-24Vdc
Output	NPN transistor
Output transistor, max	NPN (Open collector), 100mA
Rated current, max	15mA
Detection frequency	500Hz
Sensing range	0 - 1.8mm
Standard detectable	Steel plate, 15x15x1mm
Environmental protection	IP67
Weight	12g
Ambient temperature	-10°C to +55°C
Dimensions: Front detection	21x8x7.4mm
Top detection	23x8x8mm

Retail Unit Price each (inc. VAT).

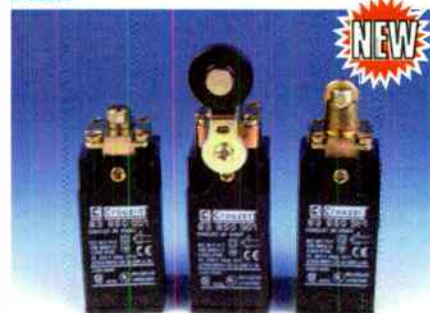
Order Code	Type 13789	Price each exc. VAT	inc. VAT each
SH27E	Top Detect, Approach	£29.080 £27.620	£26.170 £34.170
SH28F	Top Detect, Leave	£27.140 £25.790	£24.430 £31.900
SH29G	Front Detect, Appr	£27.140 £25.790	£24.430 £31.900
SH30H	Front Detect, Leave	£27.140 £25.790	£24.430 £31.900

**SWITCHES**

**LIMIT SWITCHES**

**Limit Switch - Plastic Body**

Crouzet



Industry standard limit switches to EN50047 housed in a thermoplastic case which is double insulated. These switches are designed for use in industrial applications and have a fail safe action, the contacts being forced apart in the event of welding.

- ★ Snap Action Contact with Positive Break Operation
  - ★ IP66 rated
  - ★ UL/CSA and British Rail approved
- | Maplin Stock Code | Crouzet Part Number |
|-------------------|---------------------|
| MG17T             | 83 850 001          |
| MG18U             | 83 850 301          |
| MG19V             | 83 850 501          |

**Specification**

Contact rating	10A, 250Vac / 8A, 380Vac
Approvals:	UL A300 - Q300 CSA A300 - Q300 British Rail RIA20
Mechanical life	>3x10 <sup>7</sup> operations
Operating temperature	-25°C to +80°C

Retail Unit Price each (inc. VAT).

Order Code	Type 13795	Price each exc. VAT	inc. VAT each
MG17T	Limit Sw Plunger	£11.000 £10.460	£9.900 £12.930
MG18U	L/Sw Plastic Roller	£13.750 £13.070	£12.380 £16.160
MG19V	L/Sw Steel Roller	£12.190 £11.590	£10.980 £14.330

**Limit Switch - Metal Body**

Crouzet



Industry standard limit switches to EN50041, housed in a metal body and incorporating metal actuator heads. These switches have a fail safe action which forces the contacts open in the event of contacts welding.

- ★ Snap Action Contact with Positive Break Operation
- ★ IP66 rated
- ★ UL and CSA Approved

Maplin Stock Code	Crouzet Part Number
MG20W	83 861 001
MG21X	83 861 301
MFG22Y	83 861 501

**Specification**

Contact rating	6A, 250Vac / 1.9A, 380Vac / 3A, 24Vdc / 0.1A, 220Vdc
Approvals:	UL A300 - Q300 CSA A300 - Q300
Mechanical life	>3x10 <sup>7</sup> operations
Operating temperature	-25°C to +80°C

Retail Unit Price each (inc. VAT).

Order Code	Type 13798	Price each exc. VAT	inc. VAT each
MG20W	Limit Sw Plunger	£19.800 £18.820	£17.820 £23.270
MG21X	L/Sw Plastic Roller	£23.900 £22.710	£21.510 £28.090
MG22Y	L/Sw Steel Roller	£23.370 £22.210	£21.040 £27.470

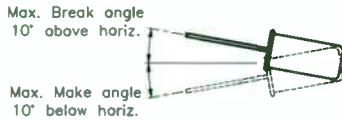
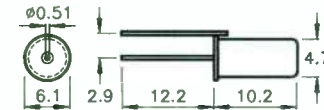
We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

† This symbol beside an order code in the price block indicates WHILE STOCKS LAST

## TILT SWITCHES

### Non-Mercury Tilt Switches

A hermetically sealed tilt and motion detector ideal for use with industrial control equipment, household goods and security devices. The CM1300 (DP50E) is designed for low level switching applications which are currently using mercury switches. Enclosed in a metal housing for longer life. Features hermetically sealed contacts and filled with an inert gas for stable resistance and quiet operation.



**Specifications:** **CM1300**  
 Switching current: 450ma (at 1.5V DC)  
 Switching voltage: 120V AC  
 Contact resistance: 0.8Ω

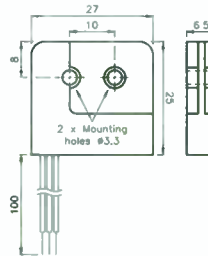
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DP50E	Mini Tilt Switch	£0.851	£0.684	£0.622	£1.000

### Non-Mercury Tilt Switches



A pair of hermetically sealed tilt and motion detectors ideal for use with industrial control equipment, household goods and security devices. MTA240 (DP48C) and MTC175 (DP49D) are hermetically sealed tilt switches incorporating reed switch contacts featuring non-bouncing contacts and estimated mechanical switching life in excess of 105 operations. The MTA240 has a simple N.O. configuration while the MTC175 incorporates a change-over function. Ideal for use in a wide variety of industrial, household and leisure-time applications.



**Specifications:** **MTA240** **MTC175**  
 Switching current: 500mA 500mA  
 Switching voltage: 240V AC 175V AC  
 Contact resistance: 0.1Ω 0.15Ω

Retail Unit Price each (inc. VAT).

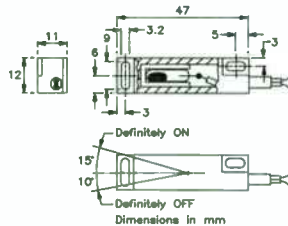
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DP48C	Tilt Switch N/O	£3.850	£3.210	£2.960	£4.530
DP49D	Tilt Switch C/O	£6.000	£5.050	£4.650	£7.060

**Business Account Holders**  
**No Delivery Charges for any order**

### Encapsulated Mercury Switch



A surface mounted mercury tilt switch encapsulated in a plastic housing. Slotted screw holes are incorporated in the casing to allow fine adjustments to be made. The switch is supplied with 300mm of 2 core cable.



**Specifications**  
 Included Angle: 25° about the horizontal  
 Contact Rating: 1A @ 240V AC  
 Contact Resistance: 300mΩ  
 Dimensions 47mm long x 12mm wide x 11mm high

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FS99H	Encap Merc Switch	£4.710	£3.830	£3.510	£5.540

### Tip-Over Safety Switch

Potted in a robust polypropylene housing these sealed mercury tip over switches are designed for level and position sensing as well as safety systems. The switch contacts are closed when vertical and open when tilted beyond the 35° from vertical.



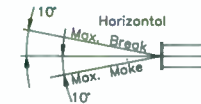
Max Contact Rating 15A 240VAC  
 Terminals 2 x 200mm leads 17awg silicone rubber insulated. Diameter 28.0mm Height 29.0mm  
 Fixing centres 42.0mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CE59P	35deg Tipover Switch	£5.770	£5.000	£4.570	£6.790

### Miniature Tilt Switches

Miniature tilt switches which due to their low cost are ideally suited as position sensors. When mounted horizontally contact is made when the device is tipped up and broken when tipped down. Contact is made / broken when the device is 10° from the horizontal.



**Specifications:**  
 Max switching voltage: 240Vac  
 Max switching current: 300mA  
 Differential angle: 10°  
 Contact resistance: 1Ω

Body length: 10.2mm 5.6mm  
 Body dia.: 4.7mm 3.55mm  
 Lead length: 17mm 3mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FE11M	Min Tilt Switch	£1.420	£1.360	£1.290	£1.680
SH41U	Tiny Tilt Switch	£2.440	£2.320	£2.200	£2.870

### Vibration Switches

Assemtech



Miniature vibration switches ideal for mobile security units on cars, bikes etc or as a safety device on machinery. The contacts are normally open but when vibrated the switch pulses on and off continuously until movement stops.

**Specifications:**  
 Max switching voltage: 240Vac 120Vac  
 Max switching current: 500mA 150mA  
 Switching capacity: 200VA 3VA  
 Contact resistance: N/A 5Ω  
 Operating temp: -37°C to 100°C  
 Overall length: 20.7mm 7.1mm  
 Body dia.: 8.2mm 4.6mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
UK57M	Vibration Switch	£2.530	£2.410	£2.290	£2.980
SH40T	Mini Vibration Sw	£1.940	£1.850	£1.760	£2.290

## MICRO SWITCHES

### Sub Miniature

Crouzet



A sub-miniature microswitch of internationally accepted size and operating characteristics. It is manufactured to the highest standards using glass-reinforced thermoplastic with inlaid silver contacts. Switches are single-pole double-throw. BT approved.

**Specification**  
 Contact rating: 5A 250V AC  
 Body size: 19.84 x 6.35 x 9.6mm high  
 Fixing centres: 9.53mm, 2.3mm clear  
 Actuator: 2.4mm above body, 2.26mm square

The switch is also available with an 18mm long lever or with a 16.8mm long lever with roller. Solder tag connections.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FP41U	Min Microswitch	£0.987	£0.842	£0.693	£1.160
FP42V	Min M-Sw With Lever	£1.140	£0.969	£0.798	£1.340
FP43W	Min M-Sw With Roller	£1.200	£1.020	£0.840	£1.410

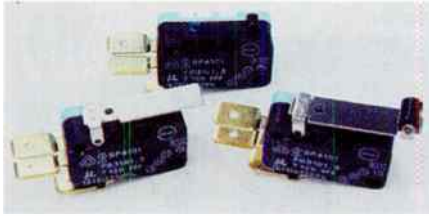
## Call and Collect

At all our stores nationwide.  
 See the maps at the front of the catalogue for the nearest one to you.



**Miniature**

Crouzet



A miniature microswitch of standard size with internationally accepted operating characteristics. Constructed in glass-reinforced thermoplastic to give strength and good temperature performance. Switches are single-pole double-throw.

**Specification**

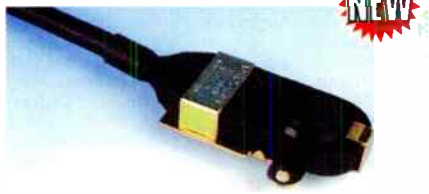
Contact rating: 16A 250VAC  
Body size: 27.76 x 10.3 x 15.9mm high  
Fixing centres: 22.2 x 10.31mm, 3.16mm clear  
Actuator: 2.76mm above body  
The switch is also available with a 28.3mm long lever, or with a 27mm long lever with roller. Standard 6.35mm (1/4in.) blade connections.

Retail Unit Price each (inc. VAT).

Order Code	Type 2475	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FP48C	HD M-Sw With Lever	£2.050	£1.750	£1.440	£2.420
FP49D	HD M-Sw With Roller	£2.550	£2.160	£1.780	£3.000
FP50E	HD M-Sw With Button	£2.700	£2.300	£1.890	£3.180

**Sealed Microswitch**

Crouzet



A compact low profile microswitch with a nitrile case and passivated mild steel mounting plate.

- ★ Sealed to IP66
- ★ Rubber casing
- ★ Supplied with 1m of flexible cable

Crouzet Part Number 83 123 015

**Specification**

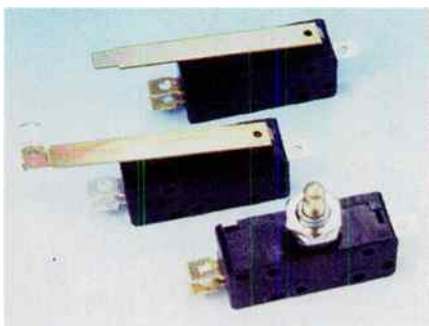
Contact rating 5A, 250Vac  
Operating temperature 0°C to +85°C  
Body size with plate 71x32x12.3mm  
Fixing centres 26mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17960	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG14Q	Sealed Microswitch	£17.430	£16.560	15.690	£20.490

**Heavy Duty**

Crouzet



A heavy duty microswitch with internationally accepted dimensions and operating characteristics and a particularly rugged construction. Switches are single-pole double-throw.

**Specification**

Contact rating: 16A 250VAC  
Body size: 46.4 x 16.3 x 18.7mm high  
Fixing centres: 25.4mm, 3.78mm clear  
Actuator: 5.26mm above body  
The switch is also available with a 60mm long lever, or a 60mm long lever with roller, or a panel-mounting bush and push-button. Bush requires 9.5mm panel cut-out and is 8mm long, flattened to 8.1mm on opposing sides. Button is 8mm long. Standard 6.35mm (1/4in.) blade connections.

Retail Unit Price each (inc. VAT).

Order Code	Type 2475	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FP48C	HD M-Sw With Lever	£2.050	£1.750	£1.440	£2.420
FP49D	HD M-Sw With Roller	£2.550	£2.160	£1.780	£3.000
FP50E	HD M-Sw With Button	£2.700	£2.300	£1.890	£3.180

**Protected Microswitch**

Crouzet



A general microswitch housed in a polyamide case, incorporating a double break circuit.

- ★ Ideal for industrial applications
- ★ Double Break Circuit
- ★ Nickel Silver Contacts
- ★ UL and CSA approved

Crouzet Part Number 83 106 022

**Specification**

Contact Rating 5A, 250Vac  
Operating temperature -20°C to +85°C  
Body size 32x19x12.6mm  
Fixing centres 13mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17960	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG15R	Prot Microswitch	£2.970	£2.830	£2.680	£3.500

**Protected Sub-Miniature Microswitch**

Crouzet



A protected sub-miniature microswitch housed in a glass filled polyamide case.

- ★ Compact size
- ★ Double Break C/O
- ★ UL and CSA approved

Crouzet Part Number 83 133 035

**Specification**

Contact rating 5A, 250Vac  
Operating temperature -20°C to +125°C  
Body size 20.4x10x6.4mm  
Fixing centres 7mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17972	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG16S	Prot Submin Microsw	£1.860	£1.770	£1.680	£2.190

**SOLID STATE RELAYS**

**Single Phase AC - G Series**

Crouzet



A range of surface mounting, optically coupled solid state relays in the industry standard "hockey puck" housing.

These relays have a sealed construction, with no moving parts, giving a long life and high reliability. The switching is silent and is not affected by vibration. The relays have a N/O output circuit and can be used for switching single phase resistive loads or motors where the power factor is greater than 0.7.

These relays must be mounted on an adequate heat sink to dissipate the heat generated within the relay, caused by internal volt drop across the output circuit. A cut out thermal pad (MG42V) is available to interface between the relay and heatsink to help dissipate excess heat

**Features**

- ★ Surface mounting
- ★ Protection by RC filter
- ★ Zero volt switching
- ★ Back to Back Thyristor
- ★ UL and CSA approved

**Specification**

<b>Input circuit</b>	<b>840 60 31</b>	<b>840 60 41</b>
Voltage	3-32Vdc	4-32Vdc
Max current	34mA	34mA
Resistance	1000Ω	1000Ω
Term screw torque	1Nm max	1Nm max
<b>Output circuit</b>		
Voltage range	24-280Vac	36-530Vac
Peak voltage	600V	1200V
Min current	100mA	100mA
Max off state leakage	15mA	15mA
On state volt drop @ I <sub>max</sub>	1.6V	1.6V
Switching frequency	47-80Hz	47-80Hz
Term screw torque	2Nm max	2Nm max
<b>General</b>		
I/P to O/P insulation	4000V	
I/P to O/P capacitance	8pF	
Operating temperature	-20°C to +80°C	
Weight	100g	
Mounting screw torque	1.1 - 1.3Nm	
<b>Note: Watts = I(max) x 1.6volts</b>		

Maplin Stock Code	Crouzet Part No.	I(max)
MG35Q	84 060 231	10A
MG36P	84 060 431	25A
MG37S	84 060 631	45A
MG38R	84 060 741	50A
MG39N	84 060 841	75A
MG40T	84 060 841	90A

Retail Unit Price each (inc. VAT).

Order Code	Type 17950	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG35Q	S/S Relay 10A	£13.650	£12.970	£12.290	£16.050
MG36P	S/S Relay 25A	£15.240	£14.480	£13.720	£17.910
MG37S	S/S Relay 45A	£19.420	£18.450	£17.480	£22.830
MG38R	S/S Relay 50A	£24.290	£23.080	£21.870	£28.550
MG39N	S/S Relay 75A	£40.770	£38.740	£36.700	£47.910
MG40T	S/S Relay 90A	£42.500	£40.380	£38.250	£49.940
MG42V	Thermal Joint	£1.000	£0.800	£0.650	£1.180

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## DIN RAIL TERMINALS

### TOP HAT & G TYPE

#### Feed Through DIN Rail Terminals

Entelec



Available in five sizes from a cable capacity of 2.5mm<sup>2</sup> to 16mm<sup>2</sup>, in a choice of colours to aid circuit identification. The range has a VDE voltage rating of 750V. A pre-assembled 10-way jumper bar is available, as is end sections and end stops. See 'DIN Rail and Accessories' for DIN rail, pre-assembled jumper bar, markers, end sections and end stops.

- ★ Fits both top hat and 'G' rails
- ★ Range of colours
- ★ Easy installation

Specification	Colour/ cable size, mm <sup>2</sup>	VDE Amps,	Approvals	Part No.	Order Code	
	yellow/2.5	26	a,b	105-486-12	MB24B	
	grey/2.5	26	a,b	115-486-03	MB25C	
	blue/2.5	26	a,b	125-486-05	MB26D	
	grey/4.0	35	a-n	115-116-07	MB27E	
	blue/4.0	35	a-n	125-116-01	MB28F	
	red/4.0	35	a-n	105-032-15	MB29G	
	black/4.0	35	a-n	105-031-14	MB30H	
	yellow/4.0	35	a-n	105-116-16	MB31J	
	grey/6.0	46	a-n	115-118-11	MB32K	
	grey/10.0	63	a-j,l,m,n	115-120-17	MB33L	
	grey/16.0	85	a-f,h,i,j,l,m,v	115-129-14	MB34M	
Size mm <sup>2</sup> :		2.5	4	6	10	16
Terminal Pitch mm		5	6	8	10	12

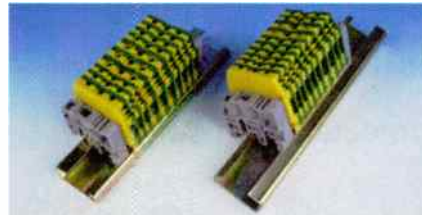
Retail Unit Price each (inc. VAT).

Order Code	Type 17211	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MB24B	2.5mm Term Blk-Yell	£0.510	£0.504	£0.465	£0.600
MB25C	2.5mm Term Blk-Grey	£0.408	£0.403	£0.372	£0.480
MB26D	2.5mm Term Blk-Blue	£0.500	£0.504	£0.465	£0.600
MB27E	4mm Term Blk-Grey	£0.408	£0.403	£0.372	£0.480
MB28F	4mm Term Blk-Blue	£0.510	£0.503	£0.464	£0.600
MB29G	4mm Term Blk-Red	£0.510	£0.503	£0.464	£0.600
MB30H	4mm Term Blk-Black	£0.510	£0.503	£0.464	£0.600
MB31J	4mm Term Blk-Yell	£0.510	£0.503	£0.464	£0.600
MB32K	6mm Term Blk-Grey	£0.595	£0.581	£0.536	£0.700
MB33L	10mm Term Blk-Grey	£0.723	£0.710	£0.655	£0.850
MB34M	16mm Term Blk-Grey	£1.040	£1.020	£0.942	£1.230

† = While Stocks Last

## Earth Terminal

Entelec



Available in three sizes and finished in green/yellow, they are electrically connected to the DIN rail. A suitable end section, which will fit all three sizes, is available separately.

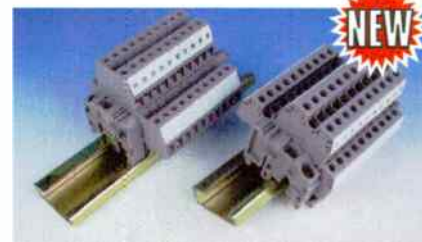
Specification	Size	Pitch	Part No.	Order Code
	2.5mm <sup>2</sup>	5mm	165-488-27	MB43W
	4mm <sup>2</sup>	6mm	165-113-16	MB44X
	6mm <sup>2</sup>	8mm	165-114-17	MB45Y
	end section		103-062-21	MB46A

Retail Unit Price each (inc. VAT).

Order Code	Type 17205	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MB43W	5mm Earth Term Blk	£1.710	£1.670	£1.540	£2.020
MB44X	4mm Earth Term Blk	£1.710	£1.680	£1.550	£2.020
MB45Y	6mm Earth Term Blk	£1.970	£1.920	£1.770	£2.320
MB46A	Earth End Sect-Yell	£0.221	£0.220	£0.203	£0.260

## Double Deck Terminal

Entelec



Provides two separate circuits within the same termination width, with interconnection via a pre-assembled jumper bar. 6mm terminal pitch. A suitable end section is available separately.

- ★ Fits both rails
- ★ Space saving

Specification	Size	VDE spec.	Pitch	Part No.	Order Code
	4mm <sup>2</sup>	750V/25A	6mm	115-271-22	MB41U
	end section			118-499-23	MB42V

Retail Unit Price each (inc. VAT).

Order Code	Type 17215	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MB41U	Double Deck-Grey	£1.060	£1.040	£0.962	£1.250
MB42V	End Section D/D Grey	£0.417	£0.413	£0.382	£0.490

Account Enquiries: 01702 554187

## Fuse Terminals

Entelec



A range of fuse terminals available in either 'pull-up' or 'lever' action, that accept various fuse types. A suitable end section is available separately for the 'pull-up' type.

Specification	Size	VDE	Approvals	Part No.	Order Code
	1 1/4in. x 1 1/4in. fuse - pull-up type				
	mm <sup>2</sup>	Spec			
	10/6	750V/16A	a,b	115-377-24	MB48C
	1 1/4in. x 1 1/4in. and 1in. x 1 1/4in. fuse - pull-up type				
	mm <sup>2</sup>	Spec			
	16/10	750V/16A	a,b	199-013-10	MB49D
	5 x 25mm and 5 x 20mm fuse - lever action				
	mm <sup>2</sup>	Spec			
	4/4	630V/10A	a,b	115-657-25	MB74R
	end section			116-951-15	MB75S
	NB size is stated as solid/stranded cable				

Retail Unit Price each (inc. VAT).

Order Code	Type 17337	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MB48C	Fuse Hold-11/4 X1/4	£2.180	£2.130	£1.960	£2.570
MB49D	FHold-11/4x1/4&1x1/4	£2.860	£2.800	£2.580	£3.370
MB74R	FHold-5x25&5x20	£1.770	£1.730	£1.600	£2.090
MB75S	End Section-M 4&8SF	£0.280	£0.278	£0.257	£0.330

## DIN Rail and Accessories

Entelec



DIN rail in 1m lengths available in either 'G' type asymmetric, (BS5825, DIN46277-1, CENELEC EN50-035), standard 'Top Hat' (BS5584, DIN46277-3, CENELEC 50-022), and miniature 'Top Hat', (BS6273, DIN46277-2, CENELEC 50-045).

- Accessories**
- MB35Q - end cover for 2.5 - 10mm<sup>2</sup> standard, 4mm<sup>2</sup> isolation and earth
  - MB36P - end cover for 16mm<sup>2</sup>.
  - MB37S - end stop for fitting at each end of an assembled rail.

Pe-assembled jumper bars for transverse connections up to 10 terminals but can easily be cut

for less terminals.

**MB38R** - for 2.5/5mm<sup>2</sup> 25A rating.

**MB39N** - for 4/6mm<sup>2</sup> 32A rating.

**MB40T** - for 6/8mm<sup>2</sup> 41A rating.

Marker cards for standard range DIN rail terminals supplied blank on cards of 100.

**MC10L** - 5mm terminal pitch

**MC11M** - 6mm terminal pitch.

Retail Unit Price each (inc. VAT).

Order Code	Type 17315	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MB38R	Jumper Bar MA 2-5/5	£2.320	£2.270	£2.090	£2.730
MB39N	Jumper Bar MA 4/6	£2.690	£2.630	£2.420	£3.170
MB40T	Jumper Bar MA 6/8	£3.300	£2.740	£2.530	£3.880
MB35Q	End Section 2.5-10mm	£0.178	£0.176	£0.162	£0.210
MB36P	End Section for 16mm	£0.382	£0.373	£0.345	£0.450
MB37S	End Stop-Term Block	£0.340	£0.337	£0.311	£0.400
MC10L	Marker Cards-Lg 5mm	£1.240	£1.210	£1.120	£1.460
MC11M	Marker Cards-Lg 6mm	£1.230	£1.210	£1.110	£1.450

Retail Unit Price each (inc. VAT).

Order Code	Type 17315	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MC07H	Top Hat DIN Rail	£1.980	£1.890	£1.790	£2.330
MC08J	G Section DIN Rail	£2.180	£2.080	£1.970	£2.570
MC09K	Miniature DIN Rail	£1.980	£1.890	£1.790	£2.330

### Specification

#### Terminals

Size mm <sup>2</sup>	VDE Spec	Terminal Pitch mm	Part No.	Order Code
1.5	250V/20A	5	115-377-24	MC01B
4	500V/35A	6	110-491-17	MC02C
4 earth terminal		6	160-496-26	MC03D

#### Accessories

1.5	end section	117-318-23	MC04E
4	end section	117-600-03	MC05F
	end stop	199-420-21	MC06G
	miniature rail 1m length	164-600-12	MC09K

Retail Unit Price each (inc. VAT).

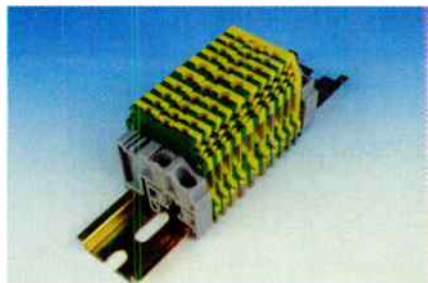
Order Code	Type 17329	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MC01B	1.5mm Min Term-Grey	£0.672	£0.657	£0.607	£0.790
MC02C	4mm Min Term-Grey	£0.425	£0.418	£0.386	£0.500
MC03D	4mm Min Earth Term	£1.460	£1.430	£1.320	£1.720
MC04E	E/Sec 1.5mm Min.	£0.178	£0.175	£0.161	£0.210
MC05F	E/Sec 4mm Min	£0.161	£0.163	£0.150	£0.190
MC06G	End Section for Min	£0.340	£0.337	£0.311	£0.400

Retail Unit Price each (inc. VAT).

Order Code	Type 17329	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MC09K	Miniature DIN Rail	£1.980	£1.890	£1.790	£2.330

## Isolating Terminal Block

Entelec



Designed to interrupt a circuit for testing etc., this short blade isolating terminal accepts 4mm<sup>2</sup> cable, with a 6mm terminal pitch. Rated at 500V/10A.

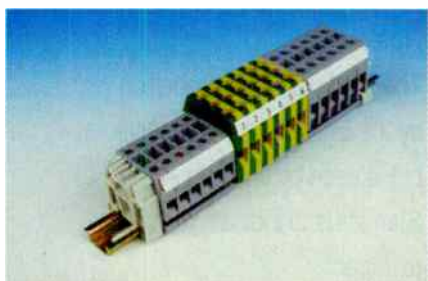
Retail Unit Price each (inc. VAT).

Order Code	Type 17325	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MB47B	4mm Isolating TBk	£1.100	£1.080	£1.000	£1.300

## MINIATURE

## Miniature DIN Rail Range

Entelec



This compact range of terminals is designed for mounting on a miniature 'top hat' symmetrical rail. The mouldings are manufactured in flame-resistant grey polyamide 6.6 with a working temperature range of -55°C to +130°C. Accessories include end sections, an end stop and symmetrical rail in one metre lengths.

- ★ Space saving
- ★ Low profile
- ★ Easy installation

## IP Ratings

FIRST NUMBER Protection against solid objects	SECOND NUMBER Protection against liquids	THIRD NUMBER Protection against mechanical shock
0 No Protection	0 No Protection	0 No Protection
1 Protected against solid objects over 50 mm, eg accidental touch by hands	1 Protected against vertically falling drops of water	1 Impact 0.225 joule
2 Protected against solid objects over 12mm , eg fingers	2 Protected against direct sprays of water up to 15° from the vertical	2 Impact 0.375 joule
3 Protected against solid objects over 2.5mm (tools + wires)	3 Protected against sprays 60° from the vertical	3 Impact 0.50 joule
4 Protected against solid objects over 1mm (tools + small wires)	4 Protected against water sprayed from all directions - limited ingress permitted	5 Impact 2.00 joules
5 Protected against dust - limited ingress (no harmful deposit) permitted	5 Protected against low pressure jets of water from all directions -	7 Impact 6.00 joules
6 Totally protected against dust	6 Protected against strong jets of water, eg for use on shipdecks - limited ingress permitted	9 Impact 20.000 joules
	7 Protected against the effects of immersion between 15cm and 1m	<b>Note;</b> The third digit is not specified by the British Standards Institute but is used by some International Standards to indicate resistance to impact
	8 Protected against long periods of immersion under pressure	



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## HI-FI LOUDSPEAKERS

### SPEAKER KITS

#### Speaker Kits

A range of speaker kits that include all the parts you need to make a speakers except the enclosures. The kits comprise both 2, 3 and 4 way designs, cross-overs are included.

##### Specifications:

**VM56L - 130mm 2 way Kit**



**Woofer:** 130mm Polypropylene Laminated  
**Tweeter:** 13mm Dome  
**Cross-over:** 2 way 6dB/Octave  
**Response:** 85-25,000Hz  
**Power Handling:** 30W Nominal  
**Sensitivity:** 90dB  
**Impedance:** 4-8Ω

**VM57M - 165mm 2 way Kit**



**Woofer:** 165mm Polypropylene Laminated  
**Tweeter:** 13mm Dome  
**Cross-over:** 2 way 6dB/Octave  
**Response:** 65-25,000Hz  
**Sensitivity:** 90dB  
**Impedance:** 4-8Ω

**VM58N - 200mm 3 way Kit**



**Woofer:** 200mm Polypropylene Laminated  
**Midrange:** 100mm Polypropylene Laminated  
**Tweeter:** 13mm Dome  
**Cross-over:** 3 way 12/6 dB/Octave  
**Response:** 48-25,000Hz  
**Sensitivity:** 90dB  
**Impedance:** 4-8Ω

**VM59P - 200mm 4 way Kit**



**Woofer:** 2 x 200mm Polypropylene Laminated  
**Midrange:** 130mm Polypropylene Laminated

**Tweeter:** 13mm Dome  
**Cross-over:** 6 dB/Octave  
**Response:** 48-22,000Hz  
**Sensitivity:** 90dB  
**Impedance:** 4-8Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM56L	130mm 2-Way Spkr Kit	£17.010	£19.990
VM57M	165mm 2-Way Spkr Kit	£25.520	£29.990
VM58N	200mm 3-Way Spkr Kit	£34.030	£39.990
VM59P	200mm 4-Way Spkr Kit	£42.540	£49.990

#### 3-Way Stereo Speaker Kit

Audax



An excellent, classical, 3-way bookshelf system, including a high quality 200mm paper cone woofer, a 100mm mid range and a high efficiency 14mm dome tweeter. A good, lively sounding system at a real budget price. A 3-way cross over is supplied with this kit. All you need to make a single, 3-way shelf speaker. When building the enclosure it is recommended that MDF (medium density fibre board) is used, 20-25mm thick and with the following dimensions:

No. of Pieces	Measurements
2	197 x 262
2	262 x 675
2	235 x 675
2	150 x 197
1	138 x 197

##### Specification

**Impedance:** 8Ω  
**Frequency range:** 35Hz to 20kHz  
**Efficiency:** 91dB W/m  
**Power handling:** 70W RMS  
**Dimensions:** 70 x 23 x 30mm (HxWxD)  
**N.B. Kit includes drive units, crossovers and terminals to make two loudspeakers.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM68Y	113W Speaker Kit	£119.140	£139.990

#### 2-Way Stereo Speaker Kit

Audax



A compact, floor standing system, based on the woven carbon fibre cone technology for the two 130mm drivers designed for tight and dynamic bass performance. Supplied with 2-way crossover. The high frequencies are covered by a 25mm shielded aluminium dome with vented pole piece and tuned cavity. Sound reproduction is firm, dynamic and

enhances the micro information. When building the enclosure it is recommended that MDF (medium density fibreboard) is used, 20-25mm thick and with the following dimensions:

No. of Pieces	Measurements
4	188 x 900
3	125 x 188

##### Specification

**Impedance:** 8Ω  
**Frequency range:** 46Hz to 22kHz  
**Efficiency:** 90dB W/m  
**Power handling:** 60W rms  
**Dimensions:** 70 x 23 x 30mm (HxWxD)  
**N.B. Kit includes drive units, crossovers and terminals to make two loudspeakers.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM69A	2W Speaker Kit	£110.620	£129.990

## LOW COST SPEAKERS

### Miniature



A range of miniature loudspeakers with alnico magnets and paper cones. Various sizes are available with 8Ω voice coils and some with 64Ω voice coils for direct single-transistor drive.

##### 8Ω Types

Type	Dia. (mm)	Depth (mm)	Power (W)	f (Hz)	Frequency range (Hz)
388	38	17	0.1	550±100	f to 3500
458	45	17	0.1	500±80	f to 3500
508	50	19	0.2	450±60	f to 4000
578	57	20	0.25	400±40	f to 4000
668	66	21	0.3	350±40	f to 4500
778	77	23	0.5	300±30	f to 4500

Type	Sensitivity (dB/W)	Magnet weight (g)	Flux density (Gauss)	Net weight
388	87±2	10	5700	22g
458	87±2	10	5700	24g
508	87±2	10	6000	39g
578	88±2	10	6000	42g
668	89±2	10	6000	45g
778	90±2	10	6000	50g

##### 64Ω Types

Type	Dia. (mm)	Depth (mm)	Power (W)	f (Hz)	Frequency range (Hz)
3864	38	17	0.1	550±100	f to 3500
5064	50	19	0.2	450±60	f to 4000
5764	57	20	0.25	400±40	f to 4000
6664	66	21	0.3	350±40	f to 4500

Type	Sensitivity (dB/W)	Magnet weight (g)	Flux density (Gauss)	Net weight
3864	87±2	10	5700	22g
5064	87±2	10	6000	39g
5764	88±2	10	6000	42g
6664	89±2	10	6000	45g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WB04E	L/S Lo-Z 388	£1.570	£1.850
YT27E	L/S Hi-Z 3864	£1.520	£1.790
WB05F	L/S Lo-Z 458	£1.570	£1.850
WB08J	L/S Lo-Z 508	£1.570	£1.850
YT28F	L/S Hi-Z 5064	£1.520	£1.790
WB09K	L/S Lo-Z 578	£1.570	£1.850
YT29G	L/S Hi-Z 5764	£1.520	£1.790
WB13P	L/S Lo-Z 6664	£1.570	£1.850
WF57M	L/S Hi-Z 6664	£1.570	£1.850
YW53H	L/S Lo-Z 778	£1.520	£1.790

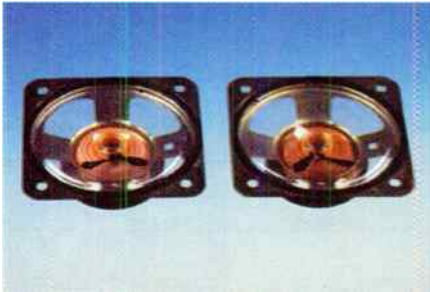
## Mylar Speakers

A range of mylar cone speakers with ferrite magnets designed primarily for use in sirens and buzzers. The mylar cone and plastic centre dome combined with a card gasket around the cone make the units fully weather and splashproof from the front. They are therefore ideal for use as sounders in portable equipment and in external burglar alarm boxes. Four types are available without mounting (round type) and three in a square metal chassis.



### Specifications

	Round 49mm	Round 56mm
Order Code	VC84F	VC85G
Power input (max.)	0.5W	0.5W
Power input (nominal)	0.25W	0.25W
Power output	82dB	84dB
Frequency range	200Hz - 20kHz	200Hz - 20kHz
Resonance fo	480Hz±96Hz	480Hz±94Hz
Impedance	8Ω	8Ω
	Round 66mm	Round 76mm
Order Code	VC86T	VC87U
Power input (max.)	0.8W	1W
Power input (nominal)	0.5W	0.5W
Power output	87dB	88dB
Frequency range	100Hz - 20kHz	100Hz - 20kHz
Resonance fo	350Hz±3Hz	300Hz±60Hz
Impedance	8Ω	8Ω



	Square 77mm	Square 87mm	Square 102mm
Order Code	VC88V	VC89W	VC90X
Power input (max.)	5W	10W	15W
Power nominal	3W	8W	13W
Power output	97dB	97dB	96dB
Frequency range	75Hz	150Hz	200Hz
	to 20kHz	to 20kHz	to 20kHz
Resonance fo	400Hz	550Hz	650Hz
	±80Hz	±110Hz	±150Hz
Impedance	8Ω	8Ω	8Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 25+ 100+	1+
VC84F	Mylar Speaker 49mm	£1.260 £0.930 £0.770	£1.490
VC85G	Mylar Speaker 56mm	£1.260 £0.930 £0.770	£1.490
VC86T	Mylar Speaker 66.5mm	£1.600 £1.160 £0.960	£1.890
VC87U	Mylar Speaker 76mm	£1.690 £1.220 £1.010	£1.990
VC88V	Mylar Spkr 77mm Sqr	£2.200 £1.600 £1.320	£2.590
VC89W	Mylar Speaker 89mm	£3.820 £2.650 £2.100	£4.490
VC90X	Mylar Speaker 103.5mm	£4.670 £3.450 £2.900	£5.490

## Low-Cost Elliptical Speakers

Low-cost loudspeakers primarily intended as replacements for unit audio equipment and television sets, mounting on the inside surface of the baffle.

Two models are available: A (125 x 77mm) and B (153 x 101mm).

Type	Size (mm)	Baffle cut-out (mm)	Fixing centres (mm)	Depth (mm)
A	125 x 77	117 x 68	90 x 65 x M5	36
B	153 x 101	138 x 91	110 x 73 x M5	44

Type	Power (W)	Z (Ω)	f <sub>o</sub> (Hz)	Frequency range (Hz; -10dB max.)	Sensitivity (dB/W)
A	3	8	145±29	f <sub>o</sub> to 22k	96±3dB
B	6	8	120±24	f <sub>o</sub> to 13	97±3dB

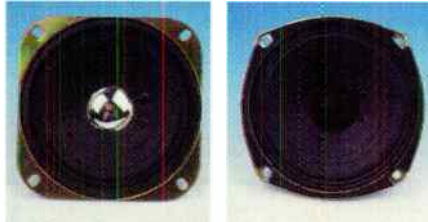


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 25+ 100+	1+
GL16S	3W Elliptical Speaker	£2.540 £1.650 £1.500	£2.990
GL17T	6W Elliptical Speaker	£2.970 £1.900 £1.620	£3.490

## Low-Cost Round Speakers

A range of low-cost round speakers of good quality that vary in size from a 100mm 1.5W type to a 254mm 50W speaker. They have a variety of applications, such as replacing or up-rating those used in radios and 'ghetto blasters', extension speakers, car systems and music centres/rack systems. The higher powered units, when used with a suitable tweeter and crossover, will form the basis of an excellent low-cost high fidelity speaker system. Type E is fitted with a centrally mounted chromed plastic cone to enhance the treble response.



Type	Overall size (mm)	Baffle cut-out (mm)	Fixing centres (mm)	Depth (mm)
A	100 x 100	95 dia.	85 x 85 x M5	36
B	120 x 120	110 dia.	85 x 85 x M5	42
C	120 x 120	110 dia.	85 x 85 x M5	42
D	165 dia.	144 dia.	110 x 110 x M5	55
E	206 dia.	185 dia.	140 x 140 x M5	69
F	254 dia.	234 dia.	175 x 175 x M5	100

Type	Power (W)	Z (Ω)	f <sub>o</sub> (Hz)	Frequency range (Hz; -10dB max.)	Sensitivity (dB/W)
A	1.5	8	180±30	f <sub>o</sub> to 10k	90±2
B	3	8	140±25	f <sub>o</sub> to 8k	91±2
C	6	8	120±24	f <sub>o</sub> to 9.2k	99±3
D	10	8	80±16	f <sub>o</sub> to 9k	99±3
E	15	8	45±9	f <sub>o</sub> to 3.5k	101±3
F	50	8	40±8	f <sub>o</sub> to 4.3k	96±3

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 25+ 100+	1+
YT25C	1.5W Low Cost Speaker	£1.690 £1.230 £1.060	£1.990
YJ16S	3W Low Cost Speaker	£2.540 £1.670 £1.470	£2.990
GL12N	6W Low Cost Speaker	£2.540 £1.800 £1.640	£2.990
GL13P	10W Low Cost Speaker	£3.390 £2.620 £2.270	£3.990
GL14Q	15W Low Cost Speaker	£5.940 £4.320 £2.720	£6.990
GL15R	50W Low Cost Speaker	£10.200 £7.770 £6.270	£11.990

## TWEETERS

### 50mm (2in.) Direct Radiant Tweeter



This tweeter is ideal as the high frequency unit in three-speaker systems. Average harmonic distortion: <0.75% Output sound level at 457mm

from front of speaker with 4V rms pink noise input: 101.5dB  
 Frequency response: 4.8kHz to 20kHz ±3dB  
 Max continuous rms input voltage: 35V  
 Max peak music power: 16W  
 Overall diameter: 51mm  
 Overall depth: 18mm  
 Total width: 70mm  
 Fixing centres: 62mm  
 Panel cut-out: 48mm dia.  
 Weight: 8g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
YW52G	50mm Piezo Tweeter	£2.970 £2.200 £1.850	£3.490

### 95mm (3 3/4in.) Direct Radiant Tweeter

This tweeter is ideal for use in bookshelf speaker systems and smaller high fidelity speakers where it will greatly enhance the high frequency response.



Harmonic distortion: <0.75%  
 Output sound level at 457mm from front of speaker with 4V rms pink noise input: 100dB  
 Frequency response: 2.2kHz to 32kHz ±3dB  
 Max continuous rms input voltage: 16V  
 Max pk music power: 35W  
 Overall diameter: 95mm  
 Overall depth: 21mm  
 Fixing centres: 60 x 60mm  
 Panel cut-out: 60mm dia.  
 Weight: 36g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
WF54J	Direct Radiant Piezo	£4.670 £3.250 £2.750	£5.490

## HI-FI TWEETERS

### Dome Tweeter

A slim dome tweeter with a heavy duty ceramic magnet.



### Specification

Frequency response: 2kHz to 20kHz  
 Power handling (max): 50W  
 Impedance: 8Ω (suitable for 4 to 8Ω systems)  
 Dimensions: Baffle cut-out: 78mm dia.  
 Fixing centres: 68 x 69mm x 4BA (M4)  
 Mounting plate: 96 x 96mm  
 Overall depth: 31mm  
 Crossover point: 4.5kHz approx.

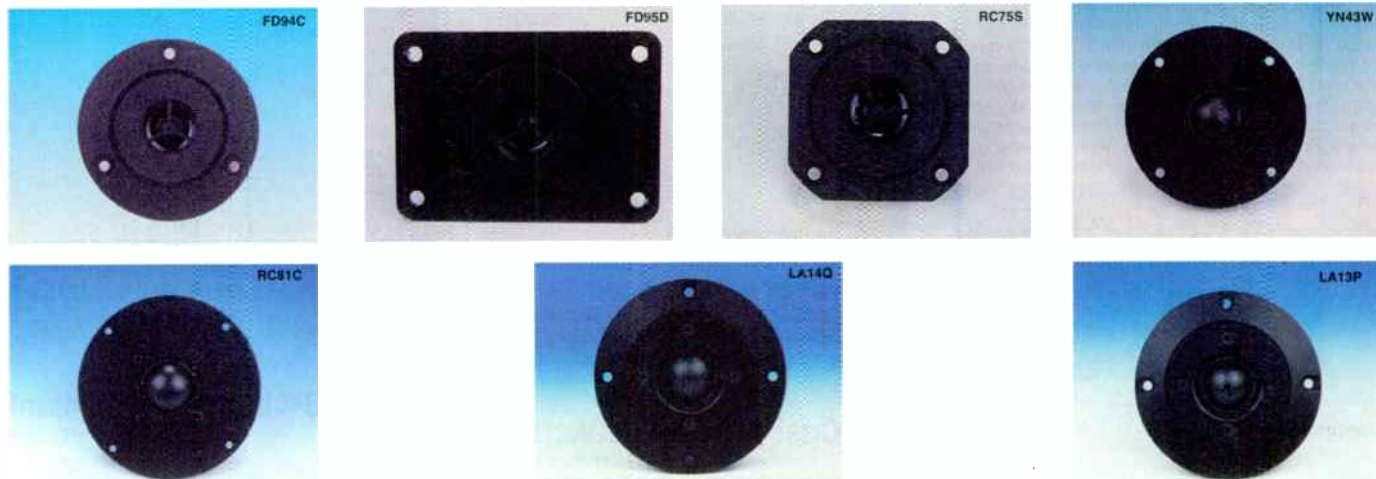
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
WF43W	1 Dome Tweeter	£7.650 £6.000 £5.450	£8.990

Retail Unit Price each (inc. VAT).



## Audax High Performance Tweeters



Audax have been dedicated to manufacturing high quality speakers for over 50 years, currently manufacture in excess of 4,000,000 a year and display a flair for design and technical innovation that places them as one of the top speaker manufacturers in the world. This range of high quality tweeters offers exceptional clarity and sound quality and features examples of two of the company's finest design concepts:  
**Balanced Drive** – the mass of the one piece polymer diaphragm is symmetrical at the apex and driven by a 10mm formless voice coil. A phase plug is critically aligned with the diaphragm to give excellent dispersion characteristics.  
**Catenary Profile** – the contour of the diaphragm is fine tuned to attain maximum stiffness at the top of the dome. This minimises the break-up of the radiation surface at all frequencies to deliver a smoother, more natural response with low distortion.

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	FD94C	FD95D	RC75S	LA13P	RC81C	LA14Q	YN43W
Type	25W Round Miniature Dome	25W Rectangular Miniature Dome	25W Square Shielded Dome	55W Round Soft Dome	70W Round Soft Dome	70W Round Soft Dome	55W Round Soft dome
Dome type	Polymer	Polymer	Polymer	Impregnated textile	Impregnated textile	Impregnated textile	Impregnated textile
Key features	Balanced drive, ferrofluid-cooled voice coil, extended frequency response, encapsulated magnet assembly	Balanced drive, ferrofluid-cooled voice coil, extended frequency response, encapsulated magnet assembly	Balanced drive, shielded magnet, ferrofluid-cooled voice coil, extended frequency response, ultra-light moving parts	Catenary profile, extended frequency response, replaceable voice coil assembly, injected polymer faceplate, high efficiency	Catenary profile, extended frequency response, replaceable voice coil assembly, solid aluminium faceplate, good efficiency	Catenary profile, extended frequency response, replaceable voice coil assembly, solid aluminium faceplate, high efficiency	Catenary profile, extended frequency response, replaceable voice coil assembly, solid aluminium faceplate, good efficiency
Nominal impedance	8Ω	8Ω	8Ω	8Ω	8Ω	8Ω	8Ω
Resonant frequency	3000Hz	3000Hz	3000Hz	900Hz	1200Hz	1200Hz	900Hz
Frequency response	2500Hz to >5kHz	2500Hz to >5kHz	2.5 to 20kHz	1 to 20kHz	1 to 20kHz	2 to 20kHz	1 to 20kHz
Nominal power handling	25W	25W	25W	55W	70W	70W	55W
Sensitivity	90dB	90dB	91dB	92dB	90dB	92dB	90dB
Voice coil diameter	10mm	10mm	10mm	25mm	25mm	25mm	25mm
Minimum impedance	6-4Ω	6-4Ω	6-4Ω	6-5Ω	7Ω	7Ω	6-5Ω
DC resistance	5-5Ω	5-5Ω	5-5Ω	5-8Ω	5-8Ω	5-8Ω	5-8Ω
Voice coil inductance	32μH	32μH	27μH	11μH	13μH	13μH	11μH
Voice coil length	2mm	2mm	2mm	1.6mm	1.6mm	1.6mm	1.8mm
Coil layers	2	2	2	2	2	2	2
Magnet dimensions	29 x 5mm	29 x 5mm	2(29 x 5)mm	72 x 15mm	72 x 15mm	72 x 15mm	72x15mm
Drive magnet weight	0.017kg	0.017kg	0.034kg	0.240kg	0.240kg	0.240kg	0.240kg
Linear excursion	±0.25mm	±0.25mm	±0.25mm	±0.3mm	±0.3mm	±0.3mm	±0.3mm
Chassis size	74mm dia	89 x 63.8mm	60 x 60mm	100mm dia	100mm dia	100mm dia	100mm dia
Fixing centres	3 x 4.2mm dia holes on 60mm dia circle	74.5 x 48.5mm, 5mm clear	4 x 4.2mm dia at 90° on 60mm dia circle	4 x 5mm dia at 90° on 86mm dia circle	4 x 5mm dia at 90° on 86mm dia circle	4 x 5mm dia at 90° on 88mm dia circle	4x5mm dia at 90° on 86mm dia circle
Baffle cutout	48mm	48mm	48mm	73.5mm	73.5mm	73.5mm	73.5mm
GRILL AVAILABLE			LA20W		LA20W		

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FD94C	Mini Dome Twr Prd	£5.090	£3.650	£3.000	£5.990
FD95D	Mini Dome Twr Rect	£5.090	£3.650	£3.000	£5.990
RC75S	25W Shld 10mm Dome	£5.350	£4.500	£3.900	£6.290
YN43W	Hi-Fi Dome Tweeter	£12.750	£11.000	£9.850	£14.950
LA13P	55W Dome Tweeter	£12.750	£11.500	£10.750	£14.990
RC81C	70W 25mm Soft Tweeter	£13.900	£12.200	£10.950	£15.990
LA14Q	70W Dome Tweeter	£13.900	£12.050	£11.210	£15.990
LA20W	Grille for Tweeter	£1.690	£1.180	£1.070	£1.990
YN43W	Hi-Fi Dome Tweeter	£12.750	£11.000	£9.850	£14.990



## 20W Bullet Tweeter

A high quality-high frequency transducer with a substantially level frequency response from 5kHz to 15kHz, in a cast alloy body with a brushed finish front mounting flange and centre 'bullet'. A high quality tweeter for domestic hi-fi and all other music systems.



Flux density: 11,500 Gauss  
 Freq range: 6kHz to 15kHz  
 System power rating: 100W using HPX2 crossover  
 Unit power rating: 12-15 rms  
 Impedance: 8Ω  
 Acoustic output: 99dB (sensitivity 1W @ 1m)  
 Crossover freq: 5kHz min @ 18dB/octave  
 Overall diameter: 98mm  
 Overall depth: 45.5mm  
 Fixing centres: 4 x 84 x 5mm clear  
 Overall weight: 490g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YJ01B	Tweeter 20W 8R	1+ 4+ 10+ £19.560 £14.850 £13.000	1+ £22.990

### SPECIFICATION

**Primary Application**  
 Nominal impedance 8Ω  
 Resonance Frequency 800Hz  
 Nominal power handling 70W  
 Sensitivity 93dB  
**Voice Coil**  
 DC Resistance 5.3Ω  
 Voice coil inductance 6mH  
**Parameters**  
 Moving mass 0.5x10<sup>-3</sup>kg  
 Effective piston area 10.8x10<sup>-2</sup>m<sup>2</sup>

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MY22Y	34mm Soft dome twee	1+ £21.260	1+ £24.990

## Soft Dome Tweeter – DM650S

A high quality soft domed tweeter ideal for use in all types of speaker system, with power handling up to 100W.



### Specification

Impedance 6Ω ±20%  
 SPL 90dB ±3dB  
 Frequency response 250Hz - 16kHz  
 Cross over frequency 800Hz  
 Power (max) 60W  
 Magnet weight 370g  
 Total weight 1.2kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB29G †	Soft Dome 650	1+ 5+ 10+ £17.010 £16.650 £16.100	1+ £19.990

## 45W Dome Tweeter

Audax

A compact, 14mm diameter polymer dome tweeter with ultra-light moving parts, and with a voice coil directly wound onto the diaphragm according to the 'direct drive' concept. Efficiency is in the order of 94.5dB. The perfect transfer of energy that results produces its excellent musical qualities, with high definition and energy. The voice coil is wound onto the high temperature polymer, which is then cooled by ferrofluid for high power handling.

### Specification

Nominal impedance: 8Ω  
 Resonant frequency: 2,050Hz  
 Frequency response: 2 to 20kHz  
 Nominal power handling: 45W  
 Sensitivity: 94dB  
 Voice coil diameter: 14mm  
 Minimum impedance: 6.9Ω  
 DC resistance: 5-7Ω  
 Voice coil inductance: 34μH  
 Voice coil length: 2mm  
 Former: Polymer  
 Number of coil layers: 2  
 Magnet dimensions: 38 x 8mm  
 Magnet weight: 30-1g  
 Flux density: 1.35T  
 Magnetic gap height: 1.5mm  
 Linear excursion: 0.25mm  
 Dimensions: 80 x 80mm  
 Fixing centres: 4 x 4.2mm dia. holes on 75.8mm dia. circle

Note that the voice coil overhangs the magnetic gap to ensure linear excursion of the dome.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RC76H	45W 14mm Dome Twtr	1+ 10+ 25+ £5.940 £4.700 £4.250	1+ £6.990

## 25mm 70W Soft Dome Tweeter

Audax

A 25mm impregnated textile dome tweeter suitable for the most demanding applications such as studio monitoring and Hi-Fi. It combines very high efficiency, high power handling and a wide frequency response that makes a lower than normal crossover frequency point possible.



The critically damped textile dome ensures an exceptionally smooth roll-off, an absence of colouration and is generally responsible for this speaker's ability for highly accurate detail and natural sound. The faceplate is solid aluminium.

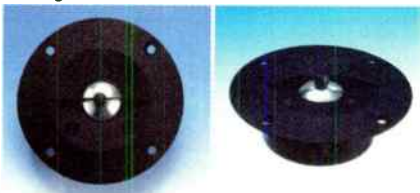
### Specification

Nominal impedance: 8Ω  
 Resonant frequency: 1200Hz  
 Frequency response: 1k to 20kHz  
 Nominal power handling: 70W  
 Sensitivity: 91dB  
 Voice coil diameter: 25mm  
 Minimum impedance: 7Ω  
 DC resistance: 5-8Ω  
 Voice coil inductance: 13μH  
 Voice coil length: 1-6mm  
 Former: Aluminium  
 Number of coil layers: 2  
 Magnet dimensions: 75 x 15  
 Flux density: 1-6T  
 Magnetic gap height: 3mm  
 Linear excursion: 0-3mm  
 Dimensions: 100mm diameter  
 Fixing centres: 4 x 5mm dia. holes on 86mm dia. circle

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RC81C †	70W 25mm Soft Tweeter	1+ 10+ 25+ £13.600 £12.200 £10.950	1+ £15.990

## 1" - Shielded Aluminium Alloy Dome - 25mm



This 25mm Aluminium alloy dome features soft polymer suspension a shielded magnet for audio/video use, vented pole piece - tuned cavity, replaceable voice coil assembly, injected polymer face plate and ferrofluid cooled voice coil.

### SPECIFICATION

**Primary Application**  
 Nominal Impedance 8Ω  
 Resonance Frequency 1150Hz  
 Nominal Power Handling 80W  
 Sensitivity 92dB  
**Voice Coil**  
 DC Resistance 5.8Ω  
 Voice Coil inductance 25mH  
**Parameters**  
 Moving mass 0.31x10<sup>-3</sup>  
 Effective Piston area 6.2x10<sup>-4</sup>



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MY21X	25mm Al Tweeter	1+ £19.560	1+ £22.990

## 1 1/4" - Soft Dome - 34mm

Audax



This textile dome tweeter fits the most demanding applications like studio monitoring. It combines very high efficiency, high power handling and the possibility of low crossover frequency. Features, replaceable voice coil assembly, 1 1/4" impregnated textile dome, solid aluminium face plate, very high efficiency and high power handling capacity.

## CAR TWEETER

### Micro 10mm Neodymium Polymer Dome.

This ultra compact tweeter is ideal for a growing number of applications: automotive, multimedias, telecommunications, HDTV and home theatres.

The unit is ultra light in weight at 10g, has a ferrofluid cooled voice coil, extended frequency response, ultra-light moving parts, encapsulated neodymium magnet and a balanced drive concept design.

### SPECIFICATION

**Primary Application**  
 Nominal Impedance 4Ω  
 Resonance Frequency 3000Hz  
 Nominal Power handling 25W  
 Sensitivity 85dB  
**Voice Coil**  
 DC Resistance 3.4Ω  
 Voice Coil Inductance 0.25μH



### MOUNTING KITS

Two mounting kits available for use with this tweeter:

**MY17T**  
 Flush mounting kit

**MY19V**  
 Surface mounting kit

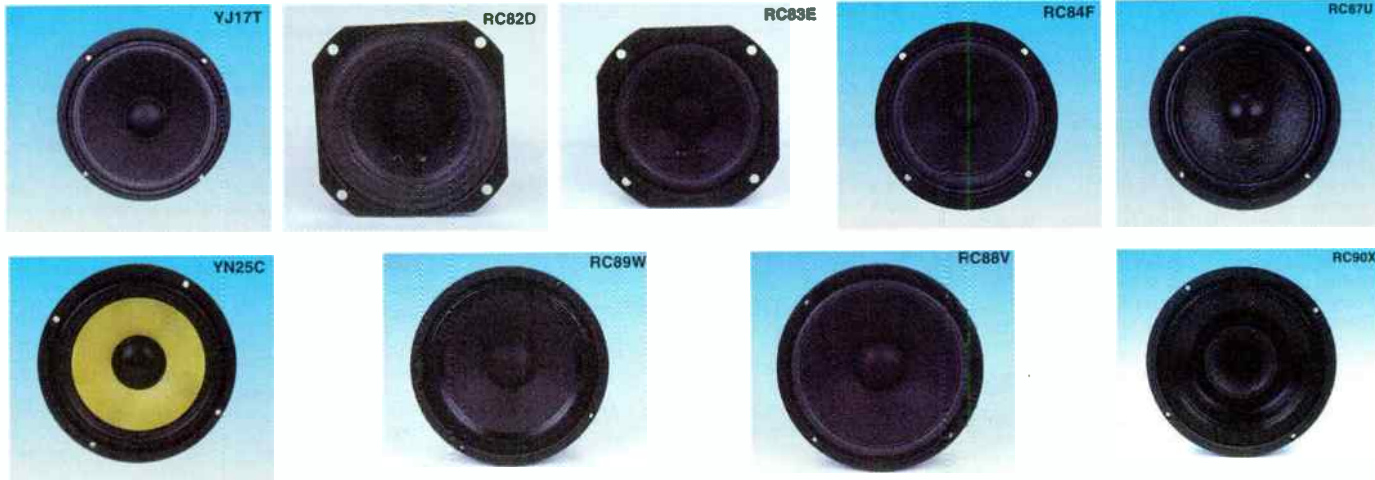


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MY20W	10mm Micro Tweeter	1+ £9.350	1+ £10.990
MY19V	surface mount kit	£6.800	£7.990
MY17T	Flush mounting kit	£6.800	£7.990

## HI-FI SPEAKERS

### Audax High Performance Bass/Midrange Speakers



Audax have been dedicated to manufacturing high quality speakers for over 50 years, currently manufacture in excess of 4,000,000 a year and display a flair for design and technical innovation that places the as one of the top speaker manufacturers in the world. Every speaker within this range of high quality bass/midrange drivers features a high temperature voice coil (tailored to the driver's individual performance) for enhanced power handling capability and a stamped steel chassis (electro-statically sprayed for a consistent resistance to abrasion and corrosion) for excellent rigidity.

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#### Specifications

Type	YJ17T 170mm 50W Bass/Midrange	RC82D 75mm 20W Shielded Bass	RC83E 100mm 30W Shielded Bass	RC84F 130mm 40W Bass Driver	RC87U 165mm 50W Bass Driver	YN25C 165mm 50W Bass Driver	RC89W 210mm 55W Bass/Midrange	RC88V 210mm 70W Low Resonance Bass	RC90X 210mm 55W Full Range Driver
Dome type	Paper	Paper	Paper	Paper	Woven kevlar	Woven fibreglass	Paper	Paper	Coated Paper
Key features	Extended bass response, foam suspension	Shielded magnet, extended bass response, foam suspension	Shielded magnet, extended bass response, foam suspension	Extended bass response, foam suspension	High loss rubber surround, large magnet, low resonance, ideal for top end systems	High loss rubber surround, large magnet, low resonance, smooth frequency response	Corrugated suspension, ideal for 2 or 3-way systems	Extended bass response, foam suspension, high efficiency, ideal for 2 and 3-way systems	Full range with bicone corrugated suspension very high sensitivity
Nominal impedance	8Ω	8Ω	8Ω	8Ω	8Ω	8Ω	8Ω	8Ω	8Ω
Resonant frequency	50Hz	82Hz	64Hz	59Hz	48Hz	52Hz	58Hz	41Hz	55Hz
Frequency response	50Hz to 10kHz	100Hz to 10kHz	60Hz to 10kHz	40Hz to 10kHz	50Hz to 7kHz	45Hz to 7kHz	60Hz to 10kHz	40Hz to 7kHz	60Hz to 15kHz
Nominal power handling	50W	20W	30W	40W	50W	50W	45W	70W	55W
Sensitivity	90dB	83dB	88dB	91dB	89dB	90dB	92dB	92dB	94dB
Voice coil diameter	25mm	20mm	25mm	25mm	25mm	25mm	25mm	25mm	25mm
DC resistance	6-8Ω	6-1Ω	5-7Ω	6-4Ω	6-7Ω	6-6Ω	7-6Ω	6-3Ω	7-6Ω
Voice coil inductance	0-08μH	0-26μH	0-3μH	0-32μH	0-25μH	0-31μH		0-20μH	
Resonant frequency $f_s$	51Hz	90Hz	90Hz	52Hz	43Hz	44Hz	58Hz	37Hz	55Hz
Suspension compliance $C_{ms}$	1.24 x 10 <sup>-3</sup> m/N	1.3 x 10 <sup>-3</sup> m/N	1.26 x 10 <sup>-3</sup> m/N	0.98 x 10 <sup>-3</sup> m/N	0.84 x 10 <sup>-3</sup> m/N	0.78 x 10 <sup>-3</sup> m/N	8 x 10 <sup>-3</sup> m/N	1.14 x 10 <sup>-3</sup> m/N	0.98 x 10 <sup>-3</sup> m/N
Mechanical Q factor $Q_{ms}$	2-46	2-28	2-33	1-95	2-16	2-48	3-77	2-64	2-91
Electrical Q factor $Q_{es}$	0-52	0-99	0-61	0-40	0-52	0-49	1-31	0-60	0-69
Total Q factor $Q_{ts}$	0-43	0-69	0-48	0-33	0-42	0-41	0-97	0-49	0-56
Volume equivalent air at Cas: $V_{as}$	35L (1.235Cuft)	18L (0.635Cuft)	44.1L (1.56Cuft)	90L (3.18Cuft)	23L (0.811Cuft)	21L (0.74Cuft)	52L (1.83Cuft)	90L (3.18Cuft)	61L (2.15Cuft)
Chassis size	167mm dia x 66mm deep	78 x 78 x 55mm deep	104 x 104 x 59mm deep	142mm dia x 58mm deep	173mm dia x 71mm deep	173mm dia x 71mm deep	209 dia x 76mm deep	213mm dia x 78mm deep	209mm dia x 82mm deep
Fixing centres	4 x 5-2mm dia holes on 157mm dia circle	4 x 4mm dia holes on 84mm dia circle	4 x 5-2mm dia holes on 106mm dia circle	4 x 5-2mm dia holes on 128mm dia circle	4 x 5-2mm dia holes on 157mm dia circle	4 x 5-2mm dia holes on 157mm dia circle	4 x 5-2mm dia holes on 199mm dia circle	4 x 5-2mm dia holes on 199mm dia circle	4 x 5-2mm dia holes on 199mm dia circle
Baffle cutout	142mm	78mm	91mm	113mm	142mm	142mm	184mm	184mm	184mm

Retail Unit Price each (inc. VAT).

Order Code	Type 11704	Price each exc. VAT	inc. VAT each
		1+	10+ 25+ 1+
YJ17T	1 HI-FI Spkr 50W 6.5in	£15.310	£11.750 £10.600 £17.990
RC82D	20W 3in. Bass Spkr	£11.900	£9.950 £8.500 £13.990
RC83E	30W 4in. Bass Spkr	£14.450	£11.100 £9.850 £16.990

Retail Unit Price each (inc. VAT).

Order Code	Type 11704	Price each exc. VAT	inc. VAT each
		1+	10+ 25+ 1+
RC84F	40W 5.25in. Bass	£14.880	£12.000 £10.500 £17.490
RC87U	50W 6.5in. Kevlar	£23.820	£19.950 £17.750 £27.990
YN25C	HI-FI spkr Fib-glass	£22.110	£19.450 £16.650 £25.990

Retail Unit Price each (inc. VAT).

Order Code	Type 11704	Price each exc. VAT	inc. VAT each
		1+	10+ 25+ 1+
RC89W	45W 8in. Paper Bass	£15.310	£12.500 £10.250 £17.990
RC88V	50W 8in. Bass Spkr	£18.710	£16.550 £14.000 £21.990
RC90X	55W 8in. Twin core	£19.560	£16.700 £14.950 £22.990

Sales Tel: 01702 554000 • Fax: 01702 554001 • Technical Helpline: 01702 556001

Export carriage charges (1.2 etc.) and price information are back of catalogue. † symbol in price block indicates While Stocks Last.

## 3" - Paper Cone Driver - 80mm

Audax



This compact size, low resonance and long throw capabilities of this driver makes it ideal for use in mini-enclosures, satellite systems or as a full range driver of high quality. Unit features a high loss high compliance rubber surround, coated paper cone, stamped steel chassis, high temperature voice coil, aluminium voice coil, aluminium voice coil former and extended bass response.

**SPECIFICATION**

**Primary Application**

Nominal Impedance 8Ω  
Resonance frequency 80Hz  
Nominal Power Handling 20W  
Sensitivity 86dB

**Voice Coil**

DC Resistance 3.5Ω  
Voice coil inductance 0.21mH

**Parameters**

Suspension compliance  $1.6 \times 10^{-3} \text{mN}^{-1}$   
Mechanical Q factor 1.96  
Electrical Q factor 0.73  
Total Q factor 0.53  
Mechanical resistance  $0.66 \text{kgs}^{-1}$   
Moving mass  $2.7 \times 10^{-3} \text{kg}$   
Effective piston area  $2.9 \times 10^{-2} \text{m}^2$   
VAS  $1.9 \times 10^{-3} \text{M}^3$

Retail Unit Price each (inc. VAT).

Order Code	Type 18105	Price each exc. VAT	inc. VAT each
MY25C	3in full range	£11.900	£13.990

## 41/2" - Paper Cone Driver - 100mm

Audax



This 4" midrange has been designed for high end systems. It features a state of the art curvilinear paper cone, which is critically damped and coupled to a high-loss rubber surround, stamped steel chassis and a high temperature voice coil.

**SPECIFICATION**

**Primary Application**

Nominal impedance 8Ω  
Resonance Frequency 240Hz  
Nominal power handling 35W  
Sensitivity 89dB  
Cross over Frequency 500 to 800Hz

**Voice Coil**

DC Resistance 7.6Ω  
Voice coil inductance 0.23mH

**Parameters**

Suspension compliance  $0.1 \times 10^{-3} \text{mN}^{-1}$   
Mechanical Q factor 4.16  
Electrical Q factor 2.09  
Total Q factor 1.39  
Mechanical resistance  $1.52 \text{kgs}^{-1}$   
Moving mass  $4.2 \times 10^{-3} \text{kg}$   
Effective piston area  $0.57 \times 10^{-2} \text{m}^2$

Retail Unit Price each (inc. VAT).

Order Code	Type 18108	Price each exc. VAT	inc. VAT each
MY27E	4 1/2in Midrange	£14.450	£16.990

## 61/2" - Paper Cone -170mm

Audax



Designed for high end compact 2 way systems, this 6 1/2 inch Bass-Midrange driver offers the ultimate in paper cone technology. It features a state of the art curvilinear cone which is critically damped with a visco elastic compound and is coupled to a high loss rubber surround.

**SPECIFICATION**

**Primary Application**

Nominal impedance 8Ω  
Resonance Frequency 42Hz  
Nominal power handling 60W  
Sensitivity 90dB

**Voice Coil**

DC Resistance 6.6Ω  
Voice coil inductance 0.41mH

**Parameters**

Suspension compliance  $1.2 \times 10^{-3} \text{mN}^{-1}$   
Mechanical Q factor 7.83  
Electrical Q factor 0.38  
Total Q factor 0.36  
Mechanical resistance  $0.4 \text{kgs}^{-1}$   
Moving mass  $11.9 \times 10^{-3} \text{kg}$   
Effective piston area  $1.39 \times 10^{-2} \text{m}^2$   
VAS  $32.5 \times 10^{-3}$

Retail Unit Price each (inc. VAT).

Order Code	Type 18110	Price each exc. VAT	inc. VAT each
MY32K1	6 1/2in Bass pap con.	£29.770	£34.990

## 170mm 35W Bass/Midrange Driver

Audax



Designed for compact 2-way and multi-purpose wide band applications, this 170mm diameter paper cone driver has a corrugated paper surround coated with a rubber based damping compound. Ideal for bass, midrange and wide-band applications, the free air resonance is 65Hz. The high temperature voice coil is wound onto an aluminium former to ensure high power handling capacity. The chassis is stamped steel.

**Specification**

Nominal impedance: 8Ω  
Resonant frequency: 65Hz  
Frequency response: 60Hz to 10kHz  
Nominal power handling: 35W

Sensitivity: 90dB

Voice coil diameter: 25mm

Minimum impedance: 6.5Ω

DC resistance: 5.7Ω

Voice coil inductance: 0.26μH

Voice coil length: 10mm

Former: Aluminium

Number of coil layers: 2

Magnet dimensions: 72 x 15mm

Flux density: 1.0T

Magnetic gap height: 4mm

Linear excursion: ±3mm

Dimensions: 167mm dia. x 64mm deep

Fixing centres: 4 x 5.2mm dia. holes on 157mm dia. circle

Baffle cut-out: 142mm dia.

Total mass of unit: 0.67kg

Note that the voice coil overhangs the magnetic gap to ensure linear excursion of the cone.

Retail Unit Price each (inc. VAT).

Order Code	Type 3011	Price each exc. VAT	inc. VAT each
RC86T 2	35W 6.5in Bass/Mid	£12.330	£14.490

## 41/2" - Paper Cone Driver - 100mm

Audax



The compact size, low resonance and long throw capabilities of this driver make it ideal for use in mini-enclosures, satellite systems or as a full range driver of high quality. Featuring high loss, high compliance rubber surround, coated paper cone, stamped steel chassis, high temperature voice coil, aluminium voice coil former and extended bass response.

**SPECIFICATION**

**Primary Application**

Nominal impedance 8Ω  
Resonance Frequency 75Hz  
Nominal power handling 30W  
Sensitivity 86dB

**Voice Coil**

DC Resistance 5.7Ω  
Voice coil inductance 0.34mH

**Parameters**

Suspension compliance  $0.83 \times 10^{-3} \text{mN}^{-1}$   
Mechanical Q factor 2.09  
Electrical Q factor 0.61  
Total Q factor 0.47  
Mechanical resistance  $1.2 \text{kgs}^{-1}$   
Moving mass  $5.3 \times 10^{-3} \text{kg}$   
Effective piston area  $0.57 \times 10^{-2} \text{m}^2$   
VAS  $3.8 \times 10^{-3} \text{M}^3$

Retail Unit Price each (inc. VAT).

Order Code	Type 18107	Price each exc. VAT	inc. VAT each
MY26D	4 1/2in full range	£15.310	£17.990

## 61/2" - Paper Cone -170mm

Audax



Designed for compact 2-way high end bookshelf system, or floor standing 2 or 3 way systems, this 6 1/2" Bass-midrange driver features a patented TPX diaphragm coupled to a high loss, high compliance rubber suspension. TPX is an advanced polymer that is extremely rigid, very light and possesses high internal damping. Features, non resonant die cast chassis, ventilated chassis under spider, high loss, high compliance rubber suspension, edgedwood, flat copper wire, gold plated terminals

**SPECIFICATION**

**Primary Application**

Nominal impedance 8Ω  
Resonance Frequency 46Hz  
Nominal power handling 70W  
Sensitivity 90dB

**Voice Coil**

DC Resistance 6Ω  
Voice coil inductance 0.31mH

**Parameters**

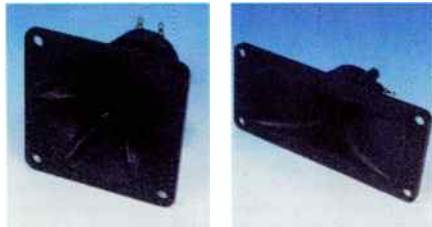
Suspension compliance  $1.1 \times 10^{-3} \text{mN}^{-1}$   
Mechanical Q factor 10.62  
Electrical Q factor 0.46  
Total Q factor 0.11  
Mechanical resistance  $0.28 \text{kgs}^{-1}$   
Moving mass  $10.7 \times 10^{-3} \text{kg}$   
Effective piston area  $1.39 \times 10^{-2} \text{m}^2$   
VAS  $29.8 \times 10^{-3}$

Retail Unit Price each (inc. VAT).

Order Code	Type 18112	Price each exc. VAT	inc. VAT each
MY34M1	6 1/2in Bass mid TPX	£36.580	£42.990

## TWEETERS AND HORNS

### Small Square and Rectangular Horns



Piezo electric horn tweeters ideal for medium sized 2-way and even 3-way speaker systems. The high impedance of the piezo electric material means that the unit can simply be connected directly across the terminals of the main driver to add extra treble sparkle. Two different designs are available, a square-faced circular horn and an equivalent rectangular horn offering wider horizontal dispersion.

#### Basic specification

Frequency response: 4kHz to 28kHz  
 Maximum continuous rms input voltage: 20V (= 100W into 4Ω)  
 Maximum pk input voltage: 28V

#### Square type

Overall size: 85 x 85mm  
 Overall depth: 67.7mm  
 Fixing centres: 71 x 71mm  
 Panel cut-out: 80mm dia.

#### Rectangular type

Overall size: 145 x 67.3mm  
 Overall depth: 50.9mm  
 Fixing centres: 132.2 x 54mm  
 Panel cut-out: 125.5 x 47mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RT60Q	Square Piezo Tweeter	£4.070	£3.100	£2.350	£4.790
CJ83E	Rect Piezo Tweeter	£5.940	£3.450	£2.650	£6.990

### Standard Horn



This tweeter is designed for general purpose use in high fidelity, disco & PA speakers of all sizes.

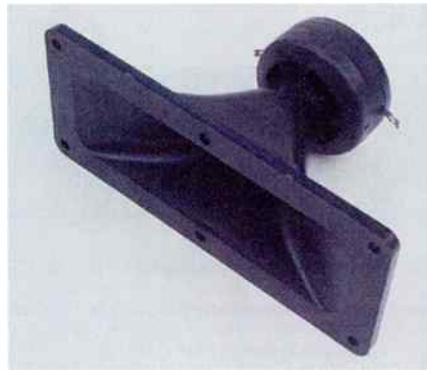
Average harmonic distortion: 1%  
 Output sound level at 457mm from front of speaker with 4V rms pink noise input: 103dB  
 Frequency response: 3-9kHz to 28kHz ±3dB  
 Max continuous rms input voltage: 16V  
 Max peak music power: 35W  
 Overall size: 85 x 85 x 70mm deep  
 Fixing centres: 71 x 71mm  
 Panel cut-out: 76mm dia.  
 Weight: 63g

Available in two types. With mounting flange flush with front of horn. With mounting flange recessed 12mm so that front of horn may be more nearly flush with front of baffle when mounted.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
WF09K	Piezo Horn Flush	£5.090	£3.750	£3.150	£5.990
WF55K	Piezo Horn Recessed	£5.090	£3.750	£3.150	£5.990

### Wide Dispersion Horn



This tweeter is designed to give a wide dispersion pattern and is therefore ideal in stereo hi-fi systems and in high quality discos etc.

Average harmonic distortion: 0.5%  
 Output sound level at 457mm from front of speaker with 4V rms pink noise input: 104dB  
 Frequency response: 2kHz to 32kHz ±3dB  
 Max continuous rms input voltage: 20V  
 Max peak music power: 35W  
 Overall size: 185 x 83 x 108mm  
 Fixing centres: 86 x 86 x 63.5mm  
 Panel cut-out: 155 x 51mm  
 Weight: 130g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
WF56L	Wide Angle Piezo	£7.650	£7.450	£6.650	£8.990

### Large Rectangular Horn



A wide dispersion horn tweeter designed to give a wide pattern and therefore ideal for stereo use and does not insist that the listener be exactly on axis with the driver unit itself.

#### Basic specification

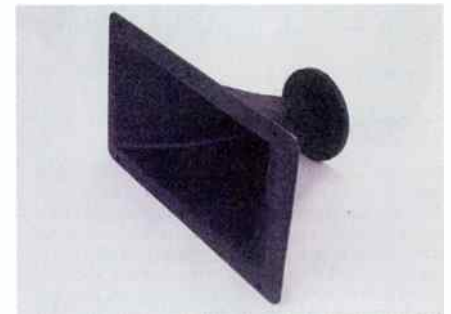
Frequency response: 2kHz to 28kHz  
 Max. continuous rms input voltage: 20V (= 100W into 4Ω)  
 Max. pk input voltage: 28V  
 Overall size: 187.3 x 79mm  
 Overall depth: 108.64mm  
 Fixing centres: 86 x 86 x 63.2mm  
 Panel cut-out: 158 x 54mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RT61R	Large Rect Horn	£6.800	£4.750	£4.150	£7.990

### Horn for Compression Drivers

Eminence



A superb quality standard fitting fibreglass horn with a 25mm throat designed for use with compression drivers. This horn offers a radial dispersion pattern, and when combined with such a driver it will be suitable for high-power, high-reliability applications such as PA and disco.

#### Specification

Rolloff: 1-2kHz  
 Lowest recommended crossover point: 1kHz  
 Dispersion: 90 x 40  
 Fitting holes: 3 M6 Holes on a 57mm PCD  
 2 M6 Holes on a 76mm PCD  
 Flanged throat: 25mm (1in.)  
 Overall dimensions: 290 x 160 x 150mm  
 Weight: 500g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
ZC43W	Compression Horn	£38.280	£31.000	£28.250	£44.990

### 70W Horn Tweeter



A rectangular horn tweeter having a solid cast body 184 x 76mm, with a six hole fixing. It is a rectangular horn tweeter which disperses its sound output on a lateral plane, and has a horn cut-off frequency fixed at 820Hz, although the lowest input frequency should be double this to maintain efficiency.

#### Specification

Flux density: 9000 Gauss  
 Frequency range: 4 to 10kHz  
 System power rating: 70W using HPX2 crossover  
 Unit power rating: 12W  
 Impedance: 8Ω  
 Acoustic output: 97dB (sensitivity 1W @ 1m)  
 Crossover frequency: 1.7kHz min  
 Overall width x height: 184 x 76mm  
 Overall depth: 160mm  
 Fixing centres: 6 x 86mm + 86mm x 64mm, x 5mm clear  
 Overall weight: 647g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
YJ02C	Tweeter 70W 8R	£21.690	£16.350	£15.000	£25.490



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WHILE STOCKS LAST

**MAPLIN**  
 on the Net  
<http://www.maplin.co.uk>

## 600W Wide Angle Horn Tweeter

Eminence



A constantly directive horn with a square section, designed to provide a smooth response up to 20kHz fully over the angles 90° horizontal and 90° vertical. A crossover must be used with this driver and the crossover point must be 3.5kHz or greater. Suitable crossovers can be RC99 depending on the system power handling required.

### Specification

Impedance:	8Ω
Frequency response:	3.5kHz to 20kHz
Sensitivity	105dB
Recommended crossover point >	3.5kHz
Power handling, using 6kHz, 18dB/octave crossover:	600W rms
Dispersion:	100° horizontal x 50° vertical
Dimensions:	190mm wide x 115mm high x 107.2mm deep
Weight:	700g

Retail Unit Price each (inc. VAT).

Order Code	Type 3342	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
RC98G3	600W Wide Angle Horn	£34.030	£28.900	£26.000	£39.990

## 600W High Power Horn Tweeter

Eminence



A high power, square faced horn tweeter with circular section horn, suitable as a treble unit in 2-way and 3-way PA, disco, organ and similar sound amplification systems. It offers low distortion and an exceptionally flat frequency response over the range 2kHz to >20kHz, and radiated evenly over 60° horizontal and vertical angles. A crossover must be used with this driver and the crossover point must be 3.5kHz or greater. Suitable crossovers can be RC99 depending on the system power handling required.

### Specification

Impedance:	8Ω
Frequency response:	3.5kHz to 20kHz
Sensitivity:	105dB
Recommended crossover >	3.5kHz
Power handling, using 6kHz, 18dB/octave crossover:	600W rms
Dispersion:	80° conical
Dimensions:	87 x 87mm x 73.5mm deep
Weight:	700g

Retail Unit Price each (inc. VAT).

Order Code	Type 3343	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
RC98H3	600W Horn Tweeter	£28.070	£23.800	£21.500	£32.990

† = While Stocks Last

## Horn Driver

A tough, rugged mid-range compression driver featuring a 50mm (2in.) phenolic diaphragm and voice coil. When attached to a horn of the appropriate size, this highly-efficient 100W rms driver will provide clear audio reproduction over the 2kHz to 10kHz range. Must be used with a suitable crossover. Standard 35mm (1<sup>3</sup>/<sub>8</sub>in.) 18TPI thread coupling.



### Specification

Impedance:	8Ω
Power handling (rms):	100W
Power handling (peak programme):	200W
Frequency response:	2kHz to 10kHz
Output (SPL):	105dB
Dimensions:	160mm dia. x 88mm

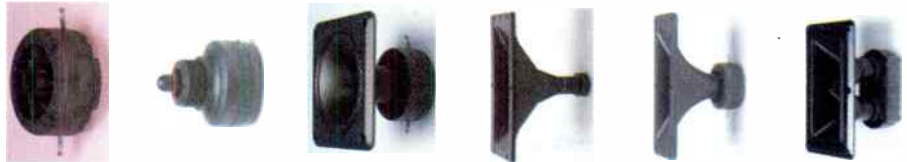
Retail Unit Price each (inc. VAT).

Order Code	Type 3034	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
DW95D1	Horn Driver	£51.050	£46.500	£42.000	£59.990

## POWERLINE PIEZO HORNS

### Ceramic Tweeters

Motorola



CB22Y      CB23A      CB24B      CB26D      CB27E      CB28F

A range of Powerline piezo horns, unique in that they contain a built-in protection circuit consisting of a PTC resistor and tungsten bulb wired in parallel. When the amplifier output reaches several hundred watts continuous the PTC heats up and increases its resistance dramatically, immediately lowering the power to the driver. In order to avoid a sudden drop in sound pressure level a tungsten lamp, wired in parallel to the PTC, allows the driver to draw current whilst the PTC is in operation. The audible effect is similar to that produced by a level compressor. Below 400W the driver behaves normally (even during transients above 400W).

Model	Description	Impedance (Ω at 1kHz)	Music Power (W)	Frequency Response (kHz)	Sensitivity (1W at 1m)	Weight (g)	Dimensions (dia x D) or (W x H x D)	Order Code
LO54F	Horn Driver	1000	400	1.8-30	92	66	63.5 x 23	CB22Y
LO54H	Horn Driver	1000	400	1.8-30	92	99	64 x 71	CB23A
LO54J	Bullet Tweeter	1000	400	1.8-20	92	-	110 x 110 x 62	CB24B
LO54DA	Exponential Horn	-	-	-	-	254	267 x 110 x 168	CB26D
LO54G	Dispersion Horn	1000	400	1.8-30	92	130	187 x 79 x 108	CB27E
LO54L	Twin Drive Bullet	610	100	3.5-20	99	175	161 x 95 x 102	CB28F

Retail Unit Price each (inc. VAT).

Order Code	Type 10223	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CB22Y	Tweeter KSN1140	£9.350	£8.060	£7.250	£10.990
CB23A	Tweeter KSN1142	£9.350	£8.060	£7.250	£10.990
CB24B	Tweeter KSN1165A	£11.050	£9.350	£8.350	£12.990
CB26D	Tweeter KSN1151A	£12.750	£11.050	£10.000	£14.990
CB27E	Tweeter KSN1141	£9.350	£8.350	£7.650	£10.990
CB28F	Tweeter KSN1177A	£12.750	£11.050	£10.000	£14.990

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## HIGH POWER

### McKenzie Loudspeakers



CB18U



CB19V



CB20W

**CB18U 260mm 100W:** A high compliance, die-cast frame loudspeaker incorporating a rubber roll cone edge for low resonance. Good low frequency and low distortion performance in very compact 2- and 3-way systems for home, car or studio.

**CB19V 320mm 100W:** A versatile die-cast frame, bass/midrange loudspeaker with linen cone edge and rigid ribbed cone assembly. Ideal for use singly or in pairs in 2-way reflex systems.

**CB20W 320mm 200W:** A high power, die-cast frame, low resonant frequency loudspeaker suitable for all high quality studio type bass applications. The unit features a 65mm coil and neoprene cone edge.

Specification	260mm 100W CB18U	320mm 100W CB19V	320mm 200W CB20W
Impedance	8Ω	8Ω	8Ω
Nominal Power	100W	100W	200W
Music Power	200W	200W	400W
Frequency Response	40Hz to 3kHz	40Hz to 7kHz	28Hz to 6kHz
Resonant Frequency	52Hz	60Hz	30Hz
Sensitivity 1W/1m	95dB	98dB	97dB
Magnet Weight	1.08kg	1.4kg	2.4kg
Overall Weight	3.1kg	4.5kg	7kg
Dimensions	266 x 112mm	320 x 128mm	320 x 131mm

Retail Unit Price each (inc. VAT)

Order Code	Type 11714	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
CB18U 1	250mm Spkr LO35A	£46.800	£42.500	£37.950	£54.990
CB19V 1	300mm Spkr LO36A	£46.800	£42.500	£37.950	£54.990
CB20W 1	300mm Spkr LO36D	£68.070	£62.950	£57.000	£79.990

## HIGH POWER PROFESSIONAL

### 200mm (8in.) 100W Midrange Driver

Eminence



A paper cone driver with corrugated surround optimised for midrange use over a bandwidth of 600Hz to 4kHz in 3-way systems. Because of the specialised nature of this driver it is not suitable for use on its own or as a bass unit. In a 3-way system it can be used with any of the other bass and treble drivers in the same range.

#### Specification

Nominal impedance:	8Ω
Resonant frequency:	547.4Hz
Usable frequency response:	548Hz to 5kHz
Nominal power handling:	100W rms
Sensitivity:	102dB
Voice coil diameter:	38.1mm
Magnet weight:	1080g
Dimensions:	203mm dia. x 89mm deep
Fixing centres:	8 x 7mm dia. holes
on 197mm dia. circle	
Baffle cutout:	187.3mm dia.

#### Thiele-Small Parameters

Resonant frequency	$f_s$ : 547.40Hz
Impedance	$R_e$ : 7.08Ω
Coil inductance	$L_e$ : 0.14mH
Electromagnetic Q	$Q_{es}$ : 2.060
Mechanical Q	$Q_{ms}$ : 6.83
Total Q	$Q_{ts}$ : 1.580
Compliance equivalent volume	$V_{as}$ :
0.76L/0.027cu.ft	
Suspension mechanical compliance	$C_{ms}$ : 0.0119mm/N
BL product	BL: 9.18T-M
Diaphragm mass including airload	$M_{ms}$ : 7.13g
Equivalent mechanical resistance loss	$R_{ms}$ :
3.5198N*sec/m	
Efficiency bandwidth product	EBP: 65.0
Cone area	$S_d$ : 218.08cm <sup>2</sup>

Retail Unit Price each (inc. VAT)

Order Code	Type 4066	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
RC91Y 5	100W 8in. Midrange	£24.670	£22.950	£20.650	£28.990

### Bumper PA Chassis Speakers

Bumper

RECENTLY INTRODUCED



VM01B



VM02C



VM03D



VM04E



VM05F

Code	Dia	Imp	Frequency Response	P max	Prms	Magnet Weight	fo	Qts	Vas	Ref efficiency	Mounting Depth
	cm(in)	(Ω)	(Hz)	(W)	(W)	(kg)	(Hz)		(l)	(dB, 1W @ 1m)	(mm)
VM01B	38(15)	8	20-4600	600	300	3.87	46.3	0.35	4.4	97	152
VM02C	38(15)	8	20-4500	300	150	1.69	44.9	0.73	6	94.1	152
VM03D	30(12)	8	20-4000	500	250	3.16	53	0.38	1.6	93.9	120
VM04E	20(8)	8	20-6700	300	150	1.69	67.4	0.43	8.4	89.4	90
VM05F	25(10)	8	20-5000	300	150	1.69	49.9	0.54	1.6	91.5	102

Retail Unit Price each (inc. VAT).

Order Code	Type 13616	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
VM01B	38cm, 600W PA Spkr	£93.600			£109.990
VM02C	38cm, 300W PA Spkr	£51.050			£59.990
VM03D	30cm, 500W PA Spkr	£68.070			£79.990
VM04E	20cm, 300W PA Spkr	£29.770			£34.990
VM05F	25cm, 300W PA Spkr	£34.030			£39.990

## 200mm (8in.) 100W Power Speaker

Eminence



A paper cone driver with plasticised linen surround that is suitable for general purpose use such as vocal PA, keyboards, discotheques, stage monitors and bass guitar.

### Specification

Nominal impedance: 8Ω  
Resonant frequency: 72Hz  
Usable frequency response: 72Hz to 4kHz  
Nominal power handling: 100W rms  
Sensitivity: 97dB  
Voice coil diameter: 50.8mm  
Magnet weight: 1080g  
Dimensions: 203mm dia. x 82mm deep

Fixing centres: 197mm dia. circle  
Baffle cutout: 187.3mm dia.

### Thiele-Small Parameters

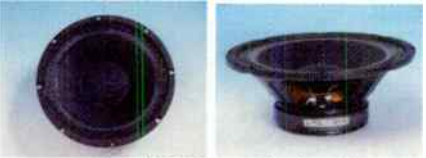
Resonant frequency  $f_s$ : 72.5Hz  
Impedance  $R_e$ : 7.21Ω  
Coil inductance  $L_e$ : 0.73mH  
Electromagnetic Q  $Q_{es}$ : 0.27  
Mechanical Q  $Q_{ms}$ : 5.26  
Total Q  $Q_{ts}$ : 0.26  
Compliance equivalent volume  $V_{as}$ : 27.20L/0.96cu.ft  
Peak diaphragm displacement volume  $V_d$ : 19.7cc  
Suspension mechanical compliance  $C_{ms}$ : 0.4226mm/N  
BL product BL: 11.81T-M  
Diaphragm mass including airload  $M_{ms}$ : 11.40g  
Equivalent mechanical resistance loss  $R_{ms}$ :  
Efficiency bandwidth product EBP: 269.9  
Cone area  $S_d$ : 214.08cm<sup>2</sup>  
Resonant impedance  $Z_{max}$ : 148.5Ω

Retail Unit Price each (inc. VAT).

Order Code	Type #473	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
XG43W7	Speaker 8-100L 8R	£35.730	£29.600	£26.400	£41.990

## 250mm (10in.) 100W Power Speaker

Eminence



A loudspeaker optimised for lead guitar, also suitable for bass guitar, vocal PA, keyboards, discotheques, club music systems and stage monitors. Chassis is pressed steel.

### Specification

Nominal impedance: 8Ω  
Resonant frequency: 55Hz  
Usable frequency response: 55Hz to 7kHz  
Nominal power handling: 100W rms  
Sensitivity: 97dB  
Voice coil diameter: 50.8mm  
Magnet weight: 1080g  
Dimensions: 254mm dia x 101mm deep

Fixing centres: 8x7mm on 244.5mm dia. circle  
Baffle cutout: 235mm dia.

### Thiele-Small Parameters

Resonant frequency  $f_s$ : 55.04Hz  
Impedance  $R_e$ : 7.12Ω  
Electromagnetic Q  $Q_{es}$ : 0.38

Mechanical Q  $Q_{ms}$ : 6.55  
Total Q  $Q_{ts}$ : 0.36  
Compliance equivalent volume  $V_{as}$ : 69.91L/2.74cu.ft  
Peak diaphragm displacement volume  $V_d$ : 31.73cc  
Suspension mechanical compliance  $C_{ms}$ : 0.4060mm/N  
BL product BL: 11.58T-M  
Diaphragm mass including airload  $M_{ms}$ : 20.59g  
Equivalent mechanical resistance loss  $R_{ms}$ : 1.5961  
Efficiency bandwidth product EBP: 195.8  
Voice coil overhang  $X_{max}$ : 0.9mm  
Surface area of cone  $S_d$ : 350.12cm<sup>2</sup>  
Resonant impedance  $Z_{max}$ : 98.2Ω

Retail Unit Price each (inc. VAT).

Order Code	Type #474	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
XG46A 8	Speaker 10-100L 8R	£36.580	£30.450	£27.250	£42.990

## 250mm (10in.) 200W PA Driver

Eminence



A 200W paper cone driver with corrugated surround with a performance optimised for lead guitar. Also suitable for bass guitar, vocal PA, keyboards, discotheques, club music systems and stage monitors. Chassis is pressed steel.

### Specification

Nominal impedance: 8Ω  
Resonant frequency: 65Hz  
Usable frequency response: 65Hz to 3.5kHz  
Nominal power handling: 200W rms  
Sensitivity: 99dB  
Voice coil diameter: 63.5mm  
Magnet weight: 1590g  
Dimensions: 254mm dia. x 108mm deep  
Fixing centres: 8 x 7mm on 244.5mm dia. circle  
Baffle cutout: 235mm dia.

### Thiele-Small Parameters

Resonant frequency  $f_s$ : 65.4Hz  
Impedance  $R_e$ : 5.67Ω  
Electromagnetic Q  $Q_{es}$ : 0.35  
Mechanical Q  $Q_{ms}$ : 8.34  
Total Q  $Q_{ts}$ : 0.33  
Compliance equivalent volume  $V_{as}$ : 35.53L/1.24cu.ft  
Peak diaphragm displacement volume  $V_d$ : 62.96cc  
Suspension mechanical compliance  $C_{ms}$ : 0.2127  
BL product BL: 13.69  
Diaphragm mass including airload  $M_{ms}$ : 27.85  
Equivalent mechanical resistance loss  $R_{ms}$ : 1.3727  
Efficiency bandwidth product EBP: 189.0  
Voice coil overhang  $X_{max}$ : 1.8mm  
Surface area of cone  $S_d$ : 344.00cm<sup>2</sup>  
Resonant impedance  $Z_{max}$ : 142.3Ω

Retail Unit Price each (inc. VAT).

Order Code	Type #477	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
RC32A 11	200W 10in. PA Driver	£46.800	£38.350	£33.950	£54.990

**Business Account Holders**  
**No Delivery Charges for any order**

## 300mm (12in.) 100W General Purpose Power Speaker

Eminence



A general purpose loudspeaker suitable for use in sound reinforcement systems, bass and lead guitar, keyboards, guitar combos, club music systems and stage monitors. The loudspeaker has a paper cone with a plasticised linen surround and a pressed steel chassis.

### Specification

Nominal impedance: 8Ω  
Resonant frequency: 49Hz  
Usable frequency response: 49Hz to 6kHz  
Nominal power handling: 100W rms  
Sensitivity: 100dB  
Voice coil diameter: 50.8mm  
Magnet weight: 1080g  
Dimensions: 309mm dia. x 113.5mm deep

Fixing centres: 8 x 7mm on 293.7mm dia. circle  
Baffle cutout: 284.2mm dia.

### Thiele-Small Parameters

Resonant frequency  $f_s$ : 49.50Hz  
Impedance  $R_e$ : 7.08Ω  
Electromagnetic Q  $Q_{es}$ : 0.45  
Mechanical Q  $Q_{ms}$ : 7.89  
Total Q  $Q_{ts}$ : 0.41  
Compliance equivalent volume  $V_{as}$ : 128.86L/4.55cu.ft  
Peak diaphragm displacement volume  $V_d$ : 47.80cc  
Suspension mechanical compliance  $C_{ms}$ : 0.34mm/N  
BL product BL: 12.43T-M  
Diaphragm mass including airload  $M_{ms}$ : 30.40g  
Equivalent mechanical resistance loss  $R_{ms}$ : 1.1989N\*sec/m  
Efficiency bandwidth product EBP: 114.2  
Voice coil overhang  $X_{max}$ : 0.9mm  
Cone area  $S_d$ : 519.45cm<sup>2</sup>  
Resonant impedance  $Z_{max}$ : 136.0Ω

Retail Unit Price each (inc. VAT).

Order Code	Type #482	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
XG49D 9	Speaker 12-100L 8R	£34.030	£28.200	£20.000	£39.990

## 300mm (12in.) 100W Twin Cone Power Speaker

Eminence



A general purpose loudspeaker that features a twin cone to provide extended high frequency response. Ideal for use in full range PA systems, keyboard combos, club music systems and stage monitors. Available in 8Ω and 16Ω versions with a paper cone and plasticised linen surround. Steel chassis.

### Specification

Nominal impedance:	8Ω or 16Ω
Resonant frequency:	42Hz
Usable frequency response:	42Hz to 10kHz
Nominal power handling:	100W rms
Sensitivity:	98dB
Voice coil diameter:	50.8mm
Magnet weight:	1080g
Dimensions:	309mm dia. x 113.5mm deep
Fixing centres:	8 x 7mm on 293.7mm dia. circle
Baffle cutout:	284.2mm dia.

### Thiele-Small Parameters

Resonant frequency	$f_s$ : 42.21Hz
Impedance	$R_e$ : 7.14Ω
Electromagnetic Q	$Q_{es}$ : 0.40
Mechanical Q	$Q_{ms}$ : 3.25
Total Q	$Q_{ts}$ : 0.36
Compliance equivalent volume	$V_{as}$ : 170.26L/6.01cu.ft
Peak diaphragm displacement volume	$V_d$ : 47.42cc
Suspension mechanical compliance	$C_{ms}$ : 0.4493mm/N
BL product	BL: 12.24T-M
Diaphragm mass including airload	$M_{ms}$ : 31.65g
Equivalent mechanical resistance loss	$R_{ms}$ : 2.5822N*sec/m
Efficiency bandwidth product	EBP: 105.5
Voice coil overhang	$X_{max}$ : 0.9mm
Cone area	$S_d$ : 519.45cm <sup>2</sup>
Resonant impedance	$Z_{max}$ : 65.1Ω

Retail Unit Price each (inc. VAT).

Order Code	Type 4746	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
XG50E 9	Speaker 12-100/TL 8R	£42.540	£35.500	£32.250	£49.990
XG51F 9	Speaker 12-100/TL 16R	£51.050	£35.500	£32.250	£59.990

## 300mm (12in.) 100W Rock Speaker

Eminence

A loudspeaker specifically intended for use with lead guitar. The paper cone and surround help to recreate the legendary sound of the sixties rock scene, so providing a subtle mix of tonal and overdrive characteristics.



### Specification

Nominal impedance:	8Ω
Resonant frequency:	94Hz
Usable frequency response:	95Hz to 6kHz
Nominal power handling:	100W rms
Sensitivity:	99dB
Voice coil diameter:	50.8mm
Magnet weight:	1590g
Dimensions:	309mm dia. x 18.3mm deep
Fixing centres:	8 x 7mm on 293mm dia. circle
Baffle cutout:	284mm dia.

### Thiele-Small Parameters

Resonant frequency	$f_s$ : 99.43Hz
--------------------	-----------------

Impedance	$R_e$ : 6.94Ω
Electromagnetic Q	$Q_{es}$ : 0.84
Mechanical Q	$Q_{ms}$ : 10.85
Total Q	$Q_{ts}$ : 0.78
Compliance equivalent volume	$V_{as}$ : 34.41/1.22cu.ft
Peak diaphragm displacement volume	$V_d$ : 46.25cc
Suspension mechanical compliance	$C_{ms}$ : 0.0954mm/N
BL product	BL: 11.78T-M
Diaphragm mass including airload	$M_{ms}$ : 26.85g
Equivalent mechanical resistance loss	$R_{ms}$ : 1.5458N*sec/m
Efficiency bandwidth product	EBP: 118.6
Voice coil overhang	$X_{max}$ : 2.7mm
Cone area	$S_d$ : 506.71cm <sup>2</sup>
Resonant impedance	$Z_{max}$ : 96.8Ω

Retail Unit Price each (inc. VAT).

Order Code	Type 4746	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
XJ51F 9	Rock Sp 12-100/P 8R	£39.990	£33.200	£30.000	£46.990

## 300mm (12in.) 200W Power Speaker

Eminence



A 300mm (12in.) 200W paper cone driver with corrugated surround, optimised for sound reinforcement systems. Also suitable for lead and bass guitar, keyboards, guitar combos, club music systems and stage monitors. Chassis is pressed steel.

### Specification

Nominal impedance:	8Ω
Resonant frequency:	58Hz
Usable frequency response:	55Hz to 6kHz
Nominal power handling:	200W rms
Sensitivity:	98dB
Voice coil diameter:	63.5mm
Magnet weight:	1590g
Dimensions:	309mm dia. x 118.3mm deep
Fixing centres:	8 x 7mm on 293mm dia. circle
Baffle cutout:	284.2mm dia.

Baffle cutout:

### Thiele-Small Parameters

Resonant frequency	$f_s$ : 58.52Hz
Impedance	$R_e$ : 6.31Ω
Electromagnetic Q	$Q_{es}$ : 0.77
Mechanical Q	$Q_{ms}$ : 7.04
Total Q	$Q_{ts}$ : 0.48
Compliance equivalent volume	$V_{as}$ : 87.06L/3.07cu.ft
Peak diaphragm displacement volume	$V_d$ : 140.35cc
Suspension mechanical compliance	$C_{ms}$ : 0.2297mm/N
BL product	BL: 12.02T-M
Diaphragm mass including airload	$M_{ms}$ : 32.2g
Equivalent mechanical resistance loss	$R_{ms}$ : 1.6823N*sec/m
Efficiency bandwidth product	EBP: 102.3
Voice coil overhang	$X_{max}$ : 2.7mm
Cone area	$S_d$ : 519.45cm <sup>2</sup>
Resonant impedance	$Z_{max}$ : 92.2Ω

Retail Unit Price each (inc. VAT).

Order Code	Type 4747	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
RC93B 11	200W 12in. PA Driver	£55.310	£44.600	£39.750	£64.990



## 380mm (15in.) 100W Bass Power Speaker

Eminence



A loudspeaker specifically intended as a bass driver, and ideal for use in multiway systems and for bass guitar. The loudspeaker is fitted with a paper cone and a plasticised linen and a pressed steel chassis.

### Specification

Nominal impedance:	8Ω
Resonant frequency:	49Hz
Usable frequency response:	50Hz to 4kHz
Nominal power handling:	100W rms
Sensitivity:	100dB
Voice coil diameter:	50.8mm
Magnet weight:	1080g
Dimensions:	381.7 dia x 153.6mm deep
Fixing centres:	8 x 7mm on 369.9mm dia. circle
Baffle cutout:	359mm dia.

Fixing centres:

Baffle cutout:

### Thiele-Small Parameters

Resonant frequency	$f_s$ : 49Hz
Impedance	$R_e$ : 6.74Ω
Electromagnetic Q	$Q_{es}$ : 0.75
Mechanical Q	$Q_{ms}$ : 3.66
Total Q	$Q_{ts}$ : 0.62
Compliance equivalent volume	$V_{as}$ : 224.29L/7.92cu.ft
Peak diaphragm displacement volume	$V_d$ : 78.79cc
Suspension mechanical compliance	$C_{ms}$ : 0.2178mm/N
BL product	BL: 11.59T-M
Diaphragm mass including airload	$M_{ms}$ : 48.44g
Equivalent mechanical resistance loss	$R_{ms}$ : 4.0761N*sec/m
Efficiency bandwidth product	EBP: 65.5
Voice coil overhang	$X_{max}$ : 0.9mm
Cone area	$S_d$ : 856.34cm <sup>2</sup>
Resonant impedance	$Z_{max}$ : 39.7Ω

Retail Unit Price each (inc. VAT).

Order Code	Type 4748	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
XG52G 11	Speaker 15-100/L 8R	£45.090	£42.000	£38.000	£52.990

## 380mm (15in.) 200W Bass Power Speaker

Eminence



A higher power version of the 380mm (15in.) 100W (XG52G) featuring an extended low frequency response. This loudspeaker is specifically intended as a bass driver in multiway systems and for bass guitar. The loudspeaker has a paper cone with plasticised linen surround and pressed steel chassis.

### Specification

Nominal impedance:	8Ω
Resonant frequency:	41Hz
Usable frequency response:	41Hz to 5kHz
Nominal power handling:	200W rms
Sensitivity:	99dB
Voice coil diameter:	63.5mm
Magnet weight:	2270g
Dimensions:	381.7mm dia. x 153.6mm deep
Fixing centres:	8 x 7mm dia. holes on 369.9 dia. circle



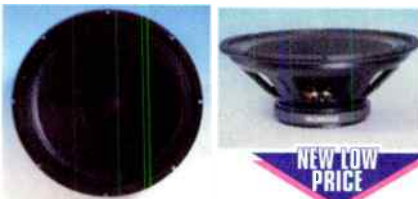
Baffle cutout: 359mm dia.  
**Thiele-Small Parameters**  
 Resonant frequency  $f_s$ : 40.27Hz  
 Impedance  $R_e$ : 6.99Ω  
 Electromagnetic Q  $Q_{es}$ : 0.537  
 Mechanical Q  $Q_{ms}$ : 6.56  
 Total Q  $Q_{ts}$ : 0.49  
 Compliance equivalent volume  $V_{as}$ : 293.11L/10.4cu.ft  
 Peak diaphragm displacement volume  $V_d$ : 231.38cc  
 Suspension mechanical compliance  $C_{ms}$ : 0.2846mm/N  
 BL product BL: 13.59T-M  
 Diaphragm mass including airload  $M_{ms}$ : 54.89g  
 Equivalent mechanical resistance loss  $R_{ms}$ :  
 2.1166N\*sec/m  
 Efficiency bandwidth product EBP: 76.6  
 Voice coil overhang  $X_{max}$ : 2.7mm  
 Cone area  $S_d$ : 856.34cm<sup>2</sup>  
 Resonant impedance  $Z_{max}$ : 52Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
YG53H 14	Speaker 15-200L 8R	£52.750	£48.700	£43.400	£61.990

## 380mm (15in.) 300W PA Driver

Eminence



A 380mm (15in.) 300W diameter paper cone driver with corrugated surround suitable for all high power bass applications, including bass guitar. Chassis is pressed steel.

### Specification

Nominal impedance: 8Ω  
 Resonant frequency: 39Hz  
 Usable frequency response: 39Hz to 3kHz  
 Nominal power handling: 300W rms  
 Sensitivity: 103dB  
 Voice coil diameter: 76.2mm  
 Magnet weight: 2270g  
 Dimensions: 381mm dia. x 155mm deep

Fixing centres: 8 x 7mm dia. holes on 369.9 dia. circle  
 359mm dia.

### Baffle cutout:

#### Thiele-Small Parameters

Resonant frequency  $f_s$ : 39.35Hz  
 Impedance  $R_e$ : 4.97Ω  
 Electromagnetic Q  $Q_{es}$ : 0.33  
 Mechanical Q  $Q_{ms}$ : 7.55  
 Total Q  $Q_{ts}$ : 0.32  
 Compliance equivalent volume  $V_{as}$ : 208.2L/7.35cu.ft  
 Peak diaphragm displacement volume  $V_d$ : 156.33cc  
 Suspension mechanical compliance  $C_{ms}$ : 0.2022mm/N  
 BL product BL: 17.37T-M  
 Diaphragm mass including airload  $M_{ms}$ : 80.92g  
 Equivalent mechanical resistance loss  $R_{ms}$ : 2.6488N\*sec/m  
 Efficiency bandwidth product EBP: 119.4  
 Voice coil overhang  $X_{max}$ : 1.8mm  
 Cone area  $S_d$ : 856.34cm<sup>2</sup>  
 Resonant impedance  $Z_{max}$ : 118.9Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
RC94C 8	300W 15in. PA Driver	£72.330	£70.000	£65.000	£84.990

## 300mm (12in.) 200W PA Speaker

Eminence



This high performance, rugged, loudspeaker features a cast aluminium chassis with a paper cone and plasticised linen surround. Designed for the professional user with performance optimised for studio monitoring and sound reinforcement systems. Also suitable for vocal PA keyboards, lead and bass guitar and combos, club music systems, discos and stage monitoring.

### Specification

Nominal impedance: 8Ω  
 Resonant frequency: 56Hz  
 Usable frequency response: 50Hz to 6kHz  
 Nominal power handling: 200W rms  
 Sensitivity: 99dB  
 Voice coil diameter: 76.2mm  
 Magnet weight: 2690g  
 Dimensions: 314.3mm dia. x 139.1mm deep

Fixing centres: 8 x 7mm dia. holes on 293.7 dia. circle  
 283.2mm dia.

### Baffle cutout:

#### Thiele-Small Parameters

Resonant frequency  $f_s$ : 56Hz  
 Impedance  $R_e$ : 6.19Ω  
 Coil inductance  $L_e$ : 0.67mH  
 Electromagnetic Q  $Q_{es}$ : 0.31  
 Mechanical Q  $Q_{ms}$ : 3.38  
 Total Q  $Q_{ts}$ : 0.29  
 Compliance equivalent volume  $V_{as}$ : 61.87L/2.18cu.ft  
 Peak diaphragm displacement volume  $V_d$ : 140.35cc  
 Suspension mechanical compliance  $C_{ms}$ : 0.1633mm/N  
 BL product BL: 18.54T-M  
 Diaphragm mass including airload  $M_{ms}$ : 49.48g  
 Equivalent mechanical resistance loss  $R_{ms}$ : 5.0045N\*sec/m  
 Efficiency bandwidth product EBP: 178.7  
 Voice coil overhang  $X_{max}$ : 2.7mm  
 Cone area  $S_d$ : 519.45cm<sup>2</sup>  
 Resonant impedance  $Z_{max}$ : 74.9Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
XJ49D 17	PA Spkr 12-200L 8R	£76.580	£70.000	£65.000	£89.990

## 380mm (15in.) 300W Bass PA Driver

Eminence



A high performance loudspeaker featuring a die-cast aluminium chassis, paper cone and plasticised cloth surround that has been designed for the most demanding applications. The speaker features a kapton coil former with a polyamide-imide coated copper voice coil. Primarily intended for all bass applications, but suitable for stage PA guitar combos, general purpose bass and electronic keyboards.

### Specification

Nominal impedance: 8Ω  
 Resonant frequency: 48Hz  
 Usable frequency response: 45Hz to 5kHz  
 Nominal power handling: 300W rms  
 Sensitivity: 99.2dB  
 Voice coil diameter: 76.2mm  
 Magnet weight: 2690g  
 Dimensions: 384.2mm dia. x

161mm deep  
 Fixing centres: 8 x 7mm dia. holes on 369.9 dia. circle  
 360.3mm dia.

### Baffle cutout:

#### Thiele-Small Parameters

Resonant frequency  $f_s$ : 47.9Hz  
 Impedance  $R_e$ : 6.51Ω  
 Electromagnetic Q  $Q_{es}$ : 0.41  
 Mechanical Q  $Q_{ms}$ : 5.01  
 Total Q  $Q_{ts}$ : 0.38  
 Compliance equivalent volume  $V_{as}$ : 203.57L/7.16cu.ft  
 Peak diaphragm displacement volume  $V_d$ : 93.8cc  
 Suspension mechanical compliance  $C_{ms}$ : 0.1977mm/N  
 BL product BL: 16.29T-M  
 Diaphragm mass including airload  $M_{ms}$ : 55.85g  
 Equivalent mechanical resistance loss  $R_{ms}$ : 3.3548N\*sec/m  
 Efficiency bandwidth product EBP: 116.2  
 Voice coil overhang  $X_{max}$ : 1.2mm  
 Cone area  $S_d$ : 856.34cm<sup>2</sup>  
 Resonant impedance  $Z_{max}$ : 85.6Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
AB90X 19	15in 300W PA Driver	£102.110	£96.000	£90.000	£119.990

## 380mm (15in.) 500W PA Driver

Eminence



A precision engineered loudspeaker for the discerning professional user and musician, that has been designed, engineered and manufactured to astonishing tolerances to produce a loudspeaker offering outstanding sound quality and reliability. The paper cone is supported by a corrugated plasticised cloth surround, and the huge 100mm diameter voice coil is made from polyamide-imide coated copper wound on a kapton former. Magnet composition is APS ferrite. Chassis is diecast aluminium.

### Specification

Nominal impedance: 8Ω  
 Resonant frequency: 38Hz  
 Usable frequency response: 38Hz to 2kHz  
 Nominal power handling: 500W rms  
 Sensitivity: 98dB  
 Voice coil diameter: 101.6mm  
 Magnet weight: 3090g  
 Dimensions: 384.2mm dia. x 161mm deep

Fixing centres: 8 x 7mm  
 Baffle cutout: 360.3mm dia.

#### Thiele-Small Parameters

Resonant frequency  $f_s$ : 38.92Hz  
 Impedance  $R_e$ : 5.26Ω  
 Coil inductance  $L_e$ : 1.46mH  
 Electromagnetic Q  $Q_{es}$ : 0.36  
 Mechanical Q  $Q_{ms}$ : 4.95  
 Total Q  $Q_{ts}$ : 0.33  
 Compliance equivalent volume  $V_{as}$ : 196.86L/7.02cu.ft  
 Peak diaphragm displacement volume  $V_d$ : 469cc  
 Suspension mechanical compliance  $C_{ms}$ : 0.1911mm/N  
 BL product BL: 17.70T-M  
 Diaphragm mass including airload  $M_{ms}$ : 87.50g  
 Equivalent mechanical resistance loss  $R_{ms}$ : 4.3237N\*sec/m  
 Efficiency bandwidth product EBP: 108.4  
 Voice coil overhang  $X_{max}$ : 5.5mm  
 Cone area  $S_d$ : 856.34cm<sup>2</sup>  
 Resonant impedance  $Z_{max}$ : 77.8Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
RC95D 24	500W 15in. PA Driver	£140.410	£130.000	£120.000	£164.990

## 450mm (18in.) 400W Fundamental Bass PA Driver

Emlence



A high performance loudspeaker featuring a die-cast aluminium chassis, paper cone and plasticised linen surround that has been designed for the most demanding applications. Primarily intended for all bass applications, but suitable for stage PA guitar combos, general purpose bass and electronic keyboards.

### Specification

Nominal impedance:	8Ω
Resonant frequency:	33Hz
Usable frequency response:	30Hz to 800Hz
Nominal power handling:	400W rms
Sensitivity:	98dB
Voice coil diameter:	76.2mm
Magnet weight:	2690g
Dimensions:	457.2mm dia. x 180.8mm deep
Fixing centres:	8 x 7mm dia. holes on 438.2 dia. circle
Baffle cutout:	422.3mm dia.

### Thiele-Small Parameters

Resonant frequency	$f_s$ : 34.5Hz
Impedance	$R_e$ : 6.6Ω
Electromagnetic Q	$Q_{es}$ : 0.41
Mechanical Q	$Q_{ms}$ : 7.32
Total Q	$Q_{ts}$ : 0.39
Compliance equivalent volume	$V_{as}$ : 374.72L
Peak diaphragm displacement volume	$V_d$ : 457.9cc
Suspension mechanical compliance	$C_{ms}$ : 0.2053mm/N
BL product	BL: 19.06T-M
Diaphragm mass including airload	$M_{ms}$ : 103.69g
Equivalent mechanical resistance loss	$R_{ms}$ : 3.0699N*sec/m
Efficiency bandwidth product	EBP: 84.5
Voice coil overhang	$X_{max}$ : 4.5mm
Cone area	$S_d$ : 1140.09cm <sup>2</sup>
Resonant impedance	$Z_{max}$ : 124.9Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
XG54J	23 Spkr 18in 400W 8R	£119.140	£110.000	£100.000	£139.990

## 450mm (18in.) 600W PA Driver

Emlence



A precision engineered loudspeaker for the discerning professional user and musician, combining unrivalled engineering accuracy with good value and outstanding reliability. A loudspeaker that combines high power handling with the sound quality needed in digital recordings with the strength and reliability needed for touring. The paper cone is supported by a corrugated plasticised cloth surround, and the huge 100mm diameter voice coil is made from polyamide-imide coated copper wound on a kapton former. Magnet composition is APS ferrite. Chassis is diecast aluminium.

### Specification

Nominal impedance:	8Ω
Resonant frequency:	28Hz
Usable frequency response:	28Hz to 2kHz
Nominal power handling:	600W rms
Sensitivity:	98dB

Voice coil diameter:	101.6mm
Magnet weight:	3090g
Dimensions:	457.2mm dia. x 207mm deep
Fixing centres:	8 x 7mm dia. holes on 438.2 dia. circle
Baffle cutout:	422.3mm dia.

### Thiele-Small Parameters

Resonant frequency	$f_s$ : 28.07Hz
Impedance	$R_e$ : 5.12Ω
Coil inductance	$L_e$ : 1.67mH
Electromagnetic Q	$Q_{es}$ : 0.25
Mechanical Q	$Q_{ms}$ : 5.53
Total Q	$Q_{ts}$ : 0.24
Compliance equivalent volume	$V_{as}$ : 345.09L
Peak diaphragm displacement volume	$V_d$ : 634.86cc
Suspension mechanical compliance	$C_{ms}$ : 0.1876mm/N
BL product	BL: 25.03T-M
Diaphragm mass including airload	$M_{ms}$ : 171.34g
Equivalent mechanical resistance loss	$R_{ms}$ : 5.4636N*sec/m
Efficiency bandwidth product	EBP: 113.7
Voice coil overhang	$X_{max}$ : 5.5mm
Cone area	$S_d$ : 1159.17cm <sup>2</sup>
Resonant impedance	$Z_{max}$ : 97.2Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
RC96E	25 600W 18in. PA Driver	£144.670	£142.000	£123.750	£169.990

## SPEAKER BUILDING

### FERRITE COILS

#### Ferrite coils



A new range of ferrite coils, ideal for use in crossover circuits.

VM18U	1.0mH
VM19V	2.0mH
VM20W	3.5mH
VM21X	4.5mH
VM22Y	5.5mH
VM23A	6.5mH
VM24B	7.5mH
VM25C	9.0mH
VM26D	12.0mH

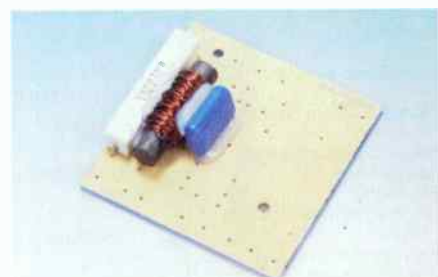
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
VM18U	Ferrite Coil 1.0mH	£1.260			£1.490
VM19V	Ferrite Coil 2.0mH	£1.690			£1.990
VM20W	Ferrite Coil 3.5mH	£2.970			£3.490
VM21X	Ferrite Coils 4.5mH	£3.390			£3.990
VM22Y	Ferrite Coil 5.5mH	£4.670			£5.490
VM23A	Ferrite Coil 6.5mH	£5.520			£6.490
VM24B	Ferrite Coil 7.5mH	£6.800			£7.990
VM25C	Ferrite Coil 9.0mH	£7.220			£8.490
VM26D	Ferrite Coils 12.0mH	£8.070			£9.490

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

## CROSSOVERS

### HPX2



A two-way crossover with a 12dB/octave high pass filter operating at 5kHz. Power handling capability up to 200W. Ideal for use with our 50W Bullet and 70W Horn Tweeters.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
YJ03D	Crossover HPX2	£11.900	£9.200	£8.300	£13.990

## Two-way 6dB/Octave



A crossover network enclosed in a small plastic box. The crossover allows a woofer and tweeter to work together. Overall size (excluding solder tags) 85 x 51 x 30mm high. Impedance 8Ω. Power handling 40W. Crossover frequency approximately 2.5kHz at 6dB/octave.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
YT47B	X-Over 2-Way 6dB	£3.990	£2.500	£2.250	£4.690

## Two-way 12dB/Octave

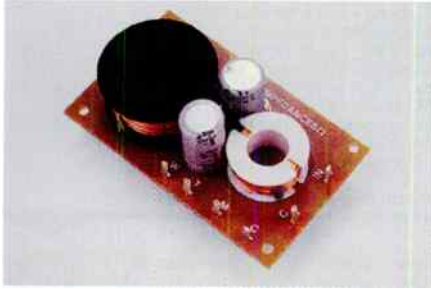


A crossover network for operating a woofer and a tweeter together. Components are mounted on a plastic panel (100 x 60mm) for fixing inside a cabinet. Power handling: 40W rms. Crossover is at approximately 3kHz (12dB/octave).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
WF02C	Crossover 2-Way	£6.450	£4.100	£3.500	£7.590

## Three-way 6dB/Octave

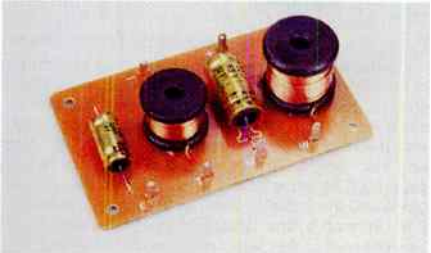


A crossover network for operating a woofer, tweeter and mid-range speaker together. Components are mounted on a paxolin pcb 100 x 60mm, for fixing inside a cabinet. Power handling 60W. Impedance 8Ω. Crossover frequencies approximately 1kHz and 5kHz at 6dB/octave. Overall height 30mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3385	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
YT46A	X-Over 3-Way 6dB	£4.240	£3.400	£3.050	£4.990

## Three-way 12dB/Octave



A crossover network for operating a woofer, tweeter and mid-range speaker together. Components are mounted on a plastic panel (100 x 60mm) for fixing inside a cabinet. Power handling 60W rms. Crossovers are at approximately 700Hz (6dB/octave) and 3kHz (12dB/octave).

Retail Unit Price each (inc. VAT).

Order Code	Type 3387	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
WF03D	Crossover 3-Way	£6.800	£4.750	£4.000	£7.990

## Three-way 100W

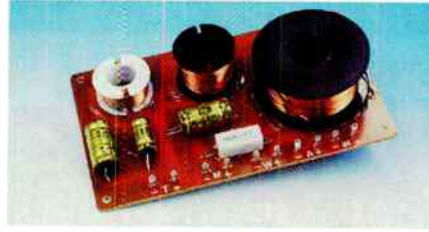


A crossover network for operating a woofer, tweeter and mid-range speaker together. Components are mounted on a paxolin pcb 115 x 95mm, for fixing inside a cabinet. Power handling 100W. Impedance 8Ω. Crossover frequencies approximately 1kHz and 4kHz at 12dB/octave. Overall height 30mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3388	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
YT44X	X-Over 3-Way 100W	£7.310	£5.900	£5.200	£8.590

## Three-way 150W

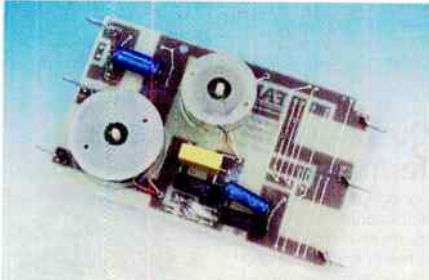


A crossover network for operating a woofer, tweeter and mid-range speaker together. Components are mounted on a paxolin PCB 151 x 90mm, for fixing inside a cabinet. Power handling 150W. Impedance 8Ω. Crossover frequencies approximately 1.2kHz and 5kHz at 12dB/octave. Overall height 30mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3389	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
YT45Y	X-Over 3-Way 150W	£8.500	£6.250	£5.750	£9.990

## HPX7 Crossover



The HPX7 is primarily designed for use with the 50W Compression Driver and suitable bass drivers but is suitable for any use requiring a 2.2kHz crossover. The HPX7 crossover is of the LC type with a crossover operating at 2.2kHz. The bass section rolls off from 2.2kHz at 12dB/octave and the high-pass section operates at the same frequency but at 18dB/octave. The maximum power handling capacity is 400W with no attenuation and when using the attenuators the power rating is 250W. It should be noted that the power distribution at 2kHz for normal music programme is 80% to the bass and 20% to the HF units. Also incorporated in the design is the opportunity for the user to select or vary the amount of HF brilliance/loudness by attenuating or reducing the HF output in 1dB steps to -6dB to achieve a perfect sound balance between the bass and the treble units. This is done by a constant impedance technique which keeps the HF section matched to its stated impedance of 8Ω.

Retail Unit Price each (inc. VAT).

Order Code	Type 3391	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
XJ56L	X-Over 2.2kHz 400W	£33.180	£28.900	£26.400	£38.990

## HPX8 Crossover



The HPX8 is an 18dB/octave high pass filter operating at 5kHz in systems with power handling up to 250W. This crossover is designed specifically for use with the 40W Compression Driver (RC97F).

An attenuator resistor is supplied with the network and may be connected if required to decrease the sensitivity or increase power handling.

Retail Unit Price each (inc. VAT).

Order Code	Type 3392	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
XJ57M	X-Over 5kHz 250W	£15.310	£13.600	£12.400	£17.990

## HPX9 Crossover



The HPX9 designed for use with the Big Cat loudspeaker range. The HPX9 crossover is of an LC type 3-way four section crossover operating at 500Hz and 6.5kHz. The bass and mid sections roll off at 12dB/octave and the mid and tweeter sections roll off at 12dB/octave. The maximum power handling capacity is 400W with no attenuation and when using the attenuators the power rating is 250W. It should be noted that the power distribution at 500Hz for normal music programme is 60% to bass and 40% to midrange. Also incorporated in the design is the opportunity for the user to select or vary the amount of HF and midrange unit loudness by attenuating these sections by -2dB or -4dB to achieve the best sound balance between the selected loudspeakers. This is done by a constant impedance technique which keeps each section matched to its stated impedance of 8Ω.

Retail Unit Price each (inc. VAT).

Order Code	Type 3393	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
XJ58N	X-Over 500Hz/6.5kHz	£55.310	£45.950	£41.000	£64.990

## BINDING POSTS

### Twin Terminal Post



Gold-plated brass terminal posts, one with a red and one with a black knob on a twin base having one part red and one part black, so that the part on the outside of the chassis can be either red or black. Rated 15A at 240V. Each post has a 4mm top socket and a 2.1mm dia. hole in post. Knob size 16 x 15mm dia. Fits panels from 1.2mm dia. to 7mm thick. Panel cut-out requires two 12.7mm holes on 18.5mm centres. Bezel size 35mm x 16mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1077	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JK24B	Pair Terminal Posts	£1.740	£1.330	£1.150	£2.050

**† = While Stocks Last**

## 30A Terminal Post

**Cliff**

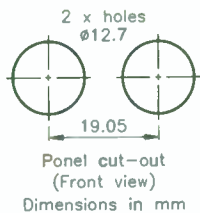
A 30A terminal (binding) post that will accept a 4mm plug-in front or through a cross hole in the post. Available in red and black. Mounting hole: 7mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1079	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CX83E	30A Post Red	£1.260	£1.080	£0.950	£1.490
CX84F	30A Post Black	£1.260	£1.080	£0.950	£1.490

## Amplifier and Speaker Terminals



A fully touch-proof connector assembly, ideal for use in speaker to amplifier connections and for use with banana plugs. Features one red and one black terminal to ensure polarity is easily maintained. Bared cables can be gripped by tightening each terminal down, once the cable has been inserted into an aperture at the side of each terminal. Rated at 30A, with solderable or solder tag connections on the equipment side. Fixing holes are required with a pitch of 19mm and each with a diameter of 13mm.

### Specification

Contact ratings: 30A  
Fixings: Same as standard XLR connectors

Retail Unit Price each (inc. VAT).

Order Code	Type 1015	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BK34M	Term. Post TouchProof	£2.970	£2.750	£2.400	£3.490

## Spade Terminals Solder Type



A spade terminal with insulated handle for use with our terminal posts. Wire is soldered to spade. Spade has 6.3mm (1/4in.) opening. Overall length 36mm. Overall width 12mm. Available in red and black.

Retail Unit Price each (inc. VAT).

Order Code	Type 1082	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS90X	Solder Spade Red	£0.553	£0.450	£0.410	£0.650
FS91Y	Solder Spade Black	£0.587	£0.450	£0.410	£0.690

See Section 8, Car Products for our full range of Gold-Plated Connectors

## Speaker Terminal Posts

**Shark**



Both versions of these speaker terminal posts have 7.3mm cable holes. The longer terminal post (VM51F) is ideal for use with wooden cabinets while the shorter version (VM52G) is for use in metal cases.

**EACH PACK CONTAINS 2 RED AND 2 BLACK SPEAKER TERMINAL POSTS**

Retail Unit Price each (inc. VAT).

Order Code	Type 13402	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
VM51F	Long Speaker Posts	£17.010	£16.250	£15.000	£19.990
VM52H	Short speaker Posts	£15.310	£14.060	£13.000	£17.990

## Quick Connection Lever Terminals

Spring loaded, lever action, quick connection terminals which will hold wires in a vice-like grip. These terminals, originally intended for terminating loudspeaker leads, have many uses.

The 2-way lever terminal on a round escutcheon has one red and one black lever marked '+' and '-', and 'INPUT'. Escutcheon diameter 74mm. Requires 50mm diameter panel cut-out. Fixing centres 43.5 x 43.5mm x 3mm clear. Overall depth 28mm.



The 2-way lever terminal on a rectangular escutcheon has one red and one black lever. Escutcheon size 55 x 24mm. Fixing centres 43.5mm x 3mm clear. Max depth 22mm. The two solder tags are 4mm from one edge and 19mm apart. The 4-way type has two black and two red levers on a base 65 x 17.5mm. Fixing centres 58mm x 3mm clear. Max depth 22mm. The four solder tags are 4mm from one edge and 13mm apart.

Retail Unit Price each (inc. VAT).

Order Code	Type 1088	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JK18U	Lever Term 2-Way Rnd	£0.510	£0.390	£0.335	£0.600
BW72P	Lever Term 2-Way	£0.672	£0.450	£0.360	£0.790
BW71N	Lever Term 4-Way	£0.842	£0.650	£0.510	£0.990

## Speaker Terminal

A spring loaded terminal for gripping speaker wires etc. The terminal is attached to a base panel with a threaded M3 stud and nut. In use, simply depress plunger and insert wire into sidehole. Available in red and black.

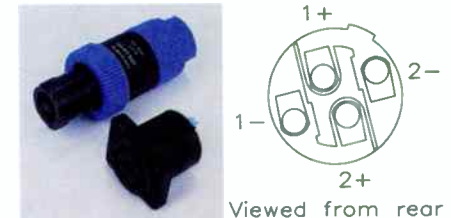


Retail Unit Price each (inc. VAT).

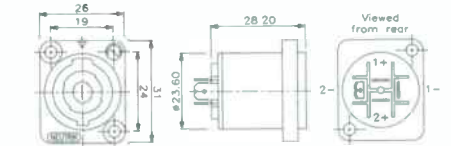
Order Code	Type 1087	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JY89W	Spkr Term Bk	£0.468	£0.370	£0.300	£0.550
JY90X	Spkr Term Red	£0.468	£0.370	£0.300	£0.550

## Loudspeaker Amplifier Connectors

**Neutrik**



An extremely robust four pole cable plug and mating chassis loudspeaker connector configuration. The chassis connector is suitable for airtight speaker cabinets. A 'latch lock' action mates the cable plug with the chassis socket and is locked by a securing ring mechanism. This ensures that leads are reliably secured. The cable plug dismantles into 4 separate parts and the cable is secured by screw terminals and clamped by the Neutrik chuck-type strain relief. The chassis socket terminals provide soldering points for internal wiring.



(Dimensions in mm)  
NL4FC Cable plug 4 pole  
NL4MP X1 Chassis connector 4 pole

Retail Unit Price each (inc. VAT).

Order Code	Type 1089	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CC72P	L/S Cable Plug 4Pole	£3.140	£2.600	£2.390	£3.690
CC73Q	L/S Chassis Connector	£1.690	£1.480	£1.420	£1.990

## Gold Plated Binding Posts



A pair of speaker connection posts available for either standard (FR66W) or bi-wiring (FR67X) techniques. Both versions use gold plated binding posts mounted on plastic recessed escutcheons. The posts will accept connections made via 4mm banana plugs, spade terminals or bare wire to a diameter of up to 5mm. The bi-wiring version has 4 posts connected by two sets of gold plated jumpers.  
Standard Plate:  
Overall dimensions: 93 x 79 x 24mm  
Mounting hole: 73 x 53mm

**MAPLIN**  
on the Net  
<http://www.maplin.co.uk>

Maplin is opening new stores all the time.  
Call for latest details

Bi-wiring Plate:  
Overall dimensions: 96 x 122 x 25mm  
Mounting hole: 75 x 96mm

Retail Unit Price each (inc. VAT).

Order Code	Type 10481	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FR66W	Single Binding Post	£4.670	£2.640	£1.950	£5.490
FR67X	Bi-Wired Binding Post	£5.940	£4.290	£3.550	£6.990

## FLAT SPEAKER CABLE

### Micro Flat Speaker Cable



This high performance micro flat speaker cable is perfect for connecting your speakers invisibly.

At only 0.5mm thick this oxygen free speaker cable has a high strength adhesive back that will stick to most surfaces and, a paintable jacket, meaning that it can be painted or wallpapered over or run under carpet for invisible installation. Or, the off white colour of the jacket blends quite easily with most decors. Hookup is simple - all you need are scissors and a small screwdriver.

This brilliant cable has 18 AWG oxygen free copper conductors and comes complete with 8 corrosion resistant gold plated pins maximising signal transfer and minimising signal loss.

Available in two lengths 30ft (Order code - MX99H) and 50ft (Order code - MX83E)

Retail Unit Price each (inc. VAT).

Order Code	Type 18010	Price each exc. VAT			inc. VAT each
		1+	10+	100+	
MX99H 1	flat spkr cab 30ft	£34.034			£39.990
MX83E 1	flat spkr cab 50ft	£51.050			£59.990

## ACOUSTIC PADS

### Acoustic Pads

Spectra Dynamics



A selection of acoustically absorptive panels for use on the back of stage and monitor loudspeaker enclosures. Constructed from an advanced polymer, these pads absorb most of the energy from the incident plane, dissipating the rest at right angles. The effect is a much clearer, less coloured sound quality, that will provide spatial depth and sharper imaging. Available in two types, spherical concave segment (CB37S), sold in pairs, and linear segment (CB41U), sold singly.

#### Specification

Colour: Charcoal  
Surface emulations: Spherical concave segment/linear segment  
Defined radius: 200mm (Spher. concave)  
Focal point: 100mm (Spher. concave)  
Overall dimensions: 280 x 210mm (L x W)  
Density/hardness: 1.36/<15°-A  
Rebound resilience: <15%.

Retail Unit Price each (inc. VAT).

Order Code	Type 9910	Price each exc. VAT			inc. VAT each
		1+	10+	100+	
CB37S	Spher/Concave Panel	£17.010			£19.990

## Acoustic Speaker Pads

Spectra Dynamics

A range of circular 'Magnapad' acoustic absorption pads to be placed on the back of the cone for use with professional stage and monitor speakers. Specially designed to absorb unwanted vibrations directed at the speaker chassis, coils and magnets, and to prevent further sound reflections off the flat surfaces. Constructed from an advanced polymer material with a spherical segment surface emulation to provide maximum sound dissipation away from the incident plane. Available in various diameters and colours to suit different sized speaker enclosures. Each pack contains two items.



Type	Defined Radius (mm)	Focal Point (mm)	Overall Diameter (mm)	Order Code
Magnapad Gold 3	45	22.5	75	CB38R
Magnapad Gold 5	75	38.5	125	CB39N
Magnapad Gold 7	105	52.5	175	CB40T

NOTE: Maximum edge thickness = 12.5mm, density/hardness = 1.36 / <15° A and rebound resilience <15% for all types.

Retail Unit Price each (inc. VAT).

Order Code	Type 9679	Price each exc. VAT			inc. VAT each
		1+	10+	100+	
CB38R	Speaker Pads 75mm	£4.240			£4.990
CB39N	Speaker Pads 125mm	£6.800			£7.990
CB40T	Speaker Pads 175mm	£9.350			£10.990

## CABINETS

### Professional Type

A range of very robust, high quality speaker cabinets designed for disco or PA use. Each is finished in hard wearing black vynide, and has carrying handles inset into both sides. All models have a removable grille covered in a smart black cloth. Speaker drivers are loaded from the front of the front baffle to ensure a perfect seal once they have been fitted. The cabinets are not lined internally, and the sound quality can be greatly improved by lining the cabinets with our Acoustic Wadding (RY06G) shown elsewhere in this section. Cutouts for speakers are provided on the baffle (see table below). Each cabinet is supplied with four clamps to hold the large bass speakers in place, and 8mm holes have been drilled at 90° intervals around the bass cutout of each cabinet, and threads have been fitted which accept the clamp bolts. The tweeters are held in place by screws (not included). There are three models in the range: Type 1 (GL23A) will accommodate a single 300mm bass unit and two bullet-type tweeters; Type 2 (XB28F) will accommodate two 300mm bass units and two bullet-type tweeters; and Type 3 (GL24B) will accommodate a single 380mm bass unit, two bullet-type tweeters and a horn tweeter. All cabinets are provided with two 35mm holes on the rear for installing flush-mounting sockets. A part-drilled hole, which has been sunk into the inside of the bottom panel, is included, which can be opened fully with a keyhole saw or similar, so that a tripod mount (such as our KU54J) can be fitted, by using the minimum of necessary woodworking.



Model	Overall dimensions (mm)	Approx. internal volume (cm <sup>3</sup> )	Cutouts provided
Type 1	H: 526mm W: 450mm	51,000	284mm (bass) 2 x 70mm (treble)
Type 2	D: 287mm H: 786mm W: 450mm	71,000	2 x 284mm (bass) 2 x 70mm (treble)
Type 3	D: 280mm H: 725mm W: 512mm	111,000	354mm (bass) 2 x 70mm (treble) 53mm x

154mm\* (horn treble)  
\* Please note that the vertical dimension of the horn tweeter cut out on the Type 3 cabinet increases to 70mm towards one end. This is to enable the magnet assembly to be inserted through the cut out.

Retail Unit Price each (inc. VAT).

Order Code	Type 0395	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
GL23A 26	12in Bass Cabinet	£51.050	£46.500	£43.750	£59.990
XB28F 30	2x12in Bass Cabinet	£51.050	£46.500	£43.750	£59.990
GL24B 42	15in Bass Cabinet	£59.560	£52.500	£48.750	£69.990

See Section 10, Connectors for our full range of Audio Connectors.

## BOX COVERING

### Close Weave Loudspeaker Grille Cloth

A needle punched, carpet style, heavy duty covering cloth for stage equipment such as speakers guitar amplifiers etc. Available in dark grey with either thin or thick pile or in a dappled grey with thin pile. extremely tough and hard wearing.



KS56 is plain grey thick pile.



KS45Y is plain grey thin pile



KS47B is dappled grey thin pile.



Note: The carpet is sold in multiples of 1/4m in a width of approximately 1.5m (60in). We will cut to length required in multiples of 1/4m only. Maximum length in one piece approx 45m.

Please order in multiples of 1/4m e.g. to order 1m of KS45Y, order 4 KS45Y; to order 3 3/4m order 15 x KS45Y.

Retail Unit Price each (inc. VAT).

Order Code	Type 1721	Price each exc. VAT			inc. VAT each
		1+	10+	100+	
KS48C 1	strndd spkr cloth	£1.690			£1.990
KS49D 1	hrd wearing spkr cloth	£1.940			£2.290
KS50E 1	thick weave spkr cloth	£1.690			£1.990

## Vynide Covering Cloth

A high-quality embossed black vynide for covering cabinets. Very hard-wearing. Available in two widths: 1.3m (51in.) and 0.6m (23<sup>1</sup>/<sub>2</sub>in.) and sold per 1/4m length (9.8in.). Note: Price shown is for 1/4m length. We will cut to length required in multiples of 1/4m only. Maximum length in one piece 24m. Please order in multiples of 1/4m, i.e. to order 1m of XR95D, order 4 XR95D; to order 33/4m of XR95D order 15 XR95D. Shops only stock pre-cut length.



Retail Unit Price each (inc. VAT).

Order Code	Type 3307	Price each exc. VAT			inc. VAT each
		1+	96+	192+	1+
XR95D	Vynide 51m.	£2.800	£1.220	£1.130	£3.290
XS05F	Vynide 23.5in.	£1.690			£1.990

## Buffalo Covering Cloth

A high-quality heavily-embossed shiny black plastic material with a 'buffalo-skin' design. Very hard wearing. Available in two widths: 1.27m (50in.) and 0.6m (23.5in.) and sold per 1/4m length (9.8in.). Note: Price shown is for 1/4m length. We will cut to length required in multiples of 1/4m only. Maximum length in one piece 25m. Please order in multiples of 1/4m, i.e. to order 1m of XR96E, order 4 XR96E; to order 33/4m of XR96E, order 15 XR96E. Shops only stock pre-cut length.



Retail Unit Price each (inc. VAT).

Order Code	Type 3308	Price each exc. VAT			inc. VAT each
		1+	96+	192+	1+
XR96E	Buffalo 50in.	£2.800	£1.150	£1.030	£3.290
XS06G	Buffalo 23.5in.	£1.690			£1.990

## SPEAKER CLOTH

### Close Weave Loudspeaker Grille Cloth

An acoustically transparent loudspeaker grille cloth. All types are plain black in three thicknesses KS48C the thinnest and KS50E the thickest (KS50E is like felt in texture and therefore ideal for hiding speakers under your parcel shelf). All types are made from non flammable 100% polyester. Note: The cloth is sold in multiples of 1/2m in a width of approximately 1.5m(60in). We will cut to length required in multiples of 1/2m only. Maximum length in one piece 64m (KS50E 59m) for example to order 1m of KS48C, order 2 x KS48C; to order 2 1/2m of KS50E, order 5 KS50E.



Retail Unit Price each (inc. VAT).

Order Code	Type 1775	Price each exc. VAT			inc. VAT each
		1+			1+
KS48C	standard spkr cloth	£1.690			£1.990
KS49D	hd wearing spkr cloth	£1.940			£2.290
KS50E	thick weave spkr cloth	£1.690			£1.990

### Diamond Pattern

Loudspeaker Grille Cloth A high quality black plastic fibre cloth woven into a small diamond pattern, for use as grille cloths on loudspeaker cabinets. The material is acoustically highly transparent. It is



available in two widths: 1.32m (52in.) and 0.61m (24in.) and is sold per 1/4m (9.8in.) length. Note: Price shown is for 1/4m length. We will cut to length required in multiples of 1/4m only. Max length in one piece 24m. Please order in multiples of 1/4m, i.e. to order 1m of XS14Q, order 4 XS14Q; to order 33/4m of XS14Q, order 15 XS14Q. Shops only stock pre-cut lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 3401	Price each exc. VAT			inc. VAT each
		1+	96+	192+	1+
XS14Q	Diamond Cloth 1.32m	£4.070	£2.800	£2.500	£4.790
XS15R	Diamond Cloth 0.61m	£2.620			£3.090

### Stripe Pattern Loudspeaker Grille Cloth

A black plastic fibre cloth woven into an attractive stripe pattern and suitable for use as grille cloths on loudspeaker cabinets etc. The material is available in two widths: 1.49m (58.7in.) and 0.72m (28.3in.) and is sold per 1/4m (9.8in.) length. Note: Price shown is for 1/4m length. We will cut to length required in multiples of 1/4m only. Max length in one piece 40m. Please order in multiples of 1/4m, i.e. to order 1m of XS07H, order 4 XS07H; to order 33/4m of XS07H, order 15 XS07H. Shops only stock pre-cut lengths.



Retail Unit Price each (inc. VAT).

Order Code	Type 3402	Price each exc. VAT			inc. VAT each
		1+	96+	192+	1+
XS07H	Stripe Cloth 1.49m	£3.900	£2.750	£2.450	£4.590
XS09K	Stripe Cloth 0.72m	£2.370			£2.790

### Loudspeaker Grille

A solid black nylon grille material for loudspeaker cabinets. Available only 0.61m (24in.) wide and sold per 1/4m (9.8in.) length. Note: Price shown is for 1/4m length. We will cut to length required in multiples of 1/4m only. Max length in one piece 15m. Please order in multiples of 1/4m, i.e. to order 1m of XR94C, order 4 XR94C; to order 33/4m of XR94C, order 15 XR94C. Shops only stock pre-cut lengths.



Retail Unit Price each (inc. VAT).

Order Code	Type 3403	Price each exc. VAT			inc. VAT each
		1+	96+	192+	1+
XR94C	Black Nylon Grille	£1.360	£1.200	£1.150	£2.190

### Open Weave Loudspeaker Grille Cloth

An acoustically transparent loudspeaker grille cloth in black with either a fine open weave pattern or a large 'diamond' pattern. Note: The cloth is sold in multiples of 1/2m in a width of approximately 40in. We will cut to length required in multiples of 1/2m only. To order 1m of AB60Q quote 2 AB60Q. To order 2 1/2m of AB70M quote 5 AB70M. Shops only stock pre-cut lengths.



Retail Unit Price each (inc. VAT).

Order Code	Type 4773	Price each exc. VAT			inc. VAT each
		1+			1+
AB60Q	Fine Weave Cloth	£1.940			£2.290
AB70M	Large Weave Cloth	£1.690			£1.990

## Loudspeaker Cabinet Wadding

A high quality polyester wadding, acoustically designed for use in loudspeaker cabinets. The material is approximately 19mm (approx. 3/4in.) thick, but may be layered to make up greater thicknesses. Available in 0.61m (24in.) widths only, and is sold per 1/2m (19 1/2in.). Note: Price shown is for 1/2m length. We will cut to length required in multiples of 1/2m only. Maximum length in one piece: 20m. Please order in multiples of 1/2m, i.e. to order 1m of RY06G, order 2 RY06G; to order 31/2m order 7 RY06G.

Retail Unit Price each (inc. VAT).

Order Code	Type 3400	Price each exc. VAT			inc. VAT each
		1+	96+	192+	1+
RY06G	Acoustic Wadding	£1.350	£0.720	£0.690	£1.590

## SPEAKER GRILLS

### Round Loudspeaker Grilles



A range of protective, circular metal grilles. The grilles are finished in matt black and have a PVC covering strip around the edge. Fitting is by loudspeaker fixing clamps, (e.g. FJ40T). Available in the following sizes: 127, 203, 254, 305, 381 and 457mm (5, 8, 10, 12, 15 and 18in.) diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type 3405	Price each exc. VAT			inc. VAT each
		1+	10+	24+	1+
FJ38R	5in Speaker Grille	£1.260	£1.090	£0.980	£1.490
FJ39N	8in Speaker Grille	£1.690	£1.450	£1.280	£1.990
YK71N	10in Speaker Grille	£2.540	£2.000	£1.800	£2.990
YK72P	12in Speaker Grille	£3.390	£2.600	£2.400	£3.990
YJ04E	15in Speaker Grille	£3.820	£3.300	£3.000	£4.490
YJ05F	18in Speaker Grille	£6.370	£5.500	£5.100	£7.490

### Fine Speaker Grills



Speaker grills are available in 3 diameters, 8"(KS74), 10"(KS75), 12"(KS76).

Retail Unit Price each (inc. VAT).

Order Code	Type 1772	Price each exc. VAT			inc. VAT each
		1+			1+
KS74R	Speaker grill 8	£1.690			£1.990
KS75S	Speaker grill 10	£2.540			£2.990
KS76H	Speaker grill 12	£3.390			£3.990

## ACCESSORIES

### Loudspeaker Fixing Clamp

A fixing clamp suitable for speakers of 254, 305 and 381mm (10, 12 and 15in.) diameter. Made from tough moulded plastic, fixing is by nut and bolt. When clamping down, the fixing clamp bends slightly to give the fixture a high degree of resilience.



Retail Unit Price each (inc. VAT).

Order Code	Type 3405	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BK30H	Spir Fixing Clamp	£0.417	£0.260	£0.180	£0.490

### Loudspeaker Stand

A very sturdy, heavy duty, tubular loudspeaker stand that extends to a height of 1.98m. The stand is supported by three legs which are 36mm diameter. The main stem is also 36mm diameter, the telescopic section is 33mm diameter. Strong handed bolts are used to clamp the movable parts in position. A wide removable loudspeaker plate is provided to fix the stand to the loudspeaker. Finished in hard wearing black paint. Supplied with fixing screws. Max. weight on stand 32kg.



Retail Unit Price each (inc. VAT).

Order Code	Type 3408	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
XM28F	HD Speaker Stand	£39.140	£32.000	£29.000	£45.950

### 'Top Hat' Speaker Stand

A heavy-duty pole mounting speaker stand which has been designed to be recessed in a speaker cabinet. This system is intended for use with PA and mobile disco speakers which need to be transported often and set up quickly. In particular, it is suitable for our GL23A, GL24B and XB28F cabinets which already have a hole part-drilled for this purpose. To fit, a 44mm diameter hole is drilled in the bottom of the cabinet, the top hat is inserted and its flange is secured in place by 4 screws (9mm holes being provided for this purpose). A 105mm long 'hollow' with a diameter of 35mm is then available which will safely accommodate poles or tripods of between 25mm and 33mm in diameter. The maximum weight that the overall support system can carry is limited by the stand used and the cabinet. However, it must not exceed 150kg. The top hat is made from aluminium, weighs 380g and is black in colour. The flange, which is 3mm tall and 110mm in diameter, could be flush-mounted on the cabinet bottom if a suitable recess is provided. Overall height: 115mm. Mounting: 4 equally spaced 9mm holes on an 80mm PCD.



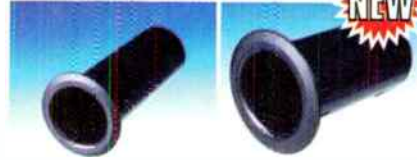
Retail Unit Price each (inc. VAT).

Order Code	Type 3410	Price each exc. VAT			inc. VAT each
		1+	4+	10+	
KU54J	Top Hat Speaker Stand	£5.090	£4.500	£4.100	£5.990

Account Enquiries: 01702 554187

## Bass Reflex Tubes

KS84F KS85G



KS86T KS87U



For home constructors of speaker cabinets, these plastic tubes are essential. Manufactured in a black ABS material, these tubes are required as the ports in reflex design.

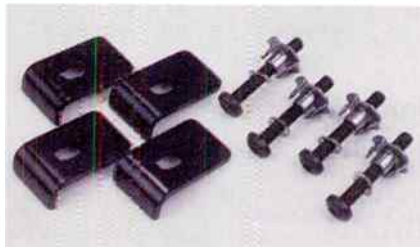
Four types are available for different cabinet sizes. All sizes in mm.

Code	KS85G	KS84F	KS86T	KS87U
Port dia	35.5	52.5	40.5	54.7
Cut out dia	39.7	56.8	45.0	59.6
Flange dia	58.7	75	61.8	71.5
length	81.3	81.1	121.5	129.0

Retail Unit Price each (inc. VAT).

Order Code	Type 17002	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KS84F	Bass reflex tube	£0.842	£0.758	£0.674	£0.990
KS85G	Bass reflex tube	£0.757	£0.682	£0.606	£0.890
KS86T	Bass reflex tube	£1.260	£1.140	£1.010	£1.490
KS87U	Bass reflex tube	£1.690	£1.520	£1.350	£1.990

## Metal Speaker Clamping Kit



A sturdy loudspeaker clamping kit comprising 108mm (4 1/4in.) Whitworth bolts 38mm long, 4 T-nuts, 4 star washers and 4 clamps in 3mm thick black finish steel. The kit may be used without the clamps to fix 254mm (10in.) or 305mm (12in.) speakers to the front or the rear of a baffle using the holes in the speaker chassis. If rear mounting, the bolts may have to be cut short with a hacksaw if they protrude too much through to the front. Put a nut or first before sawing, then removing the nut will clean up the end of the thread as it is unscrewed. The T-nuts require holes in the baffle of 9.5mm (3/8in.) clearance into which they can be tapped home lightly with a hammer. Alternatively the speaker chassis can be gripped on four points around the edge by the right angled clamps, using the bolts and T-nuts in a 'stand off' position from the chassis. The clamps are 42mm long x 25mm wide, and have a 10.5mm deep fulcrum.

Retail Unit Price each (inc. VAT).

Order Code	Type 3402	Price each exc. VAT			inc. VAT each
		1+	10+	24+	
FJ40T	Speaker Clamp Kit	£1.860	£1.750	£1.650	£2.190

FOR TECHNICAL ADVICE  
ON ALL PRODUCTS

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e-mail: Technical@maplin.co.uk

## SOUNDERS

### TRANSDUCERS

#### Ultrasonic Transducers

A high sensitivity ultrasonic transmitter and receiver, sold only in pairs, for sending and receiving ultrasonic sound through the air, either as a continuous wave or pulses. Applications include burglar alarm systems, proximity switches, liquid level meters, anti-collision devices, counters for moving objects, TV remote control systems etc.



#### Characteristics

	T40-16 Transmitter	R40-16 Receiver
Sensitivity (dB)	17±6*	-56±6†
Resonant freq. (kHz)	40±1	40±1
Max. input (Vrms)	7	—
Impedance (Ω) approx	200	70k
Capacitance (pF) ±20%	1400	1400
Pulse rise time (msec)	2	0.5
Max input voltage, pulse operation:	60V p-p	—
* 0dB = 1µBarV/m		
† 0dB = 1V/µBar with 47kΩ shunt.		
Overall size 15mm dia x 12mm deep (connecting pins protrude a further 9mm) Pins are 10mm apart.		

Retail Unit Price each (inc. VAT).

Order Code	Type 3108	Price each exc. VAT			inc. VAT each
		1+	10+	50+	
HY12N	Ultrasonic Transducer	£4.910	£3.750	£3.100	£5.780

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## Piezo Transducers

Sting



These ceramic piezo transducer elements generate a range of audible tones and frequencies when energised by 3V peak square wave. They can be driven direct from CMOS ICs with low power consumption. They are supplied unmounted and with wires attached. Provided they are mounted rigidly in the prescribed manner, outputs of up to 90dB can be achieved. In addition to a wide range of applications where audible warnings or indications are preferred to visual, other uses include toys, clocks and watches, calculators and electronic games, using the transducer in place of a speaker. Because there are no moving parts to wear out, these elements are reliable for use in professional, commercial and industrial applications. They withstand severe environmental conditions and prove durable in domestic appliances without causing r.f. interference. A range of different sizes is available.

### Specifications

#### Piezo Transducer 27mm/1.8kHz

Resonant frequency: 1.8kHz  $\pm 0.5$ kHz  
 Impedance at resonance: 800 $\Omega$   
 Capacitance: 25nF  $\pm 30\%$   
 Maximum input voltage: 30V p-p  
 Operating temperature: -20°C to +70°C

#### Piezo Transducer 27mm/4.2kHz

Resonant frequency: 4.2kHz  $\pm 0.5$ kHz  
 Impedance at resonance: 500 $\Omega$   
 Capacitance: 14nF  $\pm 30\%$   
 Maximum input voltage: 30V p-p  
 Operating temperature: -20°C to +70°C

#### Piezo Transducer 35mm/2.8kHz

Resonant frequency: 2.8kHz  $\pm 0.5$ kHz  
 Impedance at resonance: 450 $\Omega$   
 Capacitance: 20nF  $\pm 30\%$   
 Maximum input voltage: 30V p-p  
 Operating temperature: -20°C to +70°C

#### Piezo Transducer 35mm/2.8kHz with feedback electrode

Resonant frequency: 2.8kHz  $\pm 0.5$ kHz  
 Impedance at resonance: 450 $\Omega$   
 Capacitance: 19nF  $\pm 30\%$   
 Maximum input voltage: 30V p-p  
 Operating temperature: -20°C to +70°C

#### Piezo Transducer 41mm/2.0kHz for speech

Resonant frequency: 2.0kHz  $\pm 0.5$ kHz  
 Frequency range: 750Hz to 20kHz  
 Impedance at resonance: 600 $\Omega$   
 Capacitance: 40nF  $\pm 30\%$   
 Maximum input voltage: 15V p-p  
 Operating temperature: -20°C to +70°C

#### Piezo Transducer 50mm/2.8kHz

Resonant frequency: 2.8kHz  $\pm 0.5$ kHz  
 Impedance at resonance: 500 $\Omega$   
 Capacitance: 20nF  $\pm 30\%$   
 Maximum input voltage: 30V p-p  
 Operating temperature: -20°C to +70°C  
 Nodal ring diameter: 34mm

Note: These transducers are supplied unmounted and with wires attached. If it is required to remove/reattach wires this must be carried out extremely carefully. Soldering to the silvered electrode must be done with the minimum of heat for a fraction of a second, or destruction of the silvering begins to occur. The brass rim of the transducer acts as a heatsink and will require more heat, but the minimum of solder should be used. The transducers may be mounted to a surface using any suitable adhesive.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YUB7U	Piezo Xducer 27/1.8	£0.331	£0.230	£0.190	£0.390
QY13P	Piezo Xducer 27/4.2	£0.331	£0.230	£0.190	£0.390
YUB5G	Piezo Xducer 35/2.8	£0.331	£0.240	£0.210	£0.390
YUB6T	Piezo Xducer 35/2.8F	£0.417	£0.300	£0.250	£0.490
YUB3E	Piezo Xducer 41/2.0S	£0.502	£0.360	£0.320	£0.590
YUR2D	Piezo Xducer 50/2.8	£0.672	£0.500	£0.450	£0.790

## Rubber Disc

A rubber disc for use with the Piezo Transducers. Fitted over the transducer it can be tapped to produce either sounds or an electrical signal. 27mm diameter.

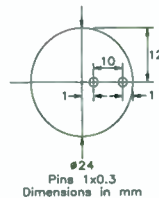


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
QY16S	Rubber Disc 27mm	£0.161	£0.100	£0.075	£0.190

## PIEZO SOUNDERS

### PCB Mounting



A piezo electric sounder for direct mounting on pcbs. Two 1mm dia. holes are required 10mm apart.

Resonant frequency: 4kHz  $\pm 500$ Hz  
 Resonant resistance: 300 $\Omega$  max.  
 Electrostatic capacitance: 17nF  $\pm 30\%$   
 Max. input voltage: 30V p-p  
 Nominal drive voltage: 10V p-p  
 Output at 10V p-p: 95dB @ 30cm  
 Size: 24mm dia. 5.5mm thick

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JH24B	PCB Piezo Sounder	£0.757	£0.500	£0.430	£1.890

## Very Low Profile Piezo Sounder

A piezoelectric sounder which can supply levels of over 100dB at a distance of 30cm, yet is only 4mm high. It can therefore be used wherever space is at an absolute premium. It requires an external driver which should operate on, or as near as possible to, the buzzer's resonant frequency of 5500Hz. This source should present a maximum drive voltage of 30V peak-to-peak to the buzzer. 100mm lead-out wires with tinned ends are provided. Mounting lugs with 2.5mm holes are moulded into the buzzer's cream-coloured case.



Resonant frequency: 5500Hz  $\pm 500$ Hz  
 Resonant resistance: 300 $\Omega$  max.  
 Electrostatic capacitance: 12000 pF ( $\pm 30\%$ )  
 Sound output at 30cm: 103dB max.  
 Height: 4mm  
 Diameter: 23mm  
 Length (lug tip to tip): 35mm  
 Fixing centres: 29mm x 8BA/M2

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KUJ57M	Low Profile Sounder	£0.672	£0.490	£0.400	£0.790

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

## Wire-Ended Piezo Sounder

A piezo electric sounder ideal for use in applications where space is at a premium owing to its small size.



Resonant frequency: 4.6kHz  
 Electrostatic capacitance: 20nF  
 Nominal drive voltage: 3 to 30V p-p  
 Output at 10V p-p: 80dB @ 30cm  
 Size: 31mm dia. x 8mm thick  
 Fixing centres: 35mm x 8BA/M2

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FM59P	Min Piezo Sounder	£0.757	£0.530	£0.460	£0.890

## BUZZERS

### Miniature Buzzer

A miniature solid state buzzer featuring long life, high reliability, low current drain, no moving contacts, no arcing, no r.f. noise. It is small but with a clear penetrating sound.



Dimensions: 23 x 16.5 x 15.5mm deep.  
 Fixing centres: 27.5mm x 8BA  
 Overall length: 33.5mm.

Finished in cream plastic.

Two types are available:

Type	Voltage range	Impedance	Frequency	Output at 30cm
6V	4 to 9V	240 $\Omega$	400Hz	75dB
12V	9 to 20V	480 $\Omega$	400Hz	75dB

Buzzers are for DC operation only and approx 100mm of lead attached is colour coded: Red - positive; Black - negative.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FL39N	Buzzer 6V	£1.010	£0.750	£0.630	£1.190
FL40T	Buzzer 12V	£1.010	£0.750	£0.630	£1.190

## Round Buzzers



Small, round electronic buzzers similar in principle to the miniature solid state buzzers above, but louder. 6V and 12V types are available. Each buzzer measures 41mm across mounting lugs, 26.4mm diameter and 17.6mm high. Fixing centres 32mm.

Type	Voltage range	Current	Frequency	Output at 30cm
6V	4 to 9V	35mA	450Hz	80dB
12V	9 to 20V	35mA	450Hz	80dB

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK81C	6V Buzzer	£1.350	£0.900	£0.740	£1.590
FK82D	12V Buzzer	£1.350	£0.900	£0.740	£1.590



## Low-Profile PCB-Mounting Buzzer

A miniature solid state, PCB mounting buzzer having a loud but pleasant 75dB tone and operating from a 12V DC supply. It is only 7mm high when mounted on the PCB. It will work with supply voltages ranging from 3 to 24V DC. Supply polarity is marked on the bottom of the case as an aid to installation. Two 2mm dia. holes are required 18mm apart. The case is finished in a cream colour.



Resonant frequency: 3.5kHz  
 Operating voltage: 3 to 24V DC  
 Current consumption at 12V: 5mA  
 Sound output at 12V DC: 75dB at 30cm  
 Temperature range: -20 to 70°C  
 Diameter: 23mm  
 Height (without leads): 7mm  
 Lead length: 8mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KU58N	PCB Buzzer	£1.090	£0.730	£0.610	£1.290

## DC-Operated Piezo Buzzer

An extremely loud PCB-mounting, piezoelectric buzzer designed to operate over a wide range of supply voltages. It has a built-in driver circuit and requires only a DC voltage to drive it. Working with a 24V DC supply voltage, this tiny unit can supply sound levels of over 95dB at a 30cm distance. The unit will operate well with 5V TTL voltages drawing only around 2mA. It will therefore make an excellent 'bell' or warning alarm for digital systems. Two 1.5mm dia. holes are required 16mm apart. The case is finished in a cream colour, and features a dot to indicate the side with the positive terminal.



Resonant frequency: 2700Hz ±500Hz  
 Operating voltage: 3 to 24V DC  
 Current at 12V DC: 10mA max.  
 Sound output at 30cm: 90dB typical (12V DC)  
 Operating temperature: -10 to 60°C  
 Size, excluding pins: 16mm high x 24mm dia.  
 Length of pins: 5mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KU56L	DC Piezo Buzzer	£1.520	£0.970	£0.820	£1.790

## Wire-Ended Piezo Buzzer

A buzzer with a loud, clear, penetrating tone for use where direct PCB mounting is not convenient. The buzzer has two 3.5mm clear mounting holes 38mm apart, and two wires are provided for making the connection.



Resonant frequency: 2kHz ±500Hz  
 Operating voltage: 3 to 15V DC  
 Current at 12V DC: 10mA  
 Sound output at 30cm: 90dB typical (12V DC)  
 Size: 30mm dia., 22mm high  
 46mm across mounting ears

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CR34M	DC Piezo Buzzer Wire	£1.180	£0.790	£0.680	£1.390

## 3-Tone Piezo Buzzer

A loud and compact buzzer which will operate with DC voltages in the range 6 to 12V. In addition to the red positive and black negative supply leads, there are three other leads which, if connected in certain combinations, will determine the sound that the buzzer will produce. If the green and yellow wires are connected together a two-tone siren sound is produced; if the green and orange wires are connected together the unit emits a pulsed tone, and if all wires are left unconnected, the output is a continuous tone. Two lugs with 3mm holes are provided for mounting purposes.



Supply voltage range: 6 to 15V DC  
 Recommended operating voltage: 12V DC  
 Current consumption at 12V DC: 95mA  
 Sound pressure level (at 1m): 107dB (with 12V supply)  
 Overall frequency: 2-8kHz  
 Operating temperature: -20°C to +70°C  
 Overall dimensions: 39mm dia. x 22mm height  
 Mounting lugs: 55mm tip to tip; 3mm holes  
 Lead length: power (red, black): 150mm (approx)  
 tone select (org, grn, yell): 60mm (approx)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KU60Q	3-Tone Piezo Siren	£2.800	£2.050	£1.600	£3.290

## High Power Buzzer

An extremely loud piezo electric buzzer with integral drive circuit and a very wide operating voltage range.



Resonant frequency: 3kHz  
 Impedance: 1kΩ approx.  
 Voltage range: 3V to 24V DC  
 Output at 12V: 103dB at 1m  
 Size: 39mm dia. 26mm high  
 Fixing centres: 50mm x slots 5 x 3mm  
 Overall width: 60mm  
 For DC operation only. Approx 100mm leads are attached, red is positive, black negative.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK84F	HP Buzzer	£1.940	£1.200	£0.980	£2.290

## Two-Tone Mini-Siren



An extremely loud two-tone piezo-electric siren mounted in a sturdy cream plastic case. The electronics which drive the piezo element, and give the siren its characteristic sound, are contained within the unit on a PCB, and the overall frequency range can be varied by means of a preset on this board. Two links, A and B, are also present which, if

bridged with solder, determine the mode of operation (see table). The board is accessible by removing the bottom mounting plate (secured by four screws) from the main body.

### Operating Modes

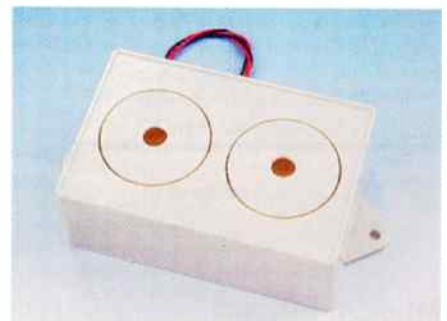
Both links open: Single tone operation  
 Link A bridged: Pulsed high tone  
 Link B bridged: Two-tone (as supplied)  
 Both links bridged: Pulsed low tone

The unit will work with supply voltages between 6 and 15V DC and is connected to the supply with the two colour-coded 150mm long leads (red: +V; black: 0V) provided. At 12V DC, the unit will supply 110dB of sound level (at 30cm) while drawing only 90mA. Two mounting lugs are moulded onto the bottom mounting plate, which will accommodate M3 screws, and are spaced 58mm apart. Overall case dimensions, 52 x 42 x 27.5mm. The mounting lugs are 68mm from tip to tip.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KU65V	Two-Tone Mini Siren	£2.800	£2.050	£1.650	£3.290

## Twin-Unit Piezo Siren



A very piercing two-tone siren housed in a very tough cream plastic housing. It is essentially the same as KU65V, except that two piezo elements have been incorporated into the larger case. As a result this unit offers an extremely high sound pressure level (105dB at 1m). Connection to the unit is by two colour-coded leads (red: +V; black: 0V). Two mounting lugs spaced 97mm apart are moulded into the case which allow the unit to be secured to a surface using M3 size screws.

### Specification

Supply voltage range: 6 to 15V DC  
 Recommended operating voltage: 12V DC  
 Current consumption at 12V DC: 85mA max.  
 Sound pressure level (at 1m): 105dB (with 12V supply)  
 Frequency: 2.5 to 2.8kHz (Preset provided for adjustment)  
 Operating temperature range: -20°C to 70°C  
 Overall dimensions: 84 x 55 x 32mm  
 Mounting lugs: 106mm tip to tip; 3mm holes  
 Leads: Approx. 150mm long  
**Operating Modes**  
 Both links open: Single tone operation  
 Link A bridged: Pulsed high tone  
 Link B bridged: Two-tone (as supplied)  
 Both links bridged: Pulsed low tone

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KU51R	Twin Piezo Siren	£3.650	£2.900	£2.550	£4.290

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## Multi-Tone Piezo Buzzer



An extremely loud piezo electric buzzer in a cream housing. Removing the back carefully with a screwdriver reveals screw terminal connections for the positive and negative DC power supply. A further three screw terminals if left open circuit make the buzzer emit a continuous tone. If screws 1 and 2 are connected together the buzzer emits a pulse tone and if screws 1 and 3 are connected together the buzzer emits a siren-like sound.

Resonant frequency: 2-8kHz  
 Impedance: 40Ω approx.  
 Voltage range: 6V to 15V  
 Output at 12V: 115dB at 1m  
 Size: 92 x 92 x 34mm high  
 Fixing centres: 72 x 72 x 4mm clear

Retail Unit Price each (inc. VAT).

Order Code	Type 3229	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JH25C	Multi-Tone Buzzer	£5.520	£4.250	£3.750	£6.490

## Musical Buzzer

A musical buzzer which plays seven traditional American tunes. Two 100mm wires red for positive and black for negative are provided for connection to the power supply. Two additional red wires are provided which when shorted, trigger the next tune in the sequence. If the wires are permanently connected, the tunes play continuously. If the battery is removed, on reconnection the first tune to play is always the first in the sequence.



The tunes are:

Yellow Rose of Texas  
 Dixieland  
 Red River Valley  
 American Patrol  
 Oh My Darling Clementine  
 When The Saints Go Marching In  
 She Wore A Yellow Ribbon

Voltage range: 6V to 12V  
 Current at 9V: 6mA  
 Output at 9V: 85dB at 1m  
 Size: 32.2mm dia. 13.9mm high  
 Fixing centres: 38mm x slots 3.5 x 4.5mm  
 Overall width: 44.6mm

Retail Unit Price each (inc. VAT).

Order Code	Type 3231	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK80B	Musical Buzzer	£2.540	£1.750	£1.400	£2.990

## Panel Mounting Buzzers

A range of three panel mounting buzzers in a black plastic housing, differing only in the tone produced by the 'door bell', pulse, or continuous tone. The positive and negative connections are standard 'Lucar' style 6-35mm (1/4in.) receptacles (HF10L). A M28 plastic screw ring is used to secure the buzzer to a suitable panel with a 29mm diameter hole. The buzzers can operate over a wide voltage range and have a low power consumption. The 'door bell' version, in particular, produces a very distinctive and noticeable output.

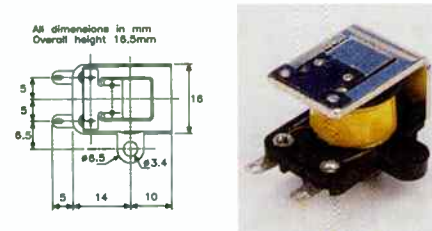


**Specification**  
 Supply voltage range: 8 to 12V DC  
 Frequency: 2600Hz  
 Current consumption (@ 12V): 20mA  
 Sound output (@ 12V): 90dB (@ 30cm)  
 Size: 45 x 36mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 3232	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BZ54J	Doorbell Buzzer	£3.390	£2.450	£2.050	£3.990
BZ55K	Pulsetone Buzzer	£2.970	£2.300	£2.000	£3.490
BZ56L	Continuous Buzzer	£2.970	£2.300	£2.000	£3.490

## 12V AC Buzzer



A miniature 12V mechanical buzzer that works from an AC supply. Single hole fixing.

**Specification**  
 Voltage range (AC): 8V to 28V  
 Current @ 12V: 60mA  
 @ 24V: 130mA  
 Sound output: 80dB @ 30cm  
 AC resistance: 120Ω ± 20%

Retail Unit Price each (inc. VAT).

Order Code	Type 3234	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BZ57M	12V AC Buzzer	£0.842	£0.670	£0.555	£0.990

## SIRENS

### Miniature Siren

A compact but very loud low cost siren. This micro piezo siren is self-contained within a black ABS plastic case with counter-sunk holes for screw fixing.



Operating voltage: 12V DC  
 Voltage range: 8V to 12V  
 Current: 150mA  
 Sound output: 110dB at 1m  
 Frequency: 2kHz to 2.8kHz  
 Size: 62 x 36 x 34mm

Retail Unit Price each (inc. VAT).

Order Code	Type 11729	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
MB00A	Miniature Siren	£4.240	£3.540	£2.980	£4.990

## Micro Siren



A miniature, but very loud siren housed in a white ABS case fixed to a swivel mounting bracket. The siren has a rapid rising and falling tone.

**Specification**  
 Operating voltage: 12V DC  
 Voltage range: 6V to 12V  
 Current: 150mA  
 Sound output: 110dB at 1m  
 Frequency: 2kHz to 2.8kHz  
 Size: 43 x 39 x 59mm long

Retail Unit Price each (inc. VAT).

Order Code	Type 3235	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JK42V	Micro Piezo Siren	£5.090	£3.990	£3.290	£5.990

## Miniature Piezo Siren



A very small, but extremely loud siren housed in a black ABS case fixed to a swivel mounting bracket. The siren has a rapid rising and falling tone.

Operating voltage: 12V DC  
 Voltage range: 6V to 12V  
 Current: 300mA  
 Sound output: 115dB at 1m  
 Frequency: 2kHz to 2.8kHz  
 Size: 61 x 56 x 86mm long

Retail Unit Price each (inc. VAT).

Order Code	Type 3236	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JK43W	Min Piezo Siren	£7.650	£5.810	£5.300	£8.990

## Low-Cost Electronic Siren

A compact electronic alarm siren, self-contained in a plastic housing with swivel mounting. Offers a low current drain.



**Specification**  
 Voltage: 12V DC  
 Current: 300mA  
 Impedance: 8 ohms  
 Sound output: 98dB at 1m  
 Case: Plastic with metal bracket  
 Size: 98mm dia x 60mm  
 Weight: 175g

Retail Unit Price each (inc. VAT).

Order Code	Type 3238	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YK60Q	Low-Cost Electronic Siren	£5.520			£6.490

## Mini Siren



A compact yet powerful siren capable of generating a piercing sound pressure level of 113dB (at 1m) while drawing a maximum of 700mA. The siren's robust black plastic case is sealed and therefore suitable for vehicle or exterior use. It is mounted on a metal swivel bracket. The supply voltage is connected to the unit by means of a colour-coded trailing lead (red: +V; black/red: 0V)

**Specification**  
Supply voltage: 6 to 12V DC  
Current drain: 700mA max.  
Sound output: 113dB (at 1m)  
Dimensions: 97 x 110 x 88mm  
Net weight: 367g  
Lead length: 400mm (approx.)

Retail Unit Price each (inc. VAT).

Order Code	Type 3241	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
ZC45Y	Mini Siren	£6.800	£5.150	£4.550	£7.990

## Staccato Electronic Sounder



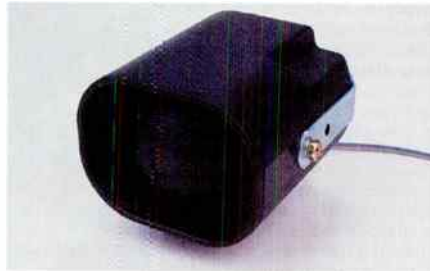
A weatherproof electronic siren which is completely self contained. The unit has a genuinely high output of up to 116dB combined with a low current consumption, making it ideal for use with intruder and automotive alarm systems and external bell housings. The finish is in black plastic with a metal fixing bracket. The reliability of the unit is improved with the design of the connection between the speaker head and the electronics.

**Specification**  
Voltage: 6 to 16V DC (12V nominal)  
Current: 300mA  
Sound output: 116 dBA  
Frequency range: 0.6 to 1.2kHz  
Size: 90mm dia. x 110mm long

Retail Unit Price each (inc. VAT).

Order Code	Type 3243	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YZ23D	Electronic Sounder	£9.350	£6.310	£5.150	£10.990

## Power Siren



A very powerful alarm siren built round a rectangular horn speaker, capable of sound pressure levels of 118dB (at 1m). The unit has some limited weather resistance but is not sealed. The siren is not suitable for exterior use unless installed under cover. The case is made from high impact black plastic and is supplied with an adjustable, swivel mounting bracket. Power is connected by a 250mm colour-coded cable (red: +V). NB. It is advisable to cover and protect ears when powering up this siren as very high sound levels are produced.

**Specification**  
Supply voltage: 12V  
Current drain: 1.6A to 1.8A  
Sound output: 118dB ±3dB at 1m  
Output frequency: 1800 to 2000Hz  
Overall size: 125 x 115 x 80mm  
Weight: 707g

Retail Unit Price each (inc. VAT).

Order Code	Type 3244	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
ZC46A	Power Siren	£17.010	£12.220	£10.660	£19.990

## HORN SPEAKERS

### 10W



A weatherproofed 10W horn speaker with standard 3-point mounting bracket for fixing to car roof or to a bracket across a car roof, etc. For maximum sound effect, four of these units mounted at right angles to each other will be found to be more efficient than one large speaker, since they are fairly directional. The mounting bracket is adjustable with 10mm (AF) clamping bolt and nut, and the whole unit is moulded in black ABS.

**Specification**  
Nominal power handling: 10W (15W max.)  
Impedance: 8Ω  
Usable frequency response: 1.4kHz to 4kHz  
Horn diameter: 136mm  
Overall depth of horn: 120mm

Retail Unit Price each (inc. VAT).

Order Code	Type 3245	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
XQ73Q	Plastic Horn 5in	£6.800	£4.950	£3.950	£7.990

## 15W Horn Speaker



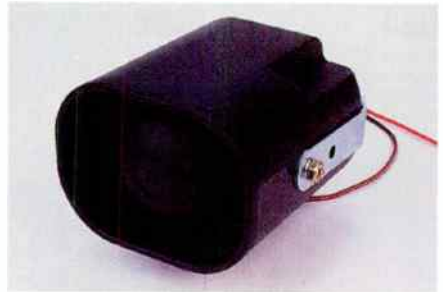
A weather-proofed horn speaker with bracket for bolting to car roof or to a bracket across car roof etc. For maximum dispersion two or more of these units mounted in opposing directions will be found far more efficient than one large speaker since they are fairly directional. The mounting bracket is adjustable and the horn is finished in grey.

**Specification**  
Nominal power: 15W  
Impedance: 8Ω  
Horn diameter: 152mm

Retail Unit Price each (inc. VAT).

Order Code	Type 3246	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XQ74R	Car PA 15W	£17.010	£13.250	£12.000	£19.990

### 20W



A weather-proof black plastic rectangular horn speaker with an adjustable bracket for bolting to a car roof or to a bracket across the car roof etc.

**Specification**  
Maximum power: 20W  
Impedance: 4Ω  
Frequency response: 600Hz to 8kHz  
Overall size: 125 x 115 x 80mm  
Weight: 680g  
Supplied with approx 290mm of connecting lead.

Retail Unit Price each (inc. VAT).

Order Code	Type 3247	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BZ66W	20W Horn	£11.900	£8.500	£7.200	£13.990

## 30W



A weather-proof white plastic, rectangular horn speaker with heavy rectangular plastic mounting base on which the horn tilts up and down.

### Specification

Nominal power: 30W  
 Impedance: 8Ω  
 Frequency response: 200Hz to 8kHz  
 Horn size: 200 x 106mm  
 Horn length: 234mm  
 Bracket base: 100 x 60mm with six 5mm clear fixing holes.

Supplied with approx. 250mm of connecting lead.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
XG97F 2	5 x 8 Horn Speaker	£15.310	£12.070	£10.910	£17.990

## DOOR BELLS & ACCESSORIES

### Bell

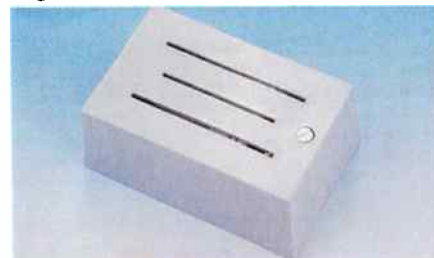
3 to 8V AC or DC bell with white case and polished chrome 70mm dia. gong. Overall size 147 x 75 x 36mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FL38R	AC Bell	£4.920	£3.850	£3.350	£5.790

### Bell Transformer



A transformer housed in a white plastic case. Primary 240V AC, secondary 4, 8 and 12V AC at 1A. Internally fused primary winding with Fuse 20 63mA. Overall size excluding case fixing nut 74 x 54 x 38mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	24+	120+	
FL37S	Bell Xformer	£7.650	£5.000	£5.300	£8.990

### Bell Push Switch

A rectangular push-to-make doorbell switch. The switch has a plastic base plate housing the electrical contacts and terminals. The base plate is fixed into position with the screws provided and after the necessary connections have been made the outer cover with the push button is snapped into position. The push-button is of white plastic with a matt black or creamy white housing. Overall size: 46 x 28 x 18mm deep. Button size: 20 x 15mm



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FS17T	Bell Push	£0.757	£0.550	£0.440	£0.890

## EARPIECES

### Magnetic



A standard magnetic earpiece having an 8Ω impedance and 950mm of lead terminated in either a 2.5mm or 3.5mm jack plug. The 3.5mm type is also available with a 4m lead.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
LB23A	Mag Earpiece 2.5mm	£0.502	£0.350	£0.300	£0.590
LB24B	Mag Earpiece 3.5mm	£0.757	£0.475	£0.380	£0.890
FE73C	Earphone 4 Metre	£0.842	£0.615	£0.550	£0.990

### Crystal



A standard crystal earpiece with a very high impedance and 1m of lead terminated in a 3.5mm jack plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
LB25C	Crystal Earpiece	£1.690	£1.410	£1.200	£1.990



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## Plugs

### 5 Amp

A 5A mains plug moulded in hard wearing heat-resistant bakelite. Fitted with cordgrip. Not fused. Conforms to BS546A.



Retail Unit Price each (inc. VAT).

Order Code	Type 1186	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL57M	5 Amp Plug Bakelite	£1.090	£0.909	£0.808	£1.290

### 13 Amp Mains Plug

A Rough Service 13A mains plug. Supplied fitted with 13A fuse and cord-grip. Conforms to BS1363A.



Retail Unit Price each (inc. VAT).

Order Code	Type 1188	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW67X	13 Amp Mains Plug	£0.638	£0.606	£0.545	£0.750

### Super Grip Plug

A 13A mains plug moulded in tough white nylon with an integral handle for easier insertion and removal for people with arthritic fingers and similar problems of impaired gripping ability. Ideal for appliances which need frequent connection and disconnection, e.g. electric kettles, vacuum cleaners, toasters etc., and some power tools. The effort required to insert/remove this type of plug is considerably reduced compared with the normal type. Fitted with ASTA approved 13A fuse to BS1362. Manufactured to BS1363/A and ASTA approved. Maximum distance of handle from socket is 50mm (2in.).



Retail Unit Price each (inc. VAT).

Order Code	Type 1189	Price each exc. VAT			inc. VAT each
		1+	10+	100+	1+
ZB88V	Super Grip Plug	£2.030	£1.780	£1.550	£2.390

### 13A Rubber Plugs



A 13A mains plug moulded in unbreakable rubber and fitted with a 13A fuse and cord grip. Available in black or white. Conforms to BS1363A.

Retail Unit Price each (inc. VAT).

Order Code	Type 13133	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL58N	Rubber 13A Plug	£2.110	£1.310	£1.170	£2.490
VJ75S	13A Rubber Plug Bk	£1.690	£1.450	£1.290	£1.990

### Heavy Duty 13A Plug

This heavy duty plug is made from a robust, resilient compound which makes it virtually indestructible in normal working conditions. Available in orange and fitted with a 13A fuse.



Retail Unit Price each (inc. VAT).

Order Code	Type 13131	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
VJ76H	13A Rubber Plug Orn	£2.110	£1.890	£1.690	£2.490

### Mains Tester



This is the quick and easy way to test every new mains supply that you connect to your caravan or boat. The Mains Tester is designed for use in your internal sockets to test that your power is correct after hook up to the mains supply provided by the site – a particularly important test on continental holidays. If everything is as it should be, all three lights will come on. If it isn't, other light combinations will help you to find out what may be wrong.

Retail Unit Price each (inc. VAT).

Order Code	Type 9800	Price each exc. VAT		inc. VAT each
		1+	10+	1+
WD53H	Mains Tester Plug	£11.900	£9.990	£13.990

### Continuity Tester



An ingenious screwdriver tester that can be used to detect continuity and therefore used for checking fuses or lamps. Continuity tests can be made by holding the tip of the screwdriver on a fuse then touching the cap of the screwdriver and the cap of the fuse with your hand. If the fuse is OK, the screwdriver will light. The same principle can be used with lamps, leads and anything else that is conductive.

Other uses include short circuit tests, tracking broken cables, microwave oven radiation testing and television emission tests. The device uses two silver or alkaline batteries (supplied), with a battery life of approximately 5 hours continuous use.

Dimensions 136 x 20mm (L x W) including clip. NB Not suitable for direct connection with live circuitry.

Retail Unit Price each (inc. VAT).

Order Code	Type 7777	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AS260	Continuity Tester	£6.380	£5.750	£5.250	£7.500

### Switch Guard



A simple yet very effective way of ensuring household appliances are never inadvertently switched off. If you've ever accidentally switched off your refrigerator, freezer or video recorder you'll know how inconvenient and costly your mistakes can be. To guarantee against accidental switch off, simply insert the earth pin of the plug through the hole in the Switch Guard and insert the plug into the socket in the normal manner. The whole of the switch will now be blanked off, so not even a conscious switch off is possible. Supplied with stickers for labelling the appliance connected, and full instructions for use. Each pack contains four Switch Guards.

Retail Unit Price each (inc. VAT).

Order Code	Type 8213	Price each exc. VAT		inc. VAT each
		1+	1+	1+
BN31J	Switch Guard	£2.540		£2.990

### Plug Mate



A pull strap attachment for 13A plugs, as an aid for easy removal. Easy to fit and safe to use. Ideal for use in kitchens, workshops and around the home, or where access is difficult. Perfect for the elderly or disabled. Supplied in packs of three.

Retail Unit Price each (inc. VAT).

Order Code	Type 8064	Price each exc. VAT		inc. VAT each
		1+	1+	1+
RZ37S	Plug Mate	£1.270		£1.500

### Plugsafe



- ★ Avoid appliances being accidentally unplugged
- ★ Stop children playing with plugs
- ★ Easy to install
- ★ Compact and inexpensive

This is an inexpensive yet effective way of protecting appliances from being accidentally

unplugged or preventing children from playing with plugs/sockets. The unit is easy to install, just loosen off electrical socket and clip on. Once the socket has been tightened up again the Plugsafe is ready to use. Plug in the required appliance and simply press the Plugsafe lid down until it clicks shut. The cover will not open again until the two tabs (one on each side) are pressed simultaneously. The Plugsafe comes in both single (VD32K) and double (VD33L) socket versions.

Retail Unit Price each (inc. VAT).

Order Code	Type 1077	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
VD32K	Plugsafe Single	£1.690	£1.240	£1.060	£1.990
VD33L	Plugsafe Double	£2.540	£1.850	£1.570	£2.990

## CEE Type Plugs and Sockets



A range of high quality 3-way CEE industrial type connectors rated at 16A that comply to BS 4343, where applicable, and IEC 309/1 + 2. The range includes a surface mounting socket, an in-line coupler (socket) and a plug. These are available in both 110/130V AC (colour coded yellow) and 230V AC (colour coded blue) versions. The socket and coupler have a spring loaded cap to protect the contacts, and when a plug is connected, the cap locks on to the plug and has to be lifted before the plug can be removed. This prevents the plug being removed by pulling on the cable. A keyway, and a larger diameter earth pin/socket make it impossible for a plug and socket/coupler to be incorrectly connected. Three CEE inlets (plugs) are available in a choice of configurations - straight flush (WD52G), angled flush (WD50E) and angled surface (WD51F) mounting - all three are for 230V AC supplies. The angled surface inlet is supplied with a protective cap for use when de-mated. The connectors are the standard type used on caravans etc. for connecting to mains supplies, and being splashproof are suitable for outside use.

Retail Unit Price each (inc. VAT).

Order Code	Type 1140	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KC76H	110V Plug	£2.760	£2.320	£2.130	£3.250
KC77J	110V Coupler	£3.870	£3.180	£2.960	£4.550
KC78K	110V Socket	£6.170	£5.010	£4.810	£7.250
KC79L	240V Plug	£2.760	£2.320	£2.130	£3.250
KC80B	240V Coupler	£3.870	£3.180	£2.960	£4.550
KC81C	240V Socket	£6.170	£5.010	£4.810	£7.250
WD50E †	Ang Flush CEE Inlet	£16.970			£19.950
WD51F	Ang Surf Mains Inlet	£6.760			£7.950
WD52G †	Str Flush CEE Inlet	£15.270			£17.950

## Industrial Isolation Transformers



Industrial specification isolation step-down transformers, especially designed for use with 110V power tools, for outdoor use. Two types are available, rated at 2000VA or 3000VA output respectively. Both types are enclosed in a tough, yellow plastic case with carrying handle and are fitted with a pair of CEE, industrial pattern, 3-pin outlet sockets with 16A contacts and spring-loaded protective caps. These conform to BS4343 and are interchangeable with various types of 110V plugs. A suitable plug is KC76H (see Electrical Accessories). The secondary is of CTE arrangement (Centre-Tapped Earth), ensuring that the absolute maximum voltage available from either side of the output is not more than 55V with reference to earth.

Specification	DH22Y	DH23A
Colour code:	Yellow (110 to 130V)	
Input:	240V AC @ 50Hz	
Phases:	Single	
Output:	110V CTE	
Tool rating, intermittent:	2000VA	3000VA
Dimensions, H x W x D:	220 x 200 x 240mm	
Weight:	13kg	13.6kg
Overall depth includes depth of outlet sockets, these being 50mm approx.		

Retail Unit Price each (inc. VAT).

Order Code	Type 0721	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DH22Y	27 2000VA Indust Tx	£14.250	£81.000	£66.000	£99.000
DH23A	3000VA Indust Tx	£109.780	£98.000	£98.000	£129.000

## Mains Adaptors and Extension Leads

A range of high quality electrical cables and adaptors for mains hook-ups on site in the UK and abroad. The range includes 10m and 25m mains extension leads complete with CEE connectors, a UK mains hook-up adaptor (13A plug to CEE socket) and a continental mains hook-up adaptor (16A Euro plug to CEE socket).



Retail Unit Price each (inc. VAT).

Order Code	Type 1171E	Price each exc. VAT		inc. VAT each
		1+	1+	
WD42V †	10m Mains Xtn Lead	£13.010		£15.290
WD43W †	25m Mains Xtn Lead	£25.090		£29.490
WD44X †	UK Hook-Up Adaptor	£5.200		£6.110
WD45Y †	Cont Hook-Up Adaptor	£3.060		£7.130

## Mains Leads

### Cassette Mains Lead



A mains lead with moulded socket which will fit the mains plugs on many battery/mains cassette players, radios etc. For manufacturers' use only.

Retail Unit Price each (inc. VAT).

Order Code	Type 1107	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RW66W	Cas Lead Telefunken	£1.010	£0.660	£0.560	£1.190

### Mains Lead

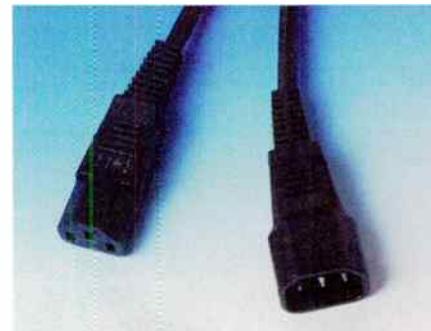


A non-rewirable mains lead with Telefunken style moulded two-pin socket at one end and a 13A moulded plug at the other. The Telefunken style socket is suitable for use with most mains/battery radios, cassette recorders, etc. The lead is 2m long, coloured black and rated at 250V AC, 2.5A. The 13A plug carries a 3A fuse.

Retail Unit Price each (inc. VAT).

Order Code	Type 1168	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
AK16S	2.5A Mains Lead	£2.200	£1.870	£1.700	£2.590

## European Plug and Socket Cord Set



Moulded, high quality, BEAB approved non-rewirable European style shrouded plug and socket cable assembly, 2m long, rated at 250V 10A. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type 1171	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MK24B	Euro Mains Cord Set	£4.670	£4.250	£3.750	£5.490

See Stock Code Index For More Price Breaks

## Moulded Socket Lead



A line socket permanently moulded to a length of 3-core flex. Rated at 6A. Available with straight or right-angled line socket. Length of flex: BW99H 1.5m; FE79L 2m. For manufacturers' use only.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BW99H	Eurocorn Lead	£2.110	£2.000	£1.890	£2.480
FE79L	R/A Eurocorn Lead	£2.970	£2.820	£2.670	£3.490

## Moulded Mains Plug and Lead



This integrally moulded 5A mains plug with 2m of 0.75mm diameter 3-core cable is supplied prepared for fitting to an electrical appliance. The plug features double insulation, and wire connections that have been crimped on by specialised semi-automatic equipment, to ensure consistent safety and reliability. The plug is supplied with solid brass semi-insulated pins and is approved to BS1363. Supplied fitted with a 5A fuse; cable end stripped 40mm, and cores bared 10mm. Available in either black or white. For manufacturers' use only.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	20+	100+	1+
CY32K	Mains Plug+Cable Bk	£2.540	£2.470	£2.300	£2.990
CY33L	Mains Plug+Cable Wht	£2.540	£2.470	£2.300	£2.990

## 2 Pin Flex Connector



A heavy duty thermoplastic 2 pin flex connector rated at 10A - 250V ac. This connector is reversible. Available in black or orange. To BS5733.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
VJ77J	2-Pin Connector Bk	£2.110	£1.890	£1.690	£2.490
VJ78K	2-Pin Connector Orm.	£3.140	£2.750	£2.500	£3.690

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## Moulded Socket Lead



A right-angled socket, permanently moulded to a 2m length of 3-core flex. Rated at 6A. For manufacturers' use only.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
AP08J	Cable Euro R-Angle	£1.600	£1.320	£1.140	£1.890

## European Mains Lead



A fully moulded double-earthed system mains lead with a 2-pin European Schuko plug at one end and the other with a Euro 3-pin socket. Suitable for equipment designed for operation from European mains supplies. Current rating: 6A. Voltage rating: 250V max. Available in two colours; Black or Grey.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	50+	100+	1+
KE77J	Schuko-Euro Bk	£2.540	£2.250	£1.950	£2.990
KE78K	Schuko-Euro Gry	£2.540	£2.250	£1.950	£2.990

## 3 Pin Flex Connector



A 3 pin heavy duty flex connector in thermoplastic. Rated at 10A - 250V ac with offset earth pin so that the connector is non reversible. Available in black or white. To BS5733.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
VJ79L	3-Pin Connector Bk	£3.390	£2.750	£2.500	£3.990
VJ80B	3-Pin Connector Wht	£3.390	£2.750	£2.500	£3.990

## Euro Socket to 13A Plug Lead



Moulded, high quality plug and socket non-rewirable cable assembly 2m long and rated at 5A 250V AC. The plug is supplied with a 5A fuse. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
MK41U	Euro-3Pin Lead	£3.390	£2.830	£2.420	£3.990

## Adaptors Flex Connector



A 10A 3-pin flex connector. The pins are shrouded and the earth pin is offset so that the connector is non-reversible. Connect mains to socket side and appliance to plug side. Fitted with cord-grip and moulded in hardwearing heat-resistant white nylon.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL61R	Flex Connector	£1.690	£1.600	£1.500	£1.990

## 2-Way Multiplug



A 13A 3-pin adaptor that plugs into a standard 13A socket and allows up to two appliances to be plugged into it. Maximum total load: 13A. Unfused. Sockets are shuttered. White.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HL62S	Mains Acceptor 2-Way	£1.690	£1.260	£0.960	£1.990





### 3-Way Multiplug

A 13A adaptor that plugs into a standard 13A socket and allows up to three appliances to be plugged into it.

Maximum total load: 13A. Fused. Sockets are shuttered. White.



Retail Unit Price each (inc. VAT).

Order Code	Type 118E	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HL63T	Mains Adaptor 3-Way	£2.540	£2.020	£1.720	£2.990

### Three Way Mains Adaptor



This three-way adaptor has built-in overload protection and is designed to BSEN 60730 (1992) to allow you to convert a single 13A socket outlet, safely into three sockets. The adaptor can support a maximum load of 3.1kW and has an indicator to show that power is present at the output. If the socket is overloaded, the in-built protection cuts the supply to all three adaptor sockets and sounds an audible alarm. After the overload has been removed the adaptor can be reset by pressing the reset button. As an extra precaution, the adaptor is also provided with a 13A fuse. Correct use of this adaptor will prevent the cable serving the socket from overheating and causing a fire risk. Please Note: This adaptor is not intended to be used as a substitute for safe wiring and good electrical practices.

Retail Unit Price each (inc. VAT).

Order Code	Type 4520	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
RZ86T †	3-Way Converter	£9.350	£8.400	£8.030	£10.160

### Multiway Plug / Surge Plug



- ★ Eliminates untidy and potentially unsafe wiring.
- ★ Eliminates the need for adaptors.
- ★ As easy to wire as a standard plug.

- ★ Enables 4 items up to a total load of 3000 Watts to be connected into one plug.
- ★ Same width as a standard 13A plug.

The Incept Multiway Plug is ideal for the office or home where multiples of electrical appliances are used together and are not usually disconnected from their power sockets. It is neater than using adaptors and extension sockets. Easy to wire up and a tool is not needed to change its fuse.

#### Surge protected multiway plug

Has all the benefits of the multiway plug but with the added advantage of a built in device to protect the items connected to it from any spike or surges that may occur on the live, neutral or earth electricity mains. The built in surge protector also has a light to indicate that it is working properly. Both units conform to BS5733 and the 1994 British Plug and Socket Safety Regulations. Multiway Plug - VD02C  
Surge Protected Multiway Plug - VD03D

Retail Unit Price each (inc. VAT).

Order Code	Type 12719	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VD02C	Multiway Mains Plug	£5.940	£5.400	£5.060	£6.990
VD03D	Multiway Surge Plug	£14.450	£12.890	£11.950	£16.990

### Shaver Adaptor

Standard 13A 3-pin plug internally connected to a 2-pin socket rated at 1A suitable for accepting the plugs fitted to electric shavers. Sockets are shuttered. Fitted with 1A fuse. White. Imported type. This adaptor is suitable for use with standard 2-pin continental mains plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type 118S	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HL64U	Shaver Adaptor	£1.350	£0.990	£0.770	£1.590

### Universal Travel Plug



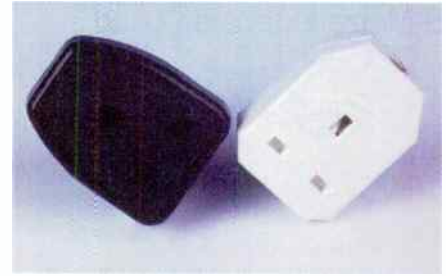
Travel round the world and plug into worldwide power. The Continental Adaptor connects earthed or non-earthed appliances rated up to 1.5W. The Intercontinental Adaptor connects non-earthed (2 wire) appliances rated up to 1.5W. Both adaptors are retained in a single cylindrical holder which is easily slipped into the suitcase.

Retail Unit Price each (inc. VAT).

Order Code	Type 1164S	Price each exc. VAT		inc. VAT each
		1+	1+	
BN30H	Universal Adaptor	£2.970		£3.490

† = While Stocks Last

### Trailing Single Sockets



A single shuttered 13A socket without switch. Finished in resilient thermoplastic with cord grip. Designed to be fitted to the end of an extension lead. Available in black or white.

Retail Unit Price each (inc. VAT).

Order Code	Type 13134	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HL73Q	Trailing Skt Single	£1.690	£1.260	£1.080	£1.990
VJ84F	Trailing Socket Bk	£1.690	£1.210	£1.020	£1.990

### Heavy Duty Single Trailing Sockets



A heavy duty single trailing socket in a robust, resilient compound. Virtually unbreakable in normal working conditions. Designed to be fitted to the end of an extension lead. Available in black, white or orange.

Retail Unit Price each (inc. VAT).

Order Code	Type 13135	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
VJ85G	H/D Trailing Skt Bk	£3.390	£2.940	£2.640	£3.990
VJ86T	H/D Trailing Skt Wht	£3.390	£2.940	£2.640	£3.990
VJ87U	H/D Trailing Skt.Orm	£3.390	£2.940	£2.640	£3.990

### Trailing Double Sockets



A double 13A unswitched socket made in resilient thermoplastic. Both sockets are shuttered and a cord grip is included. Designed to be fitted to the end of an extension lead. Both sockets are set at an angle of 45° to enable multi plug adaptors to be used. Available in black or white.

Retail Unit Price each (inc. VAT).

Order Code	Type 13136	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
ZB41U	Trailing Dble Skt	£5.090	£3.790	£3.330	£5.990
VJ88V	Dbl. Trailing Skt. Wht	£5.090	£4.120	£3.540	£5.990

## Extension Leads

### 5-Metre Extension Lead



An extension lead having a 13A plug at one end and a trailing socket at the other. The plug and socket are not moulded on types and so can be easily replaced or changed. Rated at 13A and suitable for appliances up to 3kW. Colour white.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
ZB82D	5m Lead	£5.940	£5.610	£5.050	£6.990

### 10-Metre Extension Lead



An extension lead with a 13A plug (fitted with a 5A fuse) at one end and a trailing socket at the other. The 3-core cable is rated at 5A and the maximum load is 1200W. Colour white.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KR37S	10m Lead	£7.650	£6.010	£5.300	£8.990

### Distribution Board

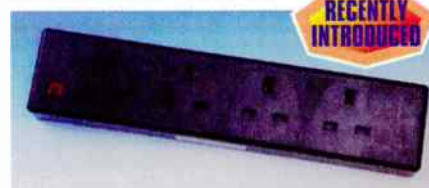


A plug board with four 13A sockets moulded in unbreakable white PVC. Cord grip on cable inlet at left-hand end enables use with trailing lead or by knocking out two covers on the front, the unit may be fixed to a wall etc. Sockets have safety shutters and a neon pilot light is fitted. Total load must not exceed 13A, and a 13A 1in. fuse is fitted. To BS1363/A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
ZF55K	Dis Board 4-Way	£5.940	£4.040	£3.380	£6.990

### Distribution Board



A plug board with four 13A sockets moulded in resilient black PVC. Cord grip on cable inlet at left hand end enables use with trailing lead or by

knocking out two covers on the front, the unit may be fixed to a wall etc. Sockets have safety shutters and a neon pilot light is fitted. Total load must not exceed 13A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
VJ90X	4w Ext Board Blk	£5.090	£3.660	£3.080	£5.990

### 4 Way Surge Protected Extension Lead



A 4 way distribution board fitted with 2m of cable and a 13A mains plug. This unit is fitted with anti surge protection designed to safeguard sensitive electrical equipment such as computers, Hi-Fi equipment, etc. For added protection this unit has thermal fusing.

Caution: The protection circuit includes double pole/neutral fusing which makes this product unsuitable for use in some rural areas where the supply has an earthed neutral conductor (PEN). If in doubt, please consult your local electricity supplier.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VJ98G	4w Surge & Spike	£14.450	£13.020	£11.990	£16.990

### 4 Way Extension Lead



4 way distribution boards ready connected to a length of mains cable and terminated in a 13A mains plug. Available in black or white with approximately 2m of cable and in white with approximately 5m of cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BN02C	Ext Lead Whi 2m	£6.800	£5.560	£5.050	£7.990
VJ89W	Ext LeadBlk 2m	£6.800	£5.450	£4.910	£7.990
GF88V	Ext Lead Whi 5m	£8.500			£9.990

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

### 6 Way Extension Lead



A 6 way distribution board ready connected to 2m (approx.) of cable and fitted with a 13A mains plug. Available in white.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VJ91Y	6w Ext Lead Whi 2m	£8.500	£7.550	£6.900	£9.990

### 4 Way Individually Switched Distribution Board



A 4 way distribution board with individually switched sockets. Available as board only or as complete extension lead with 2m (approx.) cable and 13A mains plug fitted.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VJ93B	4w Swt Ext Board	£8.500	£6.850	£6.250	£9.990
VJ94C	4w Swt Ext Lead 2m	£9.350	£8.150	£7.350	£10.990

### 3m Extension Reel



A 3m extension reel that is suitable for all domestic household appliances with a maximum combined total capacity of 3120W. Light to carry, the reel is fitted with two childproof sockets and a 13A fused plug. Finished in white. Not for use in wet conditions.

#### Specification

Cable length: 3m (10 feet approx.)  
Capacity: 8A (1920 watts) fully wound  
13A (3120 watts) fully unwound  
Weight: 600g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KR25C	3M Mains Cable Reel	£7.650	£6.820	£6.410	£8.990

## 10m Extension Reel

JoJo

A 10m extension reel with a maximum combined capacity of 1200W. Suitable for use with DIY power tools, Hi-Fi, video, lighting and most domestic electrical appliances. A convenient finger-shaped recess in the base and a small handle on the front make winding in the cable fast and easy - no more tangled cable. Fitted with two childproof sockets and a 5A fused plug. Finished in black. Not for use in wet conditions.



### Specification

Cable length: 10m (33 feet approx.)  
Capacity: 3A (720 watts) fully wound  
5A (1200 watts) fully unwound  
Weight: 850g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KP24B 2	10M Mains Cable Reel	£10.200	£11.990

## 12m Extension Reel

A versatile extension lead that retracts into its own handy carrying reel. When fully extended the cord measures 12m, providing power to the most inaccessible of places with minimum hassle. A built-in overload cut-out limits the power drawn through the cord, should somebody accidentally plug in additional items. Capable of supplying 6A continuously (when fully unwound), this unit is suitable for household and DIY appliances up to approximately 1.5kW of loading. Ideal for drills, lighting, lawn mowers and most household items.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC03D	12m ExtLead + Oload	£14.450	£16.990

## 15m Extension Reel

JoJo

Manufactured with safety in mind, this extension reel is suitable for use with power tools, lighting, various household appliances and gardening equipment such as trimmers, lawn mowers etc. The maximum load is 2400W. The reel is fitted with a convenient carry handle and an additional handle is provided for easy winding of the cable. Fitted with two childproof sockets, the extension reel conforms to BS6500, BS61363/A and BS5733. Colour black and red. Not for use in wet conditions.



### Specification

Cable length: 15m (50 feet approx.)  
Capacity: 4A (960W) Wound, 10A (2400W)  
Fully unwound  
Weight: 1.5kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KR23A 1	15M Mains Cable Reel	£14.450	£16.990

## 3m 'Quadro' Extension Reel

JoJo

This 3 metre extension lead has the benefit of four sockets making it ideal for many domestic and industrial uses. It is rated at 13A and supplied in red and black finish.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VJ95D	3m 13A Quadro Reel	£12.750	£14.990

## 10m 'Quadro' Extension Reel

JoJo

This 10 Metre extension lead has the benefit of 4 sockets making it ideal for many domestic and industrial applications. Rated at 13A and supplied in red and black finish.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VJ96E	10m 13A Quadro Reel	£22.970	£26.990

## 25m Heavy Duty Extension Lead

JoJo

A 25 Metre heavy duty extension reel on a robust rotating drum with metal stand and carrying handle. Designed for the professional, this lead has two sockets and is rated at 13A. Supplied in red and black finish.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VJ97F	25m 13A Ind.Reel	£42.540	£49.990

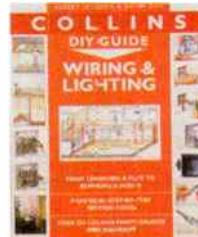
## Mains Wiring

### Books

## Wiring and Lighting

by Albert Jackson and David Day

This book will help anyone wanting to undertake household electrical tasks. It covers things as diverse as mending fuses and changing plugs through to good advice on complete rewiring. The diagrams and instructions here are full, many are step by step, and a lot of the matters left hanging in the small book are explained.



There are also a number of extended special sections which discuss the wiring of fixed appliances, the basic home electricians toolkit and how to reduce the cost of electricity - legally!

A short glossary explains some of the more basic terms as well as covering such matters as PME and ELCB.

This is the book for the serious

home electrician.

1995. 64 pages, 258 x 212mm, full colour illustrations.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WT56L	Wiring & Lighting	£5.990	£6.990 NV

## IEE Wiring Regulations

Regulations for Electrical Installations - 16th Edition

This edition supersedes the fifteenth edition from the 1st January 1993, and is based on the plan agreed internationally for the agreement of safety rules for electrical installations. Also, the technical substance of the parts of the IEC Publications 364 so far published, and of the corresponding agreements reached in CENELEC, have been taken into account. The opportunity has also been taken to revise certain regulations for greater clarity or to take account of technical developments. Considerable reference is made throughout the Regulations to publications of the British Standards Institute, both specifications and codes of practice. These publications are conveniently listed in Appendix 1 with their full titles, whereas throughout the Regulations they are referred to only by their numbers. The book is divided into seven parts. Part one details the scope, object and fundamental requirements for safety; part two covers definitions; part three the assessment of general characteristics; part four covers protection for safety; part five details selection and erection of equipment; part six covers special installations or locations and part seven covers inspection and testing. 1991. 266 pages. 296 x 210mm, illustrated.



Retail Unit Price each (inc. VAT).

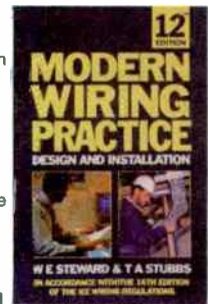
Order Code	Type	Price each exc. VAT	inc. VAT each
WZ90X 1	IEE Wiring Regs	£38.000	£38.000 NV

## Modern Wiring Practice

12th Edition

by W. E. Steward and T. A. Stubbs

A completely revised edition of Modern Wiring Practice taking into account the requirements of the 16th edition of the IEE Regulations for Electrical Installations. Includes new procedures developed since the ninth edition was published. Both the design of electrical installation systems and the practical work itself are covered, and the authors have many years' experience of electrical installation. An absolute must for all electrical engineers, apprentices, contractors and architects etc., and an invaluable reference for DIY wiring at home. 1992. 318 pages. 215 x 138mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WP64U	Mod Wiring Practice	£15.990	£16.990 NV

**All Customers**  
No additional freight charges for heavy items

## Sockets

### 13A Panel Mounting Socket

A panel mounting socket rated at 13A.- 250V ac only. Available in white. Made in England to BS1363.



**RECENTLY INTRODUCED**

Retail Unit Price each (inc. VAT).

Order Code	Type 13128	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VK02C	13A Panel Socket	£4.240	£3.850	£3.550	£4.990

### Unswitched Single

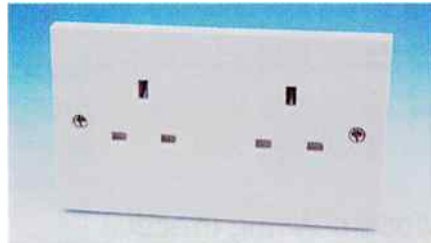
A shuttered, unswitched 13A socket in white, conforming to BS1363. Supplied with fixing screws.



Retail Unit Price each (inc. VAT).

Order Code	Type 1104	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
HL68Y	Single Skt Unswitched	£1.690	£1.520	£1.400	£1.990

### Unswitched Double



A shuttered, unswitched double 13A socket in white, conforming to BS1363. Supplied with fixing screws.

Retail Unit Price each (inc. VAT).

Order Code	Type 1105	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
HL69A	Dble Skt Unswitched	£2.540	£2.280	£2.100	£2.990

### Switched Single



A shuttered 13A socket with single pole switch that switches live only. Finished in white and conforming to BS1363. Supplied with fixing screws.

Retail Unit Price each (inc. VAT).

Order Code	Type 1106	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
HL71N	Single Sw Socket	£1.940	£1.620	£1.490	£2.290

### Metal-Clad Switched Single

A shuttered 13A socket with single pole switch that switches Live only. Completely enclosed in a smart silver grey finished box, with earth terminal. Conforms to BS1363.



Retail Unit Price each (inc. VAT).

Order Code	Type 1200	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JG40T	Mtl Single Sw Skt	£5.940	£5.270	£4.820	£6.990

### Weatherproof Socket



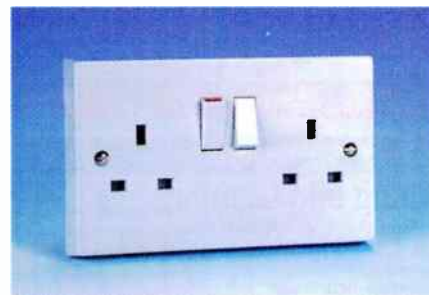
**RECENTLY INTRODUCED**

Manufactured to IP55 this socket is surface mounting with knockouts on top and sides of the enclosure for conduit fixing and is supplied with a universal connector. Manufactured to meet the highest standards from the best quality materials available. Available in grey. Coupler also available for joining two or more boxes (VK05F).

Retail Unit Price each (inc. VAT).

Order Code	Type 13108	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VK03D	Weatherproof Skt	£8.076	£7.511	£6.945	£9.490
VK05F	Weatherproof Coupler	£0.246	£0.210	£0.190	£0.290

### Switched Double



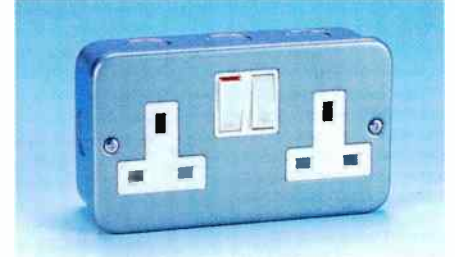
A double shuttered 13A socket each with its own single pole switch that switches live only. Finished in white and conforming to BS1363. Supplied with fixing screws.

Retail Unit Price each (inc. VAT).

Order Code	Type 1201	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
HL72P	Double Sw Socket	£2.970	£2.620	£2.390	£3.490



### Metal-Clad Switched Double



A double shuttered 13A socket each with its own single pole switch operating on the live side. Completely enclosed in a smart silver grey finished box, with earth terminal. Conforms to BS1363.

Retail Unit Price each (inc. VAT).

Order Code	Type 1202	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JG41U	Mtl Double Sw Skt	£8.920	£7.680	£6.920	£10.490

### Double RCD Wall Socket



**RECENTLY INTRODUCED**

A double pole protected safety socket designed to protect against the danger of electrocution from severed or damaged cables. Can be used as a direct replacement for standard double sockets. Supplied with fixing screws.

The use of a RCD socket should not be regarded as a substitute for basic electrical safety precautions. Always unplug equipment to achieve isolation before any inspection or repair is attempted. If the RCD repeatedly trips with an appliance connected, contact the manufacturer or seek expert advice. Complies to BS7071 & BS1363

Retail Unit Price each (inc. VAT).

Order Code	Type 13216	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VJ99H	RCD Twin Socket	£29.770	£26.900	£24.790	£34.990

### RCD Protected Sockets - Unlatched



**NEW**

A comprehensive range of 'un-latched' RCD socket outlets

\*Trips out when the power supply is temporarily lost. A safety must for machine tool applications.

- ★ Eliminates the need for plug-in circuit breakers.
- ★ Protects appliances from possible fire hazard.
- ★ Manual reset.
- ★ Extra fast action - trips out within 40 milliseconds!
- ★ Automatically disconnects both Live and Neutral connections leaving Earth connection intact.
- ★ Test button for safety checks.
- ★ Still protects with lost neutral.
- ★ Still protects with pulsating DC earth fault currents.
- ★ Complies with BS7288 and BS1363.
- ★ Switched for convenience & extra safety.

MS76H is a white single socket RCD circuit breaker. It simply replaces an existing double socket MS77J is the metal version of the above, ideal for use in factories and other industrial environments. MS78K is a double white socket that provides two protected socket outlets, making the unit ideal for multi-product applications eg. computers and printers. MS79L is the metal version of the above.

Retail Unit Price each (inc. VAT).

Order Code	Type 11703	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MS76H 1	Sglt RCD Skt	£26.370	£23.470	£20.890	£30.990
MS77J 1	Mtl RCD Skt	£29.770	£26.500	£23.580	£34.990
MS78K 1	Twin RCD Skt	£32.330	£28.770	£25.610	£37.990
MS79L 1	Twin Mtl RCD Skt	£36.160	£32.180	£28.640	£42.490

## RCD Protected Sockets - Latched

Smiths



A comprehensive range of 'latched' RCD socket outlets

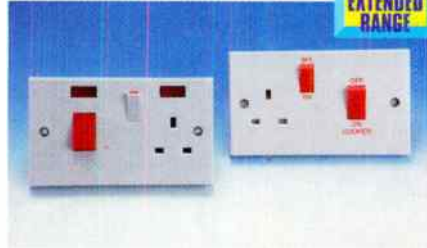
- ★ Remains latched when the power supply is temporarily lost.
- ★ Essential for applications like freezers.
- ★ Eliminates the need for plug-in circuit breakers.
- ★ Protects appliances from possible fire hazard.
- ★ Manual reset.
- ★ Extra fast action - trips out within 40 milliseconds!
- ★ Automatically disconnects both Live and Neutral connections leaving Earth connection intact.
- ★ Test button for safety checks.
- ★ Still protects with lost neutral.
- ★ Still protects with pulsating DC earth fault currents.
- ★ Complies with BS7288 and BS1363.
- ★ Switched for convenience & extra safety.

MS31J is a white single socket RCD circuit breaker. It simply replaces an existing double socket MS32K is the metal version of the above, ideal for use in factories and other industrial environments. MS33L is a double white socket that provides two protected socket outlets, making the unit ideal for multi-product applications eg. computers and printers. MS34M is the metal version of the above.

Retail Unit Price each (inc. VAT).

Order Code	Type 11710	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MS31J 1	Sglt RCD Skt Lch	£27.650	£24.600	£21.900	£32.490
MS32K 1	Mtl RCD Skt Lch	£31.480	£28.010	£24.930	£36.990
MS33L 1	Twin RCD Skt Lch	£34.030	£30.290	£26.950	£39.990
MS34M 1	Twin Mtl RCD Skt Lch	£37.860	£33.690	£29.990	£44.490

## Cooker Control



Cooker controls produced to BS4177C. The cooker switch is a large double pole switch rated at 45A. A switched 13A socket is also provided for electric kettles etc. The socket is shuttered. For ease of wiring separate earth terminals are provided for socket and cooker. Both switches have red rockers and are double pole to switch both live and neutral for absolute safety. Supplied with fixing screws. White. Available both with and without neon power indicators.

Retail Unit Price each (inc. VAT).

Order Code	Type 1230	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
HL76H	Cooker Switch	£8.500	£7.700	£7.120	£9.990
MT40T	Cooker Switch Neon	£10.620	£9.350	£8.230	£12.490

## Shaver Socket for Bathrooms

A dual voltage shaver socket complying with BS3052. A dual-voltage socket is employed with one side providing 115V and the other 240V.

Each is keyed to prevent insertion of the wrong style plug. Insertion of a plug automatically switches the sockets on, which are connected via a double wound safety isolating transformer, itself protected by a self-resetting overload device. Designed for use in bathrooms where it meets the relevant IEE regulations. Supplied with fixing screws. Colour White.



Retail Unit Price each (inc. VAT).

Order Code	Type 1231	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
HL78K 1	Shaver Skt Isolated	£25.520	£22.150	£19.990	£29.990

## Fused Spurs

### Spur Outlet Fused

An unswitched connecting unit fitted with a 13A fuse. Supplied with fixing screws. Complies with BS3676 1989.



Retail Unit Price each (inc. VAT).

Order Code	Type 13207	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VK08J	Unswitched Spur	£3.390	£2.750	£2.510	£3.990

## Flex Outlet Switched

A connecting unit, max. load 13A with a fused flex outlet in a white plate cover and a double pole switch. BS1363. Supplied with fixing screws.



Retail Unit Price each (inc. VAT).

Order Code	Type 1233	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
HL83E	Switched Flex Outlet	£4.240	£3.850	£3.550	£4.990

## Switched Flex Outlet with Red Neon

A fused connecting unit, max. load 13A, with a flex outlet in a white plate cover and a double pole switch which is illuminated by a red neon when energised. Supplied with fixing screws.



Retail Unit Price each (inc. VAT).

Order Code	Type 1238	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
ZB36R 2	Sw Flex Outlet Neon	£8.500	£7.700	£7.100	£9.990

## Metal-Clad Fused Spur Outlet

A metal-clad fused connecting outlet with 13A fuse. Rated at 13A and finished in grey. To BS3676 and BS5733 (1979).



Retail Unit Price each (inc. VAT).

Order Code	Type 13122	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VK09K 1	Unswitched Spur Met.	£6.370	£5.650	£5.180	£7.490

## Metal-Clad Switched Fused Spur Outlet

A switched connecting outlet with a double pole switch and fuse holder. Supplied with 13A fuse. BS3676



Retail Unit Price each (inc. VAT).

Order Code	Type 1237	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
ZB37S	Metal Sw Outlet	£7.650	£6.920	£6.370	£8.990

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## RCD Protected Fused Spur

Smiths



Two RCD protected fused spurs. One offers 'unlatched' operation, the other 'latched' operation.

- ★ Full protection against electric shocks and fire risk for equipment permanently connected to the mains
- ★ Extra fast action - trips out within 40 milliseconds!
- ★ Automatically disconnects both Live and Neutral connections leaving Earth connection intact.
- ★ Complies with BS7288 and BS1363.

**MS30H:** In addition to the RCD protection, this 'unlatched' version trips out if the power supply is temporarily lost. A safety must for machine tool applications.

**MS35Q:** This 'latched' version shares all the features and benefits of the MS30H and the unit will remain latched if the power supply is temporarily lost and then restored.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MS30H 1	RCD Fused Spur	£28.920	£25.740	£22.910	£33.990
MS35Q 1	RCD Fused Spur Lch	£29.770	£26.500	£23.580	£34.990

## Blanking Plates

### Blanking Plate

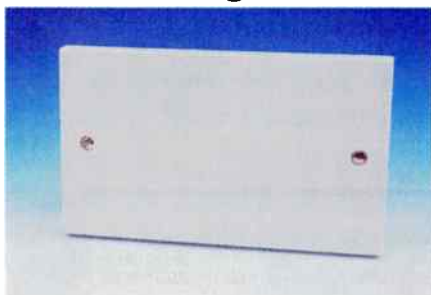
A white plate that will blank off any spare single mounting box. BS1363. Supplied with fixing screws.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
HL86T	Blanking Plate	£0.587	£0.485	£0.440	£0.690

### Double Blanking Plate



A white plate which can be used to blank off any spare double mounting box. Supplied with fixing screws.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
ZB49D	Dbl Blank Plate	£0.842	£0.700	£0.645	£0.990

## Switches

### Single Light Switch 1-Way

A single one-way switch rated at 5A and also suitable for fluorescent fittings. White. Fixing screws supplied. BS3676.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
HL89W	Light Swch ST Single	£0.842	£0.700	£0.645	£0.990

### Single Light Switch 2-Way

A single 2-way switch rated at 5A and also suitable for fluorescent fittings. For use where two switches are used to operate the light/s, e.g. in hall and stairways. White. Fixing screws supplied. BS3676.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
HL90X	Light Swch DT Single	£1.010	£0.850	£0.770	£1.190

### Illuminated Switch

This attractively styled switch is designed so that the switch button surround is illuminated when the light is off. A gentle green glow indicates the location of the switch. This switch can be used for one way lighting or, at the flick of a small toggle switch for two way lighting.

The illuminated switch can be used as a direct replacement for most standard light switches. Supplied with fixing screws.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VK06G	Illuminated Switch	£4.240	£3.950	£3.650	£4.990

### Metal-Clad Single Light Switch 2-Way

A single 2-way switch rated at 5A and also suitable for fluorescent fittings. Also for use where two switches are used to operate one light. Completely enclosed in smart hammertone grey finish box. BS3676.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JG39N	Mtl Light Sw DT	£4.670	£4.160	£3.810	£5.490

### Intermediate Single Light Switch

A single 2-way switch specifically for 'three way' lighting control, where one light can be controlled from three different places. For example, where one lighting circuit covers the front hall and upstairs landing, there can be three switches, one near the front door, one at the end of the hallway and another on the upstairs landing. Two of these need to be 2-way type (HL90X), and the third must be an intermediate type as shown here. It serves to interrupt the three-core cable linking the other two switches, and has two 'L1' and two 'L2' terminals.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
ZB61R	Intermediate Switch	£5.090	£4.620	£4.270	£5.990

### Double Light Switch

Two separate two-way switches rated at 5A and also suitable for fluorescent fittings. White. Fixing screws supplied. BS3676.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
HL91Y	Light Swch Dual	£1.690	£1.410	£1.300	£1.990

### Metal-Clad Light Switches

A metal-clad switch rated at 6A and suitable for conventional and fluorescent lighting. This switch is 2 way working and completely enclosed in a grey finish metal box with a choice of knockout entries on all sides. Available in one gang (JG39N) and two gang (VK10L) versions. BS3676.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JG39N	Mtl Light Sw DT	£4.670	£4.160	£3.810	£5.490
VK10L	2G/2W Metal Switch	£5.940	£5.180	£4.670	£6.990

### Triple Light Switch

Three separate two-way switches rated at 5A and also suitable for fluorescent fittings. White. Fixing screws supplied. BS3676.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
HL92A	Light Switch Triple	£2.110	£1.860	£1.730	£2.490



## 20A Switch

A plain white plate switch with a single double pole switch rated 20A. Fixing screws supplied. BS3676. Available with or without neon indicator.



Retail Unit Price each (inc. VAT).

Order Code	Type 1243	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
HL87U	20A Plateswitch	£3.820	£3.450	£3.170	£4.490
JG30H	20A Neon Plateswitch	£6.800	£6.300	£5.860	£7.990

## Shower Wall Switches



Double-pole switch with red rocker and heavy duty contacts for switching electric shower heaters. Available to fit single and double pattresses. Double vertical mount switch includes neon power indicator Rated at 45A 250V. BS3676 Part 1. Double pole make only. Includes two strapped earth terminals for easy carry through of an earth wire. Fixing screws supplied. **Switch should not be mounted inside a bathroom.**

Retail Unit Price each (inc. VAT).

Order Code	Type 1245	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
ZB39N	Wall Shower Switch	£6.800	£5.990	£5.460	£7.990
MT39N	Double Shower Switch	£8.500	£7.480	£6.590	£9.990

## Pull Cord Switch

This 2 Amp, side action pull cord switch with screw terminals is an ideal replacement for most decorative household wall lights.

It has a pull cord length of 180mm and is in full compliance with CE123-11/III



Retail Unit Price each (inc. VAT).

Order Code	Type 1308	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GC49D	Wall Pull Switch	£0.842	£0.784	£0.760	£0.990

## Pull Cord Switch

This 2 Amp pull cord switch with screw terminals can be used as a replacement for most types of individually switched light fittings.

It has a 16mm long shank with a white cap and 300mm of pull cord. Complies to CE123-11/III.



Retail Unit Price each (inc. VAT).

Order Code	Type 1309	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GCS1F	Ceiling Pull Switch	£1.090	£1.020	£0.990	£1.290

## Ceiling Pull Switch



A ceiling mounted, cord operated light switch to BS3676 for use in bathrooms (wall mounted switches are not permitted in bathrooms). Fitting has a one-way switch. Rated at 5A and suitable for fluorescent fittings. White with tough white nylon pull-cord. Fixing centres 51mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1247	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FQ00A	Ceiling Switch 1-Way	£2.540	£2.050	£1.860	£2.990

## Shower Pull Switch



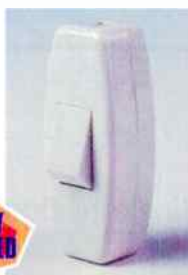
A ceiling mounted double-pole switch with heavy duty contacts for switching electric shower heaters. Rated at 40A 250V. BS3676. Double pole make only. Includes two strapped earth terminals for easy carry through of an earth wire. Escutcheon includes a red neon power-on indicator, and moving 'ON' and 'OFF' legends displayed in a window. The 1.7m long cord can be shortened as necessary. Fixing screws supplied. Requires a 35mm deep flush or 40mm deep surface mounting box.

Retail Unit Price each (inc. VAT).

Order Code	Type 1248	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
ZB89W	Shower Pull Switch	£11.900	£10.400	£9.600	£13.990

## Flex Switch

A three terminal line cordswitch rated at 5A 250V ac. Suitable for table lamps etc. Available in white.



Retail Unit Price each (inc. VAT).

Order Code	Type 13156	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VJ83E	Line Cord Switch	£1.260	£1.090	£1.010	£1.490

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## Weatherproof Switch

A one gang two way lightswitch manufactured to IP55. Knockouts provided on top and sides of the enclosure for conduit fixing and supplied with a universal connector. Manufactured to meet the highest standards from the best materials available. Supplied in grey. A coupler is also available to join two or more boxes (VK05F).



Retail Unit Price each (inc. VAT).

Order Code	Type 13191	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VK04E	Weatherproof Switch	£5.523	£5.192	£4.805	£6.490
VK05F	Weatherproof Coupler	£0.246	£0.210	£0.190	£0.290

## Dimmer Switches

### Rotary Control

White plate with elegant spun aluminium knob. Rotary knob controls up to 400W. Designed for 1 way switching only. Not suitable for use with fluorescent lamps.



Retail Unit Price each (inc. VAT).

Order Code	Type 1261	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FQ10L	400W Rotary Dimmer	£6.800	£6.050	£5.650	£7.990

### White Push-on Push-off Single

White plate with elegant spun aluminium knob. Switching is push-on push-off so that light may be switched on or off at any brightness setting. Rated 400W. Designed for 1 way and 2 way switching. Not suitable for use with fluorescent lamps.



Retail Unit Price each (inc. VAT).

Order Code	Type 1262	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FQ12N	400W Push Dmr Sngl	£9.350	£8.100	£7.450	£10.990

## Pattresses

### Single 16mm

For all light switches. 16mm deep with one adjustable lug and 16mm and 25mm oval knockouts. A hole (9 x 32mm oval) is knocked out on one side. An earth terminal is provided.



Retail Unit Price each (inc. VAT).

Order Code	Type 1268	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JG31J	Metal Box 16mm	£0.936	£0.865	£0.810	£1.100

See Stock Code Index For More Price Breaks

## Single Metal Pattresses

A range of quality metal pattresses.

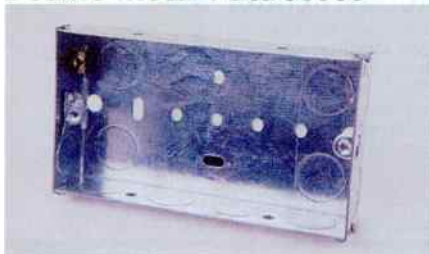
Three standard depths available 25mm, 35mm and 46mm. All have 20mm round knockouts and come complete with brass earth terminal.



Retail Unit Price each (inc. VAT).

Order Code	Type 1271	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JG32K	Metal Box 25mm	£1.020	£0.860	£0.780	£1.200
ZB75S	Shower Box 35mm	£1.100	£1.040	£0.970	£1.300
MU77J	Metal Box 46mm	£1.190	£1.120	£1.050	£1.400

## Double Metal Pattresses



A range of quality double pattresses. Available in three standard depths 25mm, 35mm, and 46mm. All have 20mm round knockouts and come complete with brass earth terminal.

Retail Unit Price each (inc. VAT).

Order Code	Type 1274	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JG33L	Metal Box 2-Way 25mm	£1.020	£0.950	£0.800	£1.200
MU78K	Metal Box 2-Way 35mm	£1.260	£1.120	£1.050	£1.490
JG34M	Metal Box 2-Way 46mm	£1.690	£1.590	£1.480	£1.990

## Eazijig Template



- ★ Easy to use template for flush fitting switch & socket boxes
- ★ Suitable for 1 gang or 2 gang boxes
- ★ 5/16" (No.16) masonry drill bit supplied
- ★ For a perfect job every time

This is an invaluable tool, when fixing flush fitting switches or sockets. Easy to use, just mark the position required, screw Eazijig to the wall and drill out template holes with the drill bit provided. Once the Eazijig has been removed, simply cut out between holes and the box can be fitted.

Retail Unit Price each (inc. VAT).

Order Code	Type 1208	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
PE47B	Eazijig Box Template	£5.940	£5.550	£5.150	£6.990

**Business Account Holders**  
No Delivery Charges for any order

## Single Surface Pattresses

Single white plastic surface pattresses available in three standard depths 16mm, 25mm and 46mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1286	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YB14Q	Sur Patt 16mm single	£0.587	£0.500	£0.465	£0.690
YB15R	Sur Patt 25mm Single	£0.672	£0.570	£0.520	£0.790
ZB40T	Sur Patt 46mm Single	£1.090	£0.930	£0.850	£1.290

## Double 25mm



For all double panels except cooker and shaver units. 25mm deep.

Retail Unit Price each (inc. VAT).

Order Code	Type 1288	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YB16S	Sur Patt 36mm Doble	£1.090	£0.930	£0.850	£1.290

## Double 47mm



For cooker and shaver panels. 47mm deep.

Retail Unit Price each (inc. VAT).

Order Code	Type 1288	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YB17T	Sur Patt 47mm Doble	£1.690	£1.400	£1.270	£1.990

## Single to Double Conversion



Designed to be fitted onto a single flush mounting box so that a double socket may be fitted.

Retail Unit Price each (inc. VAT).

Order Code	Type 1290	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YB18U	Conversion Pattress	£3.650			£4.290

## Dry Line Box Single 36mm

Requires a cut-out 74 x 74mm and a depth of 36mm. Suitable for socket outlets and plate switches. Finished in white, overall size 83 x 83mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1294	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
KC70M	Dry Line Single	£0.842	£0.710	£0.650	£0.990

## Dry Line Box Double 36mm



Requires a cut-out 135 x 74mm and a depth of 36mm. Suitable for all double panels except cooker and shaver. Finished in white, overall size 145 x 83mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1295	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
KC71N	Dry Line Double	£1.690	£1.600	£1.450	£1.990

## Round Dry Line Box



Requires a cutout of 62mm diameter and a depth of 33mm. Suitable for ceiling roses, wall lights, pendants and smoke detectors.

Retail Unit Price each (inc. VAT).

Order Code	Type 13060	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
VK07H	Round Dry-Line Box	£1.690	£1.580	£1.470	£1.990

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**Galvanised Joint Box**

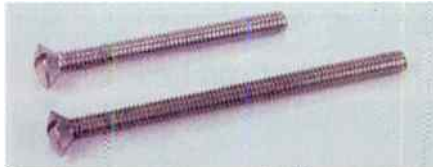


A galvanised steel box designed for enclosing armoured cable joints. Knockouts on all four sides, supplied with screw down lid and four screws. Dimensions 100 x 100 x 50mm

Retail Unit Price each (inc. VAT).

Order Code	Type 13-48	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
VK11M	Galv Knock Out Box	£4.240	£3.950	£3.650	£4.990

**Spare Screws for Electrical Fittings**



Spare screws as replacements for those supplied with single and double switch plates, blanking plates, sockets etc. The 3-5mm thread is standard for all electrical pattresses and wall boxes, but impossible to match from normal BA or metric sizes! Two lengths are available, a standard 30mm (to replace lost originals for example), and a 50mm, long reach type for deep or recessed pattresses. Sold in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1-38	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JZ38R	Slot Screw M3.5 30mm	£1.260	£0.838	£0.737	£1.490
JZ38N	Slot Screw M3.5 50mm	£1.520	£1.110	£0.990	£1.790

**Professional**

**13A Switched Sockets**



A single and double 13A switched socket both of which has a shallow back projection for ease of installation in a 25mm deep box. Both sockets are single pole with large capacity tunnel type terminals for easy wiring. Manufactured to BS1363

Dimensions: Single 86 x 86mm  
Double 146 x 86mm

Supplied with fixing screws.  
**10 Year Guarantee**

Retail Unit Price each (inc. VAT).

Order Code	Type 13849	Price each exc. VAT			inc. VAT each
		1+			1+
GF90X	Single Swt Socket	£3.650			£4.200
GC81C	Twin Switched Socket	£6.800			£7.990

**Unswitched Sockets 13A**

Crabtree



A single and double unswitched 13A socket outlet with shallow back projection for ease of installation in a 25mm deep box. Both sockets have large capacity tunnel type terminals for easy wiring. Manufactured to BS1363

Dimensions: Single 86 x 86mm  
Double 146 x 86mm

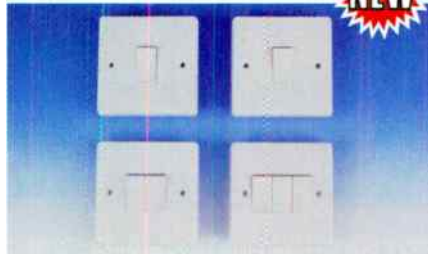
Supplied with fixing screws  
**10 Year Guarantee**

Retail Unit Price each (inc. VAT).

Order Code	Type 13850	Price each exc. VAT			inc. VAT each
		1+			1+
GF91Y	Single Un/Swt Socket	£3.140			£3.690
GF89W	Twin Un/Swt Socket	£5.520			£6.490

**6A Light Switches**

Crabtree



A range of 6A single pole light switches from 1gang to 3gang all manufactured to BS3676

All the switches are fully rated for fluorescent or inductive loads.

Supplied with fixing screws

The range includes :-

- 1G/1W SP 86 x 86mm
- 1G/2W SP 86 x 86mm
- 2G/2W SP 86 x 86mm
- 3G/2W SP 86 x 86mm

**10 Year Guarantee**

Retail Unit Price each (inc. VAT).

Order Code	Type 13852	Price each exc. VAT			inc. VAT each
		1+			1+
GF92A	1G/1W Light Switch	£1.690			£1.990
GF93B	1G/2W Light Switch	£2.110			£2.490
GF94C	2G/2W Light Switch	£3.650			£4.290
GG00A	3G/2W Light Switch	£5.090			£5.990

**Intermediate Switch**

Crabtree



A 1gang 2way light switch specifically for "three way" lighting control, where one light can be controlled from three different places. Manufactured to : BS3676. Fully rated for fluorescent or inductive loads. Supplied with fixing screws.

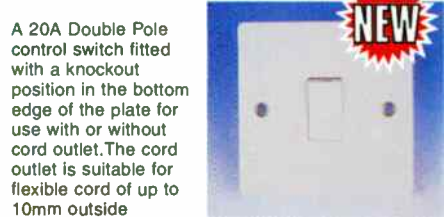
**10 Year Guarantee**

Retail Unit Price each (inc. VAT).

Order Code	Type 13853	Price each exc. VAT			inc. VAT each
		1+			1+
GG02C	1G Intermed Switch	£4.840			£5.690

**20A DP Control Switch**

Crabtree



A 20A Double Pole control switch fitted with a knockout position in the bottom edge of the plate for use with or without cord outlet. The cord outlet is suitable for flexible cord of up to 10mm outside diameter. Two earthing terminals are fitted to the switch. Fixing screws supplied. Manufactured to BS3676

Dimensions : 86mm x 86mm  
**10 Year Guarantee**

Retail Unit Price each (inc. VAT).

Order Code	Type 13842	Price each exc. VAT			inc. VAT each
		1+			1+
GG03D	20A DP Switch	£4.840			£5.690

**50A DP Control Switch**

Crabtree



A 50A double pole control switch manufactured to BS3676. BSEN 60947-3 Rated at 240V 50A Category of duty AC22 Dimensions : 86mm x 146mm Fixing screws supplied  
**10 Year Guarantee**

Retail Unit Price each (inc. VAT).

Order Code	Type 13843	Price each exc. VAT			inc. VAT each
		1+			1+
GG04E	50A DP Switch	£7.650			£8.990

**Fused Connection Units 13A**

Crabtree



A range of 13A fused connection units including unswitched, switched and switched with neon. Each unit is fitted with a knockout position in the bottom edge of the plate for use with or without a cord outlet. Suitable for flexible cord up to 10mm overall diameter.

They are all fused on the line side with a 13A fused link (ASTA certified and marked BS1362) Shallow back projection for ease of installation in a 25mm deep box. Supplied with fixing screws. Manufactured to BS5733 Dimensions : 86mm x 86mm  
**10 Year Guarantee**

Retail Unit Price each (inc. VAT).

Order Code	Type 13847	Price each exc. VAT			inc. VAT each
		1+			1+
GG05F	Unswitched Spur	£5.940			£6.990
GG06G	Switched Spur	£6.800			£7.990
GG07H	Switched Spur/Neon	£8.500			£9.990

## Blanking Plates

Crabtree



**NEW**

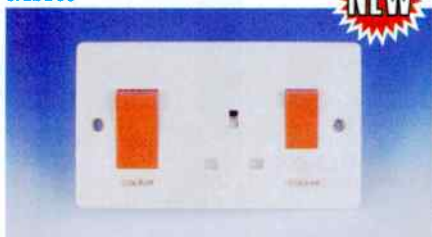
A single and double white plate which can be used to blank off any spare mounting box. Manufactured to BS 5733 Supplied with fixing screws  
 Dimensions : Single 86mm x 86mm  
 Double 146mm x 86mm  
**10 Year Guarantee**

Retail Unit Price each (inc. VAT).

Order Code	Type 13841	Price each exc. VAT 1+	inc. VAT each 1+
GG08J	1G Blanking Plate	£1.260	£1.490
GG09K	2G Blanking Plate	£2.370	£2.790

## Cooker Control Unit

Crabtree



**NEW**

This 45A double pole, slimline cooker control unit is the same plate size as a standard twin socket. It has a 45A DP mains switch & 13A switched socket outlet with the face plate marked "cooker". It has large capacity tunnel terminals on live and neutral to take up to 10mm<sup>2</sup> cable along with 2 earth terminals. It also has separate double pole switching for both cooker and socket outlet. Manufactured to BS4177 & BS1363  
 Dimensions : 146mm x 86mm  
 Supplied with fixing screws.  
**10 Year Guarantee**

Retail Unit Price each (inc. VAT).

Order Code	Type 13845	Price each exc. VAT 1+	inc. VAT each 1+
GG10L	Cooker Unit	£11.900	£13.990

## Cooker Outlet

Crabtree



**NEW**

A 45A cooker cable outlet comes complete with terminals and cable clamp. A cable knock-out in cover prevents access to terminals before outgoing cable is fitted. Terminals will accept 2 x 10mm<sup>2</sup> cables. Manufactured to BS5733.  
 Dimensions : 86mm x 86mm  
 Supplied with fixing screws.  
**10 Year Guarantee.**

Retail Unit Price each (inc. VAT).

Order Code	Type 13844	Price each exc. VAT 1+	inc. VAT each 1+
GG11M	Cooker Outlet	£4.500	£5.290

See Stock Code Index For More Price Breaks

## Ceiling Switches 6A

Crabtree

A 6A Ceiling switch available in either 1way s/p or 2way s/p. The 2way switch can also be wired as a one way. The retractive switch can be wired for normally open (N/O) or normally closed (N/C) circuits. Standard pull cord length of 1.5m in white. They are also fully rated for fluorescent or inductive loads. Each switch comes complete with pattress for surface mounting or can be mounted to a small circular circuit box. Manufactured to BS3676  
**10 Year Guarantee**



**NEW**

Retail Unit Price each (inc. VAT).

Order Code	Type 13848	Price each exc. VAT 1+	inc. VAT each 1+
GG12N	1W Pull Switch	£4.160	£4.890
GG13P	2W Pull Switch	£4.670	£5.490

## Surface Moulded Boxes

Crabtree



**NEW**

A range of surface moulded boxes for use with Crabtree electrical wiring products. Available in the following sizes:-  
 Single: 87 x 87 x 20mm Deep  
 Single: 87 x 87 x 29mm Deep  
 Double: 147 x 87 x 29mm Deep  
 Double: 147 x 89 x 45mm Deep  
**10 Year Guarantee**

Retail Unit Price each (inc. VAT).

Order Code	Type 13848	Price each exc. VAT 1+	inc. VAT each 1+
GG14Q	20mm Single Pattress	£1.090	£1.290
GG15R	29mm Single Pattress	£1.180	£1.390
GG16S	29mm Double Pattress	£2.110	£2.490
GG17T	45mm Double Pattress	£2.280	£2.690

ORDER BEFORE 5PM FOR SAME DAY DESPATCH

Tel: 01702 554000  
 Fax: 01702 554001  
 e-mail: Sales@maplin.co.uk

## Metal Switched Sockets

Crabtree



**NEW**

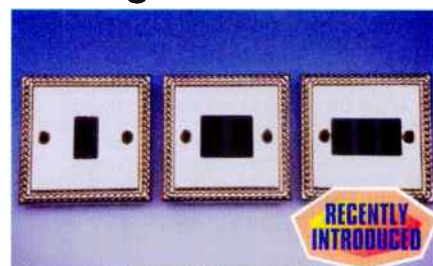
A 1 gang & 2 gang single pole switched socket complete with metal back box. Each back box has knock out facilities for use with flexible conduit. Manufactured to BS1363  
 Dimensions:-  
 Single 82 x 82 x 44mm  
 Double 142 x 82 x 44mm  
**10 Year Guarantee**

Retail Unit Price each (inc. VAT).

Order Code	Type 13851	Price each exc. VAT 1+	inc. VAT each 1+
GG18U	1G Met Swt/Socket	£7.390	£8.690
GG19V	2G Met Swt/Socket	£13.600	£15.990

## Brass Fittings

### Brass Light Switches



**RECENTLY INTRODUCED**

A range of Georgian, rope edge brass light switches with contrasting black plastic inserts. One way, two way and three way versions are available, all are supplied with fixing screws and polythene gasket.

Retail Unit Price each (inc. VAT).

Order Code	Type 13855	Price each exc. VAT 1+	10+	25+	inc. VAT each 1+
VK12N	Brass 1G/2W Light Sw	£7.650	£6.720	£6.220	£8.990
VK13P	Brass 2G/2W Light Sw	£9.350	£8.380	£7.840	£10.990
VK14Q	Brass 3G/3W Light Sw	£11.050	£9.950	£9.300	£12.990

### Brass Switched, Fused Spur



**RECENTLY INTRODUCED**

A Georgian, rope edge style brass switched, fused spur with contrasting black plastic insert. Supplied with fixing screws and polythene gasket.

Retail Unit Price each (inc. VAT).

Order Code	Type 13856	Price each exc. VAT 1+	10+	25+	inc. VAT each 1+
VK15R	1G Swt. Fused Spur	£11.900	£10.290	£9.450	£13.990

**Brass Sockets**



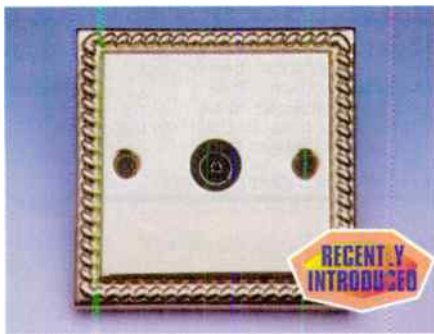
RECENTLY INTRODUCED

A Georgian, Rope edge style socket available in one gang and two gang versions. These sockets are set off by contrasting black plastic switches and inserts and come complete with fixing screws and polythene gasket. A full range of matching accessories is also available.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VK16S	Brass 1G Swt/Sok	£9.350	£9.380	£7.840	£10.990
VK17T	Brass 2G Swt/Socket	£11.900	£10.650	£9.950	£13.990

**Brass Co-axial Outlet**



RECENTLY INTRODUCED

A Georgian, rope edge style TV aerial socket which will fit standard flush back boxes. Supplied with fixing screws and polythene gasket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VK18U	Brass Coax Socket	£11.900	£10.450	£9.700	£13.990

**Brass Telephone Sockets**



RECENTLY INTRODUCED

Georgian, rope edge style brass telephone sockets available in master and slave versions. Will fit standard flush backbox. Supplied with fixing screws and polythene gasket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VK19V	Brass Tel Socket Mst	£11.900	£10.450	£9.700	£13.990
VK20W	Brass Tel Socket Sly	£10.200	£8.750	£7.990	£11.990

**Brass Dimmers**



NEW

A range of Georgian, rope edge style brass dimmer switches in either 1, 2 or 3 gang. Dimmer switches must not be overloaded or underloaded. Please refer to the fitting instruction for max/min loads per dimmer switch. Dimmer switches cannot be used for low voltage lighting, fans, fluorescent bulbs or energy saving bulbs as this will cause the switch to burn out. Switching is by push-on, push-off so that light may be switched on or off at any brightness setting. Designed for either 1 or 2 way switching

**Maximum load:**

- 1 Gang: 400W
- 2 Gang: 250W
- 3 Gang: 250W

Supplied with fixing screws and protective gasket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	10+	
GC68Y	Brass Dimmer 1G/2W	£14.450		£16.990
GC69A	Brass Dimmer 2G/2W	£24.670		£28.990
GC79L	Brass Dimmer 3G/2W	£34.030		£39.990

**Junction Boxes**

**5 Amp Junction Box**



RECENTLY INTRODUCED

A 4-terminal junction box rated 5A per terminal. White. Size 58mm diameter (2.25"). BS6220 : 1991.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VQ63T	5 Amp Junction Box	£0.757	£0.670	£0.600	£0.890

**20 Amp Junction Box**



RECENTLY INTRODUCED

A 4-terminal junction box rated 20A per terminal. White. Size 76mm ( 3" ) diameter. BS6220 : 1991.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VQ64U	20A Junction Box	£0.842	£0.720	£0.630	£0.990

**30 Amp Junction Box**



RECENTLY INTRODUCED

A 3-terminal junction box rated 30A per terminal. For inter-connections in ring main circuits. White. Size 76mm diameter. BS6220 : 1991.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VQ65V	30A Junction Box	£1.090	£1.010	£0.920	£1.290

**Screw Type**

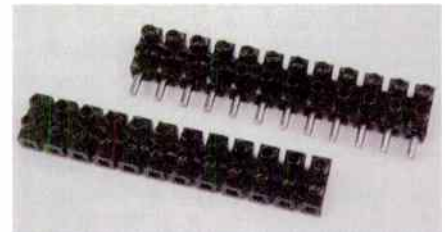


12-way flexible moulded terminal block strips that may be easily cut into shorter lengths. Screw terminals. Four types are available: 2A, 5A, 15A and 30A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FE78K	Terminal Block 2A	£0.587	£0.439	£0.389	£0.690
HF01B	Terminal Block 5A	£0.672	£0.539	£0.449	£0.790
HL54J	Terminal Block 15A	£1.260	£0.699	£0.599	£1.490
HL55K	Terminal Block 30A	£1.600	£1.210	£1.100	£1.890

**Terminal Block Plug and Socket**



A pair of 12-way flexible moulded terminal block strips that may be easily cut into shorter lengths. One block has one screw terminal and a plug per position and the other block has one screw terminal and a socket per position. Rating: 5A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HL56L	Terminal Block Conn	£2.540	£1.990	£1.790	£2.990

**Call and Collect**

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## PERMANENT MAINS FLEX CONNECTORS



A range of two flex connectors, one with two terminals and rated at 5 A- 250V ac and the other with three terminals and rated at 13A - 250V ac. Both in durable white PVC with cord grips at each end. These are designed for use where two pieces of flex need to be joined permanently. Complies to BS5733. 1979.

Retail Unit Price each (inc. VAT).

Order Code	Type 13144	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VJB1C	2-Core 5A Mains Con.	£0.842	£0.730	£0.680	£0.990
VJB2D	3-Core 13A Mains Con.	£1.090	£0.950	£0.880	£1.290

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## Cable

### 1mm<sup>2</sup> Twin and Earth 6242Y



**BASEC APPROVED / BS6004**

A twin core and earth flat domestic wiring cable for use on lighting circuits. Three 1/1-13mm copper conductors, 300/500V.

**Sheath:** Red and Black PVC plus unsheathed earth-continuity conductor, in an overall white PVC sheath.

**Overall size:** 7.5 x 4mm  
**Nom. conductor area:** 1mm<sup>2</sup>  
**Max current surface:** 15A  
**Max current enclosed:** 11A  
 Sold per metre (max. length in one piece 100m). Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 105	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XR49D	1.0mm TE Cable	£0.331		£0.390	£0.390
PA82D	13 100m TE Cable 1mm	£22.970	£21.400	£19.900	£26.990

### 1.5mm<sup>2</sup> Twin and Earth 6242Y



**BASEC APPROVED / BS6004**

A twin core and earth flat domestic wiring cable for use on separately fused spurs from ring main circuits. Two 1/1-38mm copper conductors, 300/500V and earth.

**Sheath:** Red and Black PVC plus unsheathed earth-continuity conductor, in an overall white PVC sheath.

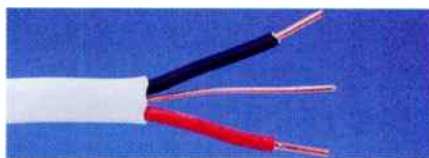
**Overall size:** 8.5 x 4.75mm

**Nom. conductor area:** 1.5mm<sup>2</sup>  
**Max. current surface:** 20A  
**Max. current enclosed:** 14.5A  
 Sold per metre (max. length in one piece 100m). Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 101	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XR50E	1.5mm TE Cable	£0.417		£0.490	£0.490
PA83E	14 100m TE Cable 1.5mm	£30.620	£28.600	£26.600	£35.990

### 2.5mm<sup>2</sup> Twin and Earth 6242Y



**BASEC Approved / BS6004**

A twin core and earth flat domestic wiring cable for use on ring mains and unfused spurs. Two 1/1-78mm copper conductors and earth 300/500V.

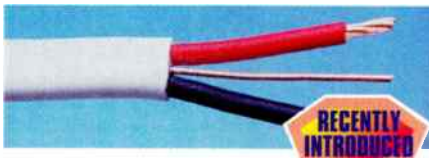
**Sheath:** Red and Black PVC plus unsheathed earth-continuity conductor, in an overall white PVC sheath.

**Overall size:** 9.5 x 5.25mm  
**Nom. conductor area:** 2.5mm<sup>2</sup>  
**Max. current surface:** 27A  
**Max. current enclosed:** 19.5A  
 Sold per metre (max. length in one piece 100m). Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 109	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XR51F	2.5mm TE Cable	£0.587		£0.690	£0.690
PA84F	23 100m TE Cable 2.5mm	£38.280	£36.500	£34.500	£44.990

### 4mm<sup>2</sup> Twin and Earth 6242Y



**BASEC Approved / BS6004**

A twin core and earth flat wiring cable for domestic use on ring mains. Two 7/0.85mm copper conductors and earth, 300/500V.

**Sheath:** Red and Black PVC plus unsheathed earth continuity conductor in an overall white PVC sheath.

**Overall size:** 11.8 x 6.1mm  
**Nom. Conductor area:** 4mm<sup>2</sup>  
**Max. current surface:** 36A  
**Max. current enclosed:** 25A  
 Sold per metre (max. length in one piece 100m). Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 13103	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VK33L	4mm T & E White 1m	£1.180		£1.390	£1.390
VK61R	4mm T & E White 100m	£32.760	£29.750	£26.600	£33.990

### 6mm<sup>2</sup> Twin and Earth 6242Y



**BASEC Approved / BS6004**

A twin core and earth flat wiring cable for use on cooker points. Two 7/1-04mm copper conductors and earth 300/500V.

**Sheath:** Red and Black PVC plus unsheathed earth-continuity conductor, in an overall white PVC sheath.

**Overall size:** 14 x 7.5mm  
**Nom. conductor area:** 6mm<sup>2</sup>  
**Max. current surface:** 47A  
**Max. current enclosed:** 34A  
 Sold per metre (max. length in one piece 100m). Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 110	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XR52G	6mm TE Cable	£1.530		£1.800	£1.800
PA85G	51 100m TE Cable 6mm	£107.220	£98.000	£91.000	£125.990

### 1mm<sup>2</sup> Three Core and Earth 6243Y



**BASEC Approved / BS6004**

A three-core and earth flat domestic wiring cable for use on lighting circuits requiring double switching. Three 1/1-13mm copper conductors and earth 300/500V.

**Sheath:** Blue, Red and Yellow PVC plus unsheathed earth-continuity conductor in an overall white PVC sheath.

**Overall size:** 10.5 x 4.6mm  
**Nom. conductor area:** 1mm<sup>2</sup>  
**Max. current surface:** 14A  
**Max. current enclosed:** 10.5A  
 Sold per metre (max. length in one piece 100m). Also available on 100m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 111	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XR53H	1mm Tpl & ECC Cbl	£0.544		£0.640	£0.640
PA87	19 100m Tpl & E Cbl 1mm	£38.280	£36.750	£33.500	£44.990

### 1mm<sup>2</sup> Twin and Earth 6242Y



**BASEC Approved / BS6004**

A twin core and earth flat domestic wiring cable for use on lighting circuits. Two 1/1-13mm copper conductors and earth, 300/500V.

**Sheath:** Red and Black PVC plus unsheathed earth continuity conductor in an overall grey PVC sheath.

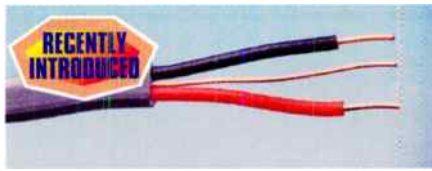
**Overall size:** 7.5 x 4mm  
**Nom. conductor area:** 1mm<sup>2</sup>  
**Max. current surface:** 15A  
**Max. current enclosed:** 11A  
 Sold per metre (max. length in one piece 50m). Also available on 50m reels.

Retail Unit Price each (inc. VAT).

Order Code	Type 13153	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VK44X	1mm T & E Grey 1m	£0.246		£0.290	£0.290
VK53H	1mm T & E Grey 50m	£11.310	£10.970	£10.320	£13.290

**All Customers**  
 No additional freight charges for heavy items

**1.5mm<sup>2</sup> Twin and Earth 6242Y**



**BASEC Approved / BS6004**

A twin core and earth flat domestic wiring cable for use on separately fused spurs from ring main circuits. Two 1/1.38mm copper conductors and earth, 300/500V

Sheath: Red and Black PVC plus unsheathed earth continuity conductor in an overall grey PVC sheath.

Overall Size: 8.5 x 4.75mm  
Nom. conductor area: 1.5mm<sup>2</sup>  
Max. current surface: 20A  
Max. Current enclosed: 14.5A

Sold per metre (max. length in one piece 50m)  
Also available on 50m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13147	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VK46A	1.5mm T & E Grey 1m	£0.331			£0.340
VK54J	1.5mm T & E Grey 50m	£13.600	£13.160	£12.450	£15.990

**2.5mm<sup>2</sup> Twin and Earth 6242Y**



**BASEC Approved / BS6004**

A twin core and earth flat domestic wiring cable for use on ring mains and unfused spurs. Two 1/1.75mm copper conductors and earth, 300/500V.

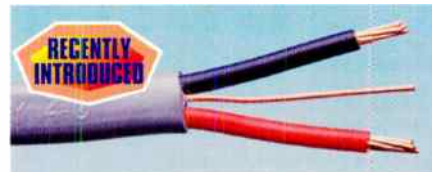
Sheath: Red and Black PVC plus unsheathed earth continuity conductor in an overall grey PVC sheath.

Overall size: 9.5 x 5.25mm  
Nom. conductor area: 2.5mm<sup>2</sup>  
Max. current surface: 27A  
Max. current enclosed: 19.5A  
Sold per metre (max. length in one piece 50m)  
Also available on 50m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13150	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VK45Y	2.5mm T & E Grey 1m	£0.417			£0.490
VK55K	2.5mm T & E Grey 50m	£18.710	£17.390	£16.450	£21.990

**4mm<sup>2</sup> Twin and Earth 6242Y**



**BASEC Approved / BS6004**

A twin core and earth flat wiring cable for domestic use on ring mains. Two 7/0.85mm copper conductors and earth, 300/500V

Sheath: Red and Black PVC plus unsheathed earth continuity conductor in an overall grey PVC sheath.

Overall size: 11.8 x 6.1mm  
Nom. conductor area: 4mm<sup>2</sup>

Max. current surface: 36A  
Max. current enclosed: 25A  
Sold per metre (max. length in one piece 50m)  
Also available on 50m reels

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13118	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VK47B	4mm T & E Grey 1m	£1.180			£1.390
VK56L	4mm T & E Grey 50m	£53.600	£49.350	£45.750	£62.990

**1mm<sup>2</sup> Single Black 6181Y**



**BASEC Approved / BS6004**

A single core black round domestic wiring cable for use on lighting circuits. One 1.13mm copper conductor, 300/500V.

Sheath: Black PVC in an overall grey PVC sheath.

Diameter: 4mm  
Nom. conductor area: 1mm<sup>2</sup>  
Max. current surface: 15A  
Max. current enclosed: 11A

Sold per metre (max. length in one piece 50m)  
Also available on 50m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13125	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VK32K	1mm Single Black 1m	£0.246			£0.290
VK59P	1mm Single Black 50m	£9.350	£8.700	£8.250	£10.990

**6mm<sup>2</sup> Twin and Earth 6242Y**



**BASEC Approved / BS6004**

A twin core and earth flat wiring cable for use on cooker points and showers where 6mm cable is specified. Two 7/1.04mm copper conductors and earth, 300/500V.

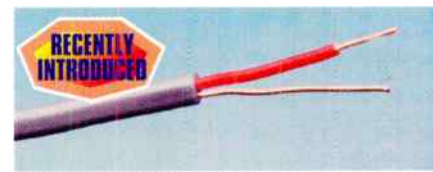
Sheath: Red and Black PVC plus an unsheathed earth continuity conductor in an overall grey PVC sheath.

Overall size: 14 x 7.5mm  
Nom. conductor area: 6mm<sup>2</sup>  
Max. current surface: 47A  
Max. current enclosed: 34A  
Sold per metre (max length in one piece 50m)  
Also available on 50m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13132	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VK48C	6mm T & E Grey 1m	£1.180			£1.390
VK57M	6mm T & E Grey 50m	£53.600	£49.350	£45.750	£62.990

**1mm<sup>2</sup> Red and Earth 6241Y**



**BASEC Approved / BS6004**

A single red core and earth flat domestic wiring cable for use on lighting circuits. One 1.13mm copper conductor and earth, 300/500V.

Sheath: Red PVC plus unsheathed earth continuity conductor in an overall grey PVC sheath.

Overall size: 5 x 4mm  
Max. current surface: 15A  
Max. current enclosed: 11A  
Sold per metre (max. length in one piece 50m)  
Also available on 50m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 13130	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VK49D	1mm Red & Earth 1m	£0.532			£0.590
VK58N	1mm Red & Earth 1m	£21.260	£19.500	£18.100	£24.990

**1mm<sup>2</sup> Twin Red and Earth 6242Y**



**BASEC APPROVED / BS6004**

A twin core and earth flat domestic wiring cable for use on lighting circuits. Three 1/1-1.3mm copper conductors. Rated at 300/500V.

Sheath: Two red PVC plus unsheathed earth-continuity conductor, in an overall grey PVC sheath.

Overall size: 7.5 x 4mm  
Nom. conductor area: 1mm<sup>2</sup>  
Max current surface: 15A  
Max current enclosed: 11A  
Sold per metre (max. length in one piece 100m).  
Also available on 100m reels.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4522	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CK91Y	1mm Twin Red & E 1m	£0.331			£0.390
BU67X 14	1mm Twin Red & E 100m	£25.520	£23.750	£22.500	£29.990

**Lighting Accessories**

**BC Lampholder**

A standard BC lampholder to BS5042. With cord-grip and sprung plungers, plus wide skirt. White.



*Retail Unit Price each (inc. VAT).*

Order Code	Type 1307	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
FQ02C	BC Lampholder	£0.842			£0.990

**Switched BC Lampholder**

A standard T1 (60W) BC lampholder to BS5042 with on/off switch.



*Retail Unit Price each (inc. VAT).*

Order Code	Type 17880	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GC44X	T1 Switched Bulb-Hld	£0.842	£0.784	£0.729	£0.990

## Ceiling Pendant



Lampholder type FQ02C and ceiling rose type FQ05F pre-wired together with 150mm approx. of white flex.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JG37S	Rose and Pendant 6in	£2.540	£2.990

## Safety Autoswitch Batten Holder

Automatically switches off 'live' contacts when the bulb is removed. Provides added protection against the possibility of electrocution while changing the lamp or left without a bulb in the socket. Suitable for use with standard bayonet type bulbs.

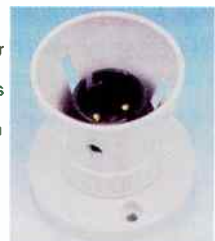


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KE90X	Safety Batten Hldr	£4.240 £3.620 £3.520	£4.990

## Battenholder

A standard BC lampholder to BS5042 in a plastic mount with wide skirt. This battenholder has sprung plungers and is finished in white. Diameter of base 63.5mm. Fixing centres 51mm. Overall height 47mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LB63T	Bayonet L-Hldr	£1.010	£1.190

## Force Fit Switched BC Lampholder



A standard BC lampholder to BS5042 with integral on/off switch and 2m of white flex. The base of the lampholder has a plastic adaptor to force fit into a suitable opening e.g. a bottle, to make an attractive and individual lamp. The flex is side entry into the lampholder so it is not necessary to drill holes in the bottle for the flex. The lampholder is screwed onto the plastic adaptor, so it can be removed for maintenance. A 60W lamp is the maximum

permissible, depending on the shade used and adequate ventilation. Suitable for an opening 17mm to 23mm approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KR35Q	Force Fit Lamp Hldr	£2.540 £2.120 £1.920	£2.990

## Clip-on Light

A handy 240V AC mains lamp that is ideal for temporary lighting at home, in the office or studio. The standard white BC lampholder has an on/off switch and is attached to a large spring loaded clip for fixing to the edge of a desk, picture rail etc. The lampholder comes complete with 2m of white twin flex and a 13A plug (fitted with a 3A fuse). The lampholder must be used with a suitable shade, and a lamp not exceeding 60W (neither supplied). NB. This item is not recommended as an inspection lamp.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KR36P	Clip-On Lamp Holder	£3.050 £2.580 £2.220	£3.590

## Ceiling Rose

A white satin-finish ceiling rose that does not need a separate backplate or pattress. Designed to BS67 1969 with three separate terminals with captive screws housed in a transparent shield providing individual loop-in facilities. A separate earth terminal is also provided. Positive cable restraint. Diameter of base 82.5mm. Fixing centres 51mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FQ05F	Ceiling Rose	£1.090	£1.290

## Ceiling Rose Lampholder

A white satin-finish ceiling rose with easy-wiring terminals as FQ05F, but with a BC lampholder integral with it. Ideal for bathrooms and kitchens.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JG38R	Rose Lampholder	£2.540	£2.990

## Brass BC Lampholders

A pair of smart brass bayonet connecting lamp holders with bases threaded for a lamp stem. The bodies are joined by a solid brass threaded collar and another threaded ring is provided for anchoring a lampshade. The base includes a screw terminal for an earth wire. One type is plain unswitched and the other has an integral push-bar on/off switch.



These lampholders must be earthed, therefore a 3-core mains cable is required.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZB84F	Sw Brass BC Holder	£1.690 £1.390 £1.290	£1.990
ZB85G	Brass BC Holder	£1.020 £0.828 £0.768	£1.200

## Brass SBC Lampholder

A B15 SBC lampholder with shade ring and earth terminal. It has a flange diameter of 40mm. The base has an earth terminal for an earth wire, therefore a 3-core mains cable is required. Complies with: NF C 61-510.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU34M	Brass Batten Hldr	£2.540 £2.360 £2.290	£2.990

## Festoon Lampholder



This BC Festoon Lampholder simply clamps to the cable for making decorative strings of lights. It is recommended for temporary, sheltered lighting only (not for Civic lighting). It is suitable for use only with cable conforming to BS6007 Table 2. Maximum bulb rating : 60W. A weather resistant lampholder sleeve is an optional extra. (GC42).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GC40T	Festoon Lamphldr	£0.587 £0.546 £0.530	£0.690
GC42V	Festoon W/Proof S	£0.417 £0.388 £0.376	£0.490

## E.S. Bulb Holder

A chassis mounting ES bulb holder ideal for use in disco light show units. The holder has 6.35mm (1/4in.) blade connectors on the rear. Moulded in tough phenolic, max. working temperature 200°C.



Max. working voltage: 250V AC  
Max. dissipation: 150W  
Fixing centres: 46mm x 3.8mm dia.  
Panel cut out: 38mm dia.  
Overall depth: 49mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JK70M	ES Panel Lampholder	£1.520 £1.160 £1.010	£1.790

See Stock Code Index For More Price Breaks

### ES Porcelain Lampholder

This E27 Edison screw lampholder has a fixing centre of between 16-20mm. The Porcelain construction is ideal for use in applications where there is excessive heat, such as the use of spotlights.



Rated at 4A. Complies with BS/EN-61184

Retail Unit Price each (inc. VAT).

Order Code	Type 13836	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GC45Y	Porcelain Lamphldr	£1.090	£1.020	£0.990	£1.290

### E.S. to B.C. Adaptor

An adaptor to convert Edison screw lampholder to bayonet fitting. Brown bakelite moulding, suitable for 250V AC.



Retail Unit Price each (inc. VAT).

Order Code	Type 1331	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BK69A	ES to BC Adaptor	£3.390	£2.680	£2.440	£3.990

### B.C. to E.S. Adaptor

An adaptor to convert a bayonet lampholder to Edison screw fitting. Black bakelite moulding, suitable for 250V AC. Max 60W.



Retail Unit Price each (inc. VAT).

Order Code	Type 1333	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BK70M	BC to ES Adaptor	£2.030	£1.520	£1.360	£2.390

### Linear Halogen Lampholder



A double ended linear halogen lampholder for use with type R7's, K9/K1 lamps. Suitable for use with our 300W tubes (KP50E) and 500W tubes (JX53H). Rated at 6A/250V, T200, 500W. Complies with BS/EN 60598-1

Retail Unit Price each (inc. VAT).

Order Code	Type 13837	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GC47B	Halogen Lampholder	£1.690	£1.570	£1.520	£1.990

### Fluorescent Tube Starters

Two fluorescent tube starters suitable for use with most domestic fluorescent tubes and having standard 2-pin pygmy connectors. Fitted with radio interference suppressors and enclosed in white nylon case. BS3772. Two differently rated types are available, 80W max. and 125W max.



Retail Unit Price each (inc. VAT).

Order Code	Type 1324	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FQ07H	Starter 80W	£0.417	£0.364	£0.333	£0.490
JZ29G	Starter 125W	£1.260	£0.985	£0.869	£1.490

### Electronic Starter

An electronic fluorescent tube starter which can replace conventional starters that have a standard 2-pin pygmy connection and is designed for use with most fluorescent fittings. Suitable for tubes rated from 30W to 125W. The EFS600 starter is rated at 200/260V AC, 50/60Hz.



Retail Unit Price each (inc. VAT).

Order Code	Type 1327	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RZ29G	Elec Starter	£4.750	£3.700	£3.350	£5.590

## Bulbs & Tubes

### Clear Candle Bulbs

Clear glass, slimline candle bulbs for use with decorative light fittings. Bayonet fitting, available in 25w, 40w and 60w versions.



Supplied in packs of 2.



Retail Unit Price each (inc. VAT).

Order Code	Type 13257	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
HN15R	25W/BC Cl/Cnd Tw/Pk	£1.690	£1.620	£1.580	£1.990
HN16S	40W/BC Cl/Cnd Tw/Pk	£1.690	£1.620	£1.580	£1.990
HN17T	60W/BC Cl/Cnd Tw/Pk	£1.690	£1.620	£1.580	£1.990

### Opal Candle Bulbs

Opal candle bulbs for use with decorative light fittings. Bayonet fitting, available in 25w, 40w, 60w versions.



Supplied in packs of 2

Retail Unit Price each (inc. VAT).

Order Code	Type 13258	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
HN18U	25W/BC Op/Cnd Tw/Pk	£1.690	£1.620	£1.580	£1.990
HN19V	40W/BC Op/Cnd Tw/Pk	£1.690	£1.620	£1.580	£1.990
HN20W	60W/BC Op/Cnd Tw/Pk	£1.690	£1.620	£1.580	£1.990

### SES Candle Bulbs



Clear or opal candle bulbs suitable for decorative light fittings. Small Edison Screw (SES) fitting, available in 40w only. Supplied in packs of 2

Retail Unit Price each (inc. VAT).

Order Code	Type 13260	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
HN21X	40W/SES Cl/Cnd Tw/Pk	£1.690	£1.620	£1.580	£1.990
HN23A	40W/SES Op/Cnd Tw/Pk	£1.690	£1.620	£1.580	£1.990

### SBC Candle Bulbs



Clear or opal candle bulbs suitable for use with decorative light fittings. Small Bayonet Cap (SBC) fitting, available in 40w only. Supplied in packs of 2

Retail Unit Price each (inc. VAT).

Order Code	Type 13261	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
HN22Y	40W SBC Cl/Cnd Tw/Pk	£1.690	£1.620	£1.580	£1.990
HN24B	40W SBC Op/Cnd Tw/Pk	£1.690	£1.620	£1.580	£1.990

### Golf Ball Bulbs



Golf ball style bulbs suitable for use with decorative light fittings. Standard bayonet fitting, 40w, available in clear or opal.

Supplied in packs of 2

Retail Unit Price each (inc. VAT).

Order Code	Type 13263	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
HN34M	40W BC Op/Glf Tw/Pk	£2.280	£2.120	£2.040	£2.690
HN37S	40W BC Cl/Glf Tw/Pk	£2.280	£2.120	£2.040	£2.690

Maplin is opening new stores all the time. Call for latest details

## SES/SBC Golf Ball Bulbs



Golf ball style bulbs suitable for use with decorative light fittings. Small Edison Screw (SES) and Small Bayonet Cap (SBC) versions available, 40w only. Supplied in packs of 2

Retail Unit Price each (inc. VAT).

Order Code	Type 13266	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
HN35Q	40W SBC Op/Gl Tw/Pk	£2.280	£2.120	£2.040	£2.690
HN36P	40W SES Op/Gl Tw/Pk	£2.280	£2.120	£2.040	£2.690

## BC Pygmy Bulbs



A range of standard bayonet fitting pygmy bulbs suitable for use in confined spaces and used extensively in display cabinets, etc. Available in clear, amber and red. 15w only. Supplied in packs of 2

Retail Unit Price each (inc. VAT).

Order Code	Type 13266	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GG35Q	15w BC Pygmy Cir 2pk	£2.970			£3.490
GG38R	15W BC Amb Pyg 2pk	£2.970			£3.490
GG39N	15W BC Red Pyg 2pk	£2.970			£3.490

## SES/SBC Pygmy Bulbs

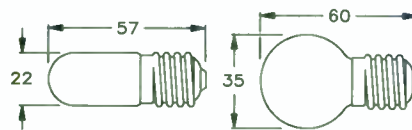


Pygmy bulbs suitable for use with display fittings or in confined spaces. Rated at 15w and available in Small Edison Screw (SES) or Small Bayonet Cap (SBC) versions. Clear glass only. Supplied in packs of 2

Retail Unit Price each (inc. VAT).

Order Code	Type 13269	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GG36P	15W SES Cir Pyg 2pk	£2.970			£3.490
GG37S	15W SBS Cir Pyg 2pk	£2.970			£3.490

## Microwave Oven Lamps

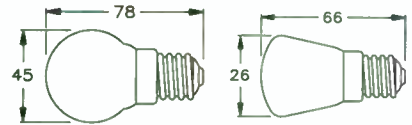


Two types of lamp to suit Japanese microwave ovens with non-standard 17mm diameter screw cap. The tubular type is 22 x 57mm 250V 15W, the round type is 35 x 60mm 250V 25W.

Retail Unit Price each (inc. VAT).

Order Code	Type 2004	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BT62S	Microwave Tubular	£1.260	£0.970	£0.860	£1.490
BT63T	Microwave Round	£1.260	£0.970	£0.860	£1.490

## Oven Lamps



Two types of lamp specially constructed to withstand the high temperatures (300°C) found in ovens. The smaller type is 26 x 66mm 240V 25W, and the larger version is 45 x 78mm 240V 40W, both versions are E14 screw cap.

Retail Unit Price each (inc. VAT).

Order Code	Type 2005	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BT64U	Oven Lamp 25W	£1.430	£1.130	£1.000	£1.690
BT65V	Oven Lamp 40W	£1.860	£1.450	£1.290	£2.190

## 10w Nitelite



A 10w Soft glow light bulb designed for use in childrens bedrooms, etc. where a bright light is not necessary but a small amount of illumination is desired.

Supplied in Packs of 2

Retail Unit Price each (inc. VAT).

Order Code	Type 13270	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GG41U	10W BC Nitelite 2pk	£2.540			£2.990

## 221mm Clear Strip



Standard clear strip light for use in display cabinets and mirror/picture lighting. Standard S15s endcaps fitted. 30w rated.

Retail Unit Price each (inc. VAT).

Order Code	Type 13273	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
HN26D	30W 221ml Cir Strip	£2.540	£2.270	£2.130	£2.990

## 221mm Opal Strip Light



A standard 221mm strip light suitable for use in display cabinets and mirror/picture lighting. Standard S15s endcaps fitted. Rated at 60w.

Retail Unit Price each (inc. VAT).

Order Code	Type 13274	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
HN29G	60W 221ml Opl Strip	£2.540	£2.270	£2.130	£2.990

## 284mm Clear Strip Light



A standard 284mm clear strip light suitable for display cabinets and mirror/picture lighting. Available in 30w and 60w versions.

Retail Unit Price each (inc. VAT).

Order Code	Type 13278	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
HN30H	30W 284ml Cir Strip	£2.540	£2.270	£2.130	£2.990
HN31J	60W 284ml Cir Strip	£2.540	£2.270	£2.130	£2.990

## 284mm Opal Strip Light



A standard 284mm Opal strip light suitable for display cabinets and mirror/picture lighting. Available in 60w only.

Retail Unit Price each (inc. VAT).

Order Code	Type 13280	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
HN33L	60W 284ml Opl Strip	£2.540	£2.270	£2.130	£2.990



**ES Crown Silver Bulb**



A Crown Silver bulb is mainly used for display purposes. The crowned cap is designed to reflect the beam back onto a silvered dish that will give a wide spread of light.  
ES Fitting.  
240/250V  
Available in 60W & 100W

Retail Unit Price each (inc. VAT).

Order Code	Type 13153	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
HN56L	60W ES Crown Silver	£2.030	£1.820	£1.720	£2.390
HN57M	100W ES Crown Silver	£2.030	£1.820	£1.720	£2.390

**SES Crown Silver Bulb**



A Crown Silver bulb is mainly used for display purposes. The crowned cap is designed to reflect the beam back onto a silvered dish that will give a wide spread of light.  
SES Fitting.  
240/250V  
40W

Retail Unit Price each (inc. VAT).

Order Code	Type 13291	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
HN58N	40W SES Crown Silver	£2.030	£1.820	£1.720	£2.390

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**R50 SES REFLECTOR**



An SES Reflector bulb which is used in small Desk/spot lights, Ceiling spotlights and Shop lighting.

Fitting: Small Edison Screw  
240/250V.

Available in 40W only.  
Supplied in Packs of 2

Retail Unit Price each (inc. VAT).

Order Code	Type 13187	Price each exc. VAT		inc. VAT each
		1+	5+	
GG40T	40W SES Spot Twin Pk	£3.390		£3.990

**R63 Reflector 60W**



An R63 type reflector lamp suitable for use with decorative mains fittings. Available in Bayonet and Edison Screw versions.  
Supplied in Packs of 2

Retail Unit Price each (inc. VAT).

Order Code	Type 13195	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
HN39N	60W R63 BC Spot x 2	£3.390	£3.100	£2.980	£3.990
HN40T	60W R63 ES Spot x 2	£3.390	£3.100	£2.980	£3.990

**R80 Reflector 60W**



An R80 style reflector lamp suitable for decorative mains fittings and display purposes. Available for Bayonet and Edison Screw versions.

Retail Unit Price each (inc. VAT).

Order Code	Type 13196	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
HN41U	60W R80 BC Spot	£1.690	£1.640	£1.590	£1.990
HN42V	60W R80 ES Spot	£1.690	£1.640	£1.590	£1.990

**R80 Reflector 100W**



An R80 style reflector lamp suitable for display lighting and spot lights. Rated at 100w and available in ES and BC fittings.

Retail Unit Price each (inc. VAT).

Order Code	Type 13254	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
HN43W	100W R80 BC Spot	£1.690	£1.640	£1.590	£1.990
HN44X	100W R80 ES Spot	£1.690	£1.640	£1.590	£1.990

**PAR38 Economy Floodlamp**

A tungsten, ES (Edison Screw) PAR38 floodlamp, designed for optimum efficiency and economy. This 80W lamp offers the same light output as a conventional 100W floodlamp, thus providing a 20% saving in running costs. Ideal for use in recessed downlighters, security lighting, etc.  
Rating: 250V AC 80W.  
Diameter 125mm. Overall depth 135mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 13256	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RZ26D	Econ FloodLamp	£4.670	£3.810	£3.510	£5.490

**Low Energy Bulbs**

Compact single ended fluorescent lamp with standard bayonet fitting, designed to replace standard light bulbs. Built in electronic ballast ensures a flicker free start and prolongs the life of the lamp. On average these lamps use approximately 80% less energy and last up to 6 times as long as conventional bulbs. Available in the following range and having light outputs approximately equivalent to the following 'ordinary' GLS bulbs: 9W (40W), 11W (60W), 15W (75W), 18W (100W).



Retail Unit Price each (inc. VAT).

Order Code	Type 13250	Price each exc. VAT		inc. VAT each
		1+	5+	
HN45Y	5W BC Low Energy	£6.800		£7.990
HN46A	11W BC Low Energy	£6.800		£7.990
HN47B	15W BC Low Energy	£6.800		£7.990
HN48C	20W BC Low Energy	£6.800		£7.990

See Stock Code Index For More Price Breaks

## 2D/16W Tube



Standard 2-pin fitting 2D energy-saving compact fluorescent tube. 16W tube gives equivalent output to a 60W GLS (ordinary) light bulb. Average life upto 10 times GLS bulb (8000 hrs).

Retail Unit Price each (inc. VAT).

Order Code	Type 11007	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GG45Y	2D / 16W Tube	£8.500	£8.240	£8.000	£9.990

## 150W Halogen Tube



A halogen tube rated at 250V AC, 150W, as used with the mini halogen lamp, DM50E, etc.

Retail Unit Price each (inc. VAT).

Order Code	Type 4837	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
DM51F	150W Halogen Tube	£2.540	£1.440	£1.160	£2.990

## 240V 300W and 500W Halogen Lamps



High-powered halogen tubes with a brilliant white light (colour temp. 2900°K) which can provide 9000 lumens of illumination for 500W tube and 5000 lumens for 300W tube. To fit standard R7S base, these tubes are suitable for any application where a very bright light is required (for example, video work). Also suitable as replacement bulbs for our Security Light (GK05F). Important note: please avoid touching the glass itself with bare fingers as the grease will reduce the life of the tube. Average life 2000 hours. Overall dimensions: 119.6mm long x 10mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 4839	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
KP50E	300W Halogen Tube	£2.540	£1.300	£1.020	£2.990
JX53H	500W Halogen Tube	£2.540	£1.300	£1.020	£2.990

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## A Class Projection Lamps



A range of halogen bulbs for use in cine projectors, overhead projectors, disco lighting, etc. Average life is 50 hours (except A1/259 which is 35 hrs). Voltages and power ratings are given below:

Type	ANSI code	V	W	Base	Lumens
A1/215	FCR	12	100	GY6.35	3,000
A1/216	FCS	24	150	G6.35	4,700
A1/220	BRL	12	50	G6.35	1,400
A1/223	EHJ	24	250	G6.35	8,500
A1/230	EFN	12	75	G6.35	
A1/231	EFP	12	100	G6.35	
A1/232	EFR	15	150	G6.35	
A1/234	EVE/BRJ	15	15	G6.35	5,000
A1/239	EVD	36	400	G6.35	14,450
A1/259	ELC	24	250	GX5.3	

Retail Unit Price each (inc. VAT).

Order Code	Type 17652	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
FU88V	Blitzer Spare Bulb	£2.540		£2.990
MS82D	Halogen Bulb A1/216	£2.540		£2.990
VR89V	50W 12V Halogen Bulb	£2.970		£3.490
GT86T	250W 24V Halogen Bulb	£2.540		£2.990
MS83E	Halogen Bulb A1/230	£8.500		£9.990
FU89V	12V 100W Spare Bulb	£6.800		£7.990
MS84F	Halogen Bulb A1/232	£8.500		£9.990
MS85G	Halogen Bulb A1/234	£4.240		£4.990
MS86T	Halogen Bulb A1/239	£8.500		£9.990
GT28F	Lamp for Datamoon	£2.970		£3.490

## Mains Lighting

### Shaver Light / Socket

Linolite



The Linolite Razorlite combines a bright 60w strip light and two pin shaver adaptor. Operated by a simple pull cord, and designed for horizontal mounting on a vertical surface. Supplied with 60w fluorescent tube.

Dimensions 420 x 80 x 75mm  
Power Requirement 250V ac 50Hz

Retail Unit Price each (inc. VAT).

Order Code	Type 13164	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
VK28F	Shaver Light/Socket	£29.770	£26.200	£23.850	£34.990

## TR63 Mains Downlighters



- ★ Available in White, Brass or Chrome finishes
  - ★ Complete with porcelain lampholder
  - ★ Stylish and robust design
- These stylish mains voltage downlighters offer

exceptional value for money. Available in a choice of white (VD37S), brass (VD38R) or chrome (VD39N) finish, they come complete with a porcelain lampholder and require an 80mm hole cutout. For use with standard R63 ES lamps (HN40T) not supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type 12791	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VD37S	Downlight R63 White	£6.800	£6.440	£6.050	£7.990
VD38R	Downlight R63 Brass	£7.650	£7.360	£6.970	£8.990
VD39N	Downlight R63 Chrome	£8.500	£8.210	£7.780	£9.990

## TR80 Mains Downlighters



- ★ Available in White, Brass or Chrome finishes
- ★ Complete with porcelain lamp holder
- ★ Stylish and robust design

This stylish mains voltage downlighter offers exceptional value for money and is available in a choice of white (VD40T), brass (VD41U) or chrome (VD42V) finish. The unit comes complete with a porcelain lampholder and requires a 100mm hole cutout.

For use with standard R80 ES lamp (HN42V) not supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type 12792	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VD40T	Downlight R8 White	£7.650	£7.150	£6.670	£8.990
VD41U	Downlight R80 Brass	£8.500	£8.090	£7.610	£9.990
VD42V	Downlight R80 Chrome	£9.350	£9.010	£8.530	£10.990

## TR63 Eyeball Fitting



- ★ Available in White, Brass or Chrome finishes
- ★ Complete with porcelain lamp holder
- ★ Stylish and robust design
- ★ Easily adjustable to required angle

This mains voltage eyeball fitting offers exceptional value for money. It is available in a choice of white (VD43W), brass (VD44X) or chrome (VD45Y) finish. The unit comes complete with porcelain lamp holder and requires a 120mm hole cutout. Its eyeball design makes it fully adjustable through 50 degrees. For use with standard R63 ES lamp (HN40T) not supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type 12796	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VD43W	Eyeball R63 White	£11.050	£10.340	£9.650	£12.990
VD44X	Eyeball R63 Brass	£13.600	£12.830	£12.020	£15.990
VD45Y	Eyeball R63 Chrome	£14.450	£13.690	£12.850	£16.990

**TR80 Eyeball Fitting**



- ★ Available in White, Brass or Chrome finishes
- ★ Complete with porcelain lamp holder
- ★ Stylish and robust design
- ★ Easily adjustable to required angle

This stylish fitting comes in a choice of white (VD46A), brass (VD47B) or chrome (VD48C) finish. It comes complete with porcelain lamp holder and requires a 140mm hole cutout. Its eyeball design makes it fully adjustable through 50 degrees. For use with standard R80 ES lamp (HN42V) not supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type 12797	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VD46A	Eyeball R80 White	£11.900	£11.150	£10.450	£13.953
VD47B	Eyeball R80 Brass	£14.450	£13.690	£12.850	£16.983
VD48C	Eyeball R80 Chrome	£16.160	£15.290	£14.350	£18.980

**Low Voltage Lighting**

**12 Volt Downlighter**



- ★ Low voltage for safety and compact style
- ★ Available in a choice of 5 finishes
- ★ Stylish and robust design
- ★ Use standard dichroic lamps

This compact, stylish 12 volt downlighter comes in White (VJ00A), Black (VJ01B), Brass (VJ02C), Chrome (VJ03D) or Antique Brass (VJ04E) finish. For use with standard dichroic lamps (see range below). This unit must be powered by a suitable 12 Volt transformer, not supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type 12799	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ00A	12V Downlight White	£2.540	£2.390	£2.270	£2.590
VJ01B	12V Downlight Black	£2.540	£2.390	£2.270	£2.590
VJ02C	12V Downlight Brass	£3.390	£3.180	£3.020	£3.690
VJ03D	12V Downlight Chrome	£3.390	£3.180	£3.020	£3.690
VJ04E	12V Downlight AnyBr	£3.990	£3.740	£3.540	£4.690

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**12 Volt Eyeball Fittings**



- ★ Low voltage for safety and compact styling
- ★ Available in a choice of 5 finishes
- ★ Stylish and robust design
- ★ Easily adjustable to required angle

This stylish and compact fitting offers exceptional value for money. It is available in White (VJ05F), Black (VJ06G), Brass (VJ07H), Chrome (VJ08J) or Antique Brass (VJ09K) finish. Its moveable eyeball design makes it fully adjustable through 50 degrees. This fitting takes standard dichroic lamps (see range below).

A suitable 12 Volt transformer will be required to power these fittings.

Retail Unit Price each (inc. VAT).

Order Code	Type 12801	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ05F	12V Eyeball White	£5.940	£5.590	£5.310	£6.990
VJ06G	12V Eyeball Black	£5.940	£5.590	£5.310	£6.990
VJ07H	12V Eyeball Brass	£8.240	£7.580	£7.130	£9.690
VJ08J	12V Eyeball Chrome	£8.240	£7.580	£7.130	£9.690
VJ09K	12V Eyeball AnyBrass	£9.940	£9.140	£8.600	£11.690

**Dichroic Lamp Retainer Clip**

A metal spring clip for retaining dichroic lamps in ceiling fittings.

Retail Unit Price each (inc. VAT).

Order Code	Type 12803	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ10L	Lamp Spring Clip	£0.297	£0.280	£0.270	£0.350

**Dichroic Lamp Holder**



A porcelain lampholder for use with low voltage ceiling fittings which take standard dichroic lamps.

Retail Unit Price each (inc. VAT).

Order Code	Type 12802	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ11M	Dichroic Lamp Holder	£1.430	£1.330	£1.250	£1.690

**Electronic Safety Converter**



This very compact and safe electronic converter is the ideal way to convert mains power for low

voltage (12V) dichroic lamps of up to 50W (order codes AB73Q, AB74R, AB75S, AB76H, AB77J and AB78K). The converter stays cool in use, is quick and easy to fit and produces a controlled power flow that will help to prolong bulb life. Can be used with dimmer switches. Dimensions: 75 x 33 x 25mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 11663	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KE85G	Lighting Transformer	£9.350	£7.500	£6.950	£10.990

**Toroidal Lighting Transformer**

This toroidal transformer is specifically designed to work with individual lamps. It is double insulated and has self resetting thermal overload protection. Its small size makes it ideally suited for use with recessed downlighter and eyeball fittings.



Specifications

Length 78mm  
Diameter 62mm  
Weight 750g  
Input 240v 50Hz  
Output 12vAC  
Rating 50va

Retail Unit Price each (inc. VAT).

Order Code	Type 12805	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ12N	12V Toroidal Trans.	£11.900	£10.970	£10.330	£13.990

**Electronic Lighting Transformer**

This electronic transformer is designer specifically for use with low voltage lighting. It is rated at 20 - 105 va, is double insulated and provided with internal overload and short circuit protection. This transformer is dimmable using standard tungsten dimmers (to BS 800/5518). An excellent transformer for variable wattage use.



Specifications

Length 140mm  
Diameter 32mm  
Weight 230g  
Rating 20-105va

Retail Unit Price each (inc. VAT).

Order Code	Type 13804	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ13P	20-105 VA Trans.	£25.520	£23.290	£21.840	£29.990

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## Low Voltage Dichroic Lamps



A range of 12V low voltage dichroic lamps in a variety of wattages and beam angles with bi-pin single ended GX 5.3 caps. The dichroic reflector has the advantage that it radiates the majority of the heat in the opposite direction to the light beam, meaning that little infra-red is radiated forward. This makes the lamps particularly suitable for illumination of heat sensitive material, such as transparencies in slide projectors for example. Further advantages of using dichroic lamps are the higher light output (a 50W lamp has the same light intensity of a 150W PAR lamp), longer life and superior colour rendition when compared to standard PAR lamps.

Available in the following wattages and beam angles:

Part No.	Watts	Beam Angle	Order Code
ESX/CG	20W	13°	AB73Q
BAB/CG	20W	40°	AB74R
EXT/CG	50W	12°	AB75S
EXZ/CG	50W	26°	AB76H
EXN/CG	50W	40°	AB77J
FNV/CG	50W	55°	AB78K
EYF/CG	75W	14°	AB79L
EYC/CG	75W	42°	AB81C

Diameter: 50mm  
Length: 45mm

Retail Unit Price each (inc. VAT).

Order Code	Type 5430	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AB73Q	ESX/CG	£3.390	£3.250	£3.150	£3.990
AB74R	BAB/CG	£3.390	£3.250	£3.150	£3.990
AB75S	EXT/CG	£3.390	£3.250	£3.150	£3.990
AB76H	EXZ/CG	£3.390	£3.250	£3.150	£3.990
AB77J	EXN/CG	£3.390	£3.250	£3.150	£3.990
AB78K	FNV/CG	£3.390	£3.250	£3.150	£3.990
AB79L	EYF/CG	£3.390	£3.250	£3.150	£3.990
AB81C	EYC/CG	£3.390	£3.250	£3.150	£3.990

## Lamps

## Desk Lights

### Desk Lamps

Ledu



Reading/work lamps suitable for use with incandescent bulbs. Ideal for desk-work, at the drawing board and work bench, anywhere, in fact, where a substantial light is required. The shade has a functionally correct design and distributes the light evenly over a large area. The lamp is supported on a jointed, articulated arm with sprung suspension and table clamp, to position the light precisely

where needed. Bulb not included. Two models are available, of max. 60W and 100W bulbs.

**60W Model:**

**Dimensions:** Arm length 75cm; shade diameter 18cm.

**100W Model: (illustrated)**

**Dimensions:** Arm length 105cm; shade diameter 20cm; shade height 18.2cm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3999	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
RJ38R	100W Lamp Grey	£42.540	£39.250	£37.200	£49.990
RJ41U	2 60W Lamp Round	£21.690	£19.450	£18.500	£25.490

## 11W Fluorescent Lamp

Ledu



A good basic articulated lamp at a reasonable price. Its parallel controlled, spring suspended arm makes it very simple to adjust, to provide the desired angle of light. The required degree of arm length is easily set, using the arm adjustment knobs. Uses a single 11W compact fluorescent tube (included). Supplied with table edge fixing clamp. Overall length including shade: 108cm. Colour: black. A replacement fluorescent tube (AP15R) is available separately.

Retail Unit Price each (inc. VAT).

Order Code	Type 4203	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
RJ42V	3 11W Lamp Black	£48.500	£43.100	£40.100	£56.990
AP15R	Spare 11W Lamp	£5.090	£3.950	£3.600	£5.990

## Artikula 93 Artikula 94



Artikula is a state of the art task light, available in two configurations - single arm with two joints (MU32K) and double arm with three joints (MU33L). Manufactured from a combination of nylon, aluminium, polycarbonate and stainless steel, Artikula is available in cool slate grey.

The patented mechanism cleverly mimics the human

backbone to give positive, simple adjustment. Supplied with hi-tech table clamp and complete with 11W energy-saving fluorescent lamp.

Order Code	Type 18099	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MU32K	Artikula 93	£83.390			£97.990
MU33L	Artikula 94	£97.860			£114.990

## Clip-on Spotlight



White Clip-on Spotlight ideal for fixing to desks and shelving, etc. Fully adjustable head allows light to be directed as desired. Heavy duty sprung clip ensures safe fixing. Comes complete with 3 Amp fused plug. Requires R63 Reflector 60W bulb (Order Code HN40T).

Retail Unit Price each (inc. VAT).

Order Code	Type 17831	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GC76H	Clip Spotlight	£8.500			£9.990
HN40T	60W R63 ES Spot x 2	£3.390	£3.100	£2.980	£3.990

## Desk Spotlight



Standard mains powered desk spotlight. Flexible arm allows light to be set in a variety of positions. Comes complete with 3 Amp fused plug. Requires R63 Reflector 60W bulb (order code HN39N).

Retail Unit Price each (inc. VAT).

Order Code	Type 17828	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GC77J	Desk Spotlight	£8.500			£9.990
HN39N	60W R63 BC Spot x 2	£3.390	£3.100	£2.980	£3.990

† This symbol beside an order code in the price block indicates WHILE STOCKS LAST

## 60W Magnifier Lamp

Ledu



A magnifying lamp which is a practical and functional aid for hobbyists, and whenever magnification and extra light are needed for viewing small objects. Lamp uses a 60W incandescent bulb (included) and has a 1.75x magnification lens. It has an impact resistant, coloured plastic shade and a well-balanced, easily adjustable articulated arm. Provided with clamp for table fixing.

**Dimensions:**  
Arm length 80cm; shade 22 x 8cm. Colour: grey.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RJ40T 4	60W Magnifier Grey	£49.350	£44.600	£42.000	£57.990

## 22W Magnifier Lamp

Ledu



A magnifying lamp which has been designed as an aid for all kinds of precision work from health care to precision engineering. It's also ideal for use in the home. It comes with a three diopter lens (1.75x magnification) as standard. A well-balanced, universally jointed arm and shade arm make for maximum adjustment. Light is provided by a 22W, circular fluorescent tube (included) encircling the glass.

Fixing is by table edge clamp.

**Dimensions:** arm length 105cm; shade length 27cm; width 24cm; height 6cm. Colour: grey. A replacement fluorescent tube (AP90X) is available separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RJ44X	22W Magnifier Grey	£110.620	£104.250	£97.650	£129.990
AP90X	22W Fitting For RJ44	£9.770	£8.750	£8.100	£11.490

## Wall Lights

### Single Spotlight

A white single spotlight for wall or ceiling mounting. Fully adjustable head allows light to be directed as desired. Switched at the base. Easy to install, requires R80 Reflector bulb (Order Code HN42V)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GC72P	Single Spotlight	£7.650			£8.990
HN42V	60W R80 ES Spot	£1.690	£1.640	£1.580	£1.990

## Twin Spotlight



A white twin spotlight for wall or ceiling mounting. Fully adjustable heads allow light to be directed as desired. Each spotlight is individually switched. Easy to install, requires two R80 Reflector 60W bulbs (Order Code HN42V)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GC73Q	Twin Spotlight	£12.750			£14.990
HN42V	60W R80 ES Spot	£1.690	£1.640	£1.580	£1.990

## Triple Spotlight

A white triple spotlight, in the same style as the single and double versions above, for ceiling or wall mounting. Fully adjustable heads allow light to be directed as desired. Each light is individually switched. Easy to install, requires three R80 Reflector bulbs (Order Code HN42V)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GC72P	Single Spotlight	£7.650			£8.990
HN42V	60W R80 ES Spot	£1.690	£1.640	£1.580	£1.990

## Brass Picture Light



Stylish brass picture lights for illuminating your favourite portraits. Available in two standard sizes 221mm and 284mm. Wall fixing plate included. 60W max requires standard strip light, (Order Code HN26D for 221mm light, Order Code HN30H for 284mm light).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GC57M	284mm Picture Light	£24.670	£23.930	£23.210	£28.990
GC59P	221mm Picture Light	£22.970	£22.280	£21.610	£26.990
HN26D	30W 221mm Cir Strip	£2.540	£2.270	£2.130	£2.990
HN30H	30W 284mm Cir Strip	£2.540	£2.270	£2.130	£2.990

## 2D Fluorescent Bulkhead



A 16W 2D compact fluorescent moonlight bulkhead is an ideal way to provide an excellent level of lighting either indoor or outdoor at a minimum running cost  
The 16W 2D Fluorescent tube will last up to 8 times

longer than a conventional electric light bulb. Supplied with fixing screws and full fitting instructions. Replacement bulbs available, order code GG45Y.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GC71N	16W Bulkhead	£21.260	£20.630	£20.010	£24.990

## Bathroom / Shower Light



A quality British made (IP44) recessed mains 240V downlight suitable for all bathroom areas including shower cubicles. Complies with BS4533: section 102.2:1990/EN60 598-2:1989. Requires 40w max R50 SES bulb (Order Code HN36P).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GC61R	Shower Light 40w	£17.010			£19.990
HN36P	40W SES Op/Gl/Tw/Pk	£2.280	£2.120	£2.040	£2.690

## Portable Lights

### Clamp-on Halogen Worklight



- ★ Can be clamped to any surface
- ★ Completely weatherproof
- ★ Quartz Halogen bulb (white Light)
- ★ Tempered Safety glass lens

This clamp light can be used on patios, workbenches, garages, etc. giving a pure white light equal to that of larger floodlights but at a lower cost. It comes complete with 6ft of Cable, vinyl-coated carrying handle, grips, hook and heavy duty clamp. Comes complete with a 150W Halogen tube. Full instructions supplied  
Available in both 110V & 240V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GC63T	Floodlight/Grip 110V	£12.720	£12.340	£11.970	£14.950
GC65V	Floodlight/Grip 240V	£12.720	£12.340	£11.970	£14.950

## Call and Collect

Maplin has more stores Nationwide than ever before.  
See the maps at the front of the catalogue for the nearest one to you.

## Portable Halogen Floodlight

Ideal for the workshop, garage, barbeque, photography or anywhere else you need portable, high-power illumination. Supplied with approximately 2.8m of cable, plug and on/off switch. Takes 300W or 500W halogen tubes (not supplied). Suitable tubes: 500W (JX53H), 300W (KP50E).



Retail Unit Price each (inc. VAT).

Order Code	Type 18116	Price each exc. VAT			
		1+	25+	100+	1+
GG53H	Portable Halogen	£13.600			£15.990
JX53H	500W Halogen Tube	£2.540	£1.300	£1.020	£2.990
KP50E	300W Halogen Tube	£2.540	£1.300	£1.020	£2.990

## Tripod Floodlight

Ideal for the workshop, garage, barbeque, photography or anywhere else you need portable, high-power illumination. The sturdy tripod extends to 1.8m using twist lock joints. Legs fold away for easy storage. Supplied with approximately 2.8m of cable, plug and on/off switch. Requires 300W or 500W halogen tube (not supplied). Suitable tubes are 500W (JX53H) and 300W (KP50E).



Retail Unit Price each (inc. VAT).

Order Code	Type 17874	Price each exc. VAT			
		1+			inc. VAT each 1+
GG55K 1	Floodlight on Tripod	£29.770			34.990
JX53H	500W Halogen Tube	£2.540			£2.990
KP50E	300W Halogen Tube	£2.540			£2.990

## Automatic Nightlight

Ideal for children's bedrooms and poorly-lit corridors or hallways this easy to use lamp provides convenient very low cost illumination. An automatic light sensor switches the Nightlight on at dusk and off at dawn ensuring dark areas are safely lit. Comes complete with 7W bulb, simply plug into a mains socket for instant illumination. Spare bulbs available.



Retail Unit Price each (inc. VAT).

Order Code	Type 17859	Price each exc. VAT			
		1+	5+	10+	inc. VAT each 1+
GC53H	Night Light	£4.240	£4.030	£3.830	£4.990
GC55K	Night Light Bulb	£0.757	£0.720	£0.684	£0.890

## Mardi Gras Garden Lights



Decorate outside your property with this weatherproof festive outdoor lighting set in a sturdy storage case. 10 lampholders are spaced 0.75m apart, with a 3m connecting tail. The set includes 10 x 25W coloured BC (bayonet cap) bulbs. Made in the UK, polycarbonate lampholders are welded to 1.5mm<sup>2</sup> double insulated PCP rubberised cable, weatherproof to IP43. Total length, 10m. Ideal for the festive season, summer evening barbeques and in preparation for the millennium celebrations!

Retail Unit Price each (inc. VAT).

Order Code	Type 18123	Price each exc. VAT	inc. VAT each
VR91Y 1	Mardi Gras Lights	£38.280	£44.990

## Regal Lanterns



Outdoor lighting, ideal for the festive season, holidays, evening barbeques, etc. 10 lampholders at 0.75m spacing are welded on 1.5mm<sup>2</sup> double insulated PCP rubberised cable, weatherproof to IP33. Made in the UK, this kit comes supplied in a sturdy carrying and storage and 10 x 15W clear pygmy BC lamps. Total length, 10m. Suitable spares available, GG35Q.

Retail Unit Price each (inc. VAT).

Order Code	Type 18124	Price each exc. VAT	inc. VAT each
VR93B 1	Regal outdoor lights	£42.540	£49.990
GG35Q	15w BC Pygmy Cir 2pk	£2.970	£3.490

## Consumer Units

### Modular Consumer Units



A range of fully insulated consumer units manufactured in accordance with BS 5486 Part 13.

Available in 1, 2, 4, 6, 8 and 12 ways. Each unit has a double-pole switch rated as follows:

Ways	Isolator Rating	Smoked perspex Front Cover
1 Way	45A	No
2 Way	60A	No
4 Way	100A	Yes
6 Way	100A	Yes
8 Way	100A	Yes
12 Way	100A	Yes

Only suitable for indoor use. Conditional short-circuit capacity is 16kA, based on the assumption that short-circuits are unlikely to occur in the first three metres of the cable connected to the over-current devices. Supplied with full instructions. MCBs must be ordered separately.

Retail Unit Price each (inc. VAT).

Order Code	Type 1348	Price each exc. VAT	inc. VAT each
BN35Q 1	Consumer Unit 1 Way	£14.710	£17.290
BN36P 1	Consumer Unit 2 Way	£17.010	£19.990
BN38R	Consumer Unit 4 Way	£21.260	£24.990
GT76H	6 Way Consumer Unit	£25.520	£29.990
BN39N 1	Consumer Unit 8 Way	£28.070	£32.990
GV39N 1	12 Way Consumer Unit	£35.730	£41.990

## 63A RCD Protected Consumer Units

Protus



A range of fully insulated consumer units manufactured in accordance with BS 5486 Part 13. Similar to the standard range above, these units have the additional protection of a 63A RCD incorporated into the main double-pole isolating switch. This safety device trips out if there is a discrepancy between Live and Neutral of  $\pm 30\text{mA}$ ; i.e. a current flow to Earth of 30mA or more.

Available in 4, 6, 8 and 12 ways. The MCBs and RCD are protected by a smoked perspex cover. Supplied with instructions. MCBs must be ordered separately.

Retail Unit Price each (inc. VAT).

Order Code	Type 17589	Price each exc. VAT	inc. VAT each
GV40T 1	4 WAY INS CON UNIT	£68.070	£79.990
GV41U 1	6 WAY INS CON UNIT	£81.690	£95.990
GV42V 1	8 WAY INS CON UNIT	£85.090	£99.990
GV43W 1	12 WAY INS CON UNIT	£94.450	£110.990

## Split Load Consumer Units

Protus



Fully insulated consumer units, manufactured to BS 5486 Part 13. The units include a smoked perspex front cover over the isolator, RCD and

MCBs. A 100A isolator switch is at the right-hand end and a 63A RCD is at the centre. Each switch controls half of the MCBs. The advantage of this type of split distribution system is that relatively hazardous circuits can be connected to the RCD-controlled MCBs (such as ring mains with washing machines, electric cookers, outdoor circuits etc.) whilst circuits where it can be more hazardous if they fail when the RCD trips (such as indoor lighting circuits), or relatively non-hazardous circuits where it's important that power is maintained at all times (such as circuits connected to freezers) can be connected to the isolator-controlled MCBs. The RCD trips out if there is a discrepancy between live and neutral of  $\pm 30\text{mA}$ , e.g. a current flow to earth of 30mA or more. Both RCD and isolator are double pole. Only suitable for indoor use. Conditional short-circuit capacity is 16kA, based on the assumption that short-circuits are unlikely to occur in the first three metres of the cable connected to the over-current devices. Supplied with instructions.

Two models are available: 6 Way (3+3) and 10 Way (5+5)

MCBs must be ordered separately.

Retail Unit Price each (inc. VAT).

Order Code	Type 1354	Price each exc. VAT	inc. VAT each
GV44X1	3 Way SLoad Con Unit	£93.600	£109.990
GV45Y1	5 Way SLoad Con Unit	£110.620	£129.990

## HRC Fuse Carriers for Consumer Units

Proteus



A range of DIN rail mounting fuse carriers that offer a low cost alternative to MCBs for use in our consumer units. BS 1361 fuses fitted. Each carrier comes complete with a fuse and incorporates a position for a spare fuse (not supplied). Replacement HRC fuses are widely available. Available in 5A, 15A, 20A and 30A

Retail Unit Price each (inc. VAT).

Order Code	Type 17595	Price each exc. VAT	inc. VAT each
GV70M	5 AMP FUSE CARRIER	£3.390	£3.990
GV71N	15 AMP FUSE CARRIER	£3.390	£3.990
GV72P	20 AMP FUSE CARRIER	£3.390	£3.990
GV73Q	30 AMP FUSE CARRIER	£3.390	£3.990

## HRC Fuses BS1361

A range of HRC fuses to BS1361. Suitable as replacement fuses in our range of consumer unit fuse carriers. Available in the following values: 5A, 15A, 20A and 30A



Retail Unit Price each (inc. VAT).

Order Code	Type 18113	Price each exc. VAT	inc. VAT each
MU79L	5A HRC Fuse	£0.621 £0.572	£0.730
MU80B	15A HRC Fuse	£0.723 £0.666	£0.850
MU81C	20A HRC Fuse	£0.723 £0.666	£0.850
MU82D	30A HRC Fuse	£0.808 £0.744	£0.950

## Henley Blocks



Single pole and double pole versions available. Used for connection of meter tails to consumer unit.

Retail Unit Price each (inc. VAT).

Order Code	Type 12158	Price each exc. VAT	inc. VAT each
VK29G	Henley Block S/Pole	£5.940 £5.570	£6.990
VK30H	Henley Block D/Pole	£11.050 £10.280	£12.990

## Stand Alone 63A RCD

Proteus

Upgrade your existing consumer unit by adding RCD protection with this 63A RCD. The RCD will trip if there is a discrepancy between Live and Neutral of  $\pm 30\text{mA}$ ; i.e. a current flow to Earth of 30mA or more. A separate housing is available for mounting the RCD.



Retail Unit Price each (inc. VAT).

Order Code	Type 17328	Price each exc. VAT	inc. VAT each
MS80B1	Stand Alone RCD 63A	£63.820	£74.990
MS81C	Enclosure for RCD	£5.940	£6.990

## MCBs

Proteus



A range of miniature circuit breakers (MCBs) with type 2 time/current characteristics to BS3871 Part 1 for use with Consumer Units.

The following types are available:

- 6A for lighting circuits.
  - 10A for power spurs etc.
  - 16A for immersion heaters etc.
  - 20A for radial circuits etc.
  - 32A for ring mains.
  - 40A for cookers and showers up to 9.6kW etc.
- The MCB breaks when the current exceeds its rating and can be reset as soon as the overload is removed, and eliminates the need for fuses and fuse wire.

Retail Unit Price each (inc. VAT).

Order Code	Type 1351	Price each exc. VAT	inc. VAT each
BN42V	6A MCB Din Rail	£6.800 £6.060	£7.990
BN43W	10A MCB Din Rail	£6.800 £6.060	£7.990
BN44X	16A MCB Din Rail	£6.800 £6.060	£7.990
BN45Y	20A MCB Din Rail	£6.800 £6.060	£7.990
BN46A	32A MCB Din Rail	£6.800 £6.060	£7.990
BN47B	40A MCB Din Rail	£6.800 £6.060	£7.990
BN49D	Blanking Plate	£0.672 £0.505	£0.790

## Safety Electrical Earthing Straps

Electrical earthing straps specifically intended to connect system earths to real earth via a grounding rod or to provide for crossbonding to metal gas and water pipes as required by IEE regulations. Type A-E is intended as a main earth connection to a grounding rod and has a wire clamp which can take a single conductor up to 7mm thick (e.g. 68A earth bonding wire XS13P). Type A-D is for close coupled applications. It has a single screw terminal around which the wire is wrapped. Will take high current wire up to 4mm thick, e.g. XR57M etc. Both are fitted by wrapping the strap around the earthed member, passing the free end through the clamp body and pulling tight with strong pliers. Then a clamping screw is used to lock the strap in place, a locknut is attached to secure the screw and prevent tampering. Will take a tube or rod from 20 to 30mm diameter. Strap carries an alloy 'Do not remove' label. Constructed from brass and other non-ferrous alloys and will not rust.



Retail Unit Price each (inc. VAT).

Order Code	Type 1352	Price each exc. VAT	inc. VAT each
JZ27E	Earth Strap A-D	£1.430 £1.190	£1.690
JZ28F	Earth Strap A-E	£1.690 £1.550	£1.990

## Circuit Breakers

### RCD Protected Plug

JoJo



An RCD protected plug which can be used as a replacement for any standard 13A mains plug. The use of a RCD plug should not be regarded as a substitute for basic electrical safety precautions. Always unplug equipment to achieve isolation before any inspection or repair is attempted. If the RCD repeatedly trips with an appliance connected, contact the manufacturer or seek expert advice. Complies to BS7071 & BS1363

Retail Unit Price each (inc. VAT).

Order Code	Type 1321	Price each exc. VAT	inc. VAT each
VK01B	RCD Plug	£15.310 £14.660	£17.990

## Power Breaker



- ★ Easy to use one button operation
- ★ Large clear indicator window
- ★ No need to unplug to reset
- ★ Instructions on front of unit
- ★ No wiring needed

Ideal for protection when used with lawn mowers, hedge trimmers and household appliances that are used around water, like kettles, etc, for use with a normal 3-pin socket. If you accidentally mow your lawn mower cable, for example, the power will immediately be switched off by the Power Breaker, rendering the dangerous cable harmless. Any leakage of current to earth will trigger this device into tripped mode, with the ability to perform a self test by pressing the On/Test button. Ideal for use with power tools including circular saws, jigsaws and drills. Full instructions for use are given on the front of the device in addition to the printed material supplied with the unit. Complies with BS7071.

### Specification

Rated voltage	230V 50Hz AC
Maximum current	13A
Maximum load	3kW
Rated trip current	30mA
Trip speed	40ms (typical)
Contact break type	Double-pole RCD
Dimensions	103 x 51 x 43mm (L x W x D)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BNS0E	RCD Adaptor	£14.880	£17.490

## Portable RCD Adaptor

Jolo



A portable and easy to use circuit breaker for use in the home, at work, in the garden or garage. Simple to use and ideal for protecting operators of all types of power-tools.

Simply plug the circuit breaker into the wall and press the 'RESET' switch. Any attached equipment can now be operated safely. Should a fault develop, then the supply to the equipment will be cut, protecting the operator from shock. Being portable this unit can be moved

around the house as necessary. A test button is also provided, to make sure that the circuit breaker is functioning properly. This unit will protect the user by isolating the supply when a leakage of 30mA or more occurs. Rated at 13A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VK00A	RCD Adaptor	£14.450	£16.990

## Power Breaker



This is a new safety RCD Fused Spur. It will cut the power for added protection against electrocution. It has double pole protection and will fit a standard 25mm back box. Operating instructions are stamped on the front face. It has a 30mA trip current. Full instructions for installation and use are on the rear of the box; do not throw away.

### Specification

Rated voltage:	230V 50Hz
Current rating:	13A maximum
Rated trip speed:	40mS (Typical)
Rated trip current:	30mA
Terminal capacity:	6mm <sup>2</sup>
Mechanical latching	
RCD contact break:	Double pole

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KEB7U	RCD Spur Unit	£34.030	£39.990

## Thermostats

### Room Thermostat

A room thermostat with an easy-to-use control for all kinds of heating systems. Mounted on the wall, this thermostat, once set to the required temperature, will automatically trigger the heating system to come on and go off in order to maintain that temperature. Can be linked to any pump to control gas, solid fuel or oil fired central heating, warm-air and electric underfloor or ceiling systems. Includes an 'accelerator' which reacts quickly to changes in room temperature so as to maintain an even level. Fits a standard pattress. Knob marked 5° to 30°C. Rated 20A resistive, 4A inductive, 240V AC. Switch SPST. Supplied with instructions.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YB20W	Room Thermostat	£11.050	£12.990

See Sockets Sub-Section for our full range of RCD protected sockets

### Frost Thermostat

A wall mounting, pattress style frost thermostat designed to operate remotely from the heat source. A bi-metal strip is the sensing element and trips at approx 0°C to switch on the heating or other appliances before the temperature falls below freezing. Thermal 'feed forward' is provided by low powered heating resistors adjacent to the thermostat and switched with the load. Maximum switching capacity is 16A @ 250V AC. Connections are to heavy duty copper screw terminals. Both earth and neutral must be connected. Grills in the

top and bottom of the cover ensure air circulation over the thermostat for realistic room temperature sensing, and the cover has two break-outs provided in the bottom left-hand corner if required. Attached to wall by four 3mm screws in base (not provided). Overall dimensions 86mm square x 38mm deep.

top and bottom of the cover ensure air circulation over the thermostat for realistic room temperature sensing, and the cover has two break-outs provided in the bottom left-hand corner if required. Attached to wall by four 3mm screws in base (not provided). Overall dimensions 86mm square x 38mm deep.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZB86T	Frost Thermostat	£18.710	£21.990

## 7-Day Programmable Thermostat Timer



A 7-day programmable room thermostat that features presettable comfort and economy temperatures plus a defrost setting (7°C). Suitable for use with heating or cooling systems. Requires 2 x AA alkaline batteries (JY48C).

### Specification

Control range:	5 to 30°C
Temp accuracy:	±1°C
Programs:	6 preset, 3 user defined
Switching:	230V AC 50Hz, 5A resistive
Dimensions:	154 x 80 x 30mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DK62S	7 Day Thermo Timer	£28.070	£32.990

## Plug-In Thermostat



A thermostat that will plug straight into a 13A socket outlet and will provide thermostatically controlled power to its 13A mains into which a heater or fire can be plugged. The unit can supply a load up to 13A and thermostatically switch at eight temperature settings from frost to 35°C. The unit has two neon indicators; one illuminates when the mains power is supplied to the unit, and the other when the power is being supplied to the load.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AQ20W	Plug-In Thermostat	£16.160	£18.990



**Time Switches**

**Immersion Heater Timer**

A 24-hour immersion heater timer that is designed to provide programmable on/off times, and fit directly to a suitable wall surface. Each switching 'rider' provides an on period of 15 minutes minimum, so that the heater can be on for as long as desired, and as often as required, during the course of a day. If 'Economy 7' is available, this enables consumers to make use of cheap rate electricity overnight. A three position switch enables the immersion heater to be on continuously, timed, or off. The timeswitch must be used with a localised isolation point (fused spur). Supplied with full mounting hardware and fitting instructions. Size: 86 x 86 x 84mm. Rated at 240V 50Hz 13A.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CY35Q	Heater Timer	£22.970 1+ £19.950 5+ £18.790 10+	£26.950 1+

**24-Hour Immersion Heater Time Controller**

Smiths-Timeguard



- ★ Easy to install
- ★ Simple to operate
- ★ Manual override
- ★ Thermal fuse included
- ★ Minimum setting time 15 minutes
- ★ Minimum on/off period 30 minutes

This unit is designed for installation with both new and existing immersion heater systems. It has a maximum of a 3kw switching load with a switching current of 13A resistive and 2A inductive. Rated at 240V 50Hz

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VJ60Q	24Hr Immersion Timer	£19.560 1+ £18.800 5+ £17.750 10+	£22.990 1+

**24-Hour Segment Immersion Heater Timer Controller**

Smiths Timeguard

Economical and convenient to use, this controller has been specially designed for easy installation with both new and existing immersion heater systems. The controller has a captive segment setting dial with a 15 minute minimum switching interval which can be increased in 15 minute steps. Conforms to 73/23/EEC and 89/336/EEC directives.

- ★ Switches ON and OFF at preset times
- ★ Easy setting captive segment dial



- ★ 15 minute minimum switching interval
- ★ Integral thermal fuse for extra protection
- ★ Manual override

**Specification**  
Operating voltage: 230Vac 50Hz  
Switch rating: 13A resistive (3kW)  
5A inductive  
Operating temperature: 0 to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB06G	24Hr Siment Imm Htr	£19.890 1+ £18.900 5+ £17.910 10+	£23.380 1+

**Electronic Immersion Heater Time Controller'**

Smiths Timeguard



This timer has the facility to be used permanently on, permanently off or with timed programmes. Its 24 hour digital clock/timer display enables a shortest switching time of 1 minute.

An integral memory back up battery retains programmes in the event of a power failure. Two versions available. VJ61R - is a 24 - hour version MB05F - is a 7- day version with individual day, everyday, every weekday or weekend programme selections for six programmes Conforms to 73/23/EEC and 89/336/EEC directives.

- ★ Easily Programmable - 2 button system.
- ★ 24-hour model has 4 ON/OFF 7-day model has up to 6 ON/OFF switching programmes every 24 Hours.
- ★ Shortest switching time of 1 minute
- ★ 24-hour model has 1 or 2 hour boost facility
- ★ Integral thermal fuse for extra protection
- ★ Self cancelling override for instant ON/OFF control

**Specification**  
Operating voltage: 230V ac 50Hz  
Switch rating: 230V ac 13A resistive or 6A inductive  
Operating temperature: -10°C to +50°C  
Dimensions: 115 x 74 x 50mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VJ61R	7Day Immersion Timer	£28.070 1+ £27.100 5+ £25.650 10+	£32.990 1+
MB05F	24 Hr Imm Heater	£22.620 1+ £21.490 5+ £20.360 10+	£26.580 1+

**Single Gang Fused Spur Timeswitch**

Smiths Timeguard



A fused spur timeswitch with double pole contacts that is built in to a single gang surface mount housing. The timeswitch is ideal for controlling combination boilers, storage heaters, convector heaters, water heaters and lighting. Conforms to

73/23/EEC and 89/336/EEC directives. Available in two versions. MB01B is a 24 hour model with 4 ON/OFF programmes per day. MB02C is a 7 day model with 6 ON/OFF programmes per day. Additionally, there is individual day, everyday or weekend programme selections This allows up to 42 settings per week.

- ★ Switched and switched timed outputs
- ★ Integral BEAB approved double pole switch and replaceable BS1362 fuse
- ★ Simple two button programming - one recessed
- ★ Front button override facility
- ★ 1000 hours memory back-up from fitted rechargeable battery in case of supply loss or fuse blow
- ★ Minimum switching period of one minute
- ★ Voltage free contacts

**Specification**  
Operating voltage: 220/240V AC 50Hz  
Switch rating (240V AC): 6A inductive 13A resistive (3kW)  
Operating temperature: -10°C to +40°C  
Dimensions: 85 x 85 x 38mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB01B	Supply Master-24 Hr	£35.980 1+ £34.180 5+ £32.380 10+	£42.280 1+
MB02C	Supply Master-7Day	£39.350 1+ £37.380 5+ £35.410 10+	£46.240 1+

**Central Heating Mini Programmer**

Smiths Timeguard



This electronic mini programmer is suitable for fully pumped or gravity fed central heating systems, and conveniently fits onto a single gang 25mm deep wall box Conforms to 73/23/EEC and 89/336/EEC directives. Available in two versions.

MB03D is a 24 hour model with up to 4 ON/OFF programmes per day. MB04E is a 7 day model with individual day, everyday, every weekday or weekend programme selection with a total of 6 programmes.

- ★ Integral BEAB approved double pole switch and replaceable BS1362 fuse
- ★ Front button override facility
- ★ 1000 hours memory back-up from fitted rechargeable battery in case of supply loss or fuse blow
- ★ Minimum switching period of one minute

**Specification**  
Operating voltage: 220/240V AC 50Hz  
Switch rating (240V AC): 3A inductive  
Operating temperature: -10°C to +40°C  
Dimensions: 85 x 85 x 38mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB03D	Supply Mastc-24 Hr	£41.070 1+ £39.020 5+ £36.970 10+	£48.260 1+
MB04E	Supply Master-7Day	£44.420 1+ £42.200 5+ £39.980 10+	£52.200 1+

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## Programmable Security Light Switch

Smiths Timeguard



**NEW**

- ★ Easy to install
- ★ Replaces standard lightswitch
- ★ Concealed programming panel
- ★ Easily programmed
- ★ Light sensor prevents operation during day light hours

Designed to operate when you are away from home, this light switch will turn a light on automatically when it gets dark and can be programmed to turn off again up to 8 hours later. It can also act as a normal on/off or 2 way light switch.

Bulb size 40W minimum, 300W maximum. Rated at 240V AC 50Hz

Can only be used with Fluorescent lighting if used in conjunction with the Strip Light Adaptor -VJ65V. Not suitable for low energy bulbs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VJ62S	Programmable Switch	£19.560	£18.800	£17.750	£22.990

## Programmable Lightswitch

Smiths Timeguard



This unit is designed to replace a conventional lightswitch and can be programmed to copy up to 9 switch settings of the previous 24 hours' switching pattern and repeat the programme daily until it is altered. The unit can be used as a normal lightswitch and is able to switch a minimum load of 40W and a maximum load of 200W. Please note: Unit not designed for switching fluorescent lighting.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AQ21X	Copy Lightswitch	£21.260	£16.110	£15.600	£24.990

## Passive Infra Red Lightswitch

Smiths Timeguard



**RECENTLY INTRODUCED**

- ★ Simple to use
- ★ Replaces existing lightswitch.
- ★ Turns light on when movement is detected.
- ★ Light level control for dusk-till-dawn switching.
- ★ Light on time adjustable.
- ★ Full instructions included.

This Passive Infra-Red Lightswitch is for indoor use and designed to automatically switch on when it detects body heat turning off again after a preset length of time from 5 seconds to 5 minutes. The lightswitch works in conjunction with a light level control which provides a dusk-till-dawn switching operation in response to body movement.

It can also act as a normal On/Off or 2-way lightswitch.

Bulb size : 40W minimum / 300W maximum.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VJ64U	Passive Light Switch	£29.770	£28.160	£26.420	£34.990

## 24-Hour 20A Electro-Mechanical Time Controller

Smiths Timeguard



**NEW**

This plug-in base surface mount electro-mechanical timer has an 'analogue' type time display, and will control all electrical equipment up to 20A (resistive). Easily set by the captive segment setting dial, the unit has a maximum of 96 switchings per day. Conforms to 73/23/EEC and 89/336/EEC directives.

- ★ Synchronous motor driven
- ★ Manual override
- ★ Permanent ON/OFF
- ★ 15 minute minimum switching interval which can be increased in 15 minute steps
- ★ 12A inductive rating
- ★ Controls electrical appliances up to 4.8kW
- ★ 72 x 72mm plug-in base surface mount
- ★ Tamper proof transparent cover

Specification

Operating voltage: 230V ac 50Hz

Contact rating: 20A resistive

12A inductive

Operating temperature: -10°C to +40°C

Dimensions: 104 x 72 x 69mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MB07H	24Hr E/Mech T/Sw	£35.860	£34.070	£32.270	£42.140

## 7-Day Electronic Time Controller

Smiths Timeguard



**NEW**

This versatile digital time controller features 7-day programme selections plus holiday suspension of programmes. Easy to use 6-button programming and 1000 hours rechargeable memory back-up allow ultimate control of electrical and electronic appliances. The controller is supplied with a transparent cover to discourage tamper and reduce dust ingress. Conforms to 73/23/EEC and 89/336/EEC directives.

- ★ 72 x 72mm plug-in base surface mount
- ★ 21 ON/OFF commands per week
- ★ Shortest switching time 1 minute
- ★ Manual override and permanently ON/OFF
- ★ ON/OFF times may be repeated over a number of days without using extra memory locations

★ Voltage free contacts

Specification

Operating voltage: 230V ac 50Hz

Contact rating: 16A resistive (3.8kW)

6A inductive

Operating temperature: -10°C to +40°C

Dimensions: 104 x 72 x 69mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MB06U	24Hr/Day T/Sw	£64.710	£61.48*	£58.250	£76.040

## 24-Hour Segment Timeswitch

Smiths Timeguard

- ★ Simple to program & operate
- ★ Plug in control for all 13A appliances and lamps
- ★ Switches on and off at preset times.
- ★ Manual override.

Easily set by its captive segment dial this 24Hour plug in time controller will automatically switch appliances On and Off at preset times during the day over a 24-Hour cycle. With a minimum On/Off switching of 15 minutes the unit can switch up to 96 times per day. You can switch your appliance On and Off at any time by using the self cancelling switching rider on the top left of the unit. Rated at 240V AC 50Hz.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VJ58N	24Hr Segment Timer	£12.750	£12.130	£11.400	£14.990

## Call and Collect

At all our stores nationwide.  
See the maps at the front of the catalogue for the nearest one to you.

**All Customers**  
No additional freight charges for heavy items

## 7-Day Segment Time Switch

Smiths Timeguard

- ★ Simple to program and operate.
- ★ Plug in Control for all 13amp appliances and lamps.
- ★ Switches on and off at preset times up to 12 times each day.
- ★ Manual override.



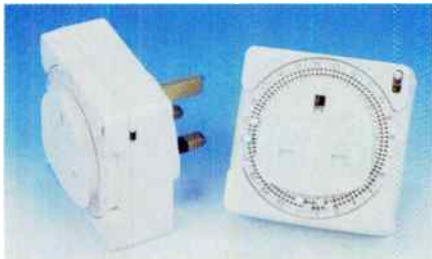
This 7-day Segment Timeswitch has all the benefits and features of the 24-hour Timeswitch (VJ58) but has a minimum On/Off switching time of 2hours and can switch a maximum of 12 times a day. Rated at 240V AC 50Hz.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VJ58P	7Day Segment Timer	£14.450	£13.560	£12.670	£16.990

## 24-Hour Plug-In Timer

Smiths Timeguard



Plugging this timer into your existing 13A socket outlet gives automatic control over a 24-hour period to any electrical appliance. Simply plug the appliance that you wish to be controlled, up to 13A resistive or 2A inductive loading, into the 13A socket outlet of the unit and set the time interval. The unit is switchable in 15-minute intervals with a minimum time between settings of 30 minutes. Available singly (RZ81C), or as a twin pack (RZ83E).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RZ81C	24h Plug-In Timer	£12.750	£11.970	£11.060	£14.990
RZ83E	Twin Pk 24h Timer	£23.820	£20.200	£19.140	£27.990

## 7-Day Plug-In Timer

Smiths Timeguard

This timer can be plugged into your existing 13A socket outlet and gives automatic control of an electrical appliance over a 7-day period. The time controller can switch up to 13A resistive or 2A inductive loads. The minimum time interval is 2 hours with a minimum time between settings of 4 hours. The timer can be extremely useful as a security device turning on such appliances as radios and table lamps to give a potential intruder an impression that your home is occupied.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RZ82D	7 Day Plug In Timer	£14.450	£12.470	£11.720	£16.990

## 24-Hour Slimline Digital Timer



This timer is a slimline digital controller that can be plugged straight into your existing 13A socket outlet and can be programmed to switch loads of up to 13A resistive or 2A inductive. The timer can switch up to 4 ON/OFF programmes per day, with a minimum of 1 minute between switch settings, each of which can be manually overridden. The override function is cancelled at the next automatic ON or OFF switching time. The unit has a back up battery in order that timing is kept accurately, even during a power cut.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RZ84F	24h Digital Timer	£17.430	£15.150	£14.390	£20.490

## 7-Day Slimline Digital Timer

Smiths Timeguard



This 7 Day Slimline Digital Timer has all the benefits and features of the 24Hour version - RZ84F- plus individual day, everyday, weekday or weekend programme selections. Six programmes are available which if selected to operate over all 7 days give a total of 42 switchings per week.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VJ63T	7Day Digital Timer	£19.560	£18.800	£17.750	£22.990

## 24Hr Plug-in Timer

- ★ Turns table lamps on and off
- ★ Random programme feature
- ★ Up to 4 on/off programmes available every 24 hours
- ★ Automatically repeats the programme every day
- ★ Manual override

Full instructions are contained in the packaging.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KE88V	24HR Elec Timer	£17.010	£15.350	£14.750	£19.990

## 7 Day Plug-in Security Timer

- ★ Turns table lamps on and off
  - ★ Up to 4 on/off programmes per day, allowing up to 28 repeated on/off settings
  - ★ Weekly, weekday or weekend operation
  - ★ Built-in rechargeable circuit. NO BATTERIES REQUIRED
  - ★ Manual override
  - ★ 220V to 240V AC 500Hz
  - ★ Max current 13A, 3kW
- Full instructions contained in the packaging.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KE89W	7Day Elec Timer	£17.860	£16.110	£15.410	£20.990

## Weekly Plug-in Timer

A compact, digital plug-in timer with up to four programmes per day, that is ideal for domestic appliances, lighting, heating and similar applications. The timer can operate one set of four daily programmes for weekdays, and a different set of daily programmes for the weekends. The unit has battery back-up and an instant on/off override.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	1+
RZ30H	Digital Weekly Timer	£15.310		£17.990

## Countdown Switch

Technotrend

This ingenious device requires no programming and is quite different from ordinary timers. It simply plugs into any 13 Amp socket. Pressing the clearly marked On button switches on the power and starts the countdown. The red illuminated display indicates time remaining. The time-on period can be simply adjusted by pressing the clock button.

- ★ Controls almost any appliance
- ★ Improves safety
- ★ Cuts electricity bills
- ★ Convenient and labour-saving
- ★ Easy to use

Typical uses include heaters, irons, kitchen appliances, power tools, soldering irons, televisions, electric blankets, etc.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MS24B	Countdown Switch	£25.520	£23.990	£22.560	£29.990

**Business Account Holders**  
No Delivery Charges for any order

## Plug-in Sensor Socket



Ideal for home security purposes which require the automatic switching on and off between dusk and dawn of domestic lamps or radios, etc.

The sensor socket is instantly installed by plugging into any 13 Amp socket and the appliance in turn plugs into the unit. The photo cell which senses the ambient light conditions can be swivelled in any direction to optimise sensitivity.

This unit is suitable for domestic appliances up to 460W (2 Amp).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MS23A	Plug-in Sensor Skt	£9.350	£8.880	£8.440	£10.990

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## Adaptors

### Costplug



- ★ Easy to use - just plug in.
- ★ Helps identify which appliances are the most expensive to run.
- ★ LCD reading in £s and pence
- ★ Suitable for domestic or business Applications.
- ★ Can be set to local electricity suppliers rates easily.

The Costplug is an invaluable means of costing electricity consumption. It will display the running cost of any appliance per hour, day, week or year. Find out which are your most costly appliances to run, discover which of them you should use less or consider replacing, teach children the cost of leaving lights on or the TV running and control your electricity spending.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VD12N	Costplug	£25.520	£23.250	£21.200	£29.990

† This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## Time Switches

### Security Lampholders

Smiths Timeguard

- ★ As simple as fitting an existing light bulb.
- ★ Requires no wiring or adaptors.
- ★ Light level control for dusk-till-dawn switching.
- ★ Microchip controlled.

Dusk-till-Dawn -VJ66W- has a light level sensor that turns the light on at dusk and off at dawn.  
Random -VJ67X- has the same features and benefits but will switch the light on and off at completely different times between dusk and dawn.  
Sound Activated -VJ68Y- will turn the light on in response to sound and will remain lit for between 10 & 20 minutes, the duration varying with each activation between dusk and dawn.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ66W	Dusk/Dawn Lampholder	£13.600	£13.210	£12.540	£15.990
VJ67X	Random Lampholder	£19.560	£18.540	£17.400	£22.990
VJ68Y	Sound Act.Lampholder	£19.560	£18.800	£17.750	£22.990

### Strip Light Adaptor

Smiths Timeguard



This Strip Light Adaptor is designed to convert fluorescent lighting for use with a range of Smiths Security product only.

It can be used in conjunction with our :-  
VJ62S Programmable Lightswitch.  
VJ64U Passive Lightswitch.

Please note that it is not suitable for use with Low Energy Fluorescent lamps.

Full wiring instructions are supplied.  
Maximum Fluorescent tube load :-  
2 x 4ft Fittings (max 40w each) or  
1 x 6ft Fitting (max 85w)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ65V	Strip Light Adaptor	£5.940	£5.500	£5.270	£6.990

### Staircase Timeswitch For DIN Rail Mounting

Smiths Timeguard



A 16A delay timeswitch for staircase lighting that has an ON time adjustable from 1 to 7 minutes in 15 second steps. The timer comes in a standard

one module wide housing (45 x 17.5 x 68mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).

H Can switch up to 2000W of incandescent or fluorescent lighting

H Permanent ON switch

H Very reliable synchronous motor drive

H Simple to set with direct indication of delay time

#### Specification

Operating voltage: 230V ac 50Hz  
Switching capacity: 16A

2000W for incandescent, fluorescent lamps

Switching: resettable after 30s approx.  
Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB12N	E-Mech S/Case T/Sw	£26.580	£25.260	£23.930	£31.240

### Dusk-to-Dawn Switch For DIN Rail Mounting

Theben



This dusk-to-dawn switch is ideal for the control of display lighting systems and external lighting systems i.e streets, car parks, drives etc. Supplied with a separate surface mount light sensor. The switch comes in a standard two module wide housing (45 x 35 x 60mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).

- ★ Adjustable brightness between 2 and 200 Lux
- ★ 40 second built-in delay to prevent nuisance switching

- ★ 10A switching capacity

#### Specification

Operating voltage: 230V ac 50Hz

Switch rating

cosφ=1: 10A

cosφ=0.6: 6A

Incandescent lamp: 1000W load

Halogen lamps: 1000W

Fluorescent lamps

uncompensated: 800W

series compensated: 800W

parallel compensated: 200W

lead-lag (duo): 800W

Operating temperature

control unit: -10°C to +50°C

light sensor: -40°C to +70°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB19V	Dusk to Dawn T/Sw	£81.890	£77.800	£73.710	£96.230

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

**Extractor Fans**

**100mm Extractor Fan Kit**



Two 100mm diameter extractor fan kits for bathrooms, toilets, kitchens etc. Each kit includes the interior fan housing and grille, a 400mm long, flexible aluminium wall ducting and an external wall grille with gravity controlled non-return shutters. The interior housing surround is 160 x 160 x 30mm deep. The cover is removable to reveal the synchronous fan motor and connecting terminal block. Requires only mains Live and Neutral since assembly is double insulated. The motor is rated at 20W and the fan is a positive displacement airscrew type shifting up to 90m<sup>3</sup> per hour. Colour of interior side is white, exterior shutter grille is light grey. Can be fitted in walls up to 115mm thick, partition walls and ceilings. Needs eight additional wall fixing screws (not supplied).

Two types are available. The first is a basic extractor fan remotely switched by either a separate switch or by splicing into the lighting supply. The second can be connected to a permanent supply and energised by a control wire connection to the lighting circuit such that when the light is switched off, a built in electronic delay timer system will keep the fan running for several minutes. Fitting instructions included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GK70M 4	Remote Fan 100mm	£25.520	£21.970	£20.400	£29.990
GK71N 1	Permanent Fan 100mm	£34.030	£29.140	£27.120	£39.990

**100mm Timer Shower Fan Kit**



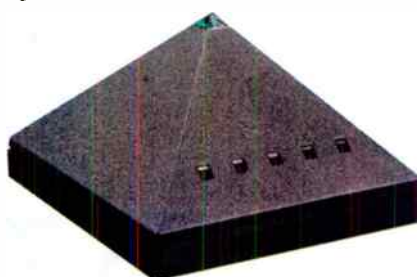
Easily installed 100mm shower fan. Removes steam and excess moisture from shower cubicles which helps reduce condensation and mildew growth. Fully adjustable timer allows fan to operate for upto 15 minutes after being switched off. Comes complete with flexible ducting, internal, white grille and external grey grille. Supplied with full installation instructions. Airflow: 23 litres per second (max)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MS04E	4in Shower Fan Kit	£34.030			£39.990

**Health Products**

**Pyramid Ioniser**



A powerful pyramid-shaped ioniser with five high output ionisation streams that help to remove pollutants such as dust, pollen, microbes and smoke from the air. The ioniser has an effective range of 5 metres and may help to alleviate symptoms of asthma, bronchitis and a wide range of allergies as well as helping to protect computer and household equipment from dust. Supplied with full operating instructions.

**Specification**  
Supply voltage: 230V 50Hz AC  
Power consumption: 0.3W  
Effective range: 5m  
Dimensions: 115 x 115 x 83mm (W x D x H)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
WC12N	Pyramid Ioniser	£17.350			£20.390

**Pyramid Ioniser with Dust Trap**



This powerful pyramid-shaped ioniser features an integral dust trap that literally takes dust from the air and traps it on changeable dust mats (initial supply included, new mats can be purchased separately in packs of 12 as WC30H). The ioniser's five high output ionisation streams will help to remove pollutants such as dust, pollen, microbes and smoke from the air over an effective range of five metres. May help to alleviate symptoms of asthma, bronchitis and a wide range of allergies and protect computer and household equipment from dust. Supplied with full operating instructions.

**Specification**  
Supply voltage: 230V 50Hz AC  
Power consumption: 0.3W  
Effective range: 5m  
Dimensions: 115 x 115 x 83mm (W x D x H)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
WC29G1	Pyramid & Dust Trap	£34.710			£40.790
WC30H	12 Sheet Paper Pack	£4.330			£5.090

**The "Classic" Ioniser**



Ideal for removing dust, smoke and pollen from the air. May help to alleviate respiratory problems, the incidence of headaches and migraine. Features very low running costs, typically 1p a week, and is totally safe and suitable for continuous use. Operates from the mains supply, with a power indicator to show power is connected. Supplied with full operating instructions.

**Specification**  
Supply voltage: 230V 50Hz AC  
Effective health benefit range: 5m  
Effective cleaning range: 7m  
Power consumption: 0.3W

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
WC11M	Breath Easy Ioniser	£17.350			£20.390

**Air Purifier**

- ★ Clears air of smoke, pollen, dust and other airborne pollutants
- ★ Removes and neutralises unpleasant odours
- ★ Two speed settings
- ★ Costs less than 5p per day to run
- ★ Five stage filtering system
- ★ Quiet running
- ★ Supplied with two filters



For use in the home or office, this compact air purifier filters the air removing smoke and other pollutants, trapping them in the fine filter layers. Ideal to help alleviate symptoms of Asthma, Hay Fever, Bronchitis and a wide range of allergies, as well as helping to protect sensitive equipment and materials from airborne dust. Air is forced through the filter medium by a powerful two speed fan. Odours are removed from the air and trapped in an activated carbon layer, neutralising cooking and food smells quickly and efficiently. When a filter becomes clogged or loses its fragrance it can easily be replaced by twisting it from the base of the unit and replacing with a new one. Supplied complete with one apple and one citrus fragrance filter and full operating instructions. Filters are available separately with apple (WC14Q), citrus (WC15R) and lavender (WC16S) fragrance or unscented (WC17T).

**Specification**  
Operating voltage: 230V 50Hz AC  
Power consumption: 12W  
Output settings: Off/Lo/Hi  
Flow rates: 294 l/h (Lo), 425 l/h (Hi)  
Weight: 750g  
Dimensions: 126 x 126 x 160mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
WC13P	Air Purifier	£13.010			£15.290
WC14Q	Filter - Apple	£3.020			£3.560
WC15R	Filter - Citrus	£3.020			£3.560
WC16S	Filter - Lavender	£3.020			£3.560
WC17T	Filter - Unscented	£3.020			£3.560

## Insect Killer

Automatically destroy flying insects, mosquitoes, bugs, flies, wasps, gnats, etc. This flying insect trap utilizes ultra-violet light of a wave-length proven to be the most effective lure for light sensitive flying insects. Mains powered, this forms a practical, efficient, hygienic and automatic electronic insect extermination system. Placing a tiny amount of meat, fish or syrup in the bottom tray will make the unit more effective at exterminating daytime flying insects. Suitable for domestic and commercial use.. Spare tubes available.



Retail Unit Price each (inc. VAT).

Order Code	Type 17005	Price each exc. VAT	inc. VAT each
GZ07H	BW UV Insect Killer	£12.750	£14.990
MS25C	Spare Tube for GZ07	£4.240	£4.990

## Home Automation

### X-10 Technology

X-10 is the USA's leading Electrical Home Automation technology with over 3 million users in American and Europe. Control signals are passed along your existing mains wiring to be received by special modules which are used to control any electrical device. An appliance module can be switched on and off whilst a lamp module can be dimmed as well as being switched on and off.

A variety of controllers are available, including radio-controlled handsets, a plug-in timer and a computer interface controller. The handset transmits a specially coded radio signal to a transceiver that can be plugged in anywhere in your home. This in turn sends the X-10 signals to the specified module. This means that you can dim the table lamp, switch off the hi-fi in the other room, turn all the lights off upstairs and switch on your electric blanket in the bedroom; all without moving from the comfort of your armchair!

### 8-in-1 Universal Remote Control Kit

Homotech



- ★ The kit comprises an 8-in-1 remote controller and an X-10 transceiver.
- ★ Replaces upto 8 remote controls.
- ★ Extensive range of pre-programmed codes cover most popular TVs, VCRs, Satellite Receivers and Cable Boxes, etc.
- ★ Learning function to record commands from existing remotes.
- ★ Backlit keys
- ★ X-10 technology controller.

In addition to all the functions one would expect from a top of the range 8-in-1 Universal Remote, this controller has a radio transmitter that sends control signals to the X-10 transceiver module. This module can be plugged in anywhere in the home and in turn will transmit the special X-10 signals along your mains wiring to control any X-10 modules that you have connected. In addition, the receiver is itself an appliance module and will switch full mains loads (upto 13 Amp) on and off. Therefore, this makes the ideal starter pack that allows control of a single appliance. Additional appliance modules and lamp modules can then be

added at will, only the one transceiver is required to individually control upto 255 different modules. The transceiver is also available as a separate item (MS20).

Retail Unit Price each (inc. VAT).

Order Code	Type 18026	Price each exc. VAT	inc. VAT each
MS15R	8in1 Remote Control	£76.580	£89.990
MS20W	Transceiver	£90.850	£71.500

### Control Modules

Homotech

These easily installed modules contain X-10 technology which means they respond to the special signals sent down the mains wiring by the X-10 transceiver or other X-10 control device. Just plug in to any standard 13A mains socket and plug your appliance into the module.



#### Appliance Module

The Appliance Module can switch upto 13A on and off. A manual override allows you to switch on an appliance even if the module has been turned off. (Manual override may not work on certain appliances).

#### Lamp Module

The lamp module can dim incandescent (normal) lamps as well as switch on and off loads upto 300W. A manual override allows you to switch on a lamp even if the module has been turned off. (Cannot be used with fluorescent or low-voltage lamps).

Retail Unit Price each (inc. VAT).

Order Code	Type 18027	Price each exc. VAT	inc. VAT each
MS18U	Lamp Module	£42.540	£49.990
MS19V	Appliance Module	£42.540	£49.990

### Timer for X-10

Homotech

The timer controller allows individual, groups or all modules to be switched on and off at pre-determined times. The controller can also dim lamp modules. The unit can be programmed to turn on and off up to four modules twice a day. The unit also has switches that allow the modules to be manually switched. As well as convenience, this controller has security applications. Your home can be given that "lived in" appearance with a facility to automatically vary the times programmed into it.

Retail Unit Price each (inc. VAT).

Order Code	Type 18048	Price each exc. VAT	inc. VAT each
MU50E	Timer	£42.540	£49.990

### 16 Channel X-10 Remote

Homotech

An easy to use remote controller that can switch on and off 16 separate modules using the X-10 system. There is room on the controller to write the name of the appliance that is being controlled next to each rocker style switch.

Retail Unit Price each (inc. VAT).

Order Code	Type 18029	Price each exc. VAT	inc. VAT each
MS22Y	16 Channel Remote	£42.540	£49.990

### Computer Interface Controller

Homotech

- ★ Stand alone operation even when unplugged from PC
- ★ Easy to use Windows 3.1 and Windows 95 compatible software on CD ROM
- ★ Battery-backed for up to 1 week

A serial cable with RJ11 connector at the interface end and a 9 pin D connector at the other end is provided to connect the interface to the serial port of your PC. The interface is 2 way, both generating and receiving X-10 commands. The point-and-click software provides graphical representations of switches and modules. The versatile software allows timed events to be programmed to occur at a particular time every day, on chosen days only, between chosen dates, etc. Another use is to enable macro commands from standard controllers. Normally when a controller sends a signal only one event occurs. With the computer interface installed this command can be intercepted and a whole sequence of events actioned. An example might be to turn on the landing lights then after 20 minutes dim the bedroom lights and turn off the landing lights.

Retail Unit Price each (inc. VAT).

Order Code	Type 18028	Price each exc. VAT	inc. VAT each
MS21X	Computer Interface	£74.680	£87.990

## Wireless Security

### Home Security & Automation Kit

Homotech



- ★ Wire-free system means easy installation and no unsightly wiring.
- ★ Intelligent central controller uses X-10 technology to communicate with home automation modules.
- ★ In-built auto-dialler and microphone relays alarm information to up to 4 friends or neighbours and allows them to 'listen in' to events in your home.
- ★ Extra sensors and accessories available.
- ★ UK telephone technical support line.

This advanced alarm system is extremely sophisticated yet simple to install and use. The system, as supplied, monitors your property on two important fronts. Door and Window Sensors detect any unauthorised opening of any two doors or windows. The PIR Movement Sensor detects movement in a room, hall, kitchen, garage, etc. The system also has three distinctive alerts to protect your property. Firstly, a 95 dB siren built into the Control Unit. Secondly, the Lamp Module will flash any lamp plugged into it and finally, a built-in dialler sends out your own 15 second message to up to 4 different telephone numbers which you select. There are two remote controls supplied. The Keyfob Remote simply arms and disarms the system from inside or outside the property. It also lets you turn on and off any lamp plugged into the Lamp Module. The Hand-held Remote does the same but may also be used to sound the alarm and operate other X-10 modules that you might have installed.

#### Contains:

- 1 Central Control Unit
- 1 Power Supply Unit
- 1 Wireless PIR Movement Sensor
- 2 Wireless Contact Sensors with magnetic switches
- 1 Lamp Module
- 1 Hand-held Remote Control
- 1 Keyfob Remote Control
- 1 Telephone connection lead
- 1 Telephone socket doubler
- 4 PP3 type Batteries
- 4 AAA type batteries
- Comprehensive instructions

Retail Unit Price each (inc. VAT).

Order Code	Type 18030	Price each exc. VAT	inc. VAT each
MS26D	Security Kit 4	£254.460	£299.000
MS27E	Spare PIR	£42.540	£49.990
MS28F	Spare Contact TX	£34.030	£39.990
MU51F	Panic Keyfob	£25.520	£29.990
MS29G	Spare Keyfob	£25.520	£29.990



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## MICROPHONE INSERTS

### Dynamic Microphone Inserts



Two dynamic coil microphone inserts, DU-3 is omnidirectional and is fitted in a round plastic case 23mm diameter x 11mm thick. Two solder pads provide means for connection to a screened cable. The screen should be soldered to the pad that is one end of the large circular band underneath. Type UF-27 is unidirectional and contained in a black plastic body 30mm long x 27mm diameter overall. The rear of the body is stepped to facilitate insertion into some sort of rubber grommet or suspension. Connects via two solder pads.

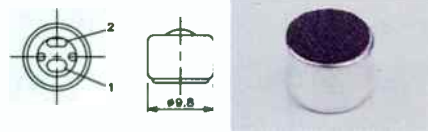
#### Specification

	DU3	UF27
Frequency response:	100Hz to 10kHz	50Hz to 14kHz
Impedance:	500Ω	600Ω ±30% @ 1kHz
Sensitivity:	-80dB ±2dB @ 1kHz	-82dB ±3dB @ 1kHz
Weight:	13g	22g

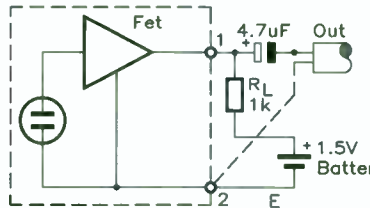
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FK43W	Omni Insert Dyn DU3	£2.540	£2.990
FK44X	Uni Insert Dyn UF27	£5.090	£5.990

### Omni-directional Sub-Miniature



Type EM-60B is a sub-miniature omni-directional electret condenser microphone only 9.8mm diameter and 7mm thick.



#### Specification

Response: Omni-directional  
 Frequency response: 50Hz to 13kHz  
 Sensitivity: -60dB ±3dB  
 (0dB = 1V/μbar at 1kHz, V<sub>CC</sub> = 4-5V, R<sub>I</sub> = 1kΩ)  
 Impedance: 1kΩ maximum  
 S/N ratio: >40dB  
 Sound pressure level: 120dB maximum  
 Power supply: 1.5V to 10V DC  
 Recommended voltage: 4-5V (optimum performance)  
 Current drain: <0.4mA  
 A 3-pin version is available (CN80B) featuring a separate earth shield. Looking at the base, pin 1 is to the left of the indent and pin 3 is to the right. Pin 3 is supply, pin 2 is output, and pin 1 is ground.

Retail Unit Price each (inc. VAT).

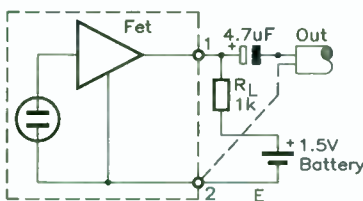
Order Code	Type	Price each exc. VAT	inc. VAT each
CN80B	Elec Mic Ins 3 Terms	£1.690	£1.990
FS43W	Submin Omni Insert	£1.260	£1.490

### Electret Microphone Inserts

#### Omnidirectional Ultra Miniature



Type EM-10B is an ultra-miniature omnidirectional electret condenser microphone only 6mm diameter and 5.2mm thick.



#### Specification

Response: Omni-directional  
 Frequency response: 50Hz to 13kHz  
 Sensitivity: -60dB ±3dB  
 (0dB = 1V/μbar at 1kHz, V<sub>CC</sub> = 4-5V, R<sub>I</sub> = 1kΩ)  
 Impedance: 1kΩ maximum  
 S/N ratio: >40dB  
 Sound pressure level: 120dB maximum  
 Power supply: 1.5V to 10V DC  
 Recommended voltage: 4-5V (optimum performance)  
 Current drain: <0.5mA

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
QY62S	Ultramin Omni Insert	£2.030	£2.390

## TELEPHONE PICK UP

### Telephone Pick-up Coil

Small pick-up coil in black plastic moulding with rubber suction pad to attach to telephone. Will pick up conversations for recording. Connected to approx. 1m of lead terminated in a 3.5mm jack plug.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LB92A	Phone Coil	£2.540	£2.990

## LOW COST MICROPHONES

### Low-Cost Dynamic Microphone



A budget priced omni-directional dynamic microphone that makes an ideal replacement for the type supplied with portable cassette recorders. It has a black plastic body and it features a remote switch, the contacts of which are terminated in a 2.5mm jack plug. Connection to the microphone itself is by means of a 1.5m lead with 3.5mm plug. A stand bracket is incorporated for desktop use.

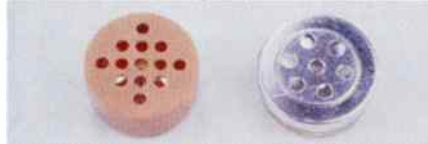
#### Specification

Frequency response: 200Hz to 10kHz  
 Impedance: 250Ω ±30% at 1kHz  
 Sensitivity: -78dB ±3dB at 1kHz  
 Size: 115 x 30mm dia.  
 Weight: 50g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZA31J	Low Cost Dynamic	£3.390	£3.990

### Crystal Microphone Inserts



Two small crystal microphone inserts, one in a plastic box and one with a metal body. Size 25mm diameter x 10mm (11mm with plastic). Both require amplifier input impedance ≥1MΩ.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LB93B	Crystal Mic In Plas	£1.260	£1.490
HY33L	Crystal Mic In Metal	£1.690	£1.990

## MICROPHONES

### LAPEL MICROPHONES

#### Lapel Microphone

A low-cost crystal lapel microphone with lapel clasp and 900mm long lead terminated with a 3.5mm jack plug.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LB68Y	Lapel Mic	£3.390	£3.990

### Vocal Dynamic Microphone



A stylish low impedance unidirectional dynamic microphone with built-in on/off switch and a spherical mesh windshield. The microphone has a rugged black plastic body and is supplied with approximately 3m of cable, terminated in a mono 6.35mm (1/4in.) jack plug. The cable is not detachable.

#### Specification

Frequency response: 80Hz to 12kHz  
 Impedance: 600Ω  
 Sensitivity: -76dB ±3dB at 1kHz  
 Size: 220 x 56mm  
 Weight: 116g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CJ15R	Voc Dynamic Mic Blac	£5.090	£5.990



## General-Purpose Dynamic Microphone



A quality microphone with a body formed from heavy diecast zinc and a light gunmetal finish. The transducer has a 500Ω balanced output, the output of which is made available via an XLR plug at the base of the body. An on/off switch is also built into the body. The microphone is supplied with a holder, and a 5m cable lead terminated in a 6.3mm jack plug.

### Specification

Type:	Uni-directional dynamic
Impedance:	500Ω, balanced
Frequency response:	60Hz to 12kHz
Sensitivity:	-72dB @ 1kHz
Head diameter:	42mm
Length:	175mm (excluding connector)

Retail Unit Price each (inc. VAT).

Order Code	Type 9077	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DW73Q	Magic Mic	£25.520			£29.990

## Magic Mic

An electronic voice effects mic with a host of impressive features including a digital voice changer, 4 drum pads, 4 preset voices, laughter and applause functions. Ideal for use with Karaoke machines, music systems with mic mixing and audio dubbing on camcorders. Bypass switch allows normal microphone use, and an LED indicates when the voice functions are enabled. Requires 4 x 'AAA' cells (JY51F, not supplied) and connects to systems with a 6.5mm jack and a 3.5mm jack with the supplied adaptor. Ideal for professional and home use.



Retail Unit Price each (inc. VAT).

Order Code	Type 9077	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DW73Q	Magic Mic	£25.520			£29.990

## SHURE MICROPHONES

### Shure Dynamic Microphone

Shure



The BG1.0 (PD91Y) dynamic microphone is ideal in a variety of settings and applications. The BG1.0 is the perfect choice to handle almost any miking application, yet at an affordable price. Suitable for instruments as well as vocals, the BG1.0 can be customised for either high or low-impedance operation, making it compatible with almost any microphone input found on a mixer or portable studio. Includes strand adaptor and vinyl carrying case. Cardioid dynamic.

Frequency response: 80 to 12,000 Hz.



The BG2.0 (PD92A) dynamic vocal microphone employs a neodymium magnet, which provides the maximum output and sensitivity giving you the high output needed to cut through crowd noise and background clutter in active environments. Like all BetaGreen vocal microphones, the BG2.0 has a specially shaped frequency response to make vocals sound their best. Includes strand adaptor and deluxe, foam padded, nylon carrying case. cardioid dynamic.

Frequency response: 70 to 13,000 Hz.

Retail Unit Price each (inc. VAT).

Order Code	Type 13398	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
PD91Y	Shure BG1.0 Mic	£39.990			£46.990
PD92A	Shure BG2.0 Mic	£63.820			£74.990

## Quality Professional Dynamic Microphone

Shure



A superb quality dynamic microphone at an affordable price, that delivers a crisp, detailed performance with good power and punch. This ruggedly built microphone is ideally suited for singers who are 'on the way up'. Features a built-in windscreen/pop filter for noise-free use, and supplied with a slip-in swivel adaptor.

### Specification

Type:	Dynamic
Polar pattern:	Cardioid (unidirectional)
Frequency response:	55Hz to 14kHz
Impedance:	150Ω (270Ω actual)
Output level at 1kHz	
open circuit voltage*	-77.5dB (0.13mV)
power level**:	-59.0dB

\* 0dB = 1V/μbar, \*\* 0dB = 1mW/10μbar  
Manufacturer's Code SM48-LC

Retail Unit Price each (inc. VAT).

Order Code	Type 3548	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CY81C 1	Professional Dynamic	£85.090	£71.500	£64.500	£99.990

## KARAOKE MICROPHONES

### 3 Microphone Pack



A pack of microphones supplied in 3 popular colours, red, yellow and blue. These stylish low-impedance, unidirectional, dynamic microphones, have a built-in on/off switch and are all supplied with approximately 3m of cable terminated in a mono 6.35mm (1/4in.) jack plug.

### Specification

Frequency response:	100Hz to 12kHz
Impedance:	600Ω
Sensitivity:	-80dB ±3dB
Size:	180 x 55mm dia.
Weight:	142g (excl. cable)

Retail Unit Price each (inc. VAT).

Order Code	Type 3544	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZF50E 1	3 Mic Pack	£15.310	£15.000	£12.850	£17.990

Apply for a  
Maplin MPS  
Account Today  
01702 554000

## High Quality Professional Dynamic Microphone

Shure



A superb high quality dynamic microphone that delivers a crisp, detailed performance with maximum power and punch. This widely used microphone has a lively, intelligible sound and is ruggedly built for a long reliable life. Ideally suited for rock, R&B, pop and country vocals. Featuring a built-in windscreen/pop filter for noise-free use, the microphone is supplied with a slip-in swivel adaptor.

### Specification

Type:	Dynamic
Polar pattern:	Cardioid (unidirectional)
Frequency response:	50Hz to 15kHz
Impedance:	150Ω (310Ω actual)
Output level at 1kHz	
open circuit voltage*	-75.5dB (0.17mV)
power level**:	-56.0dB

\* 0dB = 1V/μbar, \*\* 0dB = 1mW/10μbar3  
Manufacturer's Code SM58-LC

Retail Unit Price each (inc. VAT).

Order Code	Type 3548	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CY82D 1	HQ Professional Dymm	£110.620	£100.750	£91.650	£129.990

All Customers  
No additional freight  
charges for heavy items

## Professional Quality XLR-Type Connectors: In-Line

Neutrik



Type NC-FX

A range of professional quality XLR plugs and sockets for in-line cable connection. Suitable for audio applications such as microphone cable connectors and audio mixer connections. The range includes 3, 4 and 5-pin plugs and sockets.

Assembling the in-line plugs and sockets does not require a screwdriver. The connectors contain four easy to assemble parts including the chuck type strain relief assembly. The shell of the connector is of rugged die cast Zn/Al/Cu alloy construction with Cu/Sn contacts that comply with solderability specification IEC 68-2-20 and can accommodate wire sizes up to 16AWG (1.29mm). These connectors will also mate with the Neutrik series of chassis mounting plug and socket connectors.



Type NC-MX

Type	Socket	MPS Code
NC3FX	Female 3 pin	CW58N
NC4FX	Female 4 pin	CW59P
NC5FX	Female 5 pin	CW60Q
Type	Plug	MPS Code
NC3MX	Male 3 pin	CW61R
NC4MX	Male 4 pin	CW62S
NC5MX	Male 5 pin	CW63T

Retail Unit Price each (inc. VAT).

Order Code	Type 1051	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CW58N	XLRInLine NC3FX	£2.280	£2.020	£1.950	£2.690
CW59P	XLRInLine NC4FX	£3.220	£2.820	£2.740	£3.790
CW60QXL	XLRInLine NC5FX	£5.090	£4.600	£4.450	£5.990
CW61R	XLRInLine NC3MX	£1.860	£1.680	£1.600	£2.190
CW62S	XLRInLine NC4MX	£2.370	£2.150	£2.020	£2.790
CW63T	XLRInLine NC5MX	£3.650	£3.250	£3.150	£4.290

**All Customers**  
No additional freight charges for heavy items

## Black Finish Gold Contact XLR Type Connectors

Neutrik



Designed for professional, industrial and commercial applications with minimal parts for straightforward assembly (no assembly screws). These connectors have solder bucket connections and the standard self adjusting cable strain relief. With the same specification and features as other Neutrik XLR ranges these connectors feature the non reflective black chromate finish together with the gold plated contacts.

Retail Unit Price each (inc. VAT)

Order Code	Type 1053	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CT43W	Blk XLR 3P Free Plug	£2.110	£1.860	£1.810	£2.490
CT44X	Blk XLR 4P Free Plug	£2.880	£2.610	£2.440	£3.390
CT45Y	Blk XLR 5P Free Plug	£4.670	£4.120	£3.840	£5.490
CT46A	Blk XLR 3P Free Skt	£2.800	£2.350	£2.240	£3.290
CT47B	Blk XLR 4P Free Skt	£3.900	£3.450	£3.240	£4.590
CT48C	Blk XLR 5P Free Skt	£5.520	£5.020	£4.720	£6.490
CT51F	Blk XLR 3P Chas Pkg	£2.110	£1.910	£1.800	£2.490
CT52G	Blk XLR 4P Chas Pkg	£2.710	£2.350	£2.240	£3.190
CT53H	Blk XLR 5P Chas Pkg	£4.240	£3.840	£3.610	£4.990
CT54J	Blk XLR 3P Chas Skt	£2.880	£2.520	£2.360	£3.390
CT55K	Blk XLR 4P Chas Skt	£3.990	£3.540	£3.320	£4.690
CT56L	Blk XLR 5P Chas Skt	£6.260	£5.590	£5.250	£7.390

## Heavy Duty Professional Quality XLR Type Connectors

Neutrik



Extremely rugged 3 pole free plug and socket connectors developed for outdoor use, offering dust and water protection to IP65 when mated. The plug shell is manufactured in stainless steel and the socket has a rubber jacket. Sealing is completed with an internal 'O' ring seal and polyurethane strain relief. The connectors provide minimum IP54 sealing when mated with most other 3 pole XLR's. Electrical specifications are the same as the standard Neutrik NC3MX/NC3FX.

Retail Unit Price each (inc. VAT).

Order Code	Type 1052	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CT50E	HD-XLR 3P Free Plug	£4.840	£4.190	£3.940	£5.690
CT49D	HD-XLR 3P Free Skt	£4.840	£4.170	£3.920	£5.690

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## In-Line Male and Female XLR Adaptors

Switchcraft



These are 3-pin XLR in-line male to male or female to female audio connectors. The pins are prewired: 1 to 1, 2 to 2, 3 to 3.

Retail Unit Price each (inc. VAT).

Order Code	Type 11641	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GU17T	3 Pin F to F Adaptor	£10.950	£10.400	£9.850	£12.670
GU18U	3 Pin M to M Adaptor	£10.500	£9.970	£9.450	£12.340

## Straight 6.35mm Audio Jack Plugs

Switchcraft



The stereo or mono straight audio jack plugs are designed for OEMs and users of commercial jack plugs. They are easily assembled using three pieces; handle, insulator and finger/housing. They have large terminals that accept up to 16AWG wiring (cables up to 6.35mm dia.).

Retail Unit Price each (inc. VAT).

Order Code	Type 11639	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GU13P	Prof Mono Straight	£1.890	£1.800	£1.710	£2.230
GU14O	Prof Stereo Straight	£2.900	£2.750	£2.610	£3.410

## Professional Diecast Mono Jack Plug

Neutrik



A 6.35mm (1/4in.) professional diecast mono jack plug with Neutrik chuck-type strain relief. The item easily disassembles into four separate parts to facilitate soldering.

Retail Unit Price each (inc. VAT).

Order Code	Type 1232	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CC69A	Neutrik Mono Jack	£2.110	£1.400	£1.320	£2.490

† = While Stocks Last

**Screened Plug**



Standard 6.35mm (1/4in.) mono jack plug in a metal barrel with coiled spring cable relief sleeve.

Retail Unit Price each (inc. VAT).

Order Code	Type 1238	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HF87U	Jack Plug Metal	£0.723	£0.470	£0.360	£0.850

**Straight Mono 6.35mm (1/4in.) Jack Lead**



A straight extension lead terminated with a metal bodied 6.35mm (1/4in.) jack plug at each end. The plug bodies have knurled finger grips and coiled spring strain relief sleeves. Length 4.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type 1282	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YZ29G	Straight 1/4 Jack Lead	£3.390	£2.220	£2.040	£3.990

**Coiled Stereo Jack Plug to Socket Lead**

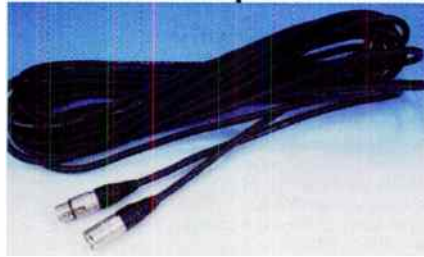


An expandable stereo jack plug to socket lead with a standard 6.35mm stereo jack plug and socket. Ideal for extending the length of a headset for easy listening.

Retail Unit Price each (inc. VAT).

Order Code	Type 1144	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CN78K	Ste Jack Plug/Skt Ld	£1.940	£1.390	£1.110	£2.290

**Balanced Microphone Lead**



A 10m long lead having a male XLR latching connector at one end and a female XLR latching connector at the other. This lead is manufactured from high quality microphone cable, with a heavy duty black outer covering, to withstand the rigours of studio and stage use.

Retail Unit Price each (inc. VAT).

Order Code	Type 3557	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MK58N1	Bal Mic Lead	£16.160	£12.750	£11.500	£18.990

See Section 10, Connectors for our full range of Audio Connectors

**GENERAL ACCESSORIES**

**Microphone Windshields**

Functionally styled, controlled-density foam windshields. The small type fits most slimline dynamic or electret microphones, the larger type fits most ball type microphones. Essential for suppressing explosive breath sounds, squeals and booming effects. Available only in black.



Retail Unit Price each (inc. VAT).

Order Code	Type 3558	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
LB35Q	Mic Windshield Small	£0.842	£0.550	£0.420	£0.990
JP44X	Mic Windshield Large	£1.690	£0.950	£0.775	£1.990

**Universal Microphone Holder**

This microphone holder features spring-loaded jaws to hold any size microphone. 16mm (5/8in.) threaded base.



Retail Unit Price each (inc. VAT).

Order Code	Type 3562	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RK92A	Universal Mic Holder	£2.540	£1.790	£1.250	£2.990

**Microphone Holder 622**

A microphone holder suitable for use with all our dynamic ball microphones including YU33L, YU34M, YU37S, YK69A and YJ75S. 16mm (5/8in.) threaded base.



Retail Unit Price each (inc. VAT).

Order Code	Type 3564	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RK93B	Mic Holder 622	£1.940	£1.400	£0.950	£2.290

**Microphone Holder 614**

A microphone holder suitable for microphone YT34M. 16mm (5/8in.) threaded base.



Retail Unit Price each (inc. VAT).

Order Code	Type 3566	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FV08J	Mic Holder 614	£2.110	£1.600	£1.440	£2.490

**Microphone Holder 600**

Microphone holder suitable for use with unidirectional Electret Condenser microphone YU36P. 16mm (5/8in.) threaded base.

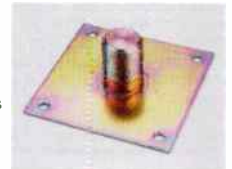


Retail Unit Price each (inc. VAT).

Order Code	Type 3567	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FV09K	Mic Holder 600	£2.540	£2.000	£1.890	£2.990

**Metal Hidden-Mounting Gooseneck Base**

An all-metal base to fit our goosenecks. Threaded stud is welded to a flat base (60 x 60mm) with fixing centres on 48mm centres (4BA (M4) clearance). Cadmium-plated. Panel cut-out: 16mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type 3574	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
WF37S	Bkt For Gsnk Stand	£2.110	£1.710	£1.600	£2.490

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## Gooseneck Base

A surface mounting all-metal base to fit our goosenecks. The base is chrome-plated and 44mm diameter. There are three equidistant fixing holes with centres on a 30mm diameter epicycle. Overall height 21mm. Standard 16mm (5/8in.) thread.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JH58N	Surface Gsnk Flange	£1.690	£1.200	£0.860	£1.990

## Anti-Vibration Microphone Holder



If environmental vibrations are picked up by a microphone, they may be amplified through a PA system (possibly causing damage to the speakers), or can ruin an otherwise-perfect recording. In discos, the vibrations can originate from the music being played. An answer to these ills is an anti-vibration microphone holder. This version consists of a central holder that is suspended from a steel frame by eight elasticated bands. The holder, which will hold standard-sized dynamic microphones in any position, fits to the stand by means of a standard thread.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BS24B	Mic Holder	£5.520	£4.090	£3.500	£5.490

## Microphone Adaptors



Solid metal adaptors which enable microphone holders threaded to 16mm (5/8in.) to be used with accessories having 8mm (5/16in.) or 9.5mm (3/8in.) threads. FV11 has 8mm (5/16in.) outer thread and 6-35mm (1/4in.) inner thread. FV12 has 9.5mm (3/8in.) outer thread and 8mm (5/16in.) inner thread.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FV11M	5/16 Inch Adaptor	£0.842	£0.740	£0.660	£0.990
FV12N	3/8 Inch Adaptor	£0.842	£0.740	£0.660	£0.990

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## MICROPHONE STANDS

### Microphone Stand

Black plastic rectangular microphone stand with non-slip feet which can be used with any microphone holder having a 16mm (5/8in.) threaded base, but must have, in addition, one of the adaptors described above used as a fixing screw. Size: 106 x 66mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FV10L	Microphone Base	£1.690	£1.300	£1.170	£1.990

### Gooseneck Microphone Stands

Brightly chromed gooseneck microphone stands, threaded to accept standard microphone carriers. Base is internally threaded. Available in three lengths, 152mm (6in.), 330mm (13in.) and 508mm (20in.).



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YW72P	Gsneck Mic Stand 6in	£2.110	£1.800	£1.650	£2.490
LH88V	Gsneck Mic Stand 13in	£2.540	£2.100	£1.850	£2.990
WF36P	Gsneck Mic Stand 20in	£3.390	£2.800	£2.500	£3.990

### Cast Base Microphone Stand with Gooseneck

A table-top microphone stand with a chrome-plated gooseneck screwed into a heavy diecast, black textured finish base. Standard thread at top suits stand adaptors supplied with our microphones and most others. Height 353mm when straight. Base diameter 150mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YT40T	Cast Gsnk Mic Stand	£5.940	£5.000	£4.400	£6.990

### Cast Base Microphone Stand

A table-top microphone stand with a chrome plated rod screwed into a heavy diecast, textured finish base. Standard thread at top suits stand adaptors supplied with our microphones and most others. Height 124mm. Base diameter 150mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YW75S	Cast Base Mic Stand	£4.670	£3.550	£2.900	£5.490

## Microphone Stand



A novel and compact floor/desk microphone stand that can be used in many situations. It consists of a heavy cast-iron base and a telescopic arm that terminates in the standard mounting thread. The length of the arm is adjustable and gives, when vertically-orientated, a total height of between 440mm and 690mm. The arm can be placed at any angle between 15 and 90 degrees, and the heavy base prevents the stand from toppling over – even if a heavy microphone is used. Weight: 2.6kg.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	1+
BS20W	Mic Stand	£25.520		£29.990

## Tripod Microphone Stand

A table-top microphone stand. Chrome plated tripod legs hinge outward to give firm base. Standard thread at top suits stand adaptors supplied with our microphones and most others.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
LB96E	Table-Top Mic Stand	£2.540	£1.850	£1.500	£2.990

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**5-Foot Microphone Stand**



A floor-standing microphone holder with five hinged feet which end 250mm from centre of stand providing a very rigid base. Feet fold under for stowing. The stand is heavily chromed and stands 875mm high with second section fully collapsed. Second section extends up to 1575mm, but may be locked to any height with friction grip. Lower section diameter 22mm. Upper section diameter 16mm. Top is threaded to accept standard microphone holders. Boom arm described below is shown fitted to the 5-foot Mic. Stand, but is not supplied with the stand and must be ordered separately if required.

Retail Unit Price each (inc. VAT).

Order Code	Type #923	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XB45Y 3	5-Foot Mic Stand	£14.450	£12.150	£11.200	£16.990

**Boom Arm**

Boom is chromed and has a heavy counterweight. It can be rotated through 360° and can be set to any angle. Total length of arm 845mm. Boom length is adjustable up to 665mm from centre of stand. End of boom arm is threaded to accept standard microphone holders.

Retail Unit Price each (inc. VAT).

Order Code	Type #986	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XB46A 2	Boom Arm	£8.500	£6.450	£6.000	£9.990

**Microphone Stand with Boom**

A free-standing, chrome plated, tripod microphone stand with legs that end 330mm from the centre-line of the stand, to provide a rigid base for a microphone. The main stem is adjustable from 0.81m to 1.59m in height and the sliding part of the stem is clamped with a twist friction grip. The stand is supplied with a 810mm long adjustable boom, which can be rotated through 360° and set to any desired angle, or removed and the stand used on its own. The stand is supplied with a threaded adaptor, to accept standard microphone holders, that is fitted to the end of either the stand or boom, as required.



Retail Unit Price each (inc. VAT).

Order Code	Type #925	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MK55K 5	Mic Stand With Boom	£31.480	£27.300	£25.500	£36.990

**Microphone Stand**

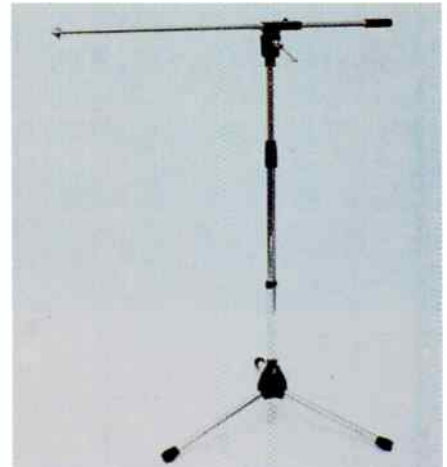
A floor-standing, chrome plated, tripod microphone stand with legs that end 330mm from the centre-line of the stand, to provide a rigid base for a microphone. The main stem is adjustable from 0.81m to 1.59m in height and the sliding part of the stem is clamped with a twist friction grip. The end of the stand is fitted with a threaded adaptor to accept standard microphone holders.



Retail Unit Price each (inc. VAT).

Order Code	Type #926	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MK56L 1	Tripod Mic Stand	£22.970	£21.350	£19.750	£26.990

**Microphone Stand with Boom**



A free-standing microphone stand with three hinged legs which end 320mm from the centre of the stand providing a very rigid base. Legs fold under for storage and transport. The main stem is adjustable between 0.9m and 1.65m in height. The sliding part of the main stem is clamped with a twist friction grip. The stand is supplied with an 83cm adjustable boom, which can be rotated through 360° and set to the required angle. The boom can be removed and the stand used on its own. Both the stand and boom are threaded to accept standard microphone holders. The microphone stand is available in two colours black and chrome.

Retail Unit Price each (inc. VAT).

Order Code	Type #578	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XM49D 5	Blk Microphone Stand	£22.110	£17.850	£16.000	£25.990
XM48C 5	Chm Microphone Stand	£22.110	£17.850	£16.000	£25.990

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## The Decibel (dB)

$$\text{dB} = 10 \log (P2/P1)$$

where P = Power

dB	P1/P2	dB	P1/P2
+100	1.0 x 10 <sup>10</sup>	0.0	1
+90	1.0 x 10 <sup>9</sup>	-0.2	0.955
+80	1.0 x 10 <sup>8</sup>	-0.4	0.912
+70	1.0 x 10 <sup>7</sup>	-0.6	0.871
+60	1.0 x 10 <sup>6</sup>	-0.8	0.832
+50	1.0 x 10 <sup>5</sup>	-1.0	0.794
+40	1.0 x 10 <sup>4</sup>	-1.2	0.759
+30	1000	-1.4	0.724
+25	316	-1.6	0.692
+20	100	-1.8	0.661
+15	31.6	-2.0	0.631
+10	10	-2.5	0.562
+05	3.16	-3.0	0.501
+4.5	2.82	-3.5	0.447
+4.0	2.51	-4.0	0.398
+3.5	2.24	-4.5	0.355
+3.0	1.995	-5.0	0.316
+2.5	1.778	-10	0.100
+2.0	1.585	-15	0.0316
+1.8	1.514	-20	0.0100
+1.6	1.445	-25	0.00316
+1.4	1.38	-30	1.0 x 10 <sup>-3</sup>
+1.2	1.318	-40	1.0 x 10 <sup>-4</sup>
+1.0	1.259	-50	1.0 x 10 <sup>-5</sup>
+0.8	1.202	-60	1.0 x 10 <sup>-6</sup>
+0.6	1.148	-70	1.0 x 10 <sup>-7</sup>
+0.4	1.096	-80	1.0 x 10 <sup>-8</sup>
+0.2	1.047	-90	1.0 x 10 <sup>-9</sup>
0.0	1	-100	1.0 x 10 <sup>-10</sup>



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## Radio Controlled Cars

### Electric Powered

#### Wildcat Mini

Schumacher



Super wheelie all-action fun machine, jumps, spins, wheelies or just race your friends. Monster truck tyres take you anywhere you want to go. Simple construction and very strong. Manufactured in the U.K. Chassis guaranteed against breakage in normal use for 12 months. Features - Very strong, easy to build and maintain, eye catching red and yellow chassis parts, multi coloured decal set, go anywhere performance, great monster Mini looks!

- ★ Standard Kit Speed - 18mph, 30kph
- ★ Maximum Speed - 27mph 43kph (with option parts)
- ★ Length & Width - 14"x11" 355x280mm.
- ★ Power - fast 540 electric motor
- ★ Control - 3 speeds with forward and reverse

Requires 2 Channel Radio (DX00), 8 AA Batteries (JY48), Power Pack (MU48) and Mains Charger (MU47) to complete. Save money by purchasing the complete package at a special deal price, order code (MV08).

Retail Unit Price each (inc. VAT).

Order Code	Type 1804	Price each exc. VAT	inc. VAT each
DX51F 1	Wildcat Mini	£42.540	£49.990
MV08J 1	Wildcat Mini Deal	£107.220	£125.990

#### Fighter Buggy RX

Tamiya



Beginners and experts alike can enjoy Tamiya's latest foray into the off-road R/C world with the Fighter Buggy RX. Boasting an injection molded bathtub chassis, rear wheel drive and rigid axle construction, the low entry price adds extra appeal. Construction has been simplified making this kit suitable for even complete novices. The kit comes complete with a 3-speed controller and 540-type motor. Suspension is handled by spring dampers at the front and rear. The body is manufactured in ABS plastic for strength. Requires 2 Channel radio (MS98), power pack (MT01), mains charger (MS99) and 8 AA batteries (JY48) to complete. Save money by purchasing the complete package at a special deal price (order code, MU99).

Retail Unit Price each (inc. VAT).

Order Code	Type 1765	Price each exc. VAT	inc. VAT each
MS87J 1	Fighter Buggy RX	£46.800	£54.990
MU99H 1	Fighter Deal	£106.370	£124.990

#### Outrage ARR

Kyosho



The Outrage ARR gives top performance at a modest cost, ideal for racing on a budget. The Outrage ARR is supplied 90% factory assembled, with suspension, speed controller, motor and gearbox pre-built, making this the ideal buggy for the beginner. Even the body shell and rear wings are supplied pre-painted. Features include long travel independent suspension with four oil filled dampers which delivers excellent control on the bumpiest of ground. A strong tub type chassis protects your radio control equipment from damage. Requires 2 Channel Radio (DX00), Power Pack (MU48), Mains Charger (MU47) and 8 AA Batteries (JY48) to complete. Save money by buying the complete package at a special deal price (MU90).

Retail Unit Price each (inc. VAT).

Order Code	Type 1767	Price each exc. VAT	inc. VAT each
DP55K 1	Outrage Buggy EP	£76.580	£89.990
MU90X 1	Outrage Deal	£132.750	£155.990

#### Club 10 Cougar & Club 10 Storm Truck

Schumacher



These Club 10 models are the perfect introduction to the sport of electric Off Road racing, the perfect hobby for father and son. Manufactured in the U.K. High specification includes racing tyres, oil filled shocks, coil springs, ball differentials and a FREE set of ball bearings. Features - Alloy chassis, full independent wishbone suspension, heavy duty ball differential, sealed transmission, clear lexan bodyshell, high quality engineering plastics throughout, clear step by step instruction manual. Unbeatable combination of specification, performance and price.

- ★ Standard Kit Speed - 18mph 30kph
  - ★ Maximum Speed - 30mph 48kph (with option parts)
  - ★ Length & Width- Cougar 15"x10" Storm 15"x11.5"
  - ★ Power - fast 540 electric motor
  - ★ Control - 3 speeds with forward and reverse
- Requires 2 Channel Radio (DX00), 8 AA Batteries

(JY48), Power Pack (MU48), Mains Charger (MU47). Save money by purchasing the complete package at a special deal price, order code (MV09) for Cougar, (MV10) for Storm Truck.

Retail Unit Price each (inc. VAT).

Order Code	Type 1834E	Price each exc. VAT	inc. VAT each
DX62S 1	Club 10 Cougar	£76.580	£89.990
MV09K 1	Cougar Deal	£132.750	£155.990
MU49D 1	Club 10 Storm	£85.090	£99.990
MV10L 1	Storm Deal	£139.560	£163.990

#### Mini Monte Carlo

Tamiya



The Mini Monte Carlo is a 1/10 scale replica of the Rover Mini Cooper '94 Monte Carlo. It combines small scale looks with excellent handling characteristics. Front Wheel drive configuration delivers superb and stable cornering. Easy to construct making it suitable for even complete novices the Mini Monte Carlo features independent suspension dampened by coil sprung oil filled dampers. 3 section chassis allows easy maintenance. Requires 2 Channel Radio (MS98), Power Pack (MT01), Mains Charger (MS99) and 8 AA Batteries (JY48) to complete. Save money by buying the complete package at a special deal price (MV06).

Retail Unit Price each (inc. VAT).

Order Code	Type 1760E	Price each exc. VAT	inc. VAT each
MS94C 1	Mini Monte Carlo	£89.350	£104.990
MV06G 1	Mini Deal	£144.670	£169.990

#### Vauxhall Calibra

Tamiya



The Vauxhall Calibra is a 1/10 scale R/C FWD High Performance Racing Car. The kit uses the FWD chassis, manufactured in impact resistant resin. Basic features include front and rear double wishbone suspension, with the ability to adjust the rear wheel camber for toe-in and toe-outs. Front wheel drive, front mounted motor (supplied) delivers excellent cornering and grip. Oil filled coil sprung shock absorbers enhance excellent handling characteristics. Requires 2 Channel Radio (MS98), Power Pack (MT01), Mains Charger (MS99) and 8 AA Batteries (JY48) to complete. Save money by buying the complete package at a special deal price (MV07).

Retail Unit Price each (inc. VAT).

Order Code	Type 1760H	Price each exc. VAT	inc. VAT each
MS96E 1	Opel Vectra	£93.600	£109.990
MV07H 1	Calibra Deal	£148.920	£174.990



## Dirt Thrasher

Tamiya



Off road fans will be delighted with the 1/10 scale R/C 4WD High Performance Off-Road Racer Dirt Thrasher. This latest addition to Tamiya's off road stable offers a simple construction with a high performance at a price that is very competitive. Dirt Thrasher boasts front and rear sealed gearboxes with bevel gear type differentials. Four wheel independent, double wishbone suspension system uses a monocoque type lower arm assembly for weight saving without sacrificing strength.

A powerful 540-type motor and 3 step forward/reverse speed control are supplied with the kit. Requires 2 Channel Radio (MS98), Power Pack (MT01), Mains Charger (MS99) and 8 AA Batteries (JY48) to complete. Save money by buying the complete package at a special deal price (MV00).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS88V 1	Dirt Thrasher	£102.110	£119.990
MV00A 1	Dirt Thrasher Deal	£161.690	£189.990

## Ford Escort Repsol

Tamiya



This 1/10 scale R/C Rally Car is ideal for those who want to combine the performance of a saloon car with the off road capabilities of a buggy. Good ground clearance makes this kit suitable for off road racing. In particular this kit boasts a tough impact resistant chassis. Hyper grip tyres ensure unrivalled grip. Features 4 Wheel Drive traction, grip and performance. 4 Wheel double wishbone independent suspension.

Oil filled coil sprung shock absorbers and handsome 8 spoke wheels. Requires 2 Channel Radio (MS98), Power Pack (MT01), Mains Charger (MS99) and 8 AA Batteries (JY48) to complete. Save money by buying the complete package at a special deal price (MV01).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS88W1	Escort Repsol	£119.140	£139.990
MV01B 1	Escort Deal	£174.450	£204.990

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## BMW 318i STW

Tamiya



The Tamiya BMW 318i STW uses high tech components, just like its full-sized counterparts, to achieve high performances. Designed for fast on-road running this car utilises 4 Wheel drive for high performance cornering. The impact resistant chassis is more than capable of holding its own, even on the toughest of circuits. Compact oil filled coil sprung shock absorbers and independent suspension ensure superb handling. Comes equipped with slick tyres. Speed controller and 540 type stock motor are included as standard. Requires 2 Channel Radio (MS98), Power Pack (MT01), Mains Charger (MS99) and 8 AA Batteries (JY48) to complete. Save money by buying the complete package at a special deal price (MV02).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS90X 1	BMW 318i	£119.140	£139.990
MV02C 1	BMW 318i Deal	£174.450	£204.990

## Martini Alfa Romeo

Tamiya



The Martini Alfa Romeo is based around the race proven TA03F chassis. The TA03 boasts a bathtub chassis with a low center of gravity for stable handling. The belt driven 4WD configuration gives superb cornering capabilities. Suspension is handled by four vertically aligned coil-over oil-filled shock absorbers and the overall setup is further strengthened by a FRP backbone. Being the latest addition to Tamiya's saloon car range this car utilises the most up-to-date technology. Requires 2 Channel Radio (MS98), Power Pack (MT01), Mains Charger (MS99) and 8 AA Batteries (JY48) to complete. Save money by buying the complete package at a special deal price (MV05).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS93B 1	Alfa Romeo	£119.140	£139.990
MV05F 1	Alfa Romeo Deal	£174.450	£204.990

## Audi A4

Tamiya



Utilising a sturdy bathtub frame and front mounted 540 type motor (supplied), the Tamiya Audi A4 exhibits excellent stable handling characteristics, making this car particularly suitable for beginners. The car chassis is easy to construct and maintain due to its design and extra rigidity is provided in the

form of a FRP backbone. Belt drive allows smooth and controlled power transmission between two sealed gearboxes with performance differentials. This car is definitely the new force to be dealt with on the racing circuits these days. Requires 2 Channel Radio (MS98), Power Pack (MT01), Mains Charger (MS99) and 8 AA Batteries (JY48) to complete. Save money by buying the complete package at a special deal price (MV04).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS92A 1	Audi A4	£119.140	£139.990
MV04E 1	Audi A4 Deal	£174.450	£204.990

## Taisan Porsche 911

Tamiya



The Taisan Porsche 911 is a stunning 1/10 scale 4WD High Performance Car. The short wheel base and wider tread of the Porsche 911 GT2 has been recreated to give incredible road holding and handling. Designed for fast on-road running this kit features compact oil filled coil sprung shock absorbers and independent suspension. Supplied with speed controller, 540 type stock motor and decal sheet. Requires 2 Channel Radio (MS98), Power Pack (MT01), Mains Charger (MS99) and 8 AA Batteries (JY48) to complete. Save money by buying the complete package at a special deal price (MV03).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS91Y 1	Porsche 911	£119.140	£139.990
MV03D 1	Porsche Deal	£174.450	£204.990

## Ready to Run Mercedes Wildcat

Schumacher



Impressive Mercedes C Class model a full 18" long. Fully assembled, painted and radio gear installed and tested, simply fit the decals, charge the nicad and you are ready to GO! Price includes 2 Channel Radio Control, nicad and charger. Manufactured in the U.K., chassis is guaranteed against breakage in normal use for 12 months. Features - Ready to Run, Very Strong, Ideal First RC Car, Radio System and nicads can be used in other models later when up grading.

- ★ Standard Kit Speed - 13mph, 22 kph
- ★ Maximum Speed - 20mph, 32kph (with option parts)
- ★ Length & Width - 18"x10" 450x240mm.
- ★ Power - Fast 540 electric motor
- ★ Run Time - 10 to 20 minutes
- ★ Control - 3 speeds with forward and reverse Requires 8 AA Batteries, order code (JY48).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU730 1	RTR Wildcat Merc	£131.900	£154.990

## Engine Powered

### Sandmaster MKII

Kyosho



The Sandmaster MKII is ready to run in next to no time because the engine, gearbox and long travel suspension arms are factory assembled. The tub-type chassis is made from impact resistant glass filled nylon and is very strong and light. The sealed gearbox assembly helps to keep out dust and dirt and contains a geared differential for improved cornering and handling.

The long travel suspension arms are connected to independent oil filled sprung dampers to soak up the bumps without affecting directional control. GT-12 pull start engine delivers quick acceleration and high speeds through turns and over rough ground. A very competitively priced gas powered car. Requires 2 Channel Radio (DX00), Glow Start (GZ96), 8 AA Batteries (JY48) and Quickfire Fuel (MU38) to complete. Fuel not available through mail order.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DP56L	SMaster II Buggy GP	£127.650	£149.990

### Sandmaster ST-2

Kyosho



Kyosho's Sandmaster ST-2 is a 2WD engine powered racing stadium truck. It incorporates elegant body styling and uses high grip rib and pin spike tyres for maximum traction and handling on the roughest tracks. Features include four extra long sprung dampers, front and rear double wishbone suspension, sealed differential gearbox - all bolted to a lightweight, one-piece glass filled nylon chassis.

Sandmaster ST-2 is supplied 90% assembled so you'll be up and running in next to no time. Powered by the GT-12 pull start engine which is factory fitted to the chassis. Requires 2 Channel Radio (DX00), Glow Start (GZ96), 8 AA Batteries (JY48) and Quickfire Fuel (MU38) to complete. Fuel not available through mail order.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT45Y 1	Sandmaster ST	£140.420	£165.000

### Volvo 850 / Audi A4

Kyosho



Both the Volvo 850 and Audi A4 engine powered 2WD touring cars utilise the latest 2WD chassis from Kyosho, the Mantis. This chassis type features shaft driven 2WD, running through sealed and super quiet transmission. A geared differential is included for smooth cornering. Four wheel independent, double wishbone suspension is connected to torsion springs to soak up the bumps. The main chassis is formed from strong and lightweight glass filled nylon. A three speed forward, one speed reverse speed controller is included. The finishing touches are provided by Kyosho's outstanding and highly detailed body shells. The cars are powered by a ballraced GX-12 engine which delivers fantastic speeds. Supplied 90% pre-built. Require 2 Channel Radio (DX00), Glow Start (GZ96), 8 AA Batteries (JY48) and Quickfire Fuel (MU38) to complete. Fuel not available through mail order.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT46A 1	Volvo 850 GP	£153.180	£179.990
MT47B 1	Audi A4 GP	£153.180	£179.990

### Renault Megane / Peugeot 306 Rally Racers

Kyosho



The Renault Megane and Peugeot 306 from Kyosho are designed for use on rough roads. They are the first two cars to utilise the new Mantis FF chassis. FF stands for front wheel drive, and that's what these cars feature to give them superior handling characteristics on bumpy and unprepared tracks. A geared differential is also fitted to aid cornering and improve handling. Power is supplied by Kyosho's latest GX-12 recoil start ballraced engine. Both cars are supplied 90% pre-built with engine installed. Body shells are made from polycarbonate plastic with full sponsor decals included. Scale wheels and rally pattern tyres round off the package. Require 2 Channel Radio (DX00), Glow Start (GZ96), 8 AA Batteries (JY48) and Quickfire Fuel (MU38) to complete. Fuel not available through mail order.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT48C 1	Renault Megane	£161.690	£189.990
MT49D 1	Peugeot 306	£161.690	£189.990

### Porsche 911 GT2 / Harrods McLaren

Kyosho



The Porsche 911 GT2 and the Harrods McLaren offer the best combination of performance and scale good looks that Kyosho is famous for. Kyosho have created a new chassis, combining all the best elements to make one of the finest road-running engine powered 4WDs available today. Supplied in kit form the cars feature a full time belt driven 4WD system coupled to twin geared differentials, a 2mm thick aluminium upper deck for increased structural strength and is supplied complete with a GS-11X pull start engine. Each car uses double wishbone suspension front and rear coupled to friction, sprung shock absorbers for effective damping over bumpy surfaces. A highly detailed polycarbonate body shell is included for each car, complete with detail parts and full sponsor decals. Require 2 Channel Radio (DX00), Glow Start (GZ96), 8 AA Batteries (JY48) and Quickfire Fuel (MU38) to complete. Fuel not available through mail order.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT51F 1	Porsche 911	£170.200	£199.990
MT50E 1	Harrods McLaren	£170.200	£199.990

### Nitro 10 Storm Truck & Nitro 10 Calibra

Schumacher



Incredible high speed power and performance with the sound and smells of the high revving engine give unforgettable excitement and fun. The Nitro 10 comes pre built and requires only the installation of the fuel tank & radio control equipment and finishing of the bodyshell. The Storm has massive monster truck tyres for real off road performance while the Calibra is perfect on smooth surfaces. Quick refuelling pit stops allow the Nitro 10 to run and run. Manufactured in the U.K. Very high specification includes a FREE set of ball bearings. Features - Powerful 12cu 2.0cc Nitro engine, Alloy chassis, full independent wishbone suspension, heavy duty ball differential, sealed transmission, twin pad disc brake system, clear lexan bodyshell, high quality engineering plastics throughout. Unbeatable combination of specification, performance and price.  
 ★ Standard Kit Speed - 35mph 56kph  
 ★ Maximum Speed - 50mph 80kph (with option)



- ★ Maximum Speed - 50mph 80kph (with option parts)
- ★ Length & Width: Calibra 18"x10" Storm 15"x11.5"
- ★ Power - 12cu 2.0cc Internal Combustion engine
- ★ Control - Centrifugal clutch for smooth acceleration, forwards only. Disc brakes.

Features - Powerful 12cu 2.0cc Nitro engine, Alloy chassis, full independent wishbone suspension, heavy duty ball differential, sealed transmission, twin pad disc brake system, clear lexan bodyshell, high quality engineering plastics throughout. Unbeatable combination of specification, performance and price. Require 2 Channel Radio (DX00), 8 AA Batteries (JY48), Glow Start (GZ96) and Fuel (MU38). Fuel not available mail order.

Retail Unit Price each (inc. VAT).

Order Code	Type 18347	Price each exc. VAT	inc. VAT each
DX77J 1	Nitro 10 Storm Truck	£170.200	£199.994
DX64U 1	Nitro 10 Calibra	£170.200	£199.994

## Radio Controlled Helicopters

### Sport 500 Helicopter Kit

MFA



- ★ A truly affordable radio controlled helicopter
- ★ Fine engineering with precision alloy and steel parts
- ★ Uses large 40 or 46 engines
- ★ Superb performance with stable hover
- ★ Unrivalled structural strength
- ★ Simple fixed pitch rotor assembly

The Sport 500 is ideal for beginners and general sport flying, is strong, resilient and lightweight. Fully adjustable engine mounts enable almost any engine to be used in the 40 to 46 size range. Cooling isn't a problem because the injection moulded air ducting provides an excellent engine temperature gradient under full load conditions. Pre-shaped and drilled composite hardwood and balsa-wood rotor and tail blades supplied in matched pairs. A centrifugal clutch provides a method of drive disengagement and features fully replaceable parts with proper pivoting shoes and springs. Unrivalled spares and technical backup service provided. Supplied with full operating and assembly instructions. Requires IC engine, either size 40 (WE42V) or size 46 (WE43W), Glow Plugs (MT94), 6 Channel Radio (DX03), 2 pack AA batteries (AR43), Glow Start (GZ96), Eezeestarter (WE34), V Belt (WE94) and fuel (MU40). Fuel not available mail order.

Retail Unit Price each (inc. VAT).

Order Code	Type 9839	Price each exc. VAT	inc. VAT each
WE92A 1	Sport 500 Helicopter	£127.650	£149.590

### Sport 500 Collective MkII Helicopter

MFA



- ★ A truly affordable radio controlled helicopter
- ★ Fine engineering with precision alloy and steel parts
- ★ Uses large 40 or 46 engines

- ★ **Superb performance with stable hover**
- ★ **Unrivalled structural strength**
- ★ **Simple fixed pitch rotor assembly**

The Sport 500 Collective is similar to the Sport 500, but has the added advantages of collective pitch blade feathering. Ideal for beginners and general sport flying with its strong, resilient and lightweight construction. Fully adjustable engine mounts enable almost any engine to be used in the 40 to 46 size range. Pre-shaped and drilled composite hardwood and balsa wood rotor and tail blades supplied in matched pairs. A centrifugal clutch provides a method of drive disengagement and features fully replaceable parts with proper pivoting shoes and springs. Cooling isn't a problem because the injection moulded air ducting provides an excellent engine temperature gradient under full load conditions. Unrivalled spares and technical backup service provided. Supplied with full operating and assembly instructions. Requires IC engine, either size 40 (WE42V) or size 46 (WE43W), Glow Plugs (MT94), 6 Channel Radio (DX03), 8 AA Batteries (AR43), Glow Start (GZ96), Eezeestarter (WE34), V Belt (WE94) and fuel (MU40). Fuel not available mail order.

Retail Unit Price each (inc. VAT).

Order Code	Type 9839	Price each exc. VAT	inc. VAT each
WE93B 1	Sport500CollectiveII	£204.240	£239.990

### Nexus 30 SS Helicopter

Kyosho



The Nexus is the latest in a long line of excellent helicopter designs from Kyosho. The Nexus exhibits superior balance due to the newly designed engine/clutch set-up. The head assembly has an under-slung flybar and convenient main rotor head button whilst the main frames modular layout gives unparalleled access to the engine. The SR-X style servo frames provide the most direct linkage layout with a minimum flex to give superb agility and precision. This stylish helicopter has been designed with greater ground clearance and integral boom supports to give greater crash resistance when learning, making it suitable for the beginner. Features a sleek and stylish moulded body shell and decal set. Requires Engine (MT73), 6 Channel Radio (DX03), 2 pack AA batteries (AR43), Glow Start (GZ96), Eezeestarter (WE34), V Belt (WE94) and fuel (MU40). Fuel not available mail order.

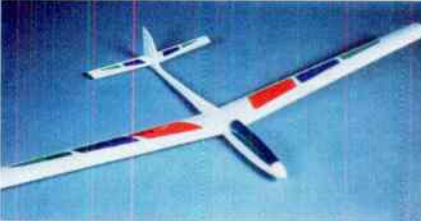
Retail Unit Price each (inc. VAT).

Order Code	Type 18158	Price each exc. VAT	inc. VAT each
MT44X 1	Nexus 30 SS	£195.730	£229.990

## Radio Controlled Gliders

### High Sierra Glider Kit

MFA



- ★ Sleek, strong fibreglass fuselage
- ★ Plug-in pre-veneered wings
- ★ Two channel operation (rudder)
- ★ Injection moulded wing root ribs
- ★ Comprehensive hardware
- ★ Full size plan and illustrated instructions

A well designed 2m glider for performance on slope, thermal or auxiliary power. Two channel radio operation is used to control the elevator and rudder flaps. Supplied with full and comprehensive instructions explaining all the steps up to final assembly. Eeze Launch Bungee also available (WE40T). Requires Futaba Attack 4 radio gear (DX01B). Electric conversion kit available (WE19V) which will also require NiCd Charger (DX19V).

Retail Unit Price each (inc. VAT).

Order Code	Type 9533	Price each exc. VAT	inc. VAT each
WE35C 1	High Sierra	£57.010	£66.990
WE40T 5	Ezeelaunch Size 1	£51.050	£59.990
WE19V 1	HSierra Electro Kit	£59.560	£69.990

### High Sierra Spare Parts

Part	Order Code
High Sierra Fuselage	WE36P
High Sierra Wings	WE37S
High Sierra Canopy	WE38R
High Sierra Power Pod	WE39N

Retail Unit Price each (inc. VAT).

Order Code	Type 11775	Price each exc. VAT	inc. VAT each
WE36P 1	High Sierra Fuselage	£29.770	£34.990
WE37S	High Sierra Wings	£26.030	£30.590
WE38R	High Sierra Canopy	£4.240	£4.990
WE39N	High Sierra Powr Pod	£8.500	£9.990

### Mistral 2500 Glider

MFA



- ★ White fibreglass fuselage pre-drilled for wing dowels
  - ★ Veneered foam wings with ailerons, pre-cut injection moulded root ribs, tailplane bellcrank assembly, tinted moulded canopy with pilot figure
  - ★ Optional spoilers with pre-installed linkage tubes
  - ★ Die-cut ply and balsa parts
  - ★ Full size plan and instructions
- This kit contains all the parts needed to construct the Mistral 2500 Glider, a high performance 2.5m thermal and slope soarer. Features super fast construction design, facilitating transportation and storage. The kit contains all ply and balsa parts pre-cut, veneered foam wings with ailerons fitted, fibreglass fuselage, moulded canopy with pilot figure and full instructions for assembly. Requires a 4 Channel Radio and 8 AA Batteries to complete. Save money by purchasing the complete package at a special deal price, order code (MV20). Optional parts available include an electric conversion kit (DX47B) to power the glider and an Eeze Launch Bungee (DX52G) which allows simple and easy Ni-Cd Charger (DX19V) required for electric conversion.

Retail Unit Price each (inc. VAT).

Order Code	Type 9540	Price each exc. VAT	inc. VAT each
DX46A 1	Mistral 2500 Glider	£110.620	£129.990
MV20W 1	Mistral 2500 Deal	£199.990	£234.990
DX52G 1	Ezeelaunch Size 2	£99.430	£81.590
DX47B 1	Mistral Electro Conv	£121.520	£142.790

## MFA Mistral 2500 Glider Spare Parts

Part	Order Code
MFA Mistral 2500 Spare Fuselage	DX48C
MFA Mistral 2500 Spare Wings	DX49D
MFA Mistral 2500 Spare Canopy & Pilot	DX50E

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX48C †	Mistral Fuselage	£43.390	£50.990
DX49D †	Mistral Wings	£47.730	£56.090
DX50E	Mistral Canopy&Pilot	£6.800	£7.990

## Radio Controlled Aeroplanes

### Banana Super De-Luxe Trainer



The banana is a very stable small trainer, the super deluxe kit is very unusual in the fact that it contains everything that is required to complete the model, except 2 channel radio (DX00) and fuel (MU39), fuel not available mail order. The Banana Super De-Luxe is the ideal first R/C model for the younger enthusiast with many features which make it one of the easiest to build 1/2A trainers around, ensuring successful building and flying.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT43W †	Banana Trainer	£72.330	£84.990

### Skyhawk Aeroplane Kit

MFA



- ★ Precision hand crafted fuselage
- ★ Reinforced high stress areas
- ★ Economic flying with small engines
- ★ Separate moulded cowl
- ★ Pre-veneered foam wings and pre-fitted aileron tubes

Designed for use as a compact size trainer and sport model, the Skyhawk is easy to build and provides a very economical yet stylish aircraft. Kit comes complete with fibreglass fuselage, pre-veneered foam wings, aileron tubes ready fitted, dihedral angle pre-cut, moulded wheel fairings, pre-drilled aluminium undercarriage, fixed sprung noseleg, all necessary balsa and ply parts, full size span and fully comprehensive instructions. Requires 4 Channel Radio (MT68), 8 AA Batteries (AR43), Glow Start (GZ96), IC Engine (WE41), Glow Plugs (MT94), Propeller (LJ13), Spinner (MW06) and fuel (MU39). Fuel not available mail order.

**Specification**

Wing span:	1168mm
Overall length:	990mm
Flying weight:	1.6kg
Engine type:	Size 25 engine
Radio type:	4-Channel

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE25C †	Skyhawk	£63.820	£74.990

## Skyhawk Aeroplane Spare Parts

Parts	Order Code
Skyhawk Fuselage	WE26D
Skyhawk Wings	WE27E
Skyhawk Cowl	WE28F

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE26D †	Skyhawk Fuselage	£29.770	£34.990
WE27E	Skyhawk Wings	£21.260	£24.990
WE28F	Skyhawk Cowl	£3.390	£3.990

## Yamamoto Aeroplane

MFA



- ★ Scale-like intermediate trainer/sport model
- ★ Quick and simple to build
- ★ Ready made wings and fuselage
- ★ Roomy 180mm depth fuselage for easy radio installation/access
- ★ Suitable for rough field operation
- ★ Easy engine access

This low-cost kit contains all the parts you'll need to make your own radio controlled aircraft with pre-moulded fin, window and door cut lines. All that is required is an RC system with servos and engine. Kit contains fibreglass fuselage with pre-moulded fin, window and door cut lines, hardware mounting points and push rod exits, pre-moulded fire wall, 225g fuel tank, engine mount, aluminium main undercarriage, all servo linkages, wood parts, pre-veneered foam wings with ready-installed aileron linkages, full size plan and fully illustrated assembly diagrams. A tough and rugged design, ideal for the beginner or as a training machine. Spares are available separately including fuselage, cowl and wings. Requires 4 Channel Radio (MT68), 8 AA Batteries (AR43), Glow Start (GZ96), IC Engine (WE42), Glow Plugs (MT94), Propeller (LJ24), Spinner (MW06) and fuel (MU39). Fuel not available mail order. **Specification**

Span:	1420mm
Engine:	Size 40 or 46 engine
All up weight:	2.5kg
Radio type:	4-Channel

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE21X †	New Yamamoto	£72.750	£85.490

## New Yamamoto Spare Parts

Parts	Order Code
New Yamamoto Fuselage	WE20W
New Yamamoto Cowl	WE23A
New Yamamoto Wings	WE24B

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE20W †	New Yamamoto Fuselage	£34.710	£40.790
WE23A	New Yamamoto Cowl	£7.800	£9.170
WE24B	New Yamamoto Wings	£25.520	£29.990

## 40 Trainer

Kyosho



The new 40 size trainer is supplied in ARTF (almost-ready-to-fly) format and pre-covered in a highly attractive, multi coloured film finish, so you can be up in the air after just a few evening construction. It's ease of construction and smooth stable flight make this plane ideal for the beginner. Whilst its aerobatic capabilities will allow the user to progress as their skills improve. Length: 1250mm, Wingspan: 1600mm, Total Weight (approx): 2680g, Wing Area: 41.6cm<sup>2</sup>, Airfoil: Clark Y, Dihedral : 3.5°. Requires 4 Channel Radio (MT68), Glow Start (GZ96), Glow Plug (MT94), .40 Engine (MT72) 2 packs AA batteries (AR43), Propeller (LJ24), Spinner (MW06) and Duraglo Fuel (MU39), fuel not available mail order.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT42V †	ARC 40 Trainer	£93.600	£109.990

## Ready Trainer



The Ready was designed to be a quick and easy to build trainer. This kit is predominantly moulded from quality ABS plastic which makes it stronger and more resistant to crash damage than traditional wooden models. Every moulded part is a perfect fit so that absolute beginners can produce a great looking model with excellent flight performance, very easily and within a short period of time. And, unlike wooden models the Ready does not even require finishing or painting. Its superior aerobatic capabilities make this trainer even more rewarding as the pilots skills improve. High wing, .40 size trainer - suit .40 to .53 engine, Wing Span: 157 cm, Length: 109 cm. Requires 4 Channel Radio (MT68), Glow Start (GZ96), Glow Plug (MT94), .40 Engine (MT72) 2 packs AA batteries (AR43), Propeller (LJ24), Spinner (MW06) and Duraglo Fuel (MU39), fuel not available mail order.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT42V †	ARC 40 Trainer	£93.600	£109.990

## Golden Eagle Aeroplane

MFA



- ★ Hand crafted high precision moulded fuselage
- ★ Pre-moulded fabric effect rear fuselage
- ★ Pre-moulded strut mounts
- ★ Pre-formed, pre-drilled wing struts to

**give foolproof wing alignment**  
★ **Pre-veneered foam wings with external aileron fittings**

A high quality kit containing all the parts required to build this beautiful aerobatic biplane. The kit contains fibreglass fuselage, veneered foam wings, pre-cut balsa and ply parts, all servo linkages including horns and hinges, fibreglass tape, engine mount, fuel tank, nuts and bolts, aluminium undercarriage, wing struts, full size plan and comprehensive instructions on assembly. Excludes engine, propeller, radio control gear and finishing materials. Spare parts are available including fuselage, upper and lower wings and a spare strut-set. Requires 4 Channel Radio (MT68), 8 AA Batteries (AR43), Glow Start (GZ96), IC Engine (WE42), Glow Plugs (MT94), Propeller (LJ24), Spinner (MW06) and fuel (MU39). Fuel not available mail order.

**Specification**

Wing span: 1190mm  
Overall length: 995mm  
Engine type: Size 40 or 46 engine  
Radio type: 4-Channel  
Weight: 2-4 to 2-8kg

Retail Unit Price each (inc. VAT).

Order Code	Type #102	Price each exc. VAT 1+	inc. VAT each 1+
WE29G1	Golden Eagle	£85.090	£99.940

**Golden Eagle Spare Parts**

Parts	Order Code
Golden Eagle Fuselage	WE30H
Golden Eagle Upper Wing	WE31J
Golden Eagle Lower Wing	WE32K
Golden Eagle Strut Set	WE33L

Retail Unit Price each (inc. VAT).

Order Code	Type #1771	Price each exc. VAT 1+	inc. VAT each 1+
WE30H1	GoldenEagle Fuselage	£34.710	£40.780
WE31J1	GoldEagle Upper Wing	£32.110	£37.730
WE32K	GoldEagle Lower Wing	£26.030	£30.590
WE33L	GoldenEagle Strutset	£9.540	£11.210

**Radio Controlled Boats**

**Piranha Electric Powered Speedboat**



- ★ **Strong ultra-light simple construction**
- ★ **Super hand-crafted fibreglass hull and deck**
- ★ **Ideal for beginners and experienced enthusiasts**
- ★ **Driver, windscreen and full colour decals included**
- ★ **Adaptable for glow plug engines**

A low-cost and attractive electric driven model powerboat, ideal for beginners and enthusiasts alike. Simple design structure and light hull ensure predictable results. Other features include a propshaft with flexible coupling, whip aerial, brass rudder assembly, rubbing strips and servo linkages. Supplied with full operating instructions. Requires MFA '15' Power Pack (DX45Y), Ni-Cd charger (DX19V), Futaba Attack 2 radio gear (DX00A) and 'AA' batteries (JY48C). Save money by purchasing the complete package at a special deal price, order code (MV24).

**Specification**

Radio type: 2-Channel  
Length: 578mm  
Beam: 235mm

Retail Unit Price each (inc. VAT).

Order Code	Type #538	Price each exc. VAT 1+	inc. VAT each 1+
DX21X1	Piranha Mk II	£34.030	£39.990
MV24B1	Piranha Deal	£123.390	£144.990

**MFA Piranha Mk II Spare Parts**

Part	Order Code
MFA Piranha Spare Windscreen	DX22Y
MFA Piranha Spare Hull	DX23A
MFA Piranha Spare Deck	DX24B
MFA Piranha Spare Propeller	DX25C
MFA Piranha Spare Rubbing Strip	DX26D
MFA Piranha Spare Coupling	DX27E
MFA Piranha Spare Rudder	DX28F
MFA Piranha Spare Superstructure	DX29G

Retail Unit Price each (inc. VAT).

Order Code	Type #732	Price each exc. VAT 1+	inc. VAT each 1+
DX22Y	Piranha Windscreen	£2.020	£3.560
DX23A	Piranha Hull	£16.160	£18.990
DX24B	Piranha Deck	£13.010	£15.290
DX25C	Piranha Propeller	£1.600	£1.890
DX26D	Piranha Rub Strip	£3.020	£3.560
DX27E	Piranha Coupling	£4.240	£4.990
DX28F	Piranha Rudder	£2.970	£3.490
DX29G	Piranha Superstruct	£11.050	£12.990

**Avenger Electric Powered Speedboat**



- ★ **Super hand-crafted fibreglass hull and deck**
- ★ **Simple, quick construction**
- ★ **Suitable for beginners and sport enthusiasts**

A sleek, fast and attractive electric model speedboat ideal for beginners and experienced enthusiasts. With the simple and quick assembly, including a super hand-crafted fibreglass hull and deck, you'll be skimming the waves in no time at all. Also suitable for glow plug engines, yielding more power than a simple electric motor power unit. Supplied with full operating instructions and decals. Requires Marlin Power Pack (WE90X), 12V 3Ah SLA battery (DX35Q), lead-acid charger (DX20W), Futaba Attack 2 radio gear (DX00A) and 'AA' batteries (JY48C). Save money by purchasing the complete package at a special deal price, order code (MV25).

**Specification**

Length: 965mm  
Beam: 292mm  
Motor type: MFA Marlin  
Radio type: 2-Channel

Retail Unit Price each (inc. VAT).

Order Code	Type #539	Price each exc. VAT 1+	inc. VAT each 1+
DX30H1	Avenger Boat	£72.330	£84.990
MV25C1	Avenger Deal	£170.200	£199.990

**MFA Avenger Spare Parts**

Part	Order Code
MFA Avenger Spare Hull	DX31J
MFA Avenger Spare Superstructure	DX32K
MFA Avenger Spare Windscreen	DX33L
MFA Avenger Spare Plywood Set	DX34M

Retail Unit Price each (inc. VAT).

Order Code	Type #791	Price each exc. VAT 1+	inc. VAT each 1+
DX31J1	Avenger Hull	£34.030	£39.990
DX32K	Avenger Superstruct	£23.420	£27.530
DX33L	Avenger Windscreen	£6.060	£7.130
DX34M	Avenger Plywood Set	£13.880	£16.310

**Seahawk Electric Powered Speedboat**



- ★ **Super hand-crafted fibreglass hull and deck**
- ★ **Simple, quick construction**
- ★ **Suitable for beginners and sport enthusiasts**

A sleek, fast and attractive electric model speedboat ideal for beginners and experienced enthusiasts, including outdrive. With the simple and quick assembly, including a super hand-crafted fibreglass hull and deck, you'll be skimming the waves in no time at all. Also suitable for glow plug engines, yielding more power than a simple electric motor power unit. Supplied with full operating instructions and decals. Requires Marlin Power Pack (WE90X), 12V 3Ah SLA battery (DX35Q), lead-acid charger (DX20W), Futaba Attack 2 radio gear (DX00A) and 'AA' batteries (JY48C). Save money by purchasing the complete package at a special deal price, order code (MV26).

**Specification**

Length: 965mm  
Beam: 292mm  
Motor type: MFA Marlin  
Radio type: 2-Channel

Retail Unit Price each (inc. VAT).

Order Code	Type #541	Price each exc. VAT 1+	inc. VAT each 1+
DX36P1	Seahawk Speedboat	£72.330	£84.990
MV26D1	Seahawk Deal	£170.200	£199.990

**MFA Seahawk Spare Parts**

Part	Order Code
MFA Seahawk Spare Hull	DX37S
MFA Seahawk Spare Rubbing Strip	DX38R
MFA Seahawk Spare Deck	DX39N
MFA Seahawk Spare Superstructure	DX40T
MFA Seahawk Spare Windscreen	DX41U
MFA Seahawk Spare Outdrive	DX42V
MFA Seahawk Spare Outdrive Coupling	DX43W
MFA Seahawk Spare Plywood Set	DX44X

Retail Unit Price each (inc. VAT).

Order Code	Type #799	Price each exc. VAT 1+	inc. VAT each 1+
DX37S1	Seahawk Hull	£34.710	£40.790
DX38R	Seahawk Rub Strip	£2.970	£3.490
DX39N	Seahawk Deck	£23.420	£27.530
DX40T	Seahawk Superstruct	£8.500	£9.990
DX41U	Seahawk Windscreen	£6.060	£7.130
DX42V	Seahawk Outdrive	£18.220	£21.410
DX43W	Seahawk Out Coupling	£6.060	£7.130
DX44X	Seahawk Plywood Set	£13.880	£16.310

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## Viper

Kyosho



If you're looking for the perfect introduction to R/C boat modelling, then Kyosho's Viper is the model for you. Made from a factory joined two piece ABS hull that's 640mm long, the Viper comes supplied with a powerful Le Mans 360 ST motor and micro speed controller which are pre-fitted to the hull to reduce build time to a minimum. The top deck is held in place by a screw cap that allows easy access to the interior of the model for battery changes and maintenance. The radio control compartment is made from moulded ABS with a clear top to help protect the radio equipment from water damage. Requires 2 Channel Radio (DX00), 2 Pack AA batteries (AR43), Power Pack (MU48) and Mains Charger (MU47) to complete. Save money by purchasing the complete package at a special deal price, order code (MV27).

Retail Unit Price each (inc. VAT).

Order Code	Type 18156	Price each exc. VAT 1+	inc. VAT each 1+
MTS2G 1	Viper EP	£76.580	£99.990
MV27E 1	Viper Deal	£132.750	£155.990

## Jet Arrow

Kyosho



The Jet Arrows ultra modern styling conveys impressions of power and speed that perfectly reflects the performance of this powerhouse. The hull is made from a two piece ABS moulding that is supplied factory joined. The upper deck is held in place with velcro and allows easy access to the radio compartment for battery changes and maintenance. The moulded inner hull allows easy installation of drive motor, micro switch and all on-board radio control equipment. Requires 2 Channel Radio (DX00), 2 Pack AA batteries (AR43), Power Pack (MU48) and Mains Charger (MU47) to complete. Save money by purchasing the complete package at a special deal price, order code (MV28).

Retail Unit Price each (inc. VAT).

Order Code	Type 18156	Price each exc. VAT 1+	inc. VAT each 1+
MTS3H 1	Jet Arrow	£85.090	£99.990
MV28F 1	Jet Arrow Deal	£141.260	£165.990

## Transmitters / Receivers

### Futaba Attack-II



The Attack-II is the ideal beginner's 2-channel digital proportional radio-control system, and contains everything that is required – radio control

unit, receiver and a pair of servos. The 27MHz AM transmitter has been ergonomically designed to make the control of boats and cars a truly pleasurable experience. Its mini-sticks and offset trim levers are precisely placed – for even the smallest racer. The deep-sunk on/off switch is placed out of harm's way to stop that accidental loss of power. Two bright LEDs advise battery status, and hidden under a front cover are key features such as servo-reversing switches (for both channels) and a crystal holder for two spare crystals. The batteries (8 x 'AA', alkaline recommended, JY48C not included) are also accessed via the front, for ease of changing. Conversion to NiCd operation is a two-minute job using the optional conversion kit. Supplied with the transmitter is the dry cell-powered Futaba R122J mini receiver, which features Futaba's proven surface mount technology and a single custom IC for secure control, low weight and high reliability. An impact-resistant snap-shut case gives superb protection to the receiver and crystal, and the unit has built-in BEC (battery eliminator circuit). Completing the package is a pair of Futaba S3003 servos, a high-performance economy design with Futaba's proven reliability. Both receiver and servo are powered by four 'AA' cells (alkaline recommended, not included), or from the car or boat's battery pack (up to 8.4V DC) if BEC is used. The Attack-II, featuring Futaba's world-renowned technical quality and production techniques, gives you the security that you need to purchase in confidence. It's sensational value, too! The receiver is available separately, so that more than one model can be controlled from one transmitter.

#### Specification

##### Transmitter (FP-T2CR)

Operating system: 2-stick  
 Transmitting frequency: 27MHz  
 Modulation system: AM  
 Power requirement: 12V DC @ 160mA (8 'AA' cells, alkaline recommended, not included)

##### Receiver (FP-R122JE)

Receiving frequency: 27MHz  
 Modulation system: AM  
 Power supply voltage: 4.8 to 8.4V DC (BEC built in)

Current drain (no signal): 30mA (4-8V), 10mA (8.4V)

Dimensions: 47.2 x 33.3 x 17.3mm  
 Weight: 16.6g

##### Servo

Control system: Pulse width control  
 Power supply voltage: 4.8V or 6V DC (shared with receiver)  
 Current drain: 8mA (idle, 6V supply)  
 Output torque: 3.2kg/cm  
 Operating speed: 0.23 sec/60o  
 Dimensions: 40.4 x 19.8 x 36mm  
 Weight: 37.2g

Retail Unit Price each (inc. VAT).

Order Code	Type 9750	Price each exc. VAT 1+	inc. VAT each 1+
DX00A 1	Attack 2	£42.540	£49.990
GZ17T	R122JE/27 Receiver	£19.080	£22.430

## 2 Channel Radio Control Handset

Acorns



The AP-201 R/C handset is an excellent digital proportional 2 channel 27 MHz set ideal for operating R/C Cars and Boats. The pack includes a transmitter, BEC receiver, 2 servos, a BEC switch

harness, and accessories. Recommended specifically for use with all Tamiya cars / buggies, features neutral pre-set levers, Ni-Cd battery charging jack, servo reverse switch. Requires 8 AA batteries, order code (JY48).

Retail Unit Price each (inc. VAT).

Order Code	Type 18152	Price each exc. VAT 1+	inc. VAT each 1+
MS98G 1	2 Ch Radio	£41.690	£48.990

## Skysport 4

Futaba



The Futaba Skysport 4 35 MHz is the ideal entry level four channel system. Simple and easy to use it will take you through the early stages of learning to fly. This handset features Futaba's trainer function. By simply linking two transmitters together using a dedicated trainer lead the instructor can pass control of the model to the student during flight. More importantly, if the student gets into trouble, the instructor simply releases a button on his transmitter and takes over.

Other features include:

- ★ Four Channel Servo Reverse
- ★ Supplied with 3 servos
- ★ Supplied complete with charging socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 18104	Price each exc. VAT 1+	inc. VAT each 1+
MT68Y 1	Skysport 4	£110.620	£129.990

## Futaba Skysport 6A



Designed for use with model aircraft, the Skysport 6A digital proportional radio control system consists of a high-quality and easy-to-use 6-channel Ni-Cd powered transmitter and receiver that work on the 35MHz FM band, a battery charger and four servos. The latter are designed to operate the aileron, elevator, throttle and rudder, and are controlled by the usual twin sticks (with trim levers). The Skysport 6A has dedicated controls for elevator/flap mixing, flap trimming, aileron and elevator dual-rate (D/R) and landing gear activation. The sticks are high-quality types with adjustable tension and length. All servos are reversible, and a number of pre-sets in the battery compartment allow the elevator/flap mixing, aileron/elevator D/R, throttle AST (adjustable servo travel)/ATV (adjustable travel volume) high side, rudder (AST/ATV) low side, aileron differential and flap trimming to be fine-tuned. The battery compartment also conceals switches for activating elevation/flap mixing, flap/aileron mixing and rudder ATV/AST. Other features

include a battery level meter, an integral carrying handle, a hook for optional neck strap and a 'trainer' socket for use with another Skysport 6A transmitter.

**Specification**

**Transmitter (FP-T6VA)**

**System:** 6-channel, 2 x 2-function joysticks, with airplane functions. Servo reverse per channel  
**Frequency:** 35MHz  
**Power supply:** 9.6V @ 180mA, from Ni-Cd battery pack (supplied)

**Receiver (FP-R138DF)**

**System:** 6-channel, six servo outputs  
**Frequency:** 35MHz FM  
**IF:** 10.7MHz, 455kHz (dual conversion)  
**Supply voltage:** 4.8V Ni-Cd battery (supplied, shared with servos)  
**Current drain:** 12mA  
**Dimensions:** 65 x 36 x 21.5mm  
**Weight:** 39g

**Servo (FP-S148)**

**Control system:** Pulse width control  
**Operating angle:** One side 45° min. (including trim)

**Operating voltage:** 4.8V DC from Ni-Cd battery pack (shared with receiver)

**Current drain:** 8mA (at idle)  
**Torque:** 3kg-cm  
**Operating speed:** 0.22 sec/60°  
**Dimensions:** 40.4 x 19.8 x 36mm  
**Weight:** 44.4g

**Ni-Cd battery for receiver/servo (NR-4J)**

**Voltage:** 4.8V DC  
**Capacity:** 500mAh  
**Dimensions:** 51 x 58 x 15mm  
**Weight:** 95g  
**Accessories supplied:** charger, receiver switch, servo horns, flat screwdriver, 2 x crystals

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT	inc. VAT each
DX02C1	Skysport 6A	£217.010	£254.990

**Futaba Skysport 6H**



Futaba's Skysport 6H is an easy-to-use six-channel digital proportional radio control system designed specifically for use with helicopters. Working on the 35MHz FM band, it consists of a control unit/transmitter, receiver, five servos (for pitch, rudder, throttle, elevator and aileron) gyro and control amp for stabilising the helicopter, NiCd batteries for the helicopter electronics and transmitter, and a charger. Apart from the usual twin sticks with trim levers (for rudder, aileron, throttle and elevator) the Skysport 6H has dedicated controls for idle-up, elevator dual-rate (D/R), hovering pitch, landing gear, throttle hold and aileron D/R. The sticks are high-quality types with adjustable tension and length. All servos are reversible, and a number of pre-sets under a flap allow the aileron/elevator D/R, throttle ATV (adjustable travel volume) high/low side, throttle hold, idle-up, revolution and pitch curve to be fine-tuned. The flap also conceals switches for activating throttle hold, idle-up, revolution mixing, rotor direction, and pitch channel (5 or 6, depending on whether landing gear is to be used). Other features include a battery level meter, an integral carrying handle, a hook for optional neck strap and a 'trainer' socket for use with another Skysport 6H transmitter.

**Specification**

**Transmitter (FP-T6VH)**

**System:** 6-channel, 2 x 2-function joysticks, with helicopter functions. Servo reverse per channel  
**Frequency:** 35MHz  
**Power supply:** 9.6V @ 180mA, from NiCd battery pack (supplied)

**Receiver (FP-R138DF)**

**System:** 6-channel, six servo outputs  
**Frequency:** 35MHz FM  
**IF:** 10.7MHz, 455kHz (dual conversion)  
**Supply voltage:** 4.8V NiCd battery (supplied, shared with servos)  
**Current drain:** 12mA  
**Dimensions:** 65 x 36 x 21.5mm  
**Weight:** 39g

**Servo (FP-S148)**

**Control system:** Pulse width control  
**Operating angle:** One side 45o min. (including trim)  
**Operating voltage:** 4.8V DC from NiCd battery pack (shared with receiver)

**Current drain:** 8mA (at idle)  
**Torque:** 3kg/cm  
**Operating speed:** 0.22 sec/60o  
**Dimensions:** 40.4 x 19.8 x 36mm  
**Weight:** 44.4g

**Gyro (FP-G154)**

**Power requirement:** 4.8V DC (shared with receiver/servos)  
**Current drain:** Motor 100mA, amp 20mA (motor can be switched off)

**Dimensions (gyro):** 42 x 34 x 39mm  
**Dimensions (amp):** 27 x 48 x 16mm  
**Weight (combined):** 102g

**NiCd battery for receiver/servo/gyro (NR-4J)**

**Voltage:** 4.8V DC  
**Capacity:** 500mAh  
**Dimensions:** 51 x 58 x 15mm  
**Weight:** 95g  
**Accessories supplied:** charger, receiver switch, servo horns, flat screwdriver, 2 x crystals.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT	inc. VAT each
DX03D1	Skysport 6H	£347.220	£407.990

**Field Force 6X**

Futaba



Designed to suit Sport pilots needing a first computer system, the new Field Force 6 has a staggering array of computing options combined with easy operation. With its large format LCD and touch key data input system, PCM or PPM output and three model memory, the Field Force 6 meets the needs of fixed wing and helicopter pilots alike. Supplied with dual conversion receiver, four servos, and fully nicaded with charger.

**General features:**

- ★ 6 Channels, 35 MHz
- ★ PPM/PCM Selectable
- ★ Aircraft & Helicopter Programming
- ★ Aileron and Elevator Dual Rate
- ★ 3 Model Memory
- ★ Trainer Facility
- ★ Trim Memory
- ★ ATVs on all Channels

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT	inc. VAT each
MT71N1	Field Force 6X	£221.260	£259.990

**Receiver**



A low cost 27MHz AM two channel receiver that's designed for use with Futaba Attack DR, Attack SR and Attack II systems. Incorporates single chip design for improved reliability and a new moulded case with crystal protection, Ideal for use in model cars, boats and simple aircraft. Channels: 2, Current Drain: 32mA, Dimensions: 46x31.5x25mm, Weight: 16.8g.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT	inc. VAT each
MT91Y	27MHz Receiver	£17.010	£19.990

**Receiver**



Futaba

A small, low cost, lightweight receiver that's become the standard for sports models. 40MHz, this receiver is ideal for multi function boats when installed in suitably waterproofed environments. Supplied with fly-lead for battery and sixth servo to keep overall size to a minimum. Channels: 6, Current Drain: 11mA, Dimensions: 50x32x20.5mm, Weight: 30g.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT	inc. VAT each
MT92A1	40MHz Receiver	£34.030	£39.990

**Dual Conversion Receiver**

Futaba



A standard, dual conversion receiver that's supplied in many of Futaba's sport radio systems. Incorporates dual gate Mosfet technology for excellent overall characteristics. 35MHz, ideal for aircraft, helicopter and boat use. Channels: 8, Current Drain: 11mA, Dimensions: 63.5x35x21mm, Weight: 33g.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT	inc. VAT each
MT93B1	35MHz Dual Con. Rec.	£46.800	£54.990



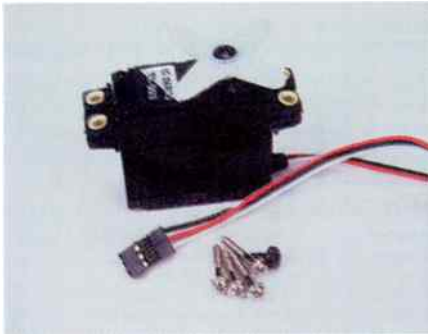
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## Servos

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### Economy Servo



An economy servo complete with motor and electronics. The servo is supplied with actuator horns. The three wire system requires 5V DC on the red wire, 0V on the black wire and a 3V to 5V pulse on the white wire between 0.75 and 2.25ms long every 18ms approx.

#### Specification

Supply voltage:	5V DC
Current drain:	Standby 8mA Max 550mA
Speed:	0.26sec/60°
Torque:	2.3kg/cm
Input pulse:	0.75ms to 2.25ms
Rotation:	170° ±10°
Operating temp:	-35° to +65°
Life (approx.):	1 million operations
Size:	39 x 38 x 19mm
Fixing centres:	47 x 10mm
Spline:	6mm diameter

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FS35Q	Economy Servo	1+ 10+ 25+ £10.400 £8.670 £7.550	1+ £12.230

### Standard and Ball Race Servos

Futaba



A standard replacement servo as supplied with Futaba radio control systems. A superior ball raced version is also available (DX99H).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX09K	S148 Servo	1+ £11.270	1+ £13.250
DX99H	S3001 Servo	1+ £13.880	1+ £16.310

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### Futaba S3302 High Torque Servo



A large, high-torque power servo, designed for activating systems requiring a lot of force, such as aircraft landing gear. Sealed for moisture and dust resistance, and built using metal gears, this heavy-duty servo is built to last. Supplied with horns and mounting kit.

#### Specification

Speed:	60° in 0.19 seconds
Torque:	8kg/cm (111oz./in.)
Dimensions:	59 x 29 x 50mm
Weight:	103g

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
DX08J	S3302 Servo	1+ £47.730	1+ £56.090

### Futaba FP-S143 Micro-Servo



A high-quality micro-servo for small models, suitable for use with the Futaba J, M, SG, PG, 4N and 6N series digital proportional radio control systems. Features include a high level of shock and vibration resistance and neutral position, easy installation, a high torque/size ratio, and a mechanically strong case that is invulnerable to glow fuel. Supplied with horns – a splined shaft here aids neutral adjustment.

#### Specification

Control system:	+pulse width control (1520µs neutral)
Operating angle:	Rotary type, one side 40° or greater (including trim)
Power supply:	4-8V or 6V (shared with receiver)
Power consumption:	6V, 8mA (idle)
Output torque:	1.9kg/cm
Operating speed:	0.18 sec/60°
Dimensions:	28mm x 13mm x 29mm
Weight:	19g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX10L	S3101 Micro Servo	1+ £39.050	1+ £45.890

### Servo Accessory Pack

Futaba



The pack contains 3 servo horns. Each horn has an internal splined socket for neutral adjustment. The circular disc which is usually used on petrol cars, is pierced for use. The other two starfish shaped horns (four and six arms) can be cut to suit your requirements.

The Servo Accessory Pack comes complete with the following mounting kit:

- 4 x Screws
- 4 x Rubber mounts
- 4 x Brass screw guide

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ81C	Servo Acc Pack	1+ £1.020	1+ £1.210

### Single Servo Tray

Futaba



This complete black plastic assembly makes up into a side mounted tray designed to accept a single servo. Supplied complete with servo tray and all necessary screws and fixings.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ82D	Single Servo Tray	1+ £2.070	1+ £2.440

### Triple Servo Tray

Futaba



This complete assembly is the ideal way to simply and neatly mount a triple servo arrangement within a large model (e.g. remote control aircraft). The kit contains a black plastic servo tray with integral mounting position for an on/off switch and all the necessary screws and fixings.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ83E	Triple Servo Tray	1+ £3.020	1+ £3.580



**'Marlin' Marine Power Pack**

MFA



Electric power pack for the Avenger, Seahawk, and Fantome model boats. Note that two are required for the Fantome model. Includes motor and mounting, reversible speed controller, wiring and connectors and universal coupling. Features high torque and is ready to go after simple installation. The motor has twin output shafts (one at each end) and has interference suppression. Powered by MFA Titan 12V battery (WE91Y), not included.

**Specification of motor**  
 Typical maximum speed: 5,100rpm  
 Torque: 253mNm  
 Power consumption: 68W  
 No load current: 0.97A  
 Typical load current: 5A  
 Length of body: 75mm  
 Diameter: 50mm  
 Shaft diameter: 6.35mm  
 Shaft length, each end: 17mm  
 Weight: 543g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE90X 1	Marlin Power Pack	£38.280	£44.990

**Batteries**

**Ni-Cd Battery 7.2V-1400mAh**

Tamiya



**NEW**

A Ni-Cd 7.2V 1400mAh racing pack for use with battery powered models. The Tamiya Ni-Cd 7.2V 1400mAh consists of six 1.2V 1400mAh cells connected in series, and can be recharged over 500 times if used correctly. Incorrect handling will shorten the life of the battery considerably. Specifically recommended for use with all Tamiya model cars and buggies.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT01B	NiCad 7.2V Race Pack	£17.010	£19.990

**Sanyo Cadnica Race Packs**



High-quality sealed 7.2V SCR racing packs with a capacity of 1400mAh or 1700mAh. The 50mm temperature-resistant output leads are terminated in a standard Tamiya type connector.

Charging information  
 1400mAh (DX04E): 140mA for 14 to 16 hours  
 1700mAh (DX05F): 170mA for 14 to 16 hours  
 Dimensions: 45 x 135 x 23mm  
 Weight: 327g (DX04E)  
 337g (DX05F)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX04E	7.2V 1.4Ah Pro Pack	£22.110	£25.990
DX05F	7.2V 1.7Ah Pro Pack	£25.520	£29.990

**Racing Packs**



Top quality, economically priced, nickel-cadmium racing packs available in four sizes/capacities. All packs are shrink-wrapped and supplied with silicone coated, high temperature leads and standard 'Tamiya-style' racing pack plug. The packs must be charged as indicated in the table below, charging time is 14hrs.

Stock Code	Voltage	Number of Cells & Type	Capacity	Weight (Approx)
BN05F	4.8V	4 x 'AA'	700mAh	92g
BN03D	7.2V	6 x 'C'	1300mAh	313g
EM06G	7.2V	6 x 'C'	1800mAh	313g
BN04E	9.6V	8 x 'AA'	700mAh	178g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BN05F	4.8V 0.7Ah Race Pack	£10.060	£11.730
BN03D	7.2V 1.2Ah Race Pack	£13.880	£16.310
EM06G	7.2V 1.7Ah Race Pack	£17.010	£19.990
BN04E	9.6V 0.7Ah Race Pack	£16.670	£19.190

**Chargers**

**Ni-Cd Mains Charger**

A mains charger recommended for charging 1400mAh Ni-Cd battery packs. Input: 230/240v AC 50Hz. Output: DC 150mA into 7.2v packs. Maximum charge time: 14 hours from fully discharged state only.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS99H	Mains Charger	£6.800	£7.990

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**Mains and 12V Rapid Ni-Cd Charger for Radio Control Models**



A fast charger for recharging 7.2V 1200mAh nickel-cadmium radio control battery packs. The charger can be powered from either 240V AC mains or from 12V DC car accessory socket (the charger must not be plugged into 24V DC sockets found on lorries). The charger incorporates a timer that will fast charge a battery pack for 20 minutes and then switch to trickle charge. This prevents battery packs from being overcharged, yet continues to top up the charge at a low enough rate such that it could be left on indefinitely without harming the battery pack. 90% of full charge will be reached during fast charge, the remaining charge to 100% is obtained by safe trickle charging. To use: connect the charger's connector to the battery pack. Plug the charger into the power source (either 240V AC or 12V DC), the red LED will illuminate indicating fast charging. After 20 minutes the LED will extinguish and the charger switches automatically to trickle charge. When charging is completed, disconnect the charger from the power source and detach the battery pack. It is essential to disconnect the charger before recharging another battery pack to allow the timer to reset. Battery packs should not be recharged when they are warm (i.e. straight after removal from a model after racing) nor should battery packs be recharged whilst still fitted in a model. During charging both battery pack and charger will become warm, this is normal. The charger is fitted with a mains lead (and plug), a 12V DC power lead and accessory plug, and a battery connector lead to suit standard battery packs. Overall dimensions: 81 x 67 x 131mm (excluding lead outs). Charging current: 2.4A. Charging voltage: 7.2V.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YP89W 2	Rapid Charger	£30.370	£35.690

## NiCd Pack Multi-Charger and Charging Monitor

MFA



A 12V input, rapid NiCd charger incorporating a trickle charge facility. Can be used to rapid charge 500mAh and 1.2Ah NiCds in packs of 5, 6, 7 or 8 cells (includes rotary switch for 6, 7-2, 8-4 and 9-6V). Rapid charging duration is controlled by a timer which can be set between 5 and 30 minutes. An ammeter shows the charging current. After the time has elapsed, the unit shuts-off and goes into trickle-charge mode. The unit is connected to a 12V battery, e.g. a 12V car battery or sealed lead-acid battery WE91Y. Internal fuse for overload protection. Dimensions: 128 x 97 x 54mm. Unit includes power source connection leads, output leads with racing-pack connection socket, battery connection crocodile clips and instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT 1+	inc. VAT each 1+
DX19V	Ni-Cd Charger	£21.260	£24.990

## Teamline Ni-Cd Race Pack Charger



This automatic charger, designed to charge Ni-Cd Race Packs from a car battery or similar 12V DC source, is probably the most advanced, lightweight and easy to use on the market. Features include:

- ★ High efficiency Delta Peak charging unit
- ★ Protection for switched polarity or short circuit
- ★ Built-in electronic safety timer
- ★ Alligator clip 12V connection
- ★ Switch for 6 (7-2V) or 7 (8-4V) cells
- ★ Compact, lightweight aluminium heatsink case
- ★ Red/green charging indicators

### Specification

Constant charging current:	3-2A
Maximum timer limit:	66 minute auto cut-off
Charging voltage range:	6 to 7 cells (7-2to 8-4V)
Input voltage:	12 to 16V DC (3-2A)
Weight:	185g
Dimensions:	116 x 62 x 22mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT 1+	inc. VAT each 1+
GZ95D	Teamline Charger	£14.740	£17.330

See Connectors Section for our full range of Battery Connectors

## Motors

### Motors



This range of motors offers R/C speed demons everywhere the latest speed technology at affordable prices. Designed to increase the maximum speed of cars and buggies these motors are suitable for use with all electric powered cars.

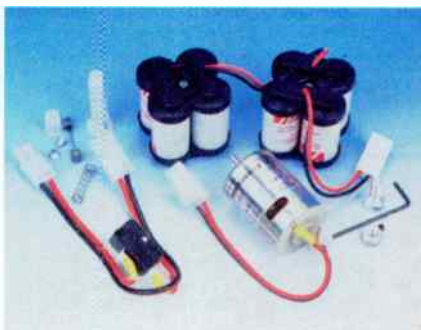
Turns	Wind	Timing	Brush
Terminal Velocity	2	Adj	5x5mm
Atom Smasher	2	Adj	5x5mm
Krypton Krystal	2	Adj	5x5mm
Endoplasma	2	Adj	5x5mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT 1+	inc. VAT each 1+
MT75S	Terminal Velocity	£22.970	£26.990
MT76H	Atom Smasher	£22.970	£26.990
MT77J	Krypton Krystal	£22.970	£26.990
MT78K	Endoplasma	£22.970	£26.990

## Electric-Flight Power Pack 15

MFA



Offers extra power for model aeroplanes utilising 1-2Ah 9-6V NiCd pack. For use with 6 x 6, 7 x 4 or 7 x 6 propellers. Suitable for lightweight models of approximately 127cm wing-span. Includes double 4-8V NiCd battery packs with interconnecting leads, microswitch, fuseholder and motor with propeller fitting kit.

### Specification

Total weight:	600g
Motor weight:	170g
Motor dimensions:	57 x 35-5mm (excluding shaft)
NiCd capacity:	8 cells, 1-4Ah
Average current consumption:	14A
Full power duration:	5 minutes, approximate
Motor includes RF suppression.	To recharge NiCds, use the Multi-Charger and Charging Monitor DX19V.
Recommended charging time is 30 minutes from 12V lead-acid battery.	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT 1+	inc. VAT each 1+
DX45Y †	Power Pack 15	£42.540	£49.960

## MRI Motors

This range of high performance motors are produced by MRI. Available in a range of permutations, these motors are make an ideal more highly powered replacement for any standard RS540-type motor.



Order Code	Description	No of Turns	Winding
GZ18U	MRI 13/65 Motor	13	Double
GZ19V	MRI 15/65 Motor	15	Double
GZ20W	MRI 15/65 Motor	15	Triple
DX14Q	MRI 17/65 Motor	17	Double
GZ21X	MRI 17/65 Motor	17	Triple
DX13P	MRI 19/65 Motor	19	Double
GZ22Y	MRI 19/65 Motor	19	Triple
GZ23A	MRI 21/65 Motor	21	Single
GZ24B	MRI 27/65 Motor	27	Single

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT 1+	inc. VAT each 1+
GZ18U	MRI 13 Trm Dble Wind	£21.690	£25.490
GZ19V	MRI 15 Trm Dble Wind	£21.690	£25.490
GZ20W	MRI 15 Trm Triple Wind	£21.690	£25.490
GZ21X	MRI 17 Trm Triple Wind	£21.690	£25.490
GZ22Y	MRI 19 Trm Triple Wind	£21.690	£25.490
GZ23A	MRI 21 Trm SingleWind	£21.690	£25.490
GZ24B	MRI 27 Trm SingleWind	£21.690	£25.490
DX13P	MRI 19 Trm Dble Wind	£21.690	£25.490
DX14Q †	MRI 17 Trm Dble Wind	£21.690	£25.490

See Transformers, Ferrites, Inductors & Motors Section for our full range of Motors

## Accessories

### Switch Harness

Futaba

Standard ON/OFF switch harness providing a single female keyed socket input switching to two keyed outputs; one female and one male.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT 1+	inc. VAT each 1+
GZ79L	Switch Harness	£4.760	£5.600

### External Charge Socket

Futaba

The easy and convenient solution; this plastic assembly fits neatly into the side of the model plane's fuselage and connects to the charge plug from the switch. Can be easily removed for transfer to other models. Pack contains charge socket, back plate, screws and fitting instructions.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT 1+	inc. VAT each 1+
GZ80B	Charge Jack	£2.590	£3.050

See Stock Code Index For More Price Breaks

## Switch and Charge Jack Mounting Set

Great Planes



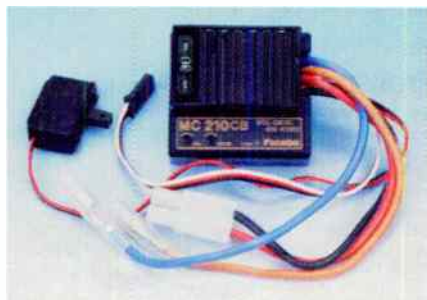
This top quality kit provides a thoroughly professional fuselage mounted charge jack and integral switch assembly with an external switch pushrod for remote switching. Pack includes a face plate with charge jack cover, switch pushrod and slide block, securing bolt for charge plug (charge plug not included), fixing screws and full instructions. Switch not included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
G071N	SwCh Jack Set	£3.460	£4.070

## Speed Controllers

### Futaba P-MC210CB FET Speed Controller with BEC



A compact, high-performance speed controller ideal for use with cars and boats being operated with 7.2V or 8.4V supplies (6 or 7 NiCd cells respectively). Features include thermal protection, forward, brake and reverse. A BEC (battery eliminator circuit) powers the receiver from the racing pack. Adjustments for high point and neutral (screwdriver and instructions supplied). Trailing on-off switch for convenient mounting.

#### Specification

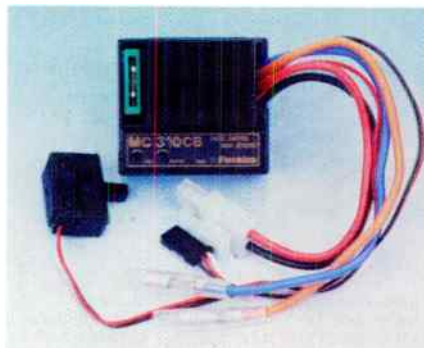
Functions: Forward, electronic brake, reverse  
 Input voltage range: 7.2V to 8.4V  
 Controller output (BEC): 6V at 3A (max.)  
 Thermal overload protection: Current reduction  
 Continuous current: 30A  
 Brief current: 142A  
 Surge current: 568A  
 Internal resistance: 0.0062Ω x 2  
 Dimensions: 45.5 x 41.5 x 26mm (excluding wires and protruding parts)

Weight: 72.5g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX06G	MC210CB FET Control	£47.730	£56.090

### Futaba P-MC310CB High Current FET Speed Controller with BEC



An improved-performance version of the above, with up-rated FETs for working with the higher currents demanded by modified motor.

#### Specification

Functions: Forward, electronic brake, reverse  
 Input voltage range: 7.2V to 8.4V  
 Controller output (BEC): 6V at 1A (max. 7.2V battery); 6V at 0.5A (max. 8.4V battery)

Thermal overload protection: Cuts power to motor, auto-resetting  
 Continuous current: 35A (fuse capacity)  
 Brief current: 180A  
 Surge current: 720A  
 Internal resistance: 0.0037Ω x 2  
 Dimensions: 45.5 x 41.5 x 26mm (excluding wires and protruding parts)

Weight: 78g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX07H	MC310 FET Controller	£60.750	£71.390

## Engines

### HOW TO INTERPRET GLOW-PLUG ENGINE SIZES

The size or capacity of glow-plug engines is usually referenced by a single number, e.g. 25, 40, 46, etc. The number corresponds to the displacement, or capacity, of the motor specified in fractions of an inch. For instance, if the motor is a number '25', then its capacity is 0.25cu.in., or 0.07cc. The sizes of motors described in this catalogue and their equivalent sizes are listed below.

Size No.	cu.in.	cc
12	0.12	3.46
25	0.25	4.07
40	0.40	6.55
46	0.46	7.54

### Glow-Plug Engines

MFA

High quality, high specification engines that give MFA models a sparkling performance. Three sizes are available for model aircraft and helicopter usage. All three feature high silicone content, aluminium piston, chromed aluminium or brass cylinder liner, 'Schneurle' 2-stroke porting for maximum efficiency, forged aluminium conrod with bronze bushes, twin ball-race crankshaft and bushed glow-plug thread. 40 and 46 sizes have identical mounting dimensions. Each set includes high efficiency carburettor, silencer and instructions. Require Glow Plugs (MT94).

#### Specifications

Type	Displacement	Operating Range	Output Power	Weight
BB25AAC	4.07cc/0.25cu.in.	2500-18000rpm	0.8PS @ 17000rpm	200g

BB40AAC	6.47cc/0.40cu.in.	2500-18500rpm	1.4PS @ 17500rpm	340g
BB46AAC	7.45cc/0.46cu.in.	2500-18000rpm	1.6PS @ 17000rpm	345g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE41U	25AAC IC Engine	£49.470	£58.130
WE42V	40AAC IC Engine	£57.860	£67.990
WE43W	46AAC IC Engine	£59.590	£69.990
MT94C	Enya Glow Plug	£33.950	£39.900

### Aircraft Engine

MDS



The new MDS Pro 40 is destined to lead its market class. A smooth throttling, free revving, hassle free powerhouse, perfect for all 40 sized trainers and sports models. Complete with its Ultra-Quiet

silencer the Pro 40 is the perfect choice for the discerning beginner or established enthusiast.

Features:

- ★ 'Aeromix', polished aluminium, twin needled carburettor with separate idle adjust
- ★ Low throat, 'O'-ring carburettor seal
- ★ Split pinch-bolt carb retention
- ★ High precision, one piece, extended length crankshaft
- ★ ABC piston and liner, hand matched
- ★ 8mm front Bearings, for increased crankshaft stability
- ★ 'O'-ring sealed Backplate
- ★ 3 Year Manufacturer Warranty

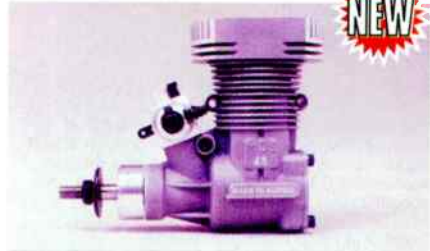
Require Glow Plugs (MT94).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT72P	MDS 40	£42.540	£49.990
MT94C	Enya Glow Plug	£33.950	£39.900

### Helicopter Engines

MDS



In helicopters, where power, performance and throttling are critical, the MDS Pro 38H and 48H come into their own. Probably the most powerful out of the box .30 sized heli engines on the market today. The MDS 38 Heli and the MDS 48 Heli come complete with special helicopter length crankshaft, tophat and extra extended throttle arm. Fitted with helicopter style cooling head. 3 Year Manufacturer Warranty. Require Glow Plugs (MT94).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT73Q	MDS 38 Heli	£51.050	£59.990
MT74R	MDS 48 Heli	£59.560	£69.990
MT94C	Enya Glow Plug	£33.950	£39.900

Call and Collect

At all our stores nationwide.  
See the maps at the front of the catalogue for the nearest one to you.

## Engine Accessories

### Glow Plugs

Enya Glow Plugs are one of the most popular ranges of plugs and originally designed for Enya engines, these are perfect for just about any sport or competition engine.



**NEW**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT94C 1	Enya Glow Plug	£33.950	£39.900

### Glow-Start



This is the essential piece of equipment for a hassle-free day's flying or racing – a quality glow-plug clip with integral 1200mAh Ni-cd battery. Simply charge using the 230V AC mains charger supplied before leaving home, then you have power source free starting in the field or pit-lane!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ96E	Glo Starter	£11.270	£13.250

### Ripmax Glo-Plug Grip-Tite



This ingenious glow plug clip is a must for all modellers using IC engines. Easy connection and release is made possible by thumb-grip release mechanism. Supplied with connecting cable and crocodile clips pre attached.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX12N	Glo-Plug Clip	£3.890	£4.580
MT85G	Glow Plug Clip Long	£4.680	£5.500

### Glow Plug Clip

This is the 'crocodile clip' for glow plugs. The clip has an insulated handle, making it the safe and convenient way to achieve a fast connection to your battery when you want to get your glow plugs started. Supplied with cable securing screws.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX95D	Glow Plug Clip	£0.944	£1.110

### Power Panel

MFA



Supplies all your glow-plug engine starting requirements from a single 12V lead-acid battery, such as WE91Y, or a car battery. Includes a high quality fill-and-drain fuel pump, and an ammeter to show glow-plug operation. There is a high current glow-plug position option for the main control switch, as well as 'normal' for certain 'cold' type plugs. Includes connectors for an electric starter motor and instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX18U	Power Panel	£18.710	£21.990

### Eezee Starter

MFA



This powerful and tough starter is the safe and easy way to start model aeroplanes, helicopters and boats without putting fingers at risk from rogue propellers etc. Simply connect the crocodile clips to a suitable 12V DC power source – such as a car battery – and press the button. An optional Starter V Belt is available (Order Code WE94C) for use when starting model helicopters.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE34M	Eezee Starter	£22.110	£25.990
WE94C	Starter V Belt	£3.390	£3.990

### Fuel Tanks

Great Planes



A quality made semi-opaque nylon fuel tank, designed for use with glow fuel. The fuel tank design incorporates nipples for a vent line and overflow line, a screw on cap for easy assembly and a built-in grabber flange to make the fuel tank easier to remove (using a 1/16in. hooked wire, not included). Each pack contains a fuel tank, screw on cap, stopper, pick up tube, clunk and a straight and 90° nipple. Available in seven sizes.

Order Code

LJ38R  
LJ39N  
LJ40T  
LJ41U  
LJ42V  
LJ43W  
LJ44X

Capacity (cc)

120  
180  
240  
300  
360  
420  
480

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LJ38R	120cc Fuel Tank	£2.590	£3.050
LJ39N	180cc Fuel Tank	£2.850	£3.360
LJ40T	240cc Fuel Tank	£3.020	£3.560
LJ41U	300cc Fuel Tank	£3.200	£3.760
LJ42V	360cc Fuel Tank	£3.290	£3.870
LJ43W	420cc Fuel Tank	£3.460	£4.070
LJ44X	480cc Fuel Tank	£3.460	£4.070

### Precision Fuel Filter

Great Planes

A top quality precision-ground fuel filter. Easy to clean and maintain – simply unscrew the two halves of the filter unit and remove the filter element for inspection and, when it needs cleaning, flush with fuel before reinstalling.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GY86T	Ultra Fuel Filter	£2.590	£3.050

### Pressure Fitting

Great Planes

Improve the performance of your remote control aircraft or helicopter by pressurising the fuel system with this quality, easy to install pressure fitting. Pack contains 6 3/2 bolt-on pressure fitting, retaining nut and washer.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GY87U	Pres. Fitting 6-3/2	£1.120	£1.320

### Fuel Can Fittings Set

Great Planes



The Filling Station™ Fuel Can Fittings Set includes everything needed (except the fuel lines) to convert a conventional fuel bottle into a fully filtered refillable fuel tank. Both the fuel probe and clunk have a removable filter for ease of inspection and cleaning. Pack contains filtered fuel probe with 'O' ring, probe receptacle, filtered clunk/pickup, fuel intake fitting, retaining nuts and full instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GQ72P	Fill Fitting Set	£4.330	£5.090

## Silicone Tube



Silicone tubing is tough, durable and resistant to fuel and chemicals. Ideal for fuel lines, etc. Supplied in approx 1m lengths in two sizes.

Order Code	Internal bore
GZ64U	2.4mm
GZ65V	3.2mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ64U	2.4mm Silicone Tube	£0.774	£0.910
GZ65V	3.2mm Silicone Tube	£0.859	£1.010

## Fuel Tube

This quality silicone Fuel Tube has a telephone cable type coil that extends from 255mm to a maximum of 1.5 metres (approx). Fluorescent orange in colour.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ97F	Orange Fuel Tube	£3.460	£4.070

## Aeroplane Accessories

### Propellers

*Graupner*

A range of high quality, glass fibre reinforced super nylon clockwise propellers. Ideal for most aircraft modelling applications, these propellers should not be used if the velocity of the propeller tip is likely to exceed 180m/s.



The stepped bore on propellers with a smaller pitch than 8 x 4 inch/ 20 x 10cm is 4.8 x 6.1mm and 6.5 x 10mm for all larger blades.

Order Code	Pitch inch	cm (approx)
LJ05F7 x 3	18 x 7.5	
LJ06G	7 x 4	18 x 10
LJ07H	7 x 5	18 x 13
LJ08J	7 x 6	18 x 15
LJ09K	7 x 7	18 x 18
LJ10L	7.5 x 5	19 x 13
LJ11M	8 x 4	20 x 10
LJ12N	8 x 5	20 x 13
LJ13P	8 x 6	20 x 15
LJ14Q	8 x 8	20 x 20
LJ15R	9 x 4	23 x 10
LJ16S	9 x 5	23 x 13
LJ17T	9 x 6	23 x 15
LJ18U	9 x 7	23 x 18
LJ19V	9.5 x 5	24 x 13
LJ20W	10 x 3	25 x 8
LJ21X	10 x 4	25 x 10
LJ22Y	10 x 5	25 x 13
LJ23A	10 x 5.5	25 x 14

LJ24B	10 x 6	25 x 15
LJ25C	10 x 6.5	25 x 17
LJ26D	10 x 7	25 x 18
LJ27E	10.5 x 6	27 x 15

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LJ05F	7x3in. 2Bl Prop	£2.160	£2.540
LJ06G	7x4in. 2Bl Prop	£2.160	£2.540
LJ07H	7x5in. 2Bl Prop	£2.160	£2.540
LJ08J	7x6in. 2Bl Prop	£2.160	£2.540
LJ09K	7x7in. 2Bl Prop	£2.160	£2.540
LJ10L	7.5x5in. 2Bl Prop	£2.160	£2.540
LJ11M	8x4in. 2Bl Prop	£2.420	£2.850
LJ12N	8x5in. 2Bl Prop	£2.420	£2.850
LJ13P	8x6in. 2Bl Prop	£2.420	£2.850
LJ14Q	8x8in. 2Bl Prop	£2.420	£2.850
LJ15R	9x4in. 2Bl Prop	£2.590	£3.050
LJ16S	9x5in. 2Bl Prop	£2.590	£3.050
LJ17T	9x6in. 2Bl Prop	£2.590	£3.050
LJ18U	9x7in. 2Bl Prop	£2.590	£3.050
LJ19V	9.5x5in. 2Bl Prop	£2.590	£3.050
LJ20W	10x3in. 2Bl Prop	£2.970	£3.500
LJ21X	10x4in. 2Bl Prop	£2.970	£3.500
LJ22Y	10x5in. 2Bl Prop	£2.970	£3.500
LJ23A	10x5.5in. 2Bl Prop	£2.970	£3.500
LJ24B	10x6in. 2Bl Prop	£2.970	£3.500
LJ25C	10x6.5in. 2Bl Prop	£2.970	£3.500
LJ26D	10x7in. 2Bl Prop	£2.970	£3.500
LJ27E	10.5x6in. 2Bl Prop	£2.970	£3.500

## Fingertip Prop Balancer

*Great Planes*



This is the quick and easy way to check the balance of your new propeller or spinner back plate. Simply place the propeller or back plate onto the metal shaft and screw the balancer cones into place at either side, then hold the shaft between thumb and finger applying light pressure. The propeller blade or part of the back plate that drops is the heaviest and can be lightly sanded until properly balanced. Pack contains threaded shaft and two balancer cones.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HZ08J	Prop Balancer	£3.460	£4.070

## Spinner

A large spinner/nose cone for radio control aircraft, supplied complete with back plate and fixing screws.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MW06G	MC	£0.851	£1.000

**Business Account Holders**  
**No Delivery Charges for any order**

## Tail Wheel Assembly



This complete tail wheel assembly for model planes can be fixed in any of four different ways - floating, self-centring, steerable or fixed. The assembly includes a metal tailwheel with rubber tyre mounted on a wire that can be cut and bent for the desired fixing, a nylon bracket, aluminium collet, two fixing screws and full instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LJ61R	Tail Wheel Assembly	£1.460	£1.720

## Tail Wheel Bracket



A nylon tail wheel bracket for model aircraft. Held in place by two small screws, the bracket has a 10mm supported collar, suitable for a tail wheel mounted on up to 16g wire.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GY92A	Tailwheel Bracket	£0.859	£1.010

## Aircraft Wheels

Gone are the days of unrealistic stamped foam rubber 'doughnuts' - these lightweight, high quality nylon wheels have perfectly round foam tyres.



This not only makes them look more realistic, it also prevents them from 'wandering' on take-off and landing. The material used for the tyres is a very high density foam rubber which gives good durability and fuel resistance and prevents the flat spots normally associated with foam wheels. Available in six sizes. Supplied in packs of two wheels with tyres.

Order Code	Outside Diameter (mm)
LJ55K	44
LJ56L	51
LJ57M	57
LJ58N	64
LJ59P	70
LJ60Q	76

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LJ55K	44mm Air Wheel Pair	£1.990	£2.340
LJ56L	51mm Air Wheel Pair	£2.070	£2.440
LJ57M	57mm Air Wheel Pair	£2.240	£2.640
LJ58N	64mm Air Wheel Pair	£2.590	£3.050
LJ59P	70mm Air Wheel Pair	£2.850	£3.360
LJ60Q	76mm Air Wheel Pair	£3.110	£3.660

## Brass Wheel Collars

Great Planes



These packs contain quality chrome-plated Brass Wheel Collars, together with retaining nut, in the quantities indicated in the table plus the appropriate size hex wrench.

Order Code	Size		No. in Pack
	mm	inch	
GY93B	1.6	1/16	4
GY94C	1.6	1/16	12
GY95D	2.4	3/32	4
GY96E	2.4	3/32	12
GY97F	3.2	1/8	4
GY98G	3.2	1/8	12
GY99H	4.0	5/32	4
HZ00A	4.0	5/32	12
HZ01B	4.8	3/16	4
HZ02C	4.8	3/16	12

Retail Unit Price each (inc. VAT).

Order Code	Type 11480	Price each exc. VAT 1+	inc. VAT each 1+
GY93B	Whl Collar 1/16 4Pk	£1.120	£1.320
GY94C	Whl Collar 1/16 12Pk	£2.590	£3.050
GY95D	Whl Collar 3/32 4Pk	£1.120	£1.320
GY96E	Whl Collar 3/32 12Pk	£2.590	£3.050
GY97F	Whl Collar 1/8 4Pk	£1.120	£1.320
GY98G	Whl Collar 1/8 12Pk	£2.590	£3.050
GY99H	Whl Collar 5/32 4Pk	£1.120	£1.320
HZ00A	Whl Collar 5/32 12Pk	£2.590	£3.050
HZ01B †	Whl Collar 3/16 4Pk	£1.120	£1.320
HZ02C †	Whl Collar 3/16 12Pk	£2.590	£3.050

## Solarfilm



Solarfilm is a light, tough shrink-on covering material specially developed for flying models. Made from an ultra thin, super light polymer coated film, it is backed with a special low heat-sensitive adhesive to make it safe and easy to apply. Solarfilm is quick and clean, durable, tough and flexible – it won't slacken, crack or become brittle and resists punctures and scratches. Available in 14 colours, sheet size: 685mm x 1270mm (approx 4 feet).

Retail Unit Price each (inc. VAT).

Order Code	Type 11742	Price each exc. VAT 1+	inc. VAT each 1+
DX15R	White Solarfilm	£2.590	£3.050
GZ36P	Black Solarfilm	£2.590	£3.050
GZ37S	Yellow Solarfilm	£2.590	£3.050
GZ38R	Red Solarfilm	£2.590	£3.050
GZ39N	Dark Red Solarfilm	£2.590	£3.050
GZ40T	Silver Solarfilm	£2.590	£3.050
GZ41U	Dark Yel. Solarfilm	£2.590	£3.050
GZ42V	Lux Blue Solarfilm	£2.590	£3.050
GZ43W	Fl Yellow Solarfilm	£3.200	£3.760
GZ44X	Fl Red Solarfilm	£3.200	£3.760
GZ45Y	Fl Pink Solarfilm	£3.200	£3.760
GZ46A	Fl Orange Solarfilm	£3.200	£3.760
GZ47B	Fl Green Solarfilm	£3.200	£3.760
GZ48C	Chrome Solarfilm	£2.590	£3.050

## Solartrim



Customise your aeroplane by cutting your own trim – stripes, checks, sunbursts, insignia, letters etc – from these sheets of ultra-thin, self adhesive opaque colour trim. Very easy to use (just cut out your shape, peel off the backing and press on), this sheet is as thin as a coat of paint and won't bubble. Solartrim is durable, fuel resistant and has an extra strong grip, even on smooth, glossy surfaces. Available in 13 colours, sheet size: 330mm x 910mm (approx 1 yard).

Retail Unit Price each (inc. VAT).

Order Code	Type 11741	Price each exc. VAT 1+	inc. VAT each 1+
GZ49D	White Solartrim	£2.420	£2.850
GZ50E	Black Solartrim	£2.420	£2.850
GZ51F	Yellow Solartrim	£2.420	£2.850
GZ52G	Red Solartrim	£2.420	£2.850
GZ53H	Dark Red Solartrim	£2.420	£2.850
GZ54J	Silver Solartrim	£2.420	£2.850
GZ55K	Dark Yel. Solartrim	£2.420	£2.850
GZ56L	Lux Blue Solartrim	£2.420	£2.850
GZ57M	Fl Yellow Solartrim	£2.590	£3.050
GZ58N	Fl Red Solartrim	£2.590	£3.050
GZ59P	Fl Pink Solartrim	£2.420	£2.850
GZ60Q	Fl Orange Solartrim	£2.590	£3.050
GZ61R	Fl Green Solartrim	£2.590	£3.050

## Smart Cut

Top Flite



This totally unique trimming tool is the perfect way to cut and trim model film (such as the Solarfilm and Solartrim ranges shown in this catalogue) and fabrics. It allows smooth, straight cuts and consistent overlaps in traditionally difficult areas – such as the inside corners where fuselage and tailfin meet, fuselage sides and wing leading and trailing edges – and can quickly and evenly trim edges, curves and inside corners. A detachable spacer plate easily produces a uniform 32mm or 16mm overlap for perfect seams. Uses two standard, replaceable number 11 hobby knife blades (included).

**Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.**

Retail Unit Price each (inc. VAT).

Order Code	Type 11745	Price each exc. VAT 1+	inc. VAT each 1+
GZ62S	Smart Cut	£6.930	£8.150

## Trimline

Model Technics



Trimline is the self-adhesive coach line that makes those essential 'go faster' stripes so fast and easy to apply!

Made from an ultra thin self-coloured opaque high-tech film that's durable, fuel resistant and highly resistant to peeling and creeping. It can be confidently applied around complex shapes or tight curves without lifting or shrinking.

Each handy pack contains approx 2.5 metres of Trimline in 8 different widths – 0.5, 0.8, 1.3, 2.1, 3.3, 5.0, 7.0 and 10.0mm. Available in 10 colours.

Retail Unit Price each (inc. VAT).

Order Code	Type 11744	Price each exc. VAT 1+	inc. VAT each 1+
GZ26D	Black Trimline	£2.590	£3.050
GZ27E	White Trimline	£2.590	£3.050
GZ28F	Red Trimline	£2.590	£3.050
GZ29G	Yellow Trimline	£2.590	£3.050
GZ30H	Royal Blue Trimline	£2.590	£3.050
GZ31J	Sky Blue Trimline	£2.590	£3.050
GZ32K	Green Trimline	£2.590	£3.050
GZ33L	Orange Trimline	£2.590	£3.050
GZ34M	Silver Trimline	£2.590	£3.050
GZ35Q	Gold Trimline	£2.590	£3.050

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## Manufacturers Spares

### Tamiya Spares

The following Tamiya spares are now available. Before ordering please check your operating manual for the type of chassis your car has to avoid purchasing unsuitable spares. Other spares to support the Tamiya products sold in this catalogue are available direct from the manufacturer with a Maplin customer Spares Service Card. This is an exclusive service to Maplin customers purchasing Tamiya model cars.

### Accessories

Order Code	Description	Use	Suitable For
MT02	Tool Set	Multi Purpose Tool Set	All Tamiya Cars
MT03	Rubber bag	Keeps water out of R/C Equipment	All Tamiya Cars
MT13	Wheel Adaptor Set	Allows different wheels to be fitted	
MT04	Snap Pin Set	Keeps body and chassis together	All Tamiya Cars

### Replacement Parts

Order Code	Description	Use	Suitable For
MT06	Manual Speed Controller	Replacement Speed Controller	All Tamiya Cars
MT07	20T/21T Pinion Gear Set	Replacement Pinion Set	All Tamiya Cars
MT11	Rally Gear	Replacement Gear	Rally Cars
MT17	4WD Short Hard Prop	Replacement Prop Shaft	Rally Cars
MT22	Antenna Pipe	Replacement Antenna Pipe	All Tamiya Cars
MT21	Spare Parts	Common Spares	Dirt Thrasher
MT24	540 Motor	Low cost replacement Motor	All Tamiya Cars
MT08	Pair Replacement Tyres	Replacement Tyres	FWD, Rally and TA03 Chassis type eg Audi A4 / Martini Alfa Romeo

### Tyres

Order Code	Description	Use	Suitable For
MT09	Pair Racing Slicks	Racing Slick Tyres	For 4WD / TA03 Chassis type
MT10	Pair Rally Block Tyres	Rally Tyres	Rally, 4WD and TA03 Chassis types
MT12	Radial Tyres	Replacement Tyres	Mini
MT20	2 Pair Radial Tyres	Radial Tyres	Rally / TA03 Chassis type
MT23	Tyres	Most Popular Rally Tyre	Rally Cars

### Performance Improvement Parts

Order Code	Description	Use	Suitable For
MT14	Sport Tuned Motor	More Powerful Motor	All Tamiya Cars
MT15	Speed Tuned Gear Set	Superior Gear Set	Rally Cars
MT18	Aluminium Damper Set	Lightweight Shock absorbers	FWD / Rally Cars
MT19	3 Pair Turned Spring Set	Beef up the Shock Springs	FWD / Rally Cars

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT02C	Tool Set	£1.600	£1.880
MT03D	Rubber Bag Set	£1.690	£1.990
MT13P	Wheel Adaptor Set	£3.820	£4.490
MT04E	Snap Pin Set	£1.260	£1.490
MT06G	Speed Controller	£6.800	£7.990
MT07H	Pinion Gear Set	£3.600	£4.240
MT11M	4WD Replacement Gear	£4.410	£5.190

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT-7T	4WD Short Hard Prop	£3.820	£4.490
MT22Y	Antenna Pipe	£0.391	£0.460
MT21X	A Parts for 58160	£5.940	£6.990
MT24B	540 Motor	£11.900	£13.990
MT08J	Spare Tyres	£4.670	£5.490
MT09K	Slick Tyres	£4.670	£5.490
MT10L	Rally Tyres	£5.520	£6.490

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT12N	Mini Tyres	£3.990	£4.690
MT20W	Radial Tyres	£6.370	£7.490
MT23A	2 Pos Tyres	£5.520	£6.490
MT14Q	Sportuned Motor	£12.750	£14.990
MT15R	Speed Tuned Gear Set	£5.520	£6.490
MT18U	Aluminium Damper Set	£17.010	£19.990
MT19V	3 Pair Spring Sets	£7.820	£9.200

## Kyosho Spares

### Kyosho

The following Kyosho spares and upgrade parts are now available. Before ordering please check your operating manual for the type of chassis your car has to avoid purchasing unsuitable spares. Other spares to support the Kyosho products sold in this catalogue are available direct from the manufacturer with a Maplin customer Spares Service Card. This is an exclusive service to Maplin customers purchasing Kyosho cars. The following chassis are used in the cars available from Maplin. The Sandmaster Buggy uses the Sandmaster chassis, the Sandmaster Stadium truck uses the Sandmaster ST chassis, the Outrage Buggy uses the Outrage chassis, the Volvo 850, Audi A4, Renault Megane and Peugeot 306 all use the Mantis chassis, and the Porsche 911 GT2 plus the Harrods McLaren use the Spider chassis.

MAPLIN CODE	KYOSHO CODE	DESCRIPTION	UOM	CHASSIS SUITABLE FOR*	USE
MV30	74313.15	RECOIL STARTER GT12/15/16/18	Each	SANDMASTER/ST	SPARE PART
MV31	74381-03	RECOIL STARTER ASSEMBLY GS11X	Each	SPIDER GP	SPARE PART
MV32	74381-04	RUBBER SEAL & O RING GS11X	Set	SPIDER GP	SPARE PART
MV33	74521.12	RECOIL STARTER ASSEMBLY GX12	Each	MANTIS GP	SPARE PART
MV34	1179	4MM NYLON WHEEL NUT	PK5	ALL	SPARE PART
MV35	1180	4MM NYLON WHEEL NUT (FLANGED)	PK5	ALL	SPARE PART
MV36	1383	E RING (E3.0)	PK10	SANDMASTER/ST	SPARE PART
MV37	1384	E RING (E4.0)	PK10	SANDMASTER/ST	SPARE PART
MV38	1889	BODY RETAINING PINS	PK5	ALL	SPARE PART
MV39	92301	75CC RED FLIP TOP FUEL TANK	Each	SANDMASTER/ST/SPIDER GP	SPARE PART
MV40	92322	BODY MOUNTS	Set	ALL SPIDER	SPARE PART
MV41	92331	4.5MM BALL END	PK16	MANTIS EP	SPARE PART
MV42	92387	DRIVE SHAFT	Pair	ALL SPIDER/ALL MANTIS	SPARE PART
MV43	92418	SCREW SHAFT	PK4	ALL SPIDER/ALL MANTIS	SPARE PART
MV44	92441	TYRE SLICK TYPE	Pair	ALL SPIDER	SPARE PART
MV45	92445	WHEEL MESH TYPE (WHITE)	Pair	ALL SPIDER	SPARE PART
MV46	92561WK	WHEEL 5 SPOKE/WHITE	Pair	ALL SPIDER	SPARE PART
MV47	92611	75CC BLUE FLIP TOP FUEL TANK	Each	MANTIS GP	SPARE PART
MV48	92672	WHEEL 5 SPOKE TYPE/WHT	Pair	ALL MANTIS	SPARE PART
MV49	92681H	TYRE SLICK TYPE/HARD	Pair	ALL SPIDER/ALL MANTIS	SPARE PART
MV50	92681S	TYRE SLICK TYPE/SOFT	Pair	ALL SPIDER/ALL MANTIS	SPARE PART
MV51	92685	TYRE RALLY TYPE	Pair	ALL SPIDER/ALL MANTIS	SPARE PART
MV52	96401	CLUTCH BELL (13T)	Each	SANDMASTER ST	SPARE PART
MV53	AB014	PILOT SHAFT FOR OS10/GS11X	Each	SPIDER GP	SPARE PART
MV54	AB015	CLUTCH SHOE 10/11 SIZE ENG.	Pair	SPIDER GP	SPARE PART
MV55	AB016	ALUMINIUM CLUTCH BELL (14T)	Each	SANDMASTER	SPARE PART
MV56	FD29	FUEL TUBE 1:10 GP CAR/BOAT	Set	ALL GP	SPARE PART
MV57	LD70	CLUTCH ROLLER BEARING	Each	SANDMASTER/OUTRAGE	SPARE PART
MV58	LZ11	WHEEL SHAFT (R)	Set	SANDMASTER/OUTRAGE	SPARE PART
MV59	MI003	SUSPENSION ARM PARTS	Set	ALL MANTIS	SPARE PART
MV60	MI005	BODY MOUNT POSTS	Set	ALL MANTIS	SPARE PART
MV61	MI009	NYLON GEARS	Set	ALL MANTIS	SPARE PART
MV62	MI010	DIFF CASE PARTS	Set	ALL MANTIS	SPARE PART
MV63	MI024	BRAKE PARTS	Set	MANTIS GP	SPARE PART
MV64	MI025	CLUTCH BELL (14T)	Each	MANTIS GP	SPARE PART
MV65	OT006	DRIVE SHAFT	Pair	SANDMASTER/OUTRAGE	SPARE PART
MV66	OT055	HUB(FR)RS200/2SPD	Set	ALL SPIDER	SPARE PART
MV67	RM11	AIR FILTER 10 & 11 SIZE ENGINE	Each	ALL GP	SPARE PART
MV68	SD53	STEEL CLUTCH BELL (12T)	Each	SPIDER GP	SPARE PART
MV69	SM004	FRONT BULKHEAD	Each	SANDMASTER/OUTRAGE	SPARE PART
MV70	SM012	BRAKE LEVER/LINING	Set	SANDMASTER	SPARE PART
MV71	SM015	MAIN GEAR	Each	SANDMASTER	SPARE PART
MV72	SM026KP	WHEELS (PINK)	Set	SANDMASTER/OUTRAGE	SPARE PART
MV73	SM027	(A) DAMPER STAYS & DECK PARTS	Set	SANDMASTER/OUTRAGE	SPARE PART
MV74	SM028	NYLON GEARS (INTERNAL)	Set	SANDMASTER	SPARE PART
MV75	SP001	SUSPENSION ARMS	Set	ALL SPIDER	SPARE PART
MV76	SP050	MAIN GEAR/BRAKE	Set	SPIDER GP	SPARE PART
MV77	SP053	DRIVE BELT (FR)	Each	ALL SPIDER	SPARE PART
MV78	TM17	DRIVE BELT	Each	SPIDER GP	SPARE PART
MV79	UM01	DRIVE GEARS	Set	OUTRAGE	SPARE PART
MV80	UM13	SUSPENSION ARMS	Set	OUTRAGE/SANDMASTER	SPARE PART
MV81	UM49	UPRIGHTS (F&R)	Set	SANDMASTER	SPARE PART
MV82	UM83	WHEEL(YELLOW)	Set	SANDMASTER ST	SPARE PART
MV83	W0136	5.8 DIA HARD BALL INT DIA 3.0	PK10	ALL MANTIS	SPARE PART
MV84	W5074	FR TYRE PIN SPIKE/HARD 2WD	Pair	SANDMASTER/OUTRAGE	SPARE PART
MV85	W5078	TYRE LOW PROFILE MULTI SPIKE	Pair	SANDMASTER/OUTRAGE	SPARE PART
MV86	W5143Y	SPORTS OIL DAMPER (L) YELLOW	Pair	SANDMASTER ST	SPARE PART
MV87	W5691	TYRE FRONT/RIBBED	Pair	SANDMASTER ST	SPARE PART
MV88	W5692	TYRE (R)MICRO BLOCK	Pair	SANDMASTER ST	SPARE PART
MV89	39343	TUNED EXHAUST PIPE .10-.15 Size	Each	SPIDER GP	PERFORMANCE IMPROVEMENT
MV90	1295KP	5.8 DIA BALL END FL.PINK	PK10	ALL	CUSTOMISING
MV91	1295KY	5.8 DIA BALL END FL.YELLOW	PK10	ALL	CUSTOMISING
MV92	1706	ANTENNA PIPE FLUORESCENT PINK	PK6	ALL	CUSTOMISING
MV93	1707	ANTENNA PIPE FLUORESCENT YELLOW	PK6	ALL	CUSTOMISING
MV94	1790	FUEL TUBE (COLOURED)10-21 SIZE	Set	ALL GP	CUSTOMISING
MV95	39418	MANIFOLD FOR GP SPIDER	Each	SPIDER GP	PERFORMANCE IMPROVEMENT
MV96	39431	2 SPEED TRANSMISSION GP SPIDER	Set	SPIDER GP	PERFORMANCE IMPROVEMENT
MV97	39502	Q.RELEASE BOD MNT EP/GP SPIDER	Set	SPIDER GP	EASY REMOVAL OF BODY SHELL
MV98	92407KP	EXHAUST JOINER (GP10) FL.PINK	Pair	SPIDER GP	CUSTOMISING
MV99	92407KY	EXHAUST JOINER (GP10) FL.YELL	Pair	SPIDER GP	CUSTOMISING
MW00	92442	TYRE HIGH GRIP SLICK TYPE	Pair	ALL SPIDER/ALL MANTIS	IMPROVED GRIP
MW01	92491	DAMPER SPRING ON ROAD TYPE	3PR	ALL SPIDER/ALL MANTIS	IMPROVED HANDLING
MW02	SPW005	ADJ RODS EP&GP SPIDER & MANTIS	Set	ALL SPIDER/ALL MANTIS	ADJUST REAR CAMBER
MW03	SPW051	METAL BRAKE DISK GP SPIDER/S10	Each	SPIDER GP	IMPROVED BRAKING
MW04	W5097	ULTIMATE OIL DAMPER SHORT	Pair	ALL SPIDER/ALL MANTIS	IMPROVED HANDLING
MW05	W5151	TOURING OIL DAMPER SUPER SHORT	Pair	ALL SPIDER/ALL MANTIS	IMPROVED HANDLING



## Schumacher Spares

Schumacher

The following Schumacher spares and upgrade parts are now available. Before ordering please check your operating manual for the reference of the part you require to avoid purchasing unsuitable spares. Other spares to support the Schumacher products sold in this catalogue are available direct from the manufacturer with a Maplin customer Spares Service Card. This is an exclusive service to Maplin customers purchasing Schumacher cars.

Order Code	Ref.	Description	Suitable For	Comments
DY18	U1591A	Front Wheel	Wildcat Mini	Use with Truck tyres.
MW34	U1592B	Rear Wheels	Wildcat Mini	Use with Truck tyres.
DY98	U1725F	3 Spoke Front Wheels	Club 10/ Nitro 10	Fits touring cars. Use with DY45 Front Tyres.
DY21	U1759N	Front Wheels 3 Spoke	Wildcat Touring Cars	For Ready to Run Merc. Fit RT3 tyres (DY45/DY48)
MW11	U224G	White - Front Wheels	Club 10	Fits Club 10 Cougar Buggy. Fit MW10 front tyres.
MW12	U225H	White - Rear Wheels	Club 10	Fits Club 10 Cougar Buggy. Fit MW15 rear tyres.
MW15	U6518M	Mini Spike - Rear Tyres	Club 10	Fits Club 10 Cougar Buggy. Off Road rear tyres.
MW27	U6508C	Mini Spike - Truck Tyres	Club 10/ Nitro 10/Wildcat Mini	Fits Storm trucks and Wildcat Mini.
MW10	T689G	2WD Stud - Slim Front	Club 10	Fits Club 10 Cougar Buggy. Off Road front tyres.
DY45	U6585B	"RT3 "Control" - Front Tyre"	Nitro 10/ Wildcat	Low profile touring car tyres.
DY48	U6586C	"RT3 "Control" - Rear Tyre"	Nitro 10/ Wildcat	Low profile touring car tyres.
DZ57	U229L	"95T "Whisper" Spur Gear - 48 D.P."	Club 10/ Nitro10	Use with 25 pinion on Nitro 10. Also fits Club 10.
DY93	U1194U	"98T "Whisper" Spur Gear - 48 D.P."	Club 10/ Nitro10	Use with 22 pinion on Nitro 10. Also fits Club 10.
DZ58	U230M	"92T "Whisper" Spur Gear - 48 D.P."	Club 10/ Nitro10	Use with 28 pinion on Nitro 10. Also fits Club 10.
DY97	U1061P	Front Bumper - 2WD Touring	Club 10/ Nitro10	Fits Nitro 10 touring cars.
MW16	U1133J	Rear Wishbone Med W/B 2WD (pr)	Club 10/ Nitro10	Fits Club 10 and Nitro 10 Cougar & Storm.
MW17	U1202B	Piston Rod - Long Shock (pr)	Club 10/ Nitro10	Fits all Club 10 and Nitro 10.
MW18	U1258F	Piston Rod; Short Shock (pr)	Club 10/ Nitro10	Fits all Club 10 and Nitro 10.
MW19	U1272T	Vari Shock Body - Short (pr)	Club 10/ Nitro10	Fits all Club 10 and Nitro 10.
MW20	U1274V	Vari Shock Body - Long (pr)	Club 10/ Nitro10	Fits all Club 10 and Nitro 10.
DZ43	U1638V	Suspension Links - Moulded - (4 prs)	Club 10/ Nitro10	Fits Club 10 and Nitro 10 Cougar & Storm.
MW21	U1310F	Shock Mouldings-Vari Click Piston (pr)	Club 10/ Nitro10	Fits all Club 10 and Nitro 10.
MW25	U322E	Lower Front Susp Plate - C10/N10	Club 10/ Nitro10	Fits Club 10 & Nitro 10
DY77	U343Z	Front Shock Mounts F/G - C10/N10	Club 10/ Nitro10	Fits Club 10 & Nitro 10
DY85	U774V	Fr.Wishbone;Hub&StrgBlocks-C10/N10	Club 10/ Nitro10	Fits Club 10 Cougar/Storm & Nitro 10 Storm
DY88	U835E	Vari Shock Seal Pack (pr)	Club 10/ Nitro10	"Repairs leaky shocks, also check rod for damage."
MW23	U1551M	"Speed Pack - "E" Clips 1/8" (pk8)"	Club 10/ Nitro10	Fits all Club 10 and Nitro 10.
MW24	U1692Y	Drive Shafts & U.J.s (pr)	Club 10/ Nitro10	Fits all Club 10 and Nitro 10.
DY95	U1704K	"Ball Grippa" Sockets (pk 8)"	Club 10/ Nitro10	Fits all Club 10 and Nitro 10.
DZ48	U396A	"Fr & Rr -Yellow -Truck Wheels 2.2""	Club 10/ Nitro10	Fit Club 10 and Nitro 10 Storm trucks.
MW26	U730D	"Thrust Bearing 1/8" x 5/16""	Club 10/ Nitro10	Fits Club 10 & Nitro 10
MW28	U786H	Body Posts - Fully adj. (pk 4)	Club10/ Nitro 10/Wildcat	Fits all models.
MW29	G207D*	"Formula 27" - Stock Motor 27single"	Club 10/ Wildcat	"High performance electric motor, ideal replacement for kit motor."
DZ64	U1118U	Competition Glow Plug	Nitro 10	"Glow Plugs do fail, allways carry a spare."
DZ75	U1645C	Pullstart Assembly - Leo 12	Nitro 10	Easily replaced assembly. Don't forget to thread lock screws.
DZ62	U1676I	Air Filter - Leo 12	Nitro 10	Air filter prevents engine damage. Never run without it !
DY01	U1753H	Mouldings Set	Wildcat	Most moulded parts except chassis.
MW35	U1755J	Fixings Set	Wildcat	"Screws, nuts and bolts."
MW31	U1628L	Assembled Differential - Nitro 10	Nitro 10	Replacement differential. Do not spin one rear wheel excessively.
DZ29	U1829F	Assembled Differential - Club 10	Club 10	Fits all Club 10 models.

## Schumacher Performance Improvement Parts

Order Code	Ref.	Description	Suitable For	Comments
MW22	U1351U	Short Spring Tuning Set-Colour (5prs)	Club 10/ Nitro 10	Tune the handling of the car to perfection
DZ14	U1353W	Long Spring Tuning Set-Colour (5prs)	Club 10/ Nitro 10	Tune the handling of the car to perfection
DZ79	U1410B	Ball Bearing - 10 x 15 x 4 (pr)	Club 10/ Nitro 10	Free running for extra speed & run time
DZ80	U1411C	Ball Bearing - 4 x 8 x 3 Non Fl. (pr)	Club 10/ Nitro 10	Free running for extra speed & run time
DY39	U724X	Ball Bearings 8x16x5 (pk4)	Club 10/Nitro 10/ Wildcat	Free running for extra speed & run time
DY00	U1744Y	Ballbearing Set - Wildcat	Wildcat	Free running for extra speed & run time
DZ42	U387R	Bumper - Racing Truck	Club 10/ Nitro 10	Convert your touring car with truck bumper and wheels.
DY80	U613J	Spring Stop & Spacer Mouldings (pr)	Club 10/ Nitro 10	Adjust the ride height for different surfaces.
DY38	U1778G	32T Hi Speed Pinion - 48dp	Club 10/ Wildcat	Larger pinions give electric cars more speed but less run time.
DY27	U1761P	Drive Gear Mouldings	Wildcat	Set of gears. Don't slam from full forward to full reverse.
DZ09	U233P	19T Pinion - 48 D.P.	Club 10	Smaller pinion gives longer run time and less top speed.
MW13	U234Q	22T Pinion - 48 D.P.	Club 10	Smaller pinion gives longer run time and more acceleration
DZ10	U235R	25T Pinion - 48 D.P.	Club 10	Larger pinion gives more top speed and less run time.
MW14	U236S	28T Pinion - 48 D.P.	Club 10	Larger pinion gives more top speed and less run time.
MW33	U1838O	Turnbuckle Set - Nitro 10	Nitro 10	Adjustable suspension links to fine tune suspension.
MW32	U1655M	Cool Heatsink Head - Leo 12	Nitro 10	Engine runs cooler and idles better.
DZ50	U1665X	2 speed Assy. Nitro 10 Off Road	Nitro 10	More acceleration and more top speed
DZ51	U1666Y	2 speed Assy. Nitro 10 Touring	Nitro 10	More acceleration and more top speed
DZ52	U1667Z	22T Pinion Clutch Bell - Nitro10	Nitro 10	Use with 98 spur gear for more acceleration.
DZ54	U1669B	28T Pinion Clutch Bell - Nitro10	Nitro 10	Use with 92 spur gear for more top speed.

The following prices relate to the Kyosho Spares Table on page 616

Retail Unit Price each (inc. VAT).

Order Code	Type 10216	Price each exc. VAT 1+	inc. VAT each 1+
MV30H	Recoil Starter	£10.030	£11.790
MV31J	Recoil Start Assemb	£6.800	£7.990
MV32K	Rubber Seal - O Ring	£1.520	£1.790
MV33L	Recoil Start Assemb	£11.900	£13.990
MV34M	Amn Nylon Wheel Nut	£2.370	£2.790
MV35Q	Amn Nyl Nut Flanged	£2.370	£2.790
MV36P	E Ring E3.0	£1.910	£2.250
MV37S	E Ring E4.0	£1.910	£2.250
MV38R	Body Retaining Pins	£1.060	£1.250
MV39N	75CC Red Fuel Tank	£7.020	£8.250
MV40T	Body Mounts	£6.800	£7.990
MV41U	4.5mm Ball End	£2.970	£3.500
MV42V	Drive Shaft	£5.530	£6.500
MV43W	Screw Shaft	£2.120	£2.500
MV44X	Slick Tyres	£6.380	£7.500
MV45Y	Wheel Mesh Type	£4.240	£4.990
MV46A	Wheel 5 spoka	£4.240	£4.990
MV47B	75CC Blue Fuel Tank	£7.020	£8.250
MV48C	Wheel 5 Spoka	£4.240	£4.990
MV49D	Slick Tyres	£5.090	£5.990
MV50E	Slick Tyres	£5.090	£5.990
MV51F	Rally Tyres	£5.090	£5.990
MV52G	Clutch Bell	£3.220	£3.790
MV53H	Pilot Shaft	£2.370	£2.790
MV54J	Clutch Shoe	£2.120	£2.500
MV55K	Alumin Clutch Bell	£4.680	£5.500
MV56L	Fuel Tube 1:10	£1.270	£1.500
MV57M	Clutch Bearing	£5.940	£6.990
MV58N	Wheel Shaft	£5.090	£5.990
MV59P	Suspension Arm Parts	£3.820	£4.500
MV60Q	Body Mount Posts	£3.820	£4.500
MV61R	Nylon Gears	£3.390	£3.990
MV62S	Diff Case Parts	£3.390	£3.990
MV63T	Brake Parts	£3.820	£4.500
MV64U	Clutch Bell 14T	£4.240	£4.990
MV65V	Drive Shaft 1:10	£5.940	£6.990
MV66W	Hub	£2.540	£2.990
MV67X	Air Filter	£2.970	£3.500
MV68Y	Steel Clutch Bell	£9.350	£10.990
MV69A	Front Bulkhead	£1.520	£1.790
MV70M	Brake Lever	£1.520	£1.790
MV71N	Main Gear	£2.370	£2.790
MV72P	Wheels - Pink	£5.090	£5.990
MV73Q	Damper Stays	£2.540	£2.990
MV74R	Nylon Gears Intern	£2.120	£2.500
MV75S	Suspension Arm Parts	£6.380	£7.500
MV76H	Main Gear/Brake	£6.170	£7.250
MV77J	Drive Belt FR	£9.350	£10.990
MV78K	Drive Belt	£4.240	£4.990
MV79L	Drive Gears	£7.650	£8.990
MV80B	Suspension Arms	£4.460	£5.250
MV82D	Wheel - Yellow	£7.650	£8.990
MV83E	5.8 Dia Hard Ball	£4.920	£5.790
MV84F	Spike Tyres	£3.610	£4.250
MV85G	Low Prof Spike Tyre	£10.200	£11.990
MV86T	Oil Dampers	£10.630	£12.500
MV87U	Front Tyre Ribbed	£13.600	£15.990
MV88V	Micro Block Tyre	£13.600	£15.990
MV89W	Tuned Exhaust Pipe	£30.620	£36.990
MV90X	5.8 Dia Ball End	£2.970	£3.500
MV91Y	5.8 Dia Ball End	£2.970	£3.500
MV92A	Pink Antenna Pipe	£5.090	£5.990
MV93B	Yellow Antenna Pipe	£5.090	£5.990
MV94C	Fuel Tube	£5.090	£5.990
MV95D	Manifold	£15.310	£17.990
MV96E	Transmission	£42.540	£49.990
MV97F	Body Mount	£12.750	£14.990
MV98G	Exhaust Joiner	£3.820	£4.500
MV99H	Exhaust Joiner	£3.820	£4.500
MW00A	High Grip Slick Tyre	£9.350	£10.990
MW01B	Damper Spring	£10.630	£12.500
MW02C	Adj Rods	£7.650	£8.990
MW03D	Metal Brake Disk	£9.350	£10.990
MW04E	Oil Damper	£27.050	£31.790
MW05F	Touring Oil Damper	£26.370	£30.990

The following prices relate to the Schumacher Spares Table on page 617

Retail Unit Price each (inc. VAT).

Order Code	Type 10205	Price each exc. VAT 1+	inc. VAT each 1+
DY18U	U1591A Front Wheels	£3.460	£4.070
MW34M	Rear Wheels	£3.950	£4.650
DY98G	U1725F Font Wheels	£3.460	£4.070
DY21X	U1759N Front Wheels	£3.460	£4.070
MW11M	Front Wheels	£2.960	£3.480
MW12N	Rear Wheels	£2.960	£3.480
MW15R	Mini Spike Tyres	£6.380	£7.500
MW27E	Spike Truck Tyres	£9.350	£10.990
MW10L	2WD Stud Tyre	£5.940	£6.990
DY45Y	U6585B RT3GrmF/Tyres	£5.630	£6.620
DY48C	U1187M Rear Bulk Head	£3.690	£4.340
DZ57M	U229L 95TWsprGear48	£1.950	£2.300
DY93B	U1194U 98TWsprGear48	£1.950	£2.300
DZ58N	U230M 92TWsprGear48	£1.950	£2.300
DY97F	U1061P Front Bumper	£4.330	£5.090
MW16S	Rear Wishbone	£4.940	£5.810
MW17T	Long Piston Rod	£2.960	£3.480
MW18U	Short Piston Rod	£2.960	£3.480
MW19V	Vari Shock Body	£3.950	£4.650
MW20W	Vari Shock Body	£3.950	£4.650
DZ43W	U1638V Susps Links	£4.330	£5.090
MW21X	Shock Mouldings	£3.220	£3.790
MW25C	Front Sus Plate	£3.470	£4.080
DY77J	U343Z Fr Shock Mnts	£2.820	£3.320
DY85G	U774V Hub&Steer Biks	£5.200	£6.110
DY88V	U835E Shock Seals Pk	£2.590	£3.050
MW23A	Speed Pack	£0.987	£1.160
MW24B	Drive Shaft	£8.430	£9.910
DY96D	U1704K Ball Jnt Skts	£2.160	£2.540
DZ48C	U396A Truck Wheels	£3.460	£4.070
MW26D	Thrust Bearings	£3.470	£4.080
MW28F	Body Posts	£5.200	£6.120
MW29G	Stock Motor	£10.630	£12.500
DZ64U	U1118U Glo Plug	£3.020	£3.560
DZ75S	U1645C PullStarter	£16.910	£19.880
DZ82S	U16751 Air Filter	£3.460	£4.070
DY01B	U1753H Mouldings Set	£13.880	£16.310
MW35Q	Fixing Set	£4.450	£5.240
MW31J	Assembled Diff	£13.390	£15.740
DZ29G	U1829 Assembled Diff	£11.710	£13.760
MW22Y	Short Spring	£6.930	£8.150
DZ14Q	U1353W Long Springs	£5.200	£6.110
DZ79L	U1410B Ball Bearings	£9.100	£10.700
DZ80B	U1411C Ball Bearings	£4.560	£5.360
DY39N	U724X B/Bearings	£6.060	£7.130
DY00A	U1744Y B/Bearings	£15.610	£18.350
DZ42V	U387R Truck Bumper	£3.690	£4.340
DY80B	U613J SprStop & Spcr	£2.590	£3.050
DY38R	U1778G 32T Pinion 48	£3.460	£4.070
DY27E	U1761P Gear Mdngs	£4.330	£5.090
DZ09K	U233P 19T PINION 48	£3.390	£3.990
MW13P	22T Pinion - 48 D.P.	£3.950	£4.650
DZ10L	U235R 25T Pinion 48	£3.460	£4.070
MW14Q	28T Pinion - 48 D.P.	£3.950	£4.650
MW33L	Turnbuckle Set	£7.430	£8.740
MW32K	Heatsink Head	£18.350	£21.570
DZ50E	U1665X 2SpdAssyOffRd	£67.260	£79.040
DZ51F	U1666Y 2SpdAssyTour	£67.260	£79.040
DZ52G	U1667Z 22TClutchBel	£7.800	£9.170
DZ54J	U1669B 28TClutchBel	£7.370	£8.660



## Global Positioning Units

### Garmin GPS Units

#### GPS 38

Garmin



- ★ **Multitrac8** operating system continuously tracks and uses up to 8 satellites for fast, accurate positioning
- ★ **User-friendly rocker/keypad system** allows room for large, backlit LCD display with easy-to-read characters and full-featured graphic plotting.
- ★ **Innovative TracBack** feature lets you quickly navigate your track log back home without manually storing waypoints.
- ★ **Resettable trip odometer** keeps track of your distance travelled.
- ★ **User-selectable navigation screens** for compass or graphic highway steering guidance.
- ★ **Ultrasonically welded, dry nitrogen filled case** with antenna.
- ★ **EZInit** feature allows fast point and shoot initialisation.

The GPS 38 is the one navigational tool for the great outdoors that offers big features in a small, lightweight package. Mark your favourite fishing spot, tree stand or camp site, or retrace your steps back to the safety of your starting point using the TracBack feature. The GPS 38 features easy, one-thumb operation and weighs only 255g. The unit features a resettable odometer, graphic compass and highway steering guidance. Uses 4 AA type batteries to provide up to 20 hours of continuous use. Includes Lat/Long, UTM, Ordnance Survey, Irish, Swiss, Swedish and German Grids.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GT11M	Garmin GPS 38	£127.650	£148.380

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#### GPS 12

Garmin

**NEW**



- ★ **12 Parallel channel receiver** tracks and uses up to 12 individual satellites for fast acquisition and a tight lock on satellites.
- ★ **User-selectable waypoint symbols and comments** enhance map display information.
- ★ **Proximity waypoint** feature warns you of approaching hazardous areas.
- ★ **Innovative Tracback** function turns your track log into an instant breadcrumb trail to quickly navigate back home.
- ★ **User-definable map datums and UTM grids** let you customise the data used for positioning.
- ★ **User-friendly rocker-keypad system** allows room for a large backlit display with easy-to-read characters and full-featured graphic plotting.
- ★ **Position averaging** feature helps reduce effects of selective availability.
- ★ **Up to 500 waypoints and 20 routes** of up to 30 waypoints each.

The Garmin GPS 12 Personal Navigator is an affordable 12 parallel channel GPS receiver packed with features and user-friendly operation. Featuring fast satellite acquisition and performance that stays locked on in the toughest conditions, the unit is housed in a rugged, waterproof case. The rocker keypad design provides true one-hand operation for the advanced navigation features that include a moving map plotter that displays waypoint names, symbols or comments, proximity waypoint alarms, average and maximum speed data and trip timers. Requires 4 AA type batteries to give up to 12 hours performance. Includes Lat/Long, UTM, Ordnance Survey, Irish, Swiss, Swedish, German and Maidenhead Grids.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ77J 1	Garmin GPS12	£170.200	£199.980

#### GPS 12XL

Garmin

**NEW**



- ★ **PhaseTrac12** receiver tracks and uses up to 12 individual satellites for fast acquisition and a tight lock on satellites.
- ★ **Proximity waypoint** feature warns you of approaching hazardous areas.

- ★ **Innovative TracBack** function turns your track log into an instant breadcrumb trail so you quickly navigate back home, even if you haven't stored waypoints.
- ★ **User-definable map datums and UTM grids** let you customise the data used for positioning.
- ★ **User-friendly rocker-keypad system** allows room for large backlit display with easy-to-read characters and full-featured graphic plotting.
- ★ **Position averaging** feature helps reduce the effects of Selective Availability.
- ★ **Large memory** holds 500 waypoints or 20 routes of up to 30 waypoints each.

Featuring a 12 parallel-channel receiver for amazingly fast satellite acquisition and tight satellite lock, even under tree cover, The GPS 12XL unit is loaded with navigation information including 106 pre defined map datums and 7 grid formats, plus advanced orienteering features like position averaging, UTM and user grid formats to define your own map parameters. Store your tree stands and fishing spots among 500 waypoints or add them to any of 20 routes. The proximity waypoint feature gives advanced warning or nearby hazards, while the TracBack function helps you find your way home. The GPS 12XL is packed in a rugged case that features military tough construction. Its rocker keypad design provides true one-hand operation, while user-friendly operating system keeps you on the move day or night. Uses four AA type batteries for up to 12 hours use. Includes Lat/Long, UTM, Ordnance Survey, Irish, Swiss, Swedish, German and Maidenhead Grids.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ10L	Garmin 12XL GPS	£255.310	£298.980

#### GPS II Plus

Garmin

**NEW**



- ★ **Powerful PhaseTrac12** twelve parallel channel receiver, tracks and uses up to twelve satellites for fast, accurate positioning.
- ★ **Versatile screen** switches from horizontal to vertical orientation (and back again) with the press of a button.
- ★ **User-friendly rocker keypad** with diagonal movement, and sophisticated FTN LCD display with easy-to-read black pixel characters, full-featured moving map plotting and backlighting.
- ★ **Adaptable navigation page** with either compass or highway steering guidance, and user-selectable data fields.
- ★ **User-selectable waypoint symbols** enhance map display information.
- ★ **Patented TracBack** feature lets you quickly navigate your track log back home without manually storing waypoints.
- ★ **Trip odometer, average and maximum speed, and auto start/stop trip timer.**
- ★ **Dedicated keys** for zooming map display from 0.2 to 320 miles.
- ★ **Rugged construction** with locking rubber battery cover

Featuring a 12 parallel channel receiver for quick satellite acquisition and enhanced reception even in dense foliage, the GPS II Plus is designed for any over-the-road journey or offroad adventure you have in mind. Garmin's latest GPS unit utilises a state-of-the-art two-way screen display for vertical or horizontal orientation - which makes it easy to go from your vehicle to the hiking trail. With an external antenna for impressive reception, the GPS II Plus

also boasts dedicated zoom keys, waypoint symbols, diagonal planning, auto start/stop trip timer, and average and maximum speed recordings. Uses 4 AA batteries to provide up to 22 hours of accurate tracking and precise navigation. Includes Lat/Long, UTM, Ordnance Survey, Irish, Swiss, Swedish, German and Maidenhead Grids.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX38R 1	Garmin GPS II Plus	£299.990	£299.990 NV

**GPS 120XL**

Garmin



- ★ MultiTrac operating system continuously tracks and uses up to 8 satellites for fast, accurate positioning.
- ★ Large, backlit LCD display with easy-to-read characters and moving map plotting with dedicated zoom keys for straightforward, intuitive operation.
- ★ User-selectable highway or compass navigation pages provide graphic steering guidance to your destination.
- ★ TracBack navigation lets you retrace your track log back home, compete with steering guidance to every waypoint.
- ★ Differential compatible.
- ★ 250 alphanumeric waypoints. 20 reversible routes, one-touch MOB and GOTO functions.

With a large 4.25in (10.8 cm) diagonal backlit display, the GPS 120XL is an ideal navigation solution for mariners who want more than a handheld - without the cost, complexity and large footprint found in typical fixed-mount units. The EZInit feature allows quick initialisation of the unit, while user-selectable highway or compass navigation pages guide you to your destination. Dedicated zoom keys give a larger usable map display whilst the TracBack feature allows you to navigate your track log back home without making a single waypoint. Includes power/data cable, remote antenna with 30 foot cable and surface/flush mount bracket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LF99E	Garmin GPS 120XL	£314.880	£369.990

**GPS 30 PC & GPS 35 PC**

Garmin



- ★ 8-Channel (GPS 30 PC) or 12-Channel (GPS 35 PC) GPS navigation ready to plug into a PC by means of a pre-fitted 9-way D-type serial COM port connector.
- ★ Pre-attached cigarette lighter adaptor for use in vehicles.
- ★ Wide +10 to +30V DC supply voltage range.
- ★ Interfaces with most PC-based navigational software.
- ★ Outputs standard NMEA 0183 sentences and has dual RS232 output capability.

Plug into the accuracy and performance of GPS navigation with the Garmin GPS 30 PC and GPS 35 PC. These units offer an integrated antenna/GPS engine that provides accurate GPS position, speed and heading information to any compatible device. The GPS 30 PC offers tracking based on up to 8 satellites and the GPS 35 PC offers tracking based on up to 12 satellites for fastest possible fix times and greatest accuracy.

Packed into the low profile, waterproof housing, both units run on +10 to +30V DC and draw just 110mA (GPS 30 PC) or 150mA (GPS 35 PC). The units are small (57 x 97 x 26mm) and light-weight too (124.5g).

Both units are pre-fitted with a standard 9-way D-type serial port connector, as fitted to most PCs, and a cigarette lighter adaptor for vehicle use.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GT15R	Garmin GPS 30 PC	£217.020	£255.000
GT16S	Garmin GPS 35 PC	£279.140	£328.000

**Garmin Accessories**

**Low Profile Antenna**

Garmin



Low profile antenna, with 8 foot cable suitable for GPS 45XL, GPS II and GPS II Plus

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
K000A	Garmin GA26 Antenna	£76.580	£89.990

**Low Profile Antenna**

Garmin



Low profile antenna, with 8 foot cable for GPS 12XL

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
K001B	Garmin GA27 Antenna	£76.580	£89.990

**Marine Remote Antenna**

Garmin



Marine remote antenna with 30 foot cable suitable for GPS 45XL, GPS II or GPS II Plus

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
L025C 1	GA28 Marine Ext Ant	£89.350	£104.990

**Vehicle Mounting Kit**

Garmin



Vehicle mounting kit suitable for GPS II and GPS II Plus

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
K008J 1	Garmin Vehicle Mount	£21.260	£24.990

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## Bicycle Mount Kit

Garmin



**NEW**

Handlebar mounting kit suitable for GPS II or GPS II Plus

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ23A	GPS II Handlebar Mnt.	£12.750	£14.990

## Cigar Lighter Adapter

Garmin



**NEW**

Cigar lighter adapter including 12 to 6 volt converter suitable for use with GPS 38

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ04E	Garmin 4050 Cigar Ad.	£25.520	£29.990

## BNC Cable Adapter

Garmin



**NEW**

BNC cable adapter for use with Garmin GPS units

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LQ24B	BNC Cable Adapter	£15.310	£17.990

## Swivel Mounting Kit

Garmin



**NEW**

Swivel mounting kit for use with GPS 38, GPS 45XL or GPS 12XL

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ07H	Garmin 4518 Mount	£21.260	£24.990

## Cigar Lighter Adapter

Garmin



**NEW**

Cigar lighter adapter suitable for use with GPS 45XL, GPS II, GPS 12XL or GPS II Plus

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ05F	Garmin 4550 Cigar Ad.	£17.010	£19.990

## PC Data Transfer Cable

Garmin



PC data transfer cable with 9 pin D connector suitable for use with GPS 38, GPS 45XL, GPS II, GPS 12XL or GPS II Plus

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ03D	Garmin 4041 PC Cable	£25.520	£29.990

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## Carry Case

Garmin



**NEW**

Carry case for use with GPS 38, GPS II or GPS II Plus

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ02C	Garmin 3815 Case	£9.350	£10.990

## Power / Data Cable

Garmin



**NEW**

Power and data cable for use with GPS 45XL, GPS II, GPS 12XL or GPS II Plus

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ06G	Garmin 4520 P/Data	£19.560	£22.990

## PC Kit

Garmin

- ★ Graphically plot waypoints, rout and track log files
- ★ Download waypoints, routes, track logs and almanac data from Garmin GPS for future reference
- ★ Create or edit waypoint and route information to upload to Garmin GPS
- ★ Create satellite visibility charts to determine satellite coverage for any location and time
- ★ Print satellite visibility charts with skyview display as well as waypoint, rout and track log files
- ★ Upload satellite almanac data to Garmin GPS for faster satellite acquisition
- ★ Convert stored waypoints to UTM's and other grid systems
- ★ Convert waypoints and track logs to DXF format for CAD/GIS applications
- ★ The PC kit includes data cable and easy to use menu driven software package (MS-DOS application)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KX27E	Garmin PC Kit	£76.580	£89.990

## Training Video

Garmin

Professionally produced training video for Garmin GPS units

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KQ09K	Garmin Training Vid	£8.500	£9.990



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## Magellan GPS Units

### GPS2000 Personal Navigator

Magellan Systems Corporation



- ★ Entry level GPS receiver
- ★ 5 graphic screens including compass pointer and rolling road display
- ★ Stores 200 landmarks, with 5 reversible routes with 20 legs each
- ★ Up to 24 hours battery life (Uses 4 AA type batteries)
- ★ 8 co-ordinate systems including OSGB and LAT/LON
- ★ Waterproof-tested to IPX 7 standard

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ00A	Magellan GPS2000	£187.220	£219.990
GZ01B	GPS Carry Case	£7.900	£9.29C
GZ02C	GPS Mounting Bracket	£17.010	£19.990
GZ03D	GPS Ext Pwr & Data	£47.220	£55.490
BM93B	GPS Video PAL/UK	£11.900	£13.990

### GPS 2000XL

Magellan Systems Corporation



- ★ 12 channel receiver for faster lock-on time
- ★ Grey screen for improved viewing in all lighting conditions
- ★ Non-slip rubber armouring for improved grip and protection
- ★ 5 graphic screens including track plotter and rolling road display
- ★ Supplied with heavy duty carry case
- ★ Co-ordinate systems include OSGB, LAT/LON, and user-defined grid system
- ★ Up to 24 hours battery life using 4 AA type batteries

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LR94C	Magellan GPS 2000XL	£161.690	£189.990

### GPS 3000XL

Magellan Systems Corporation



- ★ 12 channel receiver for faster lock-on time
- ★ 16 graphic screens including 2 user-definable displays
- ★ NMEA output and PC upload/download facilities
- ★ Grey screen provides enhanced viewing in all lighting conditions
- ★ Non-slip rubber armouring for improved grip and protection
- ★ Differential ready
- ★ Supplied with 4 AA batteries, heavy duty carry case, mounting bracket and 12 volt power/data module
- ★ Up to 24 hours of battery life

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LR95D	Magellan GPS 3000XL	£204.240	£239.990

### GPS 4000XL

Magellan Systems Corporation



- ★ 12 channel receiver for faster lock-on time
- ★ 7 graphic screens, including 2 user-definable displays
- ★ Can save messages on 25 out of 200 landmarks
- ★ Toggle feature to access 2 co-ordinate systems simultaneously
- ★ Grey screen for enhanced viewing in all lighting conditions
- ★ Non-slip rubber armouring for improved grip and protection
- ★ PC upload and download facilities
- ★ Comes complete with heavy duty carry case and 4 AA batteries
- ★ Up to 24 hours battery life

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LR91Y	Magellan GPS 4000XL	£204.240	£239.990

### Meridian XL

Magellan Systems Corporation

- ★ Wide-screen display shows 6 easy-to-understand, graphic navigation screens.
- ★ Full-featured track plotter with adjustable scale, pan & scan, waypoint information and 'Go To' features
- ★ Customisable navigation screens
- ★ Ultra-large characters for easy viewing
- ★ Displays: Distance to Go, Bearing, Course Over Ground, Time to Go, Speed Over Ground, Cross Track Error and more
- ★ 'Go To' key with 'Man Over Board' function
- ★ 200 user-defined waypoints
- ★ 9 icons to attach to waypoint names for easy reference
- ★ Waypoint projection and nearest waypoint search
- ★ 5 reversible routes with 15 legs each

- ★ Sunrise/sunset and lunar calculations
- ★ Shows position in LAT/LON, TD, UTM, OSGB, Irish or Swedish grid coordinates
- ★ Back-lit display for night-time use
- ★ Large, well-spaced keys
- ★ Up to 6 hours continuous/24 hours standby operation from 3 x AA Alkaline Cells

The rugged, weather-resistant Meridian XL is lightweight, pocket-sized and puts the power of GPS in the palm of your hand. The incredible accuracy of GPS - 24 hours a day, anywhere in the world in any kind of weather - is ideal for all types navigation, whether travelling by land or sea.

The Meridian XL has all of the advanced navigation features that experienced navigators expect, yet is simple enough for the novice. All of the information is shown on a large and very readable LCD screen.

Track plotter (a scalable overhead view of the current position, planned/past course and stored waypoints), course deviation and marine compass-like steering displays are presented in an easy-to-understand graphical format. Recalling your route and how to get to your destination has never been easier. Continuing the ease-of-use theme, functions are accessed via a menu system from the keypad.

The aerial, which can be rotated through 360°, is a compact quadrifilar helix type that demonstrates remarkable sensitivity. It can be removed to reveal a BNC socket. Using an optional extension cable and suction cup (BM63T), the aerial can be temporarily mounted on any convenient surface, e.g. when used in a vehicle or on a boat. For permanent installations, a low profile active antenna (BM66W) and mounting bracket (BM64U) are also available. 200 waypoints (position fixes) can be stored, and any of these can be used within five reversible routes. Routes and waypoints can be easily changed. Positions are entered using the selected coordinate system, or by storing the current position fix. Once the route has been stored, navigation can be achieved graphically, or via an informative navigation screen that warns you of course deviation. A 'nearest waypoint' facility is useful if an emergency occurs and you want to find the nearest base or port that has previously been stored. 72 map datums are catered for to suit the map or chart being used, along with sunrise/sunset and lunar calculations.

The Meridian XL can be used with a differential beacon receiver (requires Power and Data Interface - AV79L), this overcomes the random error in the SPS code, deliberately introduced by the US Department of Defense.

A power and data interface (AV79L) is available: this allows the unit to be powered by an external supply of between +10V and 16V DC; provides a NMEA-0183 serial data output, so that other navigation devices, lap-top computer, etc. can be attached; and provides an input for differential correction.

The Meridian XL is supplied with a nylon carrying case and lanyard strap. The Meridian XL is powered from 3 x AA alkaline cells (JY48C, not included).

Magellan Product Brochure

A brochure on the Magellan product range is available free of charge, subject to availability (CH16S).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AV78K	GPS Meridian XL	£263.820	£309.990
CH16S	Magellan Brochure	£0.000	£0.000 NV



## Meridian XL Accessories

### Meridian XL Antenna Extension Kit

**Magellan Systems Corporation**

This kit consists of a 2m BNC male-to-female cable, which allows the Meridian XL's aerial to be removed and repositioned so that it has a better view of the GPS satellites. A suction mount is provided for temporary installation to a car roof or boat wheelhouse, for example.

Retail Unit Price each (inc. VAT).

Order Code	Type 3403	Price each exc. VAT	inc. VAT each
BM63T	Ant Extension Kit	1+ 3+ 5+ £17.010 £15.500 £14.750	1+ £19.990

### Meridian XL Power and Data Interface Cables

**Magellan Systems Corporation**

Accepts a supply voltage of between +10V and +16V DC and provides an output suitable to power the Meridian XL. This power and data interface allows the Meridian XL to be powered from the electrical system of a car or boat, thus conserving internal battery power. The same unit has a separate data output, for interfacing the unit to external NMEA-0183 compatible navigation equipment, lap-top computers, etc., and a RTCM-104 input for use with a differential beacon receiver, allowing DGPS operation.

#### Important Information

There are two versions of this Power and Data Interface available, which one you need depends on which version of the Meridian XL it is to be used with.

If you have purchased a Meridian XL from Maplin under stock code AV78K, or if your Meridian XL has **five pins** on the power/data connector, you will require Power and Data Interface stock code AV79L.

If you have purchased a Meridian XL from Maplin under stock code BM62S, or if your Meridian XL has **six pins** on the power/data connector, you will require Power and Data Interface stock code BM65V.

In addition to the Meridian XL, these power/data interface cables can also be used with the following other Magellan GPS receivers: Meridian, Trailblazer and Trailblazer XL. Follow the 'number of pins' rules above to select the correct interface cable. If you are in any doubt, please obtain help by calling the Maplin Technical Sales Helpline or by visiting your nearest Maplin Regional Centre.

Retail Unit Price each (inc. VAT).

Order Code	Type 3405	Price each exc. VAT	inc. VAT each
AV79L	Pwr & Data Cable	1+ £17.860	1+ £20.990
BM65V	Pwr & Data Interface	1+ £17.860	1+ £20.990

### Meridian XL Low Profile Active Antenna

**Magellan Systems Corporation**

A high-sensitivity low-profile weather-proof active GPS antenna which can be mounted on a surface or fitted to a marine antenna pole. The antenna is supplied with 9m of pre-fitted coax, terminated in a BNC plug. Mounting hardware is included.

Retail Unit Price each (inc. VAT).

Order Code	Type 3406	Price each exc. VAT	inc. VAT each
BM66W1	GPS External Antenna	1+ £85.090	1+ £99.990

## Silva GPS

### XL1000 GPS Compass

**Silva**



For pin-pointing your position, GPS (Global Positioning System) has become the de facto standard. The remarkably compact Silva GPS Compass is unlike any other GPS receiver - which perhaps is not surprising, since its manufacturer has considerable experience in the fields of land and marine navigation. The unit is based around the same system of 24 satellites circling Earth, but has a built-in electronic compass that shows you in which direction you should travel to reach your destination. The ergonomically-designed hand-held unit can be held and operated in one hand. Easy to operate, the GPS Compass has a high contrast LCD panel and a logically-designed menu system. In full recognition of its potentially harsh outdoor applications, the British-made GPS Compass is completely waterproof, and floats in water. Full 3-D (vertical, horizontal and height) navigation can be carried out with five satellites in view, even with the device mounted on the dash of a car.

The Silva GPS Compass is the only GPS receiver with a built-in electronic compass. Working with GPS-derived information, the user can be guided straight to the desired destination - regardless of the current position. Direction is shown via arrows on the large LCD panel - unlike other GPS units, you don't have to interpret longitude/latitude figures. To maintain accurate readings, the compass can be calibrated to compensate for ferrous surroundings (e.g., car or boat bodywork). If desired, the compass can be used with the GPS receiver turned off to conserve power.

1000 waypoints (location bearings) can be stored in the GPS Compass' memory. A waypoint can be shown in any one of 100 geodetic datums, including the UK's Ordnance Survey system, nine grid systems are understood by the GPS system. A unique function is 'ORIGO', in which any position stored can be treated as a reference point. After travel, the new position can be shown as a range and bearing relative to this reference. GPS Compass interfaces with the Silva Nexus network system for power and sailing boats. Differential correction (to overcome SA accuracy restrictions) is also possible if the optional RTCM-104 module is connected up. Supplied with cigarette lighter power adaptor, nylon carrying case and car bracket. For portable use, the GPS Compass runs from 6 'AA' cells (JY48C, not included). A free information leaflet is available, subject to availability (GS95D).

Retail Unit Price each (inc. VAT).

Order Code	Type 3472	Price each exc. VAT	inc. VAT each
BM59P 1	Silva GPS Compass	1+ 3+ 5+ £506.370 £487.900 £479.800	1+ £594.990
GS95D	Silva XL1000 Ltr	£0.000	£0.000

## GPS Compass Computer Interface

**Silva**



For use with the Silva XL1000 GPS Compass, comprising of an interface unit and software for IBM PC compatible computers on 3.5-in. disk. It allows the user to connect the XL1000 to a PC and allow data to be transferred. Position information can be saved in both OSGB and Lat/Lon coordinate systems and waypoints can be edited. By default the interface is configured to communicate in Silva NEXUS BUS for the XL1000 and RS232 for the PC, however the unit can also be configured to operate in NMEA-0183 and RS422 modes should these be required. The unit is powered by a 9V Alkaline PP3 battery (not included), the unit powers down when communication is not taking place to extend battery life. PC connector for serial COM port is a 9-way D-type. A free information leaflet is available, subject to availability (GS95D).

Retail Unit Price each (inc. VAT).

Order Code	Type 3485	Price each exc. VAT	inc. VAT each
BM67X	Silva GPS Interface	1+ 3+ 5+ £123.390 £120.650 £118.900	1+ £144.990
GS95D	Silva XL1000 Ltr	£0.000	£0.000

## GPS Accessories

### Personal Navigator

**Softair**



- ★ Uses Ordnance Survey raster maps of Great Britain (1997 update)
- ★ Route planning using Ordnance Survey (1996 update) database of 140,000 miles of Britain's roads
- ★ Comprehensive place name gazetteer containing more than 220,000 locations
- ★ Royal Mail Postcode database containing more than 1.6 million Postcodes and 800,000 street names
- ★ The Good Pub Guide 1997
- ★ The Good Guide to Britain 1997
- ★ Egon Ronay's 1997 guides: Hotels & Restaurants, Pubs & Inns and Bars, Bistros and Cafes
- ★ With the addition of a GPS receiver your position can be displayed anywhere in the country to within 25m

Personal Navigator offers route planning, satellite navigation, high quality raster maps and a postcode/street and location finder in one package. Calculate either the shortest, quickest, cheapest or 'delivery road' route with up to 30 stopovers. Print out your itinerary and maps to take with you OR connect a GPS receiver to your portable computer and you will never be lost! The unique postcode/street finder means that every address in Great Britain can be found. Alternatively

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use the only electronic form of Ordnance Survey's place name gazetteer to find any town, village or hamlet in Britain. Requires Windows 95 or Windows NT, CD version only.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV44X	Personal Navigator	£97.860	£114.990

## Aquapac GPS Case

Aquamant



Waterproof and bouyant PVC case suitable for protecting most Garmin/Magellan GPS units from the elements with unimpaird signall loss - Dimensions 245mm x 95mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV58G	Aquapac GPS 2000	£11.050	£12.990

## Watson GPS-150 Active GPS Micro Antenna

Watson



Measuring just 38 x 46 x 10mm, this micro active antenna incorporates a magnetic base allowing it to be placed on the vehicle roof. The other end has a BNC plug on it ready to be attached to your GPS receiver. Cable is 5m long.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VN13P	Watson GPS-150	£34.000	£39.950

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## Navimap

Silva/Yeoman



The Navimap has revolutionised and simplified the art of finding one's way in strange and unfamiliar terrain. A high-performance plotter that links to the Silva GPS Compass, it can show your present position on any map, even if the latitude/longitude reading or grid system is not shown on the map. As a result, any map can be used – including tourist, hotel, military maps, road guides and sea charts. Consisting of a intuitive single-key puck with detachable slide scale and a carvas base for the map, Navimap can be used as a simple and user-friendly way of entering waypoints (i.e. desired locations) into the GPS Compass. To travel to the desired destination, simply follow the flashing red guide LEDs on the puck. A free information leaflet is available, subject to availability (GS95D).

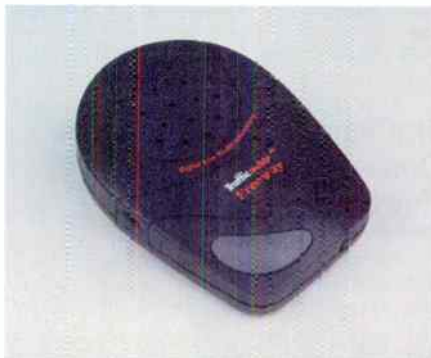
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM61R 1	Silva Navimap	£314.880	£379.600
GS95D	Silva XL1000 Lft	£0.000	£0.000

## Route Planning & Traffic Information Systems

### Freeway

TrafficMaster



The Freeway provides accurate live information concerning motorway congestion in spoken form. The unit is battery powered and requires no wiring. The unit simply attaches to the top of the dashboard by means of two self-adhesive Velcro strips (supplied), to allow easy attachment and removal (for security). Single button operation to activate the unit. The Freeway will automatically power down after 20 minutes to conserve battery power. The unit can be operated in automatic (default) and manual modes. A demonstration mode is also available so that you can familiarise yourself with the format and content of the spoken information. Supplied with 1 year's airtime pre-enable (year starts from receipt of first transmission after power-up), unit provides 14 days warning prior to air-time expiry. Additional airtime after the first year is purchased direct from TrafficMaster through their customer services hotline, and enabled on the unit by means of a PIN.

Information on traffic flow is gathered from a network of over 2,400 infra-red sensors, which monitor the speed of traffic passing below. When

the speed drops below 30 mph for an average of 3 minutes, the sensors alert the TrafficMaster National Traffic Data Centre in Milton Keynes. From here information is continuously sent out to over 1,500 transmitter stations located along the country's motorway network.

Each transmitter filters out all the motorway traffic information relevant to that particular site (to within a minimum range of 10 miles or 2 motorway junctions in either direction) and translates it into coded messages. These messages are transmitted to the Freeway unit in your car, which converts the messages into speech.

The Freeway will identify the direction in which you are travelling on receipt of the second transmission. Prior to this transmission, the Freeway will announce all locally relevant motorway information, in all directions, to within 10 miles or two motorway junctions.

Requires 4 x Alkaline AA Cells (JY48C), not included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
UL90X	Traffic Mstr Freeway	£68.070	£79.990
UL91Y	Freeway Leaflet	£0.000	£0.000 NV



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## Trafficmaster YQ Traffic Information System and Message Pager

Trafficmaster



Have you ever turned onto a motorway, and then wished you hadn't as soon as that line of red brake lights, stretching to the horizon, becomes apparent? Regular road users are only too familiar with this scenario. As such people know to their cost; teletext and radio reports are fine after a fashion, but are out of date by the time that you receive them.

Trafficmaster YQ is a practical and affordable alternative to this, the 20th century's biggest waste of time. Introduced in 1992, it is the country's first traffic information system to provide continuous and up-to-date live information on congestion, 24 hours a day and 365 days a year.

The Trafficmaster YQ is a British product that enables you to plan routes, minimising delays due to accidents and busy periods, and making most cost-efficient use of the motorways and major roads. For company executives and salespeople, Trafficmaster YQ will pay for itself very quickly.

It works by monitoring traffic flow at strategic points with devices that resemble speed cameras. Information from these is passed to Trafficmaster's headquarters in Milton Keynes, and then disseminated via a series of paging transmitters located at cellular telephone sites.

Currently, the Trafficmaster YQ system covers the entire network of national motorways, plus some 400 miles of trunk roads. Additional coverage is constantly being added. The Trafficmaster YQ receives these signals via a built-in aerial, and displays the information on a large and very readable map display.

A smartly-styled and ergonomically-designed unit, the Trafficmaster YQ can be mounted on the dashboard, and derives its power from the cigarette lighter adaptor supplied, or can be wired up directly to the car's electrical system. When out of the car, the Trafficmaster YQ derives its power from an internal Ni-Cd battery pack, which will last for 3 hours' continuous use (8 hours in standby mode). A desk stand and charger is available as an optional extra.

When powered up, icons flash at trouble spots, warning the user where average traffic speeds are less than 30mph. Extremely easy to use via an on-screen menu system, areas of interest can be 'zoomed' into.

Traffic information apart, the Trafficmaster YQ will also handle news headlines, weather forecasts - and paged messages. Those wishing to contact you call a premium-rate number, and leave a preset message and contact number.

The Trafficmaster YQ can store 50 such messages in memory. The unit is supplied with a month's free airtime, in the form of an intelligent chip-based 'information key'. Thereafter, information keys with 6 or 12 month blocks of usage must be bought. At around £10 per month, The Trafficmaster YQ represents excellent value for money - indeed, for one trip alone the time saving could pay for a month's usage.

Information key apart, the Trafficmaster YQ is supplied with a cigarette lighter power cord, a dashboard mount with extension piece, adhesive pads and mounting surface cleaners. A free information leaflet is available, subject to availability (GZ25C).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC22Y1	TM YO Traffic InfSys	£127.65†	£122.300
GZ25C	TrafficMaster Lft	£0.000	£0.000

## Trafficmaster YQ Car Mounting and Power Kit

Trafficmaster



This car mount and power kit allows a Trafficmaster YQ to be used in a second vehicle. The kit contains the same mount and power connection items as supplied with the YQ itself.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC23A	TM Car Mnt & Pwr Kit	£21.260	£20.550

## Trafficmaster YQ Leather Carrying Case

Trafficmaster



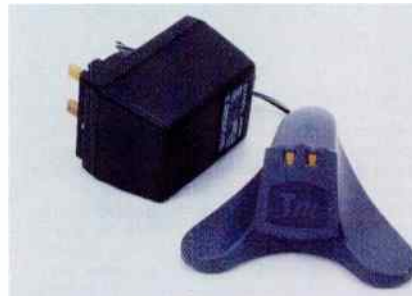
Keep your Trafficmaster YQ safe from scratches and dirt while not in the car, with this rugged and handsome dark grey leather pouch. Fastens with Velcro strip.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC24B	TM Leather CarryCase	£17.010	£16.450

## Trafficmaster YQ Executive Desk Stand and Charger Power Supply Unit

Trafficmaster



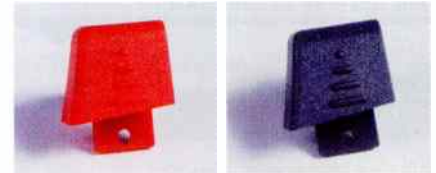
Designed to match the Trafficmaster YQ's sleek lines, the Executive Desk Stand allows the unit to be used indoors, as well as in the car. The Charger PSU enables Trafficmaster YQ to be powered from the mains.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC25C1	TM Stand & Charger	£34.030	£32.850

## 6 and 12 Month Information Keys for Trafficmaster YQ

Trafficmaster



WC26D Plug-in keys for the Trafficmaster YQ that provide six (WC26D) or twelve months (WC27E) of access to Trafficmaster services.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC26D1	TM 6mth Airtime Mod	£51.050	£59.990
WC27E1	TM 12mth AirtimeMod	£93.600	£109.990

## Compasses

### Car Compass

Silva



A gimbal type car compass also suitable for use in boats, with built-in magnetic compensation and internal lighting, which can be connected to the vehicle lighting circuit with the wires supplied. The removable base can be fitted to a dashboard with four screws and rubber insulation pad supplied. In use, the instrument shows the direction of travel of the vehicle with a fixed black pointer against a red and white moving scale. Maximum tilt angle is 20° in any direction.

Magnetic compensation of up to ±45° is provided in the form of two 'E/W' and 'N/S' adjuster screws in the body, which can be operated with the trimmer tool supplied. These are designed to offset the effects of magnetic components nearby such as windshield wiper motors. Adjustment is only really necessary if the error is more than 5°.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC55K1	Car Compass	£34.710	£32.980

## Wayfinder Outback Electronic Compass

Precision Navigation Inc.



- ★ Tilt compensation provides accuracy of 2° even when tilted by up to ±15°
- ★ Heading is displayed in digits, cardinal points and on the compass rose
- ★ Heading is easily referenced to magnetic or

- ★ true north
  - ★ Multiple declination angles can be stored
  - ★ Trail Blazing memorises your course as you travel
  - ★ Multi-leg stores a pre-planned route to follow later
  - ★ Day and Night Navigation keep you on a chosen course
  - ★ Automatic return reverses a route and guides you back to your starting point
  - ★ Bearings are stored with the press of a button
  - ★ Timer counts up or down and stores a time
  - ★ Damping reduces errors caused by movement of the compass
  - ★ Magnetic distortion alarm warns when outside magnetic interference is causing errors in the compass heading
  - ★ Water resistant in up to 3m (10ft) of water
- Probably the most sophisticated hand-held compass on the market, it incorporates technology developed for the U.S. military. The Wayfinder Outback has been designed with a variety of options. For the novice outdoor enthusiast, the Basic Option has all the features of a traditional compass, plus a few more. The advanced options of Trail Blazing, Multi-Leg, Bearing, Timer, Declination and Damping offer the serious & professional user features not found in traditional compasses such as storing courses and bearing points. This electronic compass is the ideal companion to a hand-held GPS receiver; together, these instruments provide the user with navigational facilities and information unheard of a few years ago. Powered by 2 x 3V CR2032 lithium coin cells (ZB74R), included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VN07H	Wayfinder Outback Compass	£85.090	£99.590

### Silva Model 3NL-360 Explorer Compass

Silva



This handy compass is for all outdoor activities. The ergonomically designed baseplate makes it smooth to grip. The compass has a stable sapphire jewel bearing and easy to read needle. The baseplate is clear and resistant to scratches. Complete with magnifying lens.

Size: 115 x 60mm with 360° graduation.  
Weight: 37g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC54J	Explorer Compass	£12.570	£14.780

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### Silva Model 26NL-360 Sighting Compass

Silva



A compact hand-held compass with mirror. Can be closed when not in use, and will fit into a small pocket.

Overall dimensions: Closed 56 x 56 x 14mm  
Open 56 x 56 x 69mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC53H	Mirror Compass	£12.570	£14.780

### Sighting Compass & Clinometer

Silva



This compact hand-held compass offers an easy and effective way to find a bearing, and inclination. This makes locating a satellite very easy – armed with the satellite co-ordinates, it takes just seconds to find the satellite position, so enabling accurate satellite dish location. Supplied with instructions.

Overall dimensions: Closed 56 x 56 x 14mm  
Open 56 x 56 x 69mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC52GC	Clinometer/Compass	£17.360	£20.390

See Stock Code Index For More Price Breaks

### Silva Model 4-360 Baseplate Compass

Silva



A compass ideal for use by hillwalkers and mountaineers. In use a map. In use, the compass base is placed on the map with the edge along the desired line of travel. The compass capsule is rotated until 'N' on the compass aligns with magnetic North on the map. When both the map and compass are turned until the needle lines up with 'N', the arrow in the base now points to the destination. You then choose a landmark in this direction, and repeat the procedure until you reach your destination. The transparent base includes inch and metric linear scales, 1:25,000, 1:50,000 and 1:63,360 romer scales, magnifier, luminous direction markers and a neck cord.

Overall size: 125 x 60 x 10mm.

Retail Unit Price each (inc. VAT).

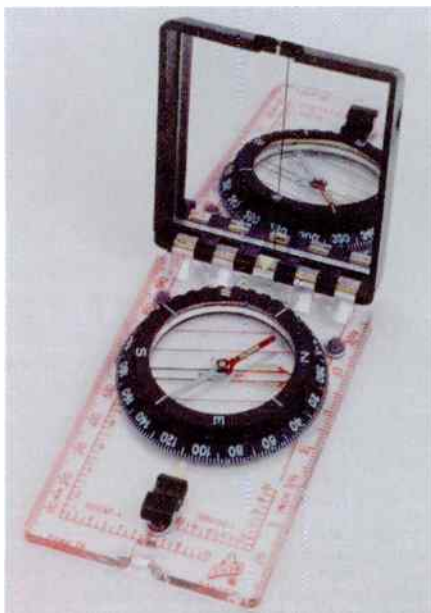
Order Code	Type	Price each exc. VAT	inc. VAT each
WC51F	Model 4 Compass	£23.420	£27.530

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## Silva Model 15T & 15TD-CL Sighting Compasses

Silva



A pair of high-quality compasses each with sighting mirror, inch and metric linear scales, 1:25,000 and 1:50,000 romer scales, luminous direction markers, non-slip feet and a neck cord. The compasses are ideally suited for use by hillwalkers, mountaineers, geologists and mountain rescue teams. The mirror section closes over the compass to form a protective cover.

Type 15T is a basic sighting compass, while type 15TD-CL can also be used as a clinometer for measuring angles of inclination and gradients.

Overall dimensions: Closed 102 x 54 x 18mm  
Open 102 x 54 x 85mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
WC58N1	15T Compass	£33.840	£30.800	£29.530	£39.770
WC57M1	15TD-CL Compass	£39.050	£34.990	£33.300	£45.690

## Leather Compass Case

Silva



A strong, tan leather compass case with white contrasting stitching and a belt loop.

Dimensions: 110 x 63 x 22mm (pouch)  
125 x 95 x 40mm (overall)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
WC56L	Compass Case	£12.140	£11.580	£11.320	£14.270

## Navigation Accessories

### Combined Altimeter and Barometer

Chamonix



A barometer indicating between 750 and 1050 HPA on the inner blue scale. It can be adjusted by turning a recessed screw on the back, and should be set to the actual local air pressure value, which can be obtained from the weather station or local radio announcement.

The instrument doubles as an altimeter, showing altitude on an outer black scale, having a resolution of 20m per division. Again this is adjustable using a recessed thumbwheel on the side, and should be set according to a known local reference altitude above sea level. Supplied with neck cord.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
WC50E1	Alti/Barometer	£43.310	£41.000	£39.980	£50.990

### Electronic Diagram and Map Measuring Device



- ★ Any type of scale can be individually selected and stored to 9 memory locations
- ★ Easy to read LCD readout
- ★ Auto-off function to save batteries
- ★ Automatic subtraction when reverse rolling

An electronic device for precisely measuring distances on maps and diagrams for professional and leisure time use. This high-tech chart meter is suited to all construction and site plans as well as hiking and road maps. There are 5 modes of operation making this unit a truly versatile device. The following measuring modes are included: metric; inches-miles/cm-km; inches-miles/cm-km with scale bar; 1cm/1 inch system and inch-feet measurements. Supplied with case and full operating instructions. Powered by 3 x SR44 button cells (FM28F, supplied).

#### Specification

Batteries: 3 x SR44 button cells  
Dimensions: 150 x 47 x 19mm  
Weight: 45g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
WC61R1	Map Measurer	£52.070	£48.690	£47.120	£61.190

## Multi-Function Pedometer



- ★ Measures distance travelled to 9999.9km
- ★ Calculates the calories you burn to 99999 units
- ★ Sensitivity adjustment for precise measurement
- ★ 1/10th second chronograph with lap function to 99m 59.9s
- ★ Real-time clock
- ★ Last memory hold
- ★ Data accumulation for your fitness control programme

A multi-function pedometer designed to help you maintain a training record, measuring the number of steps, distance covered, calories burnt while also providing a stopwatch and real-time clock. The built-in sensitivity adjuster allows the unit to be set precisely for maximum accuracy, depending on the type of use. Clips onto a belt and features a fold down front to access the display and main controls. Operation is from an SR44 cell (FM28F, supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	
WC36P†	Multi Func Pedometer	£13.010		£15.290

## 360° Protractor

Silva



A clear 360° protractor, suitable for use with a wide range of Outdoor Leisure and Pathfinder O.S. maps, with stencil holes for marking locations/orienteering symbols. Complete with linear conversion scales and factors. A must for the serious outdoor enthusiast.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
WC59P	Protractor	£0.859	£0.740	£0.699	£1.010

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**Walk Time Calculator**

Silva



The Walk Time Calculator enables the walker to measure three important factors, the exact length of the proposed walk, the time that the walk will take and the extra time required for height gain while ascending hills.

There is always a time limit – nightfall, weather conditions, rendezvous with transport and the physical limits of the participants. The ETA (Estimated Time of Arrival) at the final destination is vital. All too often mountain rescue teams are called out to parties and individuals who have failed to predict accurately the actual walking time required for a particular route.

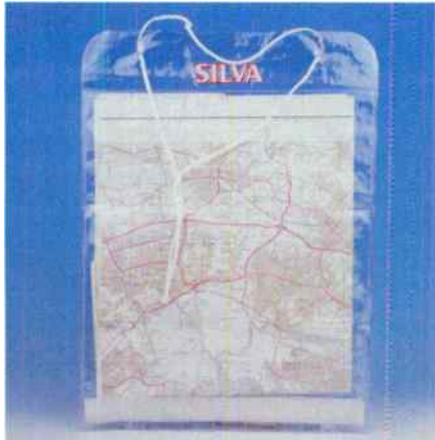
The calculator enables the user to measure the exact distance of the walk on the map using the scale for 1:50,000 or 1:25,000. This is printed on the straight and curved edges of the calculator. Once the distance has been established, the user will then identify the walking speed of the participants, generally 10 minutes per kilometre for fit regular walkers, 12 minutes for average walkers and 15 minutes for a group. Terrain and weather conditions must also be taken into account. The estimated time is then simply read from the magenta scale. A hole at one corner is included for a neck cord.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
WC60Q	Walk Time Calculator	£8.670	£8.010	£7.750	£10.190

**Map Case**

Silva



This strong, waterproof, transparent map case with velcro sealing and securing, is a must for hiking and orienteering enthusiasts. Complete with loops and 1.2m of white cord.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
WC62S	Map Case	£4.670	£4.100	£3.850	£5.490

**Nightvision**

**An Introduction to Night Vision Equipment from Moonlight Products**



Ideal for:

- ★ Wildlife Observation
- ★ Boating
- ★ Camping
- ★ Hiking
- ★ Fishing
- ★ Home & Commercial Security
- ★ Surveillance
- ★ Farming
- ★ Search & Rescue

Maplin stocks four models from Moonlight Products range of night vision equipment; these models have been carefully chosen to offer you the best performance and value for money. Each model is fully backed-up by a one-year guarantee from both Maplin and Moonlight Products. The following explanation will assist those unfamiliar with night vision equipment.

Moonlight night vision scopes and binoculars utilise electro-optical techniques which intensify existing light. These units will pick up a very broad spectrum of light, from visible through to near infra-red. The use of an infra-red illuminator throws out a beam of light outside the visible spectrum of the human eye, but to which these units are very sensitive.

You do not look through these units but instead at an intensified electronic image on a phosphor screen. This is how the image intensification process works:

Light (in the form of photons) enters the scope (or binocular) through the objective lens and strikes a photo cathode. The photo cathode, highly charged by the batteries in the unit, converts the photons into electrons. The electrons then accelerate through a vacuum inside the intensifier tube and strike a phosphor screen (much like a B&W TV screen) where the image is focussed. It is this image that the user sees.

The phosphor screen is green, specifically chosen because the human eye can differentiate more shades of green than other phosphor colours.

The models stocked by Maplin offer levels of magnification of between 1.7 and 2.5 times depending on the model.

For more information, please contact the Technical Sales Helpline or your nearest Maplin Regional Store.

**Budget Night Vision Scope**

Moonlight Products Inc.



Great value, entry level night vision scope. Provides 1.7 times magnification and viewing range of up to approximately 68m (200ft.). The objective lens is interchangeable. Does not include an infra-red illuminator. Requires 1 x 9V Alkaline PP3 (JY49D), not supplied.

**Specifications:**

Model No:	MPN-1400 Compact
Dimensions (LWH):	178 x 76 x 64mm approx
Magnification:	1.7 times
Lens:	58mm f2.0
Tripod Mount:	1/4in.
Operating Temperature:	-20°C to +45°C
Battery:	9V Alkaline PP3
Weight:	590g (1.3lb)
Field of View:	23°
Focusing:	300mm to ∞
Eyepiece:	±4 diopters
Humidity:	80% RH @20°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	1+
VP28F	MPN-1400 Compct Scope	£152.340		£179.000

**Mini Night Vision Scope**



This mini scope is sleek, lightweight and very compact. Being palm-sized it is very comfortable to use, even for extended viewing. Small enough to fit in a coat pocket, briefcase etc. Built-in infrared illuminator for use in complete darkness. Provides 1.7 times magnification and viewing range of approximately 50 metres (150ft). The objective lens is not interchangeable. Requires 2 x AAA alkaline cells (JY50E), not supplied.

**Specifications:**

Model No:	Mini
Dimensions (LWH):	140 x 44 x 76mm approx
Magnification:	1.7 times
Lens:	26mm f1.2
Battery:	2 x AAA alkaline cells
Weight:	240g (8.6oz)
Field of View:	37° min
Focusing:	2.43m to ∞
Eyepiece:	±5 diopters

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	1+
VP30H	Mini Night Vis Scope	£237.440		£279.000

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RS12750  
BS EN ISO 9002  
Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

**THE QUALITY CATALOGUE DISTRIBUTOR WITH MORE OUTLETS THAN ANY OTHER**

**Urgent Requirement?**

Call and collect from your local Maplin store.

## Compact Night Vision Scope

Moonlight Products Inc.



Tremendous night vision performance at a reasonable price. Clear optics with wide field of view, good for close-range viewing. Optimum blend of light amplification, magnification and compact size. Includes side-on infra-red illuminator for bright viewing in complete darkness. Provides 2.4 times magnification and viewing range of up to approximately 90m (300ft.). The objective lens is interchangeable. Requires 2 x AA Alkaline cells (JY48C), not supplied.

### Specifications:

Model No: NV-100 Compact  
 Dimensions (LWH): 193 x 89 x 71mm approx  
 Magnification: 2.4 times  
 Lens: 58mm f2.0  
 Battery: 2 x AA Alkaline cells  
 Weight: 860g (1.9lb)  
 Field of View: 15° min  
 Focusing: 335mm to ∞  
 Eyepiece: ±4 diopters

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VP29G	NV-100 Compct Scope	£254.460	£299.000

## Night Vision Binoculars

Moonlight Products Inc.



Binoculars with precision optics and bright light amplification provide amazing stereoscopic night viewing! Rugged, compact and completely self contained for outdoor use. Provides 2.5 times magnification and viewing range of up to approximately 106m (350ft). Does not include an infra-red illuminator and lenses are not interchangeable. Requires 2 x AA Alkaline cells (JY48C), not supplied.

### Specifications:

Model No: MPN-30K  
 Dimensions (LWH): 201 x 140 x 91mm approx  
 Magnification: 2.5 times  
 Lens: 45mm f1.5  
 Battery: 2 x AA Alkaline cells  
 Weight: 1.1kg (2.5lb)  
 Field of View: 15° min  
 Focusing: 4.6m to ∞  
 Eyepiece: ±4 diopters

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VP31J	MPN-30K NightVis Bino	£424.680	£499.000

## Conductor Gauge Comparison Table

AWG	SWG	CSA (mm <sup>2</sup> )
32		0.032
	35	0.036
31	34	0.040
	33	0.049
30		0.051
	32	0.057
29	31	0.065
	30	0.078
28		0.081
	29	0.086
27		0.103
	28	0.124
26		0.128
	27	0.132
25	26	0.162
	25	0.193
24		0.210
	24	0.245
23		0.259
	23	0.295
22		0.324
	22	0.410
21		0.412
	21	0.511
20		0.556
19		0.636
	20	0.660
	19	0.813
18		0.826
17		1.040
	18	1.170
16		1.340
	17	1.630
15		1.680
14	16	2.080
13		2.630
	15	2.640
	14	3.250
11		4.130
	13	4.470
10		5.260
	12	5.390
9	11	6.600
8		8.400
	10	10.00
7	9	10.60
6		13.00
5		16.80
4		21.00
3		26.20
2		33.60



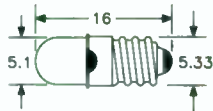
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## Filament Lamps & Holders

### LES Lamps/holders

#### Lilliput LES Type



A range of Lilliput Edison Screw (LES) E5 type bulbs, size 5.1 x 16mm.

Volts	mA	Lumens	Av. life (hours)
6	60	1	5000
6.5	150	4	2500
12	127	5.2	5000
14	50	3	1000
24	40	3	10000
28	40	3.7	25000

Retail Unit Price each (inc. VAT).

Order Code	Type 1168	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BU12N	LES Lamp 6V	£0.340	£0.285	£0.255	£0.400
BU13P	LES Lamp 6.5V	£0.340	£0.285	£0.255	£0.400
BU14Q	LES Lamp 12V	£0.391	£0.320	£0.280	£0.460
BU15R	LES Lamp 14V	£0.391	£0.320	£0.280	£0.460
BU16S	LES Lamp 24V	£0.417	£0.340	£0.290	£0.490
BU17T	LES Lamp 28V	£0.417	£0.340	£0.290	£0.490

#### Tubular LES Type

Two types are available 6V and 12V. 6V, 0-16A, 0-96W, 1-0 Lumens (nom). Nominal life 5000 hours. Post Office type 41C, 12V, 0-08A, 1W, 2 Lumens (nom). Nominal life 5000 hours.



Retail Unit Price each (inc. VAT).

Order Code	Type 1870	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
WL74R	LES Bulb 6V	£0.442	£0.370	£0.340	£0.520
WL75S	LES Bulb 12V	£0.442	£0.370	£0.340	£0.520

#### Miniature

A miniature LES lampholder with two solder tags for making the connections. Overall size 15mm across tags, 6mm diameter, 9mm high.



Retail Unit Price each (inc. VAT).

Order Code	Type 1542	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
LU72P	LES Lampholder	£0.255	£0.195	£0.170	£0.300

#### Domed Type

A panel lampholder with smart chromed bezel and domed translucent polycarbonate cap available in five colours. Panel fixing requires 10mm dia. cut out and, when fixed, lamp can be removed from either side of panel. Dia. of bezel: 12mm. Colours available Blue, Green, Red, White and Yellow.



Retail Unit Price each (inc. VAT).

Order Code	Type 1544	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RX76H	Domd LES Lhdtr Blue	£0.621	£0.510	£0.470	£0.730
RX77J	Domd LES Lhdtr Green	£0.621	£0.510	£0.470	£0.730
RX78K	Domd LES Lhdtr Red	£0.621	£0.510	£0.470	£0.730
RX79L	Domd LES Lhdtr White	£0.621	£0.510	£0.470	£0.730
RX80B	Domd LES Lhdtr Yellow	£0.621	£0.510	£0.470	£0.730

#### Flat Top Type

A panel lampholder with smart chromed bezel and flat topped, transparent red polycarbonate cap. Panel fixing requires 11mm dia. cut-out and, when fixed, lamp can be removed from either side of panel. Dia. of bezel: 14mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1169	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RX69A	Flat-Top LES Lhdtr Red	£0.612	£0.515	£0.480	£0.720

#### LES Lamp Covers

High temperature, coloured translucent, silicone rubber covers for 5mm diameter bulbs. The covers stretch over the glass bulb on LES types and our Wire Bulb and will withstand the



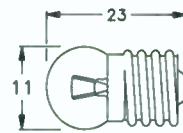
high temperature reached by the bulb. The covers also offer a very inexpensive method of mounting the bulb to a panel (up to 18swg thickness). Panel cut-out required 6.3mm (1/4in.). Overall size 12.5 x 9mm dia. Available in Amber, Blue, Green, Red and Yellow.

Retail Unit Price each (inc. VAT).

Order Code	Type 1160	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YY00A	LES Cover Amber	£0.280	£0.235	£0.210	£0.330
YY01B	LES Cover Blue	£0.280	£0.235	£0.210	£0.330
YY02C	LES Cover Green	£0.280	£0.235	£0.210	£0.330
YY04E	LES Cover Red	£0.280	£0.235	£0.210	£0.330
YY06G	LES Cover Yellow	£0.280	£0.235	£0.210	£0.330

## MES Screw Lamps/holders

### Round MES Type

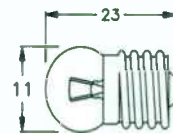


Volts	Watts	Amps	Nominal lumens	Nom. life (hours)
3.5	0.7	0.2	1.5	1000
6	0.24	0.04	0.45	1000
6	0.36	0.06	-	1000
6	0.6	0.1	3	1000
6.5	0.97	0.15	-	3000
6.5	1.95	0.3	12	3000
12	1.2	0.1	5	1000
12	2.2	0.18	11	3000
24	1.2	0.05	-	1000
24	3	0.12	11	1000

Retail Unit Price each (inc. VAT).

Order Code	Type 1977	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
WL76H	Bulb MES 3.5V	£0.374	£0.310	£0.270	£0.440
WL77J	Bulb MES 6V 0.24W	£0.374	£0.310	£0.270	£0.440
BT99H	Bulb MES 6V 0.36W	£0.374	£0.310	£0.270	£0.440
WL78K	Bulb MES 6V 0.6W	£0.374	£0.310	£0.270	£0.440
BU00A	Bulb MES 6.5V 0.97W	£0.374	£0.310	£0.270	£0.440
WL79L	Bulb MES 6.5V 1.95W	£0.374	£0.310	£0.270	£0.440
WL80B	Bulb MES 12V 1.2W	£0.374	£0.310	£0.270	£0.440
WL81C	Bulb MES 12V 2.2W	£0.374	£0.310	£0.270	£0.440
BU04E	Bulb MES 24V 1.2W	£0.374	£0.310	£0.270	£0.440
WL82D	Bulb MES 24V 3W	£0.374	£0.310	£0.270	£0.440

### Round MES Torch & Flash Light Bulbs



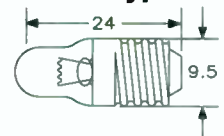
Three bulbs suitable for a wide range of torches and flash lights, with E10 (MES) end caps, size 11 x 23mm.

Volts	mA	Watts	Av. Life (hours)
1.25	250	0.31	10
2.5	300	0.75	100
3.5	300	1.05	1000

Retail Unit Price each (inc. VAT).

Order Code	Type 1992	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT95D	Torch Bulb 1.25V	£0.417	£0.295	£0.265	£0.490
BT96E	Torch Bulb 2.5V	£0.425	£0.301	£0.270	£0.500
BT97F	Torch Bulb 3.5V	£0.417	£0.295	£0.265	£0.490

### Lens End MES Type

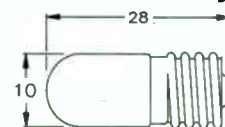


Two voltages available; 2.2V 250mA, average life 5 hours and 3.7V 300mA, average life 10 hours.

Retail Unit Price each (inc. VAT).

Order Code	Type 1990	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT69A	MES Lens 2.2V	£0.289	£0.215	£0.190	£0.340
BT70M	MES Lens 3.7V	£0.289	£0.215	£0.190	£0.340

### MES Tubular R10 Type



Volts	mA	Watts	Av. life (hours)
6.5	150	0.97	1000
6.5	300	1.95	1000
12	100	1.2	1000
12	183	2.2	1000
24	50	1.2	1000
24	125	3	1000
50	50	2.5	1000
60	50	3	1000
130	20	2.6	1000

Retail Unit Price each (inc. VAT).

Order Code	Type 1976	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BU18U	R10 MES 6.5V 150mA	£0.374	£0.310	£0.270	£0.440
BU19V	R10 MES 6.5V 300mA	£0.374	£0.310	£0.270	£0.440
BU20W	R10 MES 12V 100mA	£0.374	£0.310	£0.270	£0.440
BU21X	R10 MES 12V 183mA	£0.374	£0.310	£0.270	£0.440
BU22Y	R10 MES 24V 50mA	£0.374	£0.310	£0.270	£0.440
BU23A	R10 MES 24V 125mA	£0.374	£0.310	£0.270	£0.440
BU24B	R10 MES 50V 50mA	£0.502	£0.400	£0.360	£0.590
BU25C	R10 MES 60V 50mA	£0.502	£0.400	£0.360	£0.590
BU26D	R10 MES 130V 20mA	£0.587	£0.490	£0.425	£0.690

**All Customers**  
No additional freight charges for heavy items





**Miniature**

A miniature MES lampholder with two solder tags for making the connections. Overall size 19mm across tags, 10mm diameter, 13mm high.



Retail Unit Price each (inc. VAT).

Order Code	Type 1938	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JX87U	Min MES Lampholder	£0.255	£0.195	£0.170	£0.300

**Batten Holder**

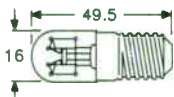
An MES bulb holder in a bakelite base, with screw terminals. Dimensions: Dia. of base: 31mm. Fixing centres: 23mm. Total height: 18mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1941	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FX86T	MES Batten Hldr	£0.382	£0.300	£0.240	£0.450

**SES 1648 Tubular**



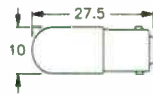
Three voltages available with E14 (SES) screw cap, size 49.5 x 16mm.

Volts	mA	Watts	Av. Life (hours)
24	125	3	2000
110 to 130	53	5 to 7	2000
220 to 260	26	5 to 7	2000

Retail Unit Price each (inc. VAT).

Order Code	Type 1983	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT73Q	SES Tubular 24V	£0.612	£0.500	£0.450	£0.720
BT74R	SES Tubular 110V	£0.672	£0.570	£0.500	£0.790
BT75S	SES Tubular 240V	£0.927	£0.750	£0.670	£1.090

**MCC Tubular R10 Bulb**



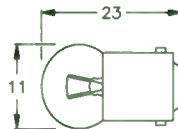
A range of voltages are available with the Ba9s (MCC) base, size 10 x 27.5mm.

Volts	mA	Watts	Av. Life (hours)
6	200	1.2	1000
6	700	4	1000
6-3	150	0.95	20000
6-5	300	1.95	1000
12	183	2.2	1000
12	340	4	1000
24	50	1.2	1000
24	83	2	1000
24	125	3	1000
28	40	1.12	1000
28	100	2.8	1000
48	40	1.92	1000
50	50	2.5	1000
60	50	3	1000
130	20	2.6	1000
240		3 to 4	1000

Retail Unit Price each (inc. VAT).

Order Code	Type 1974	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT79L	R10 MCC 6V 200mA	£0.365	£0.310	£0.270	£0.430
BT80B	R10 MCC 6V 700mA	£0.365	£0.310	£0.270	£0.430
BT81C	R10 MCC 6.3V 150mA	£0.365	£0.310	£0.270	£0.430
BT82D	R10 MCC 6.5V 300mA	£0.365	£0.310	£0.270	£0.430
BT84E	R10 MCC 12V 183mA	£0.365	£0.310	£0.270	£0.430
BT84F	R10 MCC 12V 340mA	£0.365	£0.310	£0.270	£0.430
BT84G	R10 MCC 24V 50mA	£0.382	£0.320	£0.280	£0.450
BT84T	R10 MCC 24V 83mA	£0.382	£0.320	£0.280	£0.450
BT87U	R10 MCC 24V 125mA	£0.382	£0.320	£0.280	£0.450
BT88V	R10 MCC 28V 40mA	£0.382	£0.320	£0.280	£0.450
BT89W	R10 MCC 28V 100mA	£0.382	£0.320	£0.280	£0.450
BT90X	R10 MCC 48V 40mA	£0.417	£0.330	£0.305	£0.490
BT91Y	R10 MCC 50V 50mA	£0.417	£0.330	£0.305	£0.490
BT92A	R10 MCC 60V 50mA	£0.417	£0.330	£0.305	£0.490
BT98B	R10 MCC 130V 20mA	£0.621	£0.490	£0.440	£0.730
BT94C	R10 MCC 240V	£1.060	£0.850	£0.760	£1.250

**Round MCC Type**



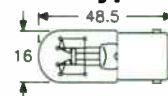
A range of voltages available with Ba9s (MCC) base, size 11 x 23mm.

Volts	mA	Watts	Av. life (hours)
6	300	1.8	3000
6-5	150	0.97	3000
6-5	300	1.95	3000
12	183	2.2	1000
24	50	1.2	1000
24	125	3.0	1000

Retail Unit Price each (inc. VAT).

Order Code	Type 1979	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BU06G	Bulb MCC 6V 1.8W	£0.417	£0.360	£0.310	£0.490
BU07H	Bulb MCC 6.5V 0.97W	£0.417	£0.360	£0.310	£0.490
BU08J	Bulb MCC 6.5V 1.95W	£0.417	£0.360	£0.310	£0.490
BU09K	Bulb MCC 12V 2.2W	£0.417	£0.360	£0.310	£0.490
BU10L	Bulb MCC 24V 1.2W	£0.417	£0.360	£0.310	£0.490
BU11M	Bulb MCC 24V 3W	£0.417	£0.360	£0.310	£0.490

**Tubular SBC Type**



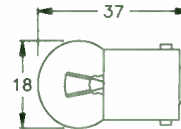
A range of lamps available with SBC, Ba15d cap, in various voltages, size 16 x 48.5mm.

Volts	mA	Watts	Av. life (hours)
24	208	5.0	2500
110/130		5 to 7	2000
220/260		5 to 7	2000

Retail Unit Price each (inc. VAT).

Order Code	Type 1985	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT57M	SBC Tubular 24V	£0.595	£0.490	£0.445	£0.700
BT58N	SBC Tubular 110V	£0.663	£0.570	£0.500	£0.790
BT59P	SBC Tubular 240V	£0.893	£0.720	£0.650	£1.050

**SCC Round K18 Type**

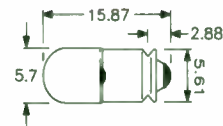


Two voltages available, 12V and 24V, both rated at 5W with and an average life of 1000 hours.

Retail Unit Price each (inc. VAT).

Order Code	Type 1981	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT71N	K18 Round 12V	£0.417	£0.370	£0.320	£0.490
BT72P	K18 Round 24V	£0.417	£0.370	£0.320	£0.490

**Midget Groove T 13/4Type**



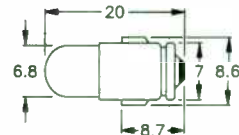
Two voltages available.

Volts	mA	Lumens	Av. life (hours)
14	80	3-7	50000
28	40	3-7	25000

Retail Unit Price each (inc. VAT).

Order Code	Type 1964	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT52G	Midget Groove 14V	£0.417	£0.330	£0.300	£0.490
BT53H	Midget Groove 28V	£0.382	£0.300	£0.270	£0.450

**Type R7 Bulb**



Three voltages available with Ba7s base, size 6.8 x 20mm.

Volts	mA	Watts	Av. life (hours)
6	100	0.6	1000
24	50	1.2	5000
60	20	1.2	1000

Retail Unit Price each (inc. VAT).

Order Code	Type 1971	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT76H	R7 Bulb 6V	£0.331	£0.285	£0.240	£0.390
BT77J	R7 Bulb 24V	£0.400	£0.340	£0.295	£0.470
BT78K	R7 Bulb 60V	£0.527	£0.470	£0.400	£0.620

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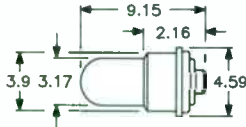
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## Sub-Midget Flange Type

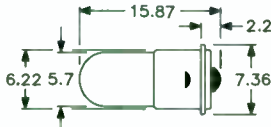


Size 9.15 x 3.9mm, one voltage available, 28V, 24mA, 1.8 lumens and average life of 5000 hours.

Retail Unit Price each (inc. VAT).

Order Code	Type 1963	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT49D	Submidget Flange 28V	£1.010	£0.860	£0.740	£1.190

## Midget Flange T 1 3/4 Type



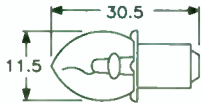
Two voltages available.

Volts	mA	Lumens	Av. life (hours)
12	100	5	5000
28	40	3-7	25000

Retail Unit Price each (inc. VAT).

Order Code	Type 1962	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT50E	Midget Flange 12V	£0.417	£0.335	£0.300	£0.490
BT51F	Midget Flange 28V	£0.374	£0.300	£0.270	£0.440

## Pre-Focus Bulb



Cap fitting, size 30.5 x 11.5mm.

Volts	Amps	Watts	Nom. Life (hours)
2.4	0.5	1.2	5
3.7	0.3	1.1	15
6.0	0.5	3.0	15

Retail Unit Price each (inc. VAT).

Order Code	Type 1995	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT66W	Bulb 2.4V Prefocus	£0.289	£0.215	£0.190	£0.340
BT67X	Bulb 3.7V Prefocus	£0.289	£0.215	£0.190	£0.340
BT68Y	Bulb 6V Prefocus	£0.289	£0.215	£0.190	£0.340

## Krypton Bulbs

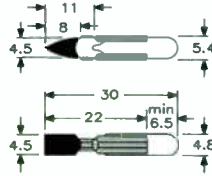
These offer a much increased light output and greater efficiency when compared to standard types. As a result, they make enhanced substitute bulbs for applications such as cycle lamps, torches and security products. However, because they are much brighter than standard bulbs, life is reduced to between 15 and 20 hours. Available only with a miniature flanged (P9) base. There are 6 bulbs in the range: 2.4V 0.7A (KU00A), 2.4V 0.95A (KU01B), 3.6V 0.8A (KU02C), 4.8V 0.7A (KU03D), 6V 0.65A (KU04E) and 7.2V 0.7A (KU05F). Overall dimensions: length 30mm, dia. 13mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 1999	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KU00A	Krypton 2.4V 0.7A	£0.468	£0.340	£0.220	£0.550
KU01B	Krypton 2.4V 0.95A	£0.468	£0.340	£0.220	£0.550
KU02C	Krypton 3.6V 0.8A	£0.468	£0.340	£0.220	£0.550
KU03D	Krypton 4.8V 0.7A	£0.468	£0.340	£0.220	£0.550
KU04E	Krypton 6V 0.65A	£0.468	£0.340	£0.220	£0.550
KU05F	Krypton 7.2V 0.7A	£0.468	£0.340	£0.220	£0.550

## Lilliput Type Telephone Lamps



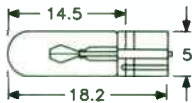
Three voltages available with T5-5 end, size 5 x 30mm approx.

Volts	mA	Lumens	Av. life (hours)
12	100	4	5000
24	50	3-3	6000
60	20	2	5000

Retail Unit Price each (inc. VAT).

Order Code	Type 2008	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT54J	Lilliput Lamp 12V	£0.519	£0.415	£0.380	£0.610
BT55K	Lilliput Lamp 24V	£0.561	£0.445	£0.395	£0.660
BT56L	Lilliput Lamp 60V	£0.629	£0.510	£0.460	£0.740

## Wedge Base Capless Type



Two versions available, both rated at 24 to 30V, current either 30mA or 42mA. Average life 1000 hours.

Retail Unit Price each (inc. VAT).

Order Code	Type 1967	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT47B	Capless Wedge 30mA	£0.365	£0.285	£0.260	£0.430
BT48C	Capless Wedge 42mA	£0.365	£0.285	£0.260	£0.430

## Backlighting Lamps

Lamps which will fit into standard 31.8 x 6.35mm (1 1/4 x 1/4 in.) chassis fuseholders and clips and which give a bright light over the length of the filament. The lamps have the appearance of standard fuses. Two voltages are available.

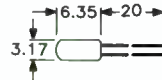
Volts	Watts	Amps
6.3V	0.6	0.1
12V	3.0	0.3

Retail Unit Price each (inc. VAT).

Order Code	Type 1985	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
UJ70M	Lamp Fuse-Shape 6V	£0.570	£0.490	£0.460	£0.670
UJ71N	Lamp Fuse-Shape 12V	£0.570	£0.490	£0.460	£0.670

## Wire Terminal Type

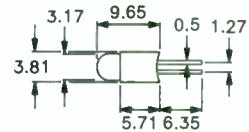
A small wire terminal type, 3.17mm dia. and 6.35mm long (excl. wire), two voltages available; 12V, 60mA average life 16000 hours and 28V, 24mA average life 5000 hours.



Retail Unit Price each (inc. VAT).

Order Code	Type 1955	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BT43W	Wire Lamp 12V	£0.297	£0.270	£0.250	£0.350
BT44X	Wire Lamp 28V	£0.468	£0.420	£0.400	£0.550

## Bi-Pin Type



This 28V bulb has a pin spacing of 2.54mm. Current consumption is 24mA with a light output of 1.8 lumens, size is 3.8 x 9.65mm approx. (excl. pins).

Retail Unit Price each (inc. VAT).

Order Code	Type 1958	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BT46A	Bi-Pin Bulb Wide	£0.842	£0.665	£0.570	£0.990

## Miniature Krypton Bulbs

A miniature 'krypton' bulb with 4mm leadouts, producing a bright light for its size. Rated at 3V and 310mA.



Retail Unit Price each (inc. VAT).

Order Code	Type 1997	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JX48C	Krypton 3V 310mA	£0.417	£0.285	£0.185	£0.490

## Wire-Ended Filament Type

A wire-ended filament type bulb, dia. 5mm, 12V, 0.08A, 0.96W, 2 Lumens (nom). Nominal life: 5000 hours.

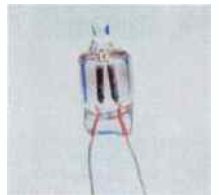


Retail Unit Price each (inc. VAT).

Order Code	Type 1954	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
WQ13P	Wire Bulb 12V	£0.485	£0.420	£0.370	£0.570

## Wire-Ended Neon Type

Wire-ended neon indicator lamp. For 250V operation use a series 270kΩ 1/4W resistor. Bulb diameter 5.95mm. Bulb length 21.5mm (max).



Retail Unit Price each (inc. VAT).

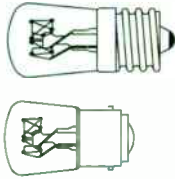
Order Code	Type 1992	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RX70M	Wire Neon	£0.170	£0.120	£0.100	£0.200

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**Pygmy Lamps**

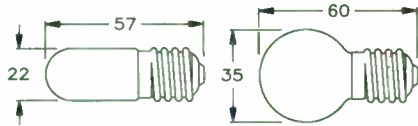


Two types are available; a bayonet fitting B22d (BC), size 29 x 59mm and a screw cap type E27 (ES), size 29 x 61mm. Both types are rated 200 to 250V 15W and have an average life of 1000 hours. Note: Switch off/isolate power before changing bulb.

Retail Unit Price each (inc. VAT).

Order Code	Type 2003	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BT60G	Pygmy Bayonet	£0.757	£0.590	£0.520	£0.690
BT61R	Pygmy Screw Cap	£1.010	£0.820	£0.730	£1.190

**Microwave Oven Lamps**

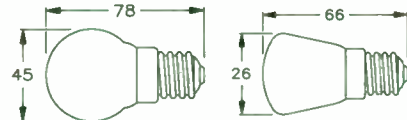


Two types of lamp to suit Japanese microwave ovens with non-standard 17mm diameter screw cap. The tubular type is 22 x 57mm 250V 15W, the round type is 35 x 60mm 250V 25W.

Retail Unit Price each (inc. VAT).

Order Code	Type 2004	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BT62S	Microwave Tubular	£1.260	£0.970	£0.860	£1.430
BT63T	Microwave Round	£1.260	£0.970	£0.860	£1.430

**Oven Lamps**



Two types of lamp specially constructed to withstand the high temperatures (300°C) found in ovens. The smaller type is 26 x 66mm 240V 25W, and the larger version is 45 x 78mm 240V 40W, both versions are E14 screw cap.

Retail Unit Price each (inc. VAT).

Order Code	Type 2005	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BT64U	Oven Lamp 25W	£1.430	£1.130	£1.000	£1.690
BT65V	Oven Lamp 40W	£1.860	£1.450	£1.290	£2.190

**Low Voltage Dichroic Lamps**



A range of 12V low voltage dichroic lamps in a variety of wattages and beam angles with bi-pin single ended GX 5.3 caps. The dichroic reflector has the advantage that it radiates the majority of the heat in the opposite direction to the light beam,

meaning that little infra-red is radiated forward. This makes the lamps particularly suitable for illumination of heat sensitive material, such as transparencies in slide projectors for example. Further advantages of using dichroic lamps are the higher light output (a 50W lamp has the same light intensity of a 150W PAR lamp), longer life and superior colour rendition when compared to standard PAR lamps.

Available in the following wattages and beam angles:

Part No.	Watts	Beam Angle	Order Code
ESX/CG	20W	13°	AB73Q
BAB/CG	20W	40°	AB74R
EXT/CG	50W	12°	AB75S
EXZ/CG	50W	26°	AB76H
EXN/CG	50W	40°	AB77J
FNV/CG	50W	55°	AB78K
EYF/CG	75W	14°	AB79L
EYC/CG	75W	42°	AB81C

Diameter: 50mm  
Length: 45mm

Retail Unit Price each (inc. VAT).

Order Code	Type 5433	Price each exc. VAT			
		1+	5+	10+	1+
AB73Q	ESX/CG	£3.390	£3.250	£3.150	£3.990
AB74R	BAB/CG	£3.390	£3.250	£3.150	£3.990
AB75S	EXT/CG	£3.390	£3.250	£3.150	£3.990
AB76H	EXZ/CG	£3.390	£3.250	£3.150	£3.990
AB77J	EXN/CG	£3.390	£3.250	£3.150	£3.990
AB78K	FNV/CG	£3.390	£3.250	£3.150	£3.990
AB79L	EYF/CG	£3.390	£3.250	£3.150	£3.990
AB81C	EYC/CG	£3.390	£3.250	£3.150	£3.990

**Electronic Safety Converter**



This very compact and safe electronic converter is the ideal way to convert mains power for low voltage (12V) dichroic lamps of up to 50W (order codes AB73Q, AB74R, AB75S, AB76H, AB77J and AB78K). The converter stays cool in use, is quick and easy to fit and produces a controlled power flow that will help to prolong bulb life. Can be used with dimmer switches. Dimensions: 75 x 33 x 25mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 11663	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KE85G	Lighting Transformer	£9.350	£7.500	£6.950	£10.990

**150W Halogen Tube**



A halogen tube rated at 250V AC, 150W, as used with the mini halogen lamp, DM50E, etc.

Retail Unit Price each (inc. VAT).

Order Code	Type 4837	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DM51F	150W Halogen Tube	£2.540	£1.440	£1.160	£2.950

**240V 300W and 500W Halogen Lamps**



High-powered halogen tubes with a brilliant white light (colour temp. 2900°K) which can provide 9000 lumens of illumination for 500W tube and 5000 lumens for 300W tube. To fit standard R7S base, these tubes are suitable for any application where a very bright light is required (for example, video work). Also suitable as replacement bulbs for our Security Light (GK05F). Important note: please avoid touching the glass itself with bare fingers as the grease will reduce the life of the tube. Average life 2000 hours. Overall dimensions: 119.6mm long x 10mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 4838	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
KP50E	300W Halogen Tube	£2.540	£1.300	£1.020	£2.990
JX53H	500W Halogen Tube	£2.540	£1.300	£1.020	£2.990

**Neon Indicators**

**Miniature Round Panel Type**



Moulded body with built-in resistance for 220-240V use, Red, Green or Amber lens. Requires a 7mm mounting cut-out in panel. Overall dimensions: 33mm long, 8mm diameter round lens.

Retail Unit Price each (inc. VAT).

Order Code	Type 2010	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BK52G	Min Neon Red	£0.842	£0.680	£0.620	£0.990
BK53H	Min Neon Green	£0.842	£0.680	£0.620	£0.990
BK54J	Min Neon Amber	£0.842	£0.680	£0.620	£0.990

**Small Square Panel Type**



Moulded body with built-in resistance for 220-240V use, Red, Green or Amber lens. Requires a 10mm mounting cut-out in panel. Overall dimensions: 38mm long, 12mm square lens.

Retail Unit Price each (inc. VAT).

Order Code	Type 2012	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RX82D	Pan Neon Amber	£0.757	£0.600	£0.545	£0.890
RX83E	Pan Neon Red	£0.757	£0.600	£0.545	£0.890
BK51F	Pan Neon Green	£0.757	£0.600	£0.545	£0.890



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## Square Panel Type



Moulded body with built-in resistance for 220-240V use. Green or Red lens. Requires a 10mm dia. mounting hole in panel. Lens size 15 x 12mm, overall length 43mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 2017	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
RX81C	Square Neon Red	£0.757	£0.630	£0.550	£0.890
RX98G	Square Neon Green	£0.757	£0.630	£0.550	£0.890

## Snap-In Plastic Type



Moulded body with integral retaining ears which lock onto the edge of a panel when the lamp is snapped-in. The lamp has integral resistance for 220-240V use. Available in red, green or amber. Panel cutout required is 10mm diameter. Connections are a pair of 6.35mm (1/4in.) push-on blades separated by plastic insulator. Overall dimensions: 56 long x 12mm diameter lens.

Retail Unit Price each (inc. VAT).

Order Code	Type 2021	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
MK78K	Red Snap-In Neon	£0.672	£0.520	£0.470	£0.790
MK79L	Green Snap-In Neon	£0.672	£0.520	£0.470	£0.790
MK80B	Orange Snap-In Neon	£0.672	£0.520	£0.470	£0.790

## Chrome Bezel Type



Chrome-plated metal body with built-in resistance for 220-240V use. Red or Green lens. Requires a 9mm mounting cut-out in panel. Overall dimensions: 41mm long, 11mm diameter round chrome bezel.

Retail Unit Price each (inc. VAT).

Order Code	Type 2025	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BK55K	Chrome Neon Red	£1.430	£1.190	£1.090	£1.690
BK56L	Chrome Neon Green	£1.430	£1.190	£1.090	£1.690

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## Xenon

### Xenon Beacons

## Low Profile Xenon Flasher Unit



Weatherproofed xenon tube-based flasher designed primarily as an alarm beacon. Gives off two bright, attention-grabbing pulses of light every second. The translucent acrylic cover lens of the unit is marked with Fresnel rings and the sides are striated to maximise light dispersal. Flashers with lenses in four different colours are available; red, clear, amber and blue. The body itself is manufactured from durable black ABS plastic. This unit is not suitable for continuous flashing use. Tube life approx. 1 million flashes.

Working voltage: 12V DC  
Supply current: 180mA  
Power Output: 1W  
Flash Rate: 2Hz (approx)  
Overall size: 70mm dia. x 44mm high  
Fixing: 1 x 6mm dia. centre fixing  
Supplied with approx 0.5m red and black cable and mounting gasket.

Retail Unit Price each (inc. VAT).

Order Code	Type 2041	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
ZC14Q	Xenon Flasher Amber	£8.500	£6.820	£5.350	£9.990
ZC15R	Xenon Flasher Blue	£8.500	£6.820	£5.350	£9.990
ZC16S	Xenon Flasher Clear	£8.500	£6.820	£5.350	£9.990
ZC17T	Xenon Flasher Red	£8.500	£6.820	£5.350	£9.990

## Xenon Tube

### Linear



Two general purpose high quality flash tubes with straight sealed glass envelopes. One tube is designed to give high energy flashes at a low rate and the other to give low energy flashes at a fast rate. (On both types, faster flash rates are possible with lower energy and life will be considerably extended).

#### Specification

	High energy	Fast rate
Minimum anode voltage:	220V	180V
Maximum anode voltage:	350V	400V
Nominal anode voltage:	320V	350V
Maximum energy input per flash:	25Ws*	0.3Ws*
Maximum flash rate at maximum input power:	6/min	60/min
Life with max energy and max flash rate:	5000 flashes	1 million flashes
Minimum trigger voltage:	4kV	4kV
Dimensions:	35mm long x	3.7mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 2294	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YQ62S	Xnn Tube High Energy	£1.350	£0.940	£0.830	£1.590
FS77J	Xnn Tube Fast Flash	£1.520	£1.000	£0.850	£1.790

## Strobe

### Optum

A U-shaped high quality flash tube designed for use in stroboscopic applications. Flash rates up to 100 flashes per second are possible at maximum energy. At lower energies the life of the tube will be considerably extended.

#### Specification

Minimum anode voltage:	200V
Maximum anode voltage:	400V
Nominal anode voltage:	300V
Maximum energy input per flash:	4 Watt seconds
Maximum flash rate at maximum input power:	6000/min
Life with max energy and max flash rate:	1 million flashes
Minimum trigger voltage:	4kV
Diameter of tube:	6mm
Width of whole unit:	16mm
Length of unit (excl. glass seal):	32mm plus 15mm pins

Retail Unit Price each (inc. VAT).

Order Code	Type 2295	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FS78K	Xenon Tube Strobe	£2.030	£1.380	£1.200	£2.390

## Beacon

A U-shaped high quality flash tube designed for use in warning and alarm beacons. Flash rates up to 100 flashes per minute are possible at high energy. At lower energies the life of the tube will be considerably extended.

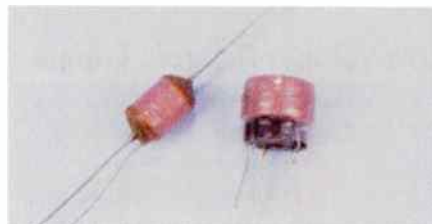
#### Specification

Minimum anode voltage:	250V
Maximum anode voltage:	500V
Nominal anode voltage:	400V
Maximum energy input per flash:	45W seconds
Maximum flash rate at maximum input power:	100/min
Life with max energy and max flash rate:	2 million flashes
Minimum trigger voltage:	6kV
Diameter of tube:	6mm
Width of whole unit:	22mm
Length of unit (excl. glass seal):	53mm plus 40mm pins

Retail Unit Price each (inc. VAT).

Order Code	Type 2297	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FS79L	Xenon Tube Beacon	£2.280	£1.650	£1.370	£2.690

## Trigger Transformers



Trigger transformers for use with our xenon tubes. The 6kV type is for use with the Beacon tube.

#### Specification

Secondary volts	4kV	6kV
Primary volts nominal	170V	190V

Trigger capacitor	0.033µF	0.047µF
Energy	0.6mj	0.9mj
Primary turns	10	15.5
Secondary turns	500	700
Primary inductance	2.5µH ±25%	4µH±25%
Secondary inductance	3mH±20%	6.5mH±20%
Primary resistance	80mΩ	85mΩ
Secondary resistance	70Ω	90Ω
Dimensions	14.5 x 8-3mm dia.	11 x 13mm cia.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YQ63T	4kV Trigger Transmtr	£0.672	£0.790
JE15R	6kV Trigger Transmtr	£0.842	£0.960

**Lasers**

**Laser Diodes & Modules**

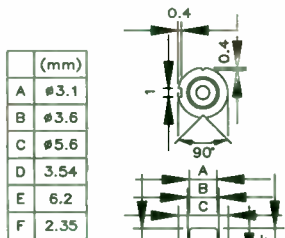
**5mW Laser Diode with Photodiode**

This low cost, compact but powerful laser diode has a built-in photodiode to provide optical feedback and monitoring to your external drive circuit. This means that only six external components are required to regulate the laser drive current. Always use anti-static precautions when handling the device.

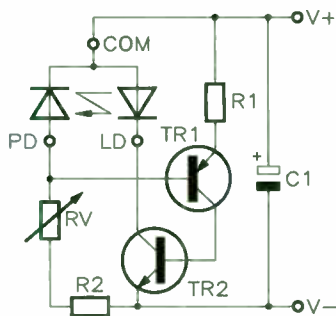
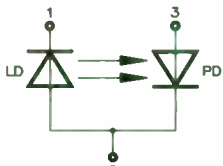


**Specification:**

Dimensions:	10mm (dia) x 5mm (L)
Beam aperture:	1mm (dia)
Wavelength:	650nm
Power supply:	3V
Operating current:	65mA
Output power:	5mW



1. Laser Diode Cathode.
2. Laser Diode Anode and Photodiode Cathode.
3. Photodiode Anode.



R1,R2 = 1k2 V=3V DC  
C1 = 10uF  
TR1 = 2N3906  
TR2 = 2N3904

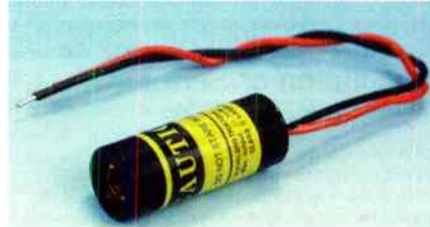
R1,2 are Min Res (M1K2), RV can be a small preset 4.7k (UH02C). C1 can be a small tantalum (WW68Y). TR1 is order code QR42V, and TR2 is (QR40T).  
**CAUTION:** This device generates a visible beam of

red light that will not burn or cut. However, it is moderately hazardous and should not be viewed by the naked eye on the same axis as the beam.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE09K 1	650nm Diode	£36.990	£49.990

**1mW 3V Laser Module**



A laser diode which features built-in power stabilisation, built-in slow start and heatsink. The device is complete with optics and electronics, yet is only 27.5mm long and 10.5mm in diameter. Operating mode is continuous wave with small beam divergence and excellent far-field beam quality. Most popular commercial applications for this device include laser pointers, bar-code readers and laboratory and educational uses. So simple to use, it only requires a 3V DC supply to operate - maximum input current should be restricted to 70mA

**Specification:**

Diode laser type:	Index-guided LD
Operating mode:	Continuous wave
Beam divergence:	<0.5mrad
Wavelength:	670 ±10nm (red)
Output power:	1mW
Operating temperature range:	-10°C to +50°C
Power supply:	+3V DC (2.5V to 4.5V)
Dimensions:	27.5mm long x 10.5mm dia.
Weight:	15g

**CAUTION:** This device generates a visible beam of red light that will not burn or cut. However, it is moderately hazardous and should not be viewed by the naked eye on the same axis as the beam. CJ51F conforms to Class II for laser products. Suitable warning labels to this effect should be attached to any equipment using this device.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CJ51F 1	1mW Diode Laser	£29.990	£39.990

**5mW 3V Laser Module**



A small laser module capable of delivering a powerful 5mW visible red (670nm wavelength) beam from a low voltage. Suitable for a wide range of general laboratory and field applications.

**Specification:**

Dimensions:	10mm (dia) x 20mm (L)
Beam aperture:	3mm (dia)
Wavelength:	670nm
Power supply:	3V
Operating current:	85mA
Output power:	5mW

**CAUTION:** This device generates a visible beam of red light that will not burn or cut. However, it is moderately hazardous and should not be viewed by the naked eye on the same axis as the beam.

**N.B:** PCB 11.5 x 8mm, protrudes from the back of the module. Care must be taken when handling this device.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE07H 1	5mW 670nm 3V Mod	£29.990	£39.990

**5mW 6-12V Laser Module**



A class IIIa laser diode capable of delivering an output power of 5mW (nominal), at 670nm (red). The beam is index guided, which gives a clearer spot than gain guided devices, and can operate from a battery. These devices are suitable for general purpose laboratory and field applications.

**Specification:**

Dimensions:	10.5mm(dia) x 42.5mm(L)
Wavelength:	670nm
Power supply:	6-12V DC
Operating current:	80mA
Output power:	<5mW
Angular divergence:	1 minute
Beam divergence:	1m rad

**CAUTION:** This device generates a visible beam of red light that will not burn or cut. However, it is moderately hazardous and should not be viewed by the naked eye on the same axis as the beam.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AQ27E	5mW 670nm Laser Di	£49.990	£69.990

**High Brightness 3mW Laser Module**



A Class IIIA laser product capable of delivering an output of 3mW at a wavelength of 635nm (bright red), supplied complete with its own built-in regulator. Easy to set up, this module is ideal for general purpose laboratory and field operations or educational use.

**Specification:**

Dimensions:	11mm (dia) x 37mm (L)
Beam aperture:	5mm (dia)
Wavelength:	635nm (bright red)
Power supply:	3V
Operating current:	40 to 70 mA
Output power:	3mW

**CAUTION:** This device generates a visible beam of red light that will not burn or cut. However, it is moderately hazardous and should not be viewed by the naked eye on the same axis as the beam.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE09G 1	3mW 635nm Module	£69.990	£99.000

## Alignment Laser



A powerful and convenient 3mW (nominal) laser, that has uses in surveying, machine alignment, and other similar applications. The laser is class IIIa and features an index guided laser structure, and can operate from a battery. The laser has built-in slow start, and is internally regulated, which means it can operate from a mains adaptor supplying 6-12V DC. Due to the 633nm wavelength, the output will look considerably brighter, when compared with 670nm types. An adjustable lens allows the beam to be accurately focused. The power supply leads to this unit should not be extended more than 1m in length in order to conform to the EMC Directive. **N.B.** This unit may require heatsinking when used continuously, or for long periods.

### Specification:

Dimensions:	10.5mm(dia) x 42.5mm(L)
Wavelength:	633nm (bright red)
Power supply:	6 to 12V DC
Current consumption:	100mA
Power consumption:	1200mW
Output power:	<3mW
Beam divergence:	1.5m rad

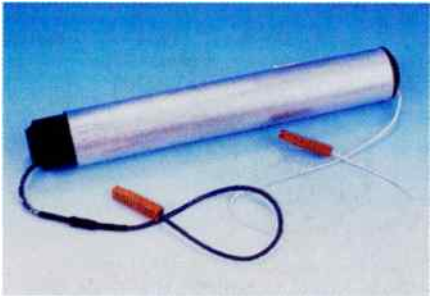
**CAUTION:** This device generates a visible beam of red light that will not burn or cut. However, it is moderately hazardous and should not be viewed by the naked eye on the same axis as the beam.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type 2015	Price each exc. VAT			inc. VAT each
		2+	5+	10+	1+
AC28F	Alignment Laser	£99.870	£87.650	£79.950	£140.940

## Laser Tubes

### Helium Neon Laser Tube



A helium-neon laser tube having a typical output power of 2mW. A complete kit including this laser and power supply is also available (order code LM72P). The laser is capable of making small holograms and is ideal for use in school physics laboratories as the laser can be used to demonstrate many of the properties of light. The laser emits randomly polarised red light at 632.8nm wavelengths and at a power which makes it completely safe provided that you do not stare directly into the beam, when retinal damage may result. Therefore never use in the presence of children unless a diverging lens is fitted to the beam. The laser is incapable of burning, cutting or drilling and may be directed at the skin when no harm whatsoever will result.

### Specification:

Typical power:	2mW
Overall size:	260 x 37mm dia.
Beam exit diameter:	0.75mm
Full angle divergence:	1.43mRad
Starting voltage:	8kV
Supply voltage:	1.5kV
Tube voltage drop:	1.15kV ±100V
Ballast resistor:	68kΩ 4W
Operating current:	5mA

Wavelength: 632.8nm (red light at 4.741 x 10<sup>14</sup> Hz)  
 Operating mode: TEM<sub>00</sub> (Gaussian intensity distribution)

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type 2299	Price each exc. VAT			inc. VAT each
		2+	5+	10+	1+
XL11M 1	Laser Tube	£38.990	£34.990	£31.990	£59.990

## Light Emitting Diodes

### Introduction

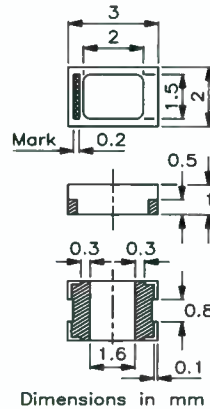
### Calculation of Series Resistors For LEDs

Connect a resistor in series with the LED. The correct resistance value is given by the formula:  $R_L = (V_S - V_F) \div I_F \Omega$  where  $I_F$  is in amps,  $V_S$  is the applied voltage,  $V_F$  is the forward voltage shown in the tables above, and  $I_F$  is the forward current which gives the highest brightness at a safe dissipation and is approximately equal to 20mA (0.02A). For AC operation connect a diode 1N4148 etc. in inverse parallel with the LED and halve the value of the resistor determined by the above formula.

### Surface Mount

### Low Profile SMD LED Lamps

Kingbright



A miniature 3mm x 2mm (1mm high) LED specifically for direct surface mounting to a PCB. Viewing angle is 90° for all colour types. Available as translucent orange, green and yellow, and clear super-bright red. A marker bar at one end of the ceramic base identifies the cathode, except for the super-bright red type where it identifies the anode. **Sold in multiples of 25 (price per 25):**

Type	Luminous intensity @ 20mA
Orange	12.5 to 32mcd
Green	12.5 to 20mcd
Yellow	12.5 to 20mcd
Super red	20 to 60mcd
Clear green	20 to 60mcd

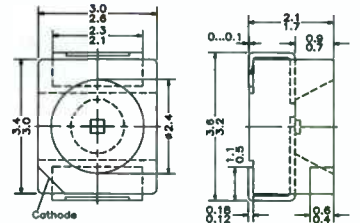
Price per pack is shown. Order quantities less than 4 packs will be sold at the one off inc. VAT price.

Order Code	Type 3720	Price each exc. VAT			inc. VAT each
		4+	10+	40+	1+
CJ72P	SMD Red LED	£3.300	£2.750	£2.490	£4.000
CJ73Q	SMD Green LED	£3.300	£2.750	£2.490	£4.000
CJ74R	SMD Yellow LED	£3.300	£2.750	£2.490	£4.000
CJ71N	SMD Super Red LED	£5.100	£4.000	£3.490	£6.100
AQ80B	Clear Green SMT LED	£3.300	£2.750	£2.490	£3.990

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## SMT-TOP-LEDs

Siemens



A range of surface mount LEDs that are housed in a white P-LCC-2 package. Available in hyper-red and super-red. Sold in strips of 10. Ideal for backlighting or light pipe applications.

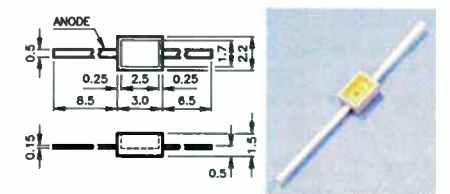
Manufacturer's Code	Colour	Light intensity $I_F=10mA$	Viewing angle	Maplin Code
LS T670-K	Super red 635nm	12.5mcd	120°	CY98G
LH T674-KO	Hyper red 660nm	20mcd	120°	CY99H

Price per pack is shown. Order quantities less than 10 packs will be sold at the one off inc. VAT price.

Order Code	Type 2099	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
CY98G	Super Red SMount	£2.390	£1.990	£1.900	£4.190
CY99H	Hyper Red SMount	£2.990	£2.790	£2.490	£5.640

## Specialised LED's

### Axial Leaded LEDs



A range of leaded LEDs in a package similar to surface mount, allowing a very small indicator footprint which may be soldered without the use of special SMD handling equipment. Available in high efficiency red and standard amber, yellow and green. All types are transparent and have a viewing angle of 90° with a maximum reverse voltage of 5V.

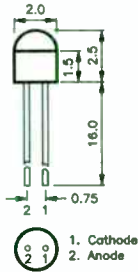
NOTE: Outline is for CH08J, with cathode lead 0.4mm thick. For other colours in the range polarity is reversed i.e. anode is lead 0.4mm

**Specification**    **Yellow**    **Green**    **Orange**    **Red**  
 Max. light output: 20mcd    20mcd    20mcd    20mcd  
 Wavelength: 590nm    565nm    610nm    660nm  
 Forward voltage: 2.1V    2.25V    2V    1.85V  
 Figures quoted are for  $I_F=20mA$ .

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 10384	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
CH05F	Leaded Ax LED Yel	£0.220	£0.150	£0.105	£0.290
CH06G	Leaded Ax LED Grn	£0.220	£0.150	£0.112	£0.290
CH07H	Leaded Ax LED Amb	£0.220	£0.150	£0.105	£0.290
CH08J	Leaded Ax LED Red SB	£0.235	£0.175	£0.142	£0.290

### 2mm Ceramic LEDs



Ceramic based 2mm diameter LEDs ideal for pin-point indicators where space is at a premium. Available in red and green. A red spot on the package denotes the anode.

Specification (I <sub>F</sub> =20mA)	Red	Green
Luminous intensity:	1-5mcd	1-5mcd
Peak wavelength:	700nm	565nm
Max forward voltage:	2.8V	2.8V
reverse voltage:	5V	5V
Max reverse current:	100µA	100µA

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CH15R	2mm Cer LED Red	£0.325	£0.390
CH17T	2mm Cer LED Grn	£0.325	£0.390

### Standard LED's

### 5mm Diameter Types

**Toshiba**

A range of high quality, bright, 5mm LEDs available in red, green and yellow. And with diffused lens. The optical construction ensures the LEDs have a superior light output, low drive current and a fast response time - ideal for pulse operation. The viewing angle is 80° (50% light output). The recommended forward current is 15 to 20mA. Cathode has shortest lead.



Specification (I <sub>F</sub> =15mA)	Red	Green	Yellow
Light output typical at:	3mcd	8-0mcd	6-0mcd
Forward voltage at I <sub>F</sub> =20mA:	2-15V	2-15V	2-05V
Forward current (maximum):	20mA	25mA	25mA
Reverse voltage (maximum):	4V	4V	4V
Power dissipation (maximum):	90mW	100mW	100mW
Peak wavelength:	700nm	565nm	585nm

Manufacturer's Code	MPS Code
TLR114A - Red	NP03D
TLG114A - Green	NP01B
TLY114A - Yellow	NP05F

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP03D	TLR114A(KT)	£0.036	£0.076
NP01B	TLG114A(KT)	£0.045	£0.086
NP05F	TLY114A(KT)	£0.060	£0.096

### 3mm Diameter Type

**Toshiba**

A range of high quality, bright, 3mm LEDs available in red, green and yellow. And with diffused lens. The optical construction ensures the LEDs have a superior light output, low drive current and a fast response time - ideal for pulse operation. The viewing angle is 70° (50% light output). The recommended forward current is 5 to 10mA. Cathode has shortest lead.



Specification (I <sub>F</sub> =10mA)	Red	Green	Yellow
Light output typical at:	2-5mcd	5-0mcd	4-0mcd
Forward voltage at I <sub>F</sub> =20mA:	2-8V	2-8V	2-8V
Forward current (maximum):	25mA	25mA	25mA
Reverse voltage (maximum):	4V	4V	4V
Power dissipation (maximum):	60mW	70mW	70mW
Peak wavelength:	700nm	565nm	585nm

Manufacturer's Code	MPS Code
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TLR124 - Red  
TLG124 - Green  
TLY124 - Yellow

NP04E  
NP02C  
NP06G

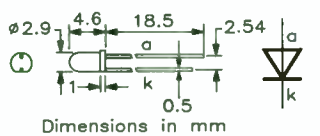
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP04E	TLR124A(KT)	£0.038	£0.070
NP02C	TLG124A(KT)	£0.045	£0.080
NP06G	TLY124A(KT)	£0.060	£0.090

### 3mm Diameter Types

**Kingbright**

A good quality, bright, miniature LED available in six colours. Case size: 3mm dia. A panel mounting clip is available, sold separately. Cathode denoted by flat on body and by short lead.



Red	Green	Orange	Yellow	Pure Green	Pure Orange
-----	-------	--------	--------	------------	-------------

Light output typical at I <sub>F</sub> = 20mA:					
3mcd	12mcd	20mcd	20mcd	20mcd	40mcd
Forward voltage at I <sub>F</sub> = 20mA:					
2V	2.2V	2V	2.1V	2V	2.2V
Forward current (max):					
20mA	30mA	30mA	30mA	50mA	50mA
Reverse voltage (max):					
5V	5V	5V	5V	5V	5V
Power dissipation (max):					
120mW	105mW	105mW	105mW	105mW	105mW
Peak wavelength:					
665nm	565nm	625nm	595nm	555nm	610nm

The LED has a diffused lens which gives a wide viewing angle of 120°. Also available in pure green (555nm) and pure orange (610nm).

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WL32K	Mini LED Red	£0.060	£0.130
WL33L	Mini LED Green	£0.050	£0.140
WL34M	Mini LED Orange	£0.065	£0.210
YY38R	Mini LED Yellow	£0.056	£0.180
CK35Q	Mini LED Pure Green	£0.090	£0.230
CK36P	Mini LED Pure Orange	£0.090	£0.230

### 3mm Diameter Types

**Hewlett-Packard**

A range of high quality, bright, 3mm LEDs available in red, green and yellow. The optical design ensures the LEDs have a superior light output with a wide viewing angle of 60°. Cathode has shortest lead.



Specification	Red	Green	Yellow
Light output typical at I <sub>F</sub> =10mA:5-5mcd:	5-0mcd	6-0mcd	
Forward voltage at I <sub>F</sub> =10mA:	2-2V	2-3V	2-2V
Forward current (maximum):	90mA	90mA	60mA
Reverse voltage (maximum):	5V	5V	5V
Power dissipation (maximum):	135mW	135mW	85mW
Peak wavelength:	635nm	565nm	583nm
Manufacturer's Code	MPS Code		
HLMP-1301	CZ22Y		
HLMP-1503	CZ23A		
HLMP-1401	CZ24B		

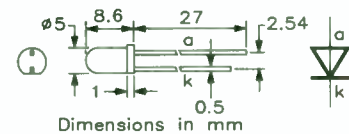
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CZ22Y	HP Mini LED Red	£0.190	£0.300
CZ23A	HP Mini LED Green	£0.190	£0.300
CZ24B	HP Mini LED Yellow	£0.190	£0.300

### 5mm Diameter Types

**Kingbright**

A good quality, bright standard LED available in six colours. Case size: 5mm dia. Panel mounting clips are sold separately. Cathode denoted by flat on body and by short lead.



Red	Green	Orange	Yellow	Pure Green	Pure Orange
-----	-------	--------	--------	------------	-------------

Light output typical at I <sub>F</sub> = 20mA:					
8mcd	8mcd	30mcd	30mcd	20mcd	40mcd
Forward voltage at I <sub>F</sub> = 20mA:					
2V	2-2V	2V	2-1V	2V	2-2V
Forward current (max):					
20mA	30mA	30mA	30mA	50mA	50mA
Reverse voltage (max):					
5V	5V	5V	5V	5V	5V
Power dissipation (max):					
120mW	105mW	105mW	105mW	105mW	105mW
Peak wavelength:					
665nm	565nm	625nm	595nm	555nm	610nm

The LED has a diffused lens which gives a wide viewing angle of 120°.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WL27E	LED Red	£0.090	£0.120
WL28F	LED Green	£0.060	£0.150
WL29G	LED Orange	£0.049	£0.200
WL30H	LED Yellow	£0.049	£0.200
CK37S	LED Pure Green	£0.060	£0.220
CK38R	LED Pure Orange	£0.065	£0.220

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## 5mm Diameter Types

**Hewlett-Packard**

A range of high quality, bright, 5mm LEDs available in red, green and yellow. These optically well designed LEDs have a wide viewing angle of 60°. Cathode denoted by flat on body and short lead.



Specification:	Red	Green	Yellow
Light output typical at $I_F=10\text{mA}$ :	7.0mcd	5.2mcd	8.0mcd
Forward voltage at $I_F=10\text{mA}$ :	2.2V	2.3V	2.2V
Forward current (maximum):	90mA	90mA	60mA
Reverse voltage (maximum):	5V	5V	5V
Power dissipation (maximum):	135mW	135mW	85mW
Peak wavelength:	635nm	565nm	583nm
<b>Manufacturer's Code</b>	<b>MPS Code</b>		
HLMP-3301	CZ25C		
HLMP-3507	CZ26D		
HLMP-3401	CZ27E		

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2048	Price each exc. VAT		
		25+	100+	1000+
CZ25C	HP LED Red	£0.150	£0.140	£0.130
CZ26D	HP LED Green	£0.150	£0.140	£0.130
CZ27E	HP LED Yellow	£0.150	£0.140	£0.130

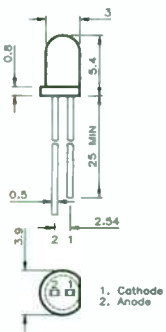
## 3mm Blue LED

A low-cost blue LED available with either a blue or water clear package.



### Specification

Luminous intensity  $I_F=30\text{mA}$ :



0.6mcd typical  
Peak wavelength: 470nm  
Forward voltage: 3.3V max.  
Forward current: 50mA max.  
**Type Order Code**  
Blue JA27E  
Water Clear JA28F



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 12707	Price each exc. VAT		
		25+	100+	500+
JA27E	3mm LED Tint Blue	£0.990	£0.940	£0.657
JA28F	3mm LED Clear Blue	£0.990	£0.940	£0.657

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 12708	Price each exc. VAT		
		25+	100+	500+
JA29G	5mm LED Tint Blue	£1.080	£0.950	£0.689
JA30H	5mm LED Clear Blue	£1.080	£0.950	£0.689

## 3mm High Brightness Blue Types

**Kingbright**

A 3mm high quality, high brightness blue LED available with either a blue-diffused, blue-transparent or water clear casing.



Specification ( $I_F=20\text{mA}$ )	Diffused (JA20W)	Transparent (JA19V)	Clear (JA22Y)
Light output:	40mcd	60mcd	90mcd
Viewing angle:	60°	20°	20°
Peak wavelength:	430nm		
DC forward current:	30mA max.		
Forward voltage:	5.5V max.		
Operating temperature:	-20°C to +80°C		
Reverse voltage:	5V		

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

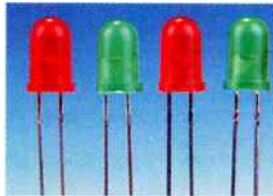
Order Code	Type 12703	Price each exc. VAT		
		10+	25+	100+
JA20W	3mm LED Diffuse Blue	£1.490	£1.290	£1.090
JA19V	3mm LED Trans Blue	£1.490	£1.290	£1.090
JA22Y	3mm LED Clear Blue	£1.490	£1.290	£1.090
JA23A	5mm LED Trans Blue	£1.490	£1.290	£1.090
JA24B	5mm LED Diffuse Blue	£1.490	£1.290	£1.090
JA25C	5mm LED Clear Blue	£1.490	£1.290	£1.090

## Direct Connection LED's

### 5V and 12V LED Types

**Kingbright**

A range of standard sized 3mm and 5mm coloured LEDs which are designed to connect directly across 5V DC and 12V DC power supply rails, having a built-in resistor thus greatly simplifying design and assembly. The encapsulations are also standard and will fit LED front panel clips (see LED clips). The cathode of each is denoted by the flat on the body and the shorter of the two leads. Viewing angle of all types is 120°.



3mm types	Wavelength	Luminous intensity
		$I_F = 10\text{mA}$
3mm 5V red	625nm	2 to 8mcd
3mm 5V green	565nm	2 to 8mcd
3mm 12V red	625nm	2 to 8mcd
3mm 12V green	565nm	2 to 8mcd
3mm 12V yellow	590nm	2 to 8mcd
5mm types	Wavelength	Luminous intensity
		$I_F = 10\text{mA}$
5mm 5V red	625nm	2 to 8mcd
5mm 5V green	565nm	2 to 8mcd
5mm 12V red	625nm	2 to 8mcd
5mm 12V green	565nm	2 to 8mcd
5mm 12V yellow	590nm	2 to 8mcd

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2054	Price each exc. VAT		
		25+	100+	1000+
CJ64U	3mm 5V LED Red	£0.147	£0.117	£0.107
CJ65V	3mm 5V LED Green	£0.149	£0.119	£0.108
CJ66W	3mm 12V LED Red	£0.149	£0.119	£0.108
CJ67X	3mm 12V LED Green	£0.158	£0.126	£0.115
CJ68Y	3mm 12V LED Yellow	£0.155	£0.124	£0.112
OK46A	LED 5V Red	£0.155	£0.124	£0.113
OK47B	LED 5V Green	£0.157	£0.125	£0.114
OK48C	LED 12V Red	£0.220	£0.130	£0.090
OK49D	LED 12V Green	£0.220	£0.130	£0.090
CJ61R	LED 12V Yellow	£0.149	£0.119	£0.108

## Low Current LED's

### 3mm Low Current Types

**Hewlett-Packard**

A range of tinted, diffused, LEDs designed and optimised especially for low DC current operation. Luminous intensity and forward voltage are tested at 2mA to assure consistent brightness at TTL output current levels. Available in high intensity red, green and yellow with a viewing angle of 50°. The cathode is denoted by the short lead.



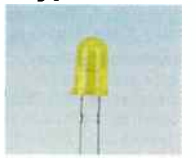
Specification:	Red	Green	Yellow
Light output typical at $I_F=2\text{mA}$ :	1.8mcd	1.6mcd	1.6mcd
Forward voltage at $I_F=2\text{mA}$ :	2.2V	2.3V	2.2V
Forward current (maximum):	7mA	7mA	7mA
Reverse voltage (maximum):	5V	5V	5V
Power dissipation (maximum):	24mW	24mW	36mW
Peak wavelength:	626nm	569nm	585nm
<b>Manufacturer's Code</b>	<b>MPS Code</b>		
HLMP-1700	CZ28F		
HLMP-1719	CZ29G		
HLMP-1790	CZ30H		

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2049	Price each exc. VAT		
		25+	100+	1000+
CZ28F	HP Mini LED Red 2mA	£0.360	£0.350	£0.250
CZ29G	HP Mini LED Vel 2mA	£0.360	£0.350	£0.250
CZ30H	HP Mini LED Gm 2mA	£0.360	£0.350	£0.250

### 3mm Low Current Types

A range of 3mm very low current (2mA) LEDs available in four colours. The LEDs will fit the appropriate clips (see LED clips). Packages are diffused with the cathode denoted by the shorter of the two leads. Viewing angle is 60° for all types.



Type	Wavelength	Luminous Intensity	Stock Code
			@ $I_F=2\text{mA}$
Orange	625nm	0.8 to 2mcd	CJ55K
Green	565nm	0.8 to 2mcd	CJ56L
Yellow	590nm	0.8 to 2mcd	CJ57M
Superbright Red	660nm	8 to 20mcd	CJ58N

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 6411	Price each exc. VAT		
		25+	100+	1000+
CJ55K	Low I 3mm Red	£0.079	£0.070	£0.043
CJ56L	Lo I 3mm Green LED	£0.076	£0.067	£0.041
CJ57M	Lo I 3mm Yellow LED	£0.079	£0.069	£0.042
CJ58N	Lo I 3mm Hi-Red LED	£0.170	£0.149	£0.092

### 5mm Low Current Types

**Hewlett-Packard**

A range of tinted, diffused, LEDs designed and optimised especially for low DC current operation. Luminous intensity and forward voltage are tested at 2mA to assure consistent brightness at TTL output current levels. Available in high intensity red, green and yellow with a viewing angle of 50°. The cathode is denoted by flat on body and short lead.



† = While Stocks Last



<b>Specification:</b>	Red	Green	Yellow
Light output typical at IF=2mA:	2.0mcd	1.8mcd	1.8mcd
Forward voltage at IF=2mA:	2.2V	2.3V	2.2V
Forward current (maximum):	7mA	7mA	7mA
Reverse voltage (maximum):	5V	5V	5V
Power dissipation (maximum):	24mW	24mW	36mW
Peak wavelength:	626nm	569nm	585nm
<b>Manufacturer's Code</b>	<b>MPS Code</b>		
HLMP-4700	CZ31J		
HLMP-4719	CZ32K		
HLMP-4740	CZ33L		

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2052	Price each exc. VAT			inc. VAT each 1+
		25+	100+	1000+	
CZ31J	HP LED Red 2mA	£0.350	£0.310	£0.270	£0.430
CZ32K	HP LED Yellow 2mA	£0.350	£0.310	£0.270	£0.430
CZ33L	HP LED Green 2mA	£0.350	£0.310	£0.270	£0.430

## High Brightness LED's

### High Brightness Red Types

Kingbright

A high brightness red LED available in miniature and standard sizes. The LEDs fit the appropriate clips listed below. The cathode is denoted by the flat on the body and by the short lead.



<b>Specification:</b>	Min	Std
Case size (dia.)	3mm	5mm
Light output typical at IF = 20mA	20mcd	30mcd
Forward voltage at IF = 20mA	2V	2V
Forward current (max)	30mA	30mA
Reverse voltage (max)	5V	5V
Power dissipation (max)	105mW	105mW
Peak wavelength	625nm	625nm

The LED has a diffused lens which gives a wide viewing angle of 120° for Min and 140° for Std type.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2057	Price each exc. VAT			inc. VAT each 1+
		25+	100+	1000+	
WL83E	Hbrt LED Red Min	£0.120	£0.050	£0.040	£0.380
WL84F	Hbrt LED Red Std	£0.051	£0.040	£0.038	£0.370

### 3mm & 5mm High Intensity Red Type

Hewlett-Packard

LEDs that are manufactured from a double heterojunction (DH) AlGaAs material and have an outstanding light output efficiency over a wide range of drive currents. The colour is deep red at the dominant wavelength of 637nm.



The LEDs are suitable for DC, or pulse drive, to produce the desired light output. The 3mm type is untinted and non-diffused with the cathode denoted by a short lead. The 5mm type is tinted and diffused with the cathode denoted by a flat on the body and a short lead.

<b>Specification:</b>	3mm	5mm
Viewing angle:	45°	65°
Light output typical at IF=20mA:	65mcd	70mcd
Peak wavelength:	645nm	
Forward voltage at IF=20mA:	2.2V maximum	300mA peak
Forward current:	20mA	30mA
Average forward current:	20mA	
DC forward current:	30mA	
Transient forward current (10µS pulse):	500mA	
Reverse voltage:	5V typical	
Power dissipation:	87mW	

<b>Manufacturer's Code</b>	<b>MPS Code</b>
HLMP-D101	CZ38R
HLMP-K105	CZ39N

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2058	Price each exc. VAT			inc. VAT each 1+
		25+	100+	1000+	
CZ38R	HP 5mm High-Int LED	£0.380	£0.360	£0.290	£0.510
CZ39N	HP 3mm High-Int LED	£0.380	£0.360	£0.310	£0.530

### High Brightness Green Types

Kingbright

A high brightness green LED available in standard (5mm) size, with either a water clear or diffused lens. The LEDs fit the appropriate clips listed below. The cathode is denoted by the flat on the body and by the short lead.



	Clear	Diffused
Light output typical at IF=20mA:	300	50
Forward voltage at IF=20mA:	2.2V	2.2V
Forward current (max):	25mA	25mA
Reverse voltage (max):	5V	5V
Power dissipation (max):	105mW	105mW
Peak wavelength:	565nm	565nm
The water clear lens has a viewing angle of 30°, and the diffused 120°.		

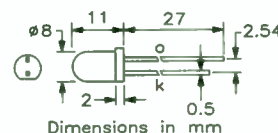
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2058	Price each exc. VAT			inc. VAT each 1+
		25+	100+	1000+	
CK38N	Hbrt LED Grn Cr	£0.074	£0.065	£0.040	£0.400
CK40T	Hbrt LED Grn Dif	£0.077	£0.068	£0.042	£0.400

### High Brightness 8mm Diameter Types

Kingbright

A high brightness 8mm diameter LED available in three colours. A panel mounting clip is available, sold separately. The cathode is denoted by the flat on the body and by the short lead.



<b>Specification:</b>	Red	Green	Yellow
Light output typical at IF = 20mA	32mcd	32mcd	32mcd
Forward voltage at IF = 20mA	2V	2.2V	2.1V
Forward current (max)	30mA	30mA	30mA
Reverse voltage (max)	5V	5V	5V
Power dissipation (max)	105mW	105mW	105mW
Peak wavelength	625nm	565nm	595nm
The LED has a diffused lens which gives a wide viewing angle of 140°.			

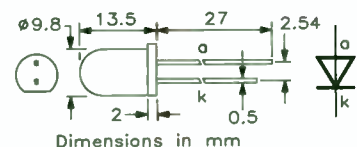
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2060	Price each exc. VAT			inc. VAT each 1+
		25+	100+	1000+	
UK21X	LED Red 8mm	£0.163	£0.143	£0.085	£0.500
UK22Y	LED Green 8mm	£0.166	£0.145	£0.097	£0.500
UK23A	LED Yellow 8mm	£0.157	£0.138	£0.092	£0.500

### High Brightness 10mm Diameter Types

Kingbright

A high brightness 10mm diameter LED available in three colours. A panel mounting clip is available, sold separately. The cathode is denoted by the short lead.



<b>Specification:</b>	Red	Green	Yellow
Light output typical at IF = 20mA	32mcd	32mcd	32mcd
Forward voltage at IF = 20mA	2V	2.2V	2.1V
Forward current (max)	30mA	30mA	30mA
Reverse voltage (max)	5V	5V	5V
Power dissipation (max)	105mW	105mW	105mW
Peak wavelength	625nm	565nm	595nm
The LED has a diffused lens which gives a wide viewing angle of 140°.			

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2062	Price each exc. VAT			inc. VAT each 1+
		25+	100+	1000+	
UK25C	LED Red 10mm	£0.156	£0.136	£0.091	£0.540
UK26D	LED Green 10mm	£0.158	£0.138	£0.092	£0.540
UK27E	LED Yellow 10mm	£0.155	£0.136	£0.091	£0.540



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## Super Bright LED's

### 12V Super-Bright LEDs

**Kingbright**

Superbright versions of the 3mm and 5mm red and green LEDs. Package dimensions are standard and will fit 5mm LED panel clips. Cathode is denoted by the flat on the body and the shorter of the two leads. Viewing angle is 120° in all cases. Package material is diffused green or red.



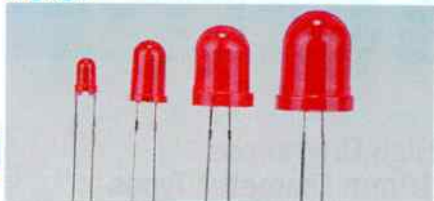
Type	Wavelength	Luminous Intensity @ I <sub>F</sub> = 20mA
3mm green	565nm	50 to 60mcd
3mm red	660nm	70 to 90mcd
5mm green	565nm	40 to 50mcd
5mm red	660nm	90 to 100mcd

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2065	Price each exc. VAT	25+	100+	1000+	inc. VAT each 1+
CJ69A	3mm 12V Green S LED	£0.167	£0.133	£0.110	£0.550	
CJ70M	3mm 12V Red Spr LED	£0.237	£0.189	£0.110	£0.680	
CJ62S	5mm 12V Green S LED	£0.168	£0.135	£0.110	£0.550	
CJ63T	5mm 12V Red Spr LED	£0.232	£0.186	£0.110	£0.680	

### Super-Bright Types

**Kingbright**



Super bright red LEDs in four sizes. The LEDs fit the appropriate panel mounting clips listed below. The cathode is denoted by the flat on the body and by the short lead. The LEDs have a diffused lens giving a wide viewing angle.

**Specification:**

Forward voltage at I <sub>F</sub> = 20mA:	1.8V
Forward current (max):	30mA
Reverse voltage (max):	5V
Power dissipation (max):	100mW
Peak wavelength:	660nm

Case size (dia.)	3mm	5mm	8mm	10mm
Light output typical at I <sub>F</sub> = 20mA	80mcd	150mcd	200mcd	200mcd
Viewing angle	100°	120°	140°	140°

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 3054	Price each exc. VAT	25+	100+	1000+	inc. VAT each 1+
UK18U	Superbri LED Red 3mm	£0.180	£0.140	£0.130	£0.330	
UK19V	Superbri LED Red 5mm	£0.180	£0.140	£0.130	£0.330	
UK52G	Superbri LED Red 8mm	£0.246	£0.215	£0.143	£0.720	
UK53H	Superbri LED Red 10mm	£0.254	£0.222	£0.148	£0.780	

### Superbright 5mm Types

**Hewlett-Packard**

A range of clear, non-diffused LEDs that have a super bright output and excellent colour performance. Available in red, green and yellow with a viewing angle of 48°. The cathode is denoted by flat on body and short lead.



**Specification:**

	Green	Yellow	
Light output typical at I <sub>F</sub> =20mA:	125mcd	120mcd	140mcd
Forward voltage at I <sub>F</sub> =20mA:	2.2V	2.3V	2.2V
Forward current (maximum):	90mA	90mA	60mA
Reverse voltage (maximum):	5V	5V	5V

Power dissipation (maximum):	135mW	135mW	85mW
Peak wavelength:	635nm	565nm	583nm
<b>Manufacturer's Code</b>	<b>MPS</b>		
HLMP-3750	CZ34M		
HLMP-3950	CZ35Q		
HLMP-3850	CZ36P		

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2065	Price each exc. VAT	25+	100+	1000+	inc. VAT each 1+
CZ34M	HP Superbri Red	£0.190	£0.180	£0.170	£0.240	
CZ35Q	HP Superbri Green	£0.190	£0.180	£0.170	£0.240	
CZ36P	HP Superbri Yellow	£0.190	£0.180	£0.170	£0.240	

## Ultrabright LED's

### Ultrabright and Hyperbright Types

**Kingbright**



Four sizes of Ultrabright red LEDs are available and two sizes of Hyperbright type. The cathode is denoted by the flat on the body and the short lead. The LEDs have a water-clear lens and a narrow viewing angle.

**Specification:**

Forward voltage at I <sub>F</sub> =20mA:	1.8V
Forward current (max):	30mA
Reverse voltage:	5V
Power dissipation (max):	100mW
Peak wavelength:	660nm

**Ultrabright Types**

Case size (dia)	3mm	5mm	8mm	10mm
Light output typical at I <sub>F</sub> =20mA	500mcd	1cd	1.6cd	1.6cd
Viewing angle	30°	30°	20°	20°

Case size (dia)	5mm	5mm wide
Light output typical at I <sub>F</sub> =20mA	3.5cd	1500mcd
Viewing angle	30°	60°

Please note that the CH22 is a Three Lead device with a common cathode.

Higher Brightness LEDs are available please contact our technical sales desk for more information

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2066	Price each exc. VAT	25+	100+	1000+	inc. VAT each 1+
UF72P	Ultrabri LED Red 3mm	£0.160	£0.150	£0.120	£0.380	
UK51F	Ultrabri LED Red 5mm	£0.138	£0.121	£0.081	£0.680	
UK20W	Hyperbri LED Red 5mm	£0.500	£0.390	£0.220	£0.890	
UK24B	Ultrabri LED Red 8mm	£0.260	£0.228	£0.152	£0.900	
UK28F	Ultrabri LED Red 10mm	£0.390	£0.341	£0.228	£0.900	
CH22Y	Hyper Wide Red LED	£0.650	£0.520	£0.490	£0.990	

### 5mm High Power Type

**Hewlett-Packard**

An untinted, non-diffused, LED that uses a 'transparent substrate, aluminium gallium arsenide' (TS AlGaAs) construction. This produces an LED with a very high light output efficiency over a wide range of currents, with a superior high current capability. The design utilises advanced optical methods to produce an extremely



high intensity output with a wide viewing angle (48°). Available in red with a dominant wavelength of 637nm. The cathode is denoted by flat on body and short lead.

**Specification:**

Light output at I <sub>F</sub> =20mA:	0.7cd typical, 2.0cd maximum
Typical radiant intensity I <sub>F</sub> =20mA:	11.8mW/sr
Forward voltage at I <sub>F</sub> =20mA:	2.4V maximum
Forward current:	300mA peak
Average forward current I <sub>PEAK</sub> =300mA:	15mA
DC forward current:	50mA
Reverse voltage (typical):	20V
Power dissipation:	130mW
Peak wavelength:	650nm
<b>Manufacturer's Code</b>	HLMP-8100

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

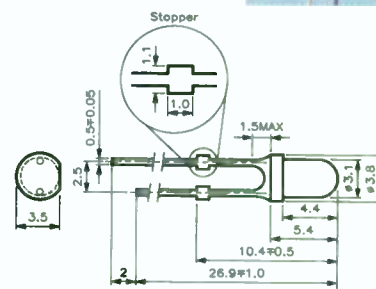
Order Code	Type 2067	Price each exc. VAT	25+	100+	1000+	inc. VAT each 1+
CZ37S	HP High Power LED	£0.740	£0.660	£0.440	£0.890	

## White LED

### 3mm

### 3mm White LED

A 3mm high quality, high brightness white LED with a spectral output from 450nm to 70nm approx. The cathode is denoted by the the shortest leg.



**Specification (I<sub>F</sub> = 20mA)**

Light output:	400mcd
Chromacity	
Forward voltage:	3.6V
Forward current:	25mA
Reverse voltage:	5V
Power dissipation:	100mW
Chromacity co-ordinates	
X:	0.29
Y:	0.30
Colour temperature:	8000°K

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2299	Price each exc. VAT	10+	inc. VAT each 1+
GV65V	White LED 3mm	£4.990		£7.990

**24**  
HR

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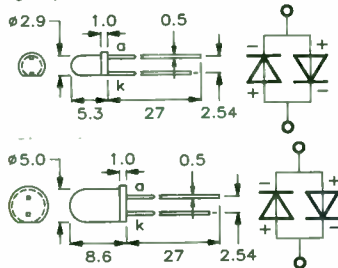
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## Multicolour LED's

### Bi-Colour LED

*Kingbright*

A two-lead 3mm or 5mm LED with a red and green die connected in inverse parallel. The LED fits the appropriate clip. Only one series resistor is required. The long lead denotes the red LED anode, so connect the positive to the short lead and the negative to the long lead for green and vice versa for red. Viewing angle 120°.



Specification:	Red	Green
Light output typical at $I_F = 20\text{mA}$	3mcd	4mcd
Forward voltage at $I_F = 20\text{mA}$	2V	2.2V
Forward current (max)	30mA	30mA
Reverse voltage (max)	5V	5V
Power dissipation (max)	105mW	105mW
Peak wavelength	665nm	565nm

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2118	Price each exc. VAT	inc. VAT each
		25+ 100+ 1000+ 1+	
UF96E	Mini Bi-Colour LED	£0.360	£0.260 £0.090 £0.850
QY83E	Bi-Colour LED	£0.270	£0.190 £0.130 £0.850

### Bi-Colour LED

*Hewlett-Packard*

A package that contains two LED chips, a high efficiency red and a high performance green, mounted on a central common cathode lead. Colours between red and green can be generated by independently pulse modulating the LED chips. The package has a diffused, wide visibility lens, and is available either as a 5mm round or 5 x 2mm rectangular package.



**Specification: Round Rectangular**

Typical light output  
 $I_F = 20\text{mA}$  (round),  $I_F = 10\text{mA}$  (rect)

red:	5.0mcd	3.5mcd
green:	8.0mcd	4.0mcd

Forward voltage at  $I_F = 10\text{mA}$

red:	2.5V maximum
green:	2.7V maximum

Forward current: 90mA peak  
 Average forward current (total): 25mA  
 DC forward current (total): 30mA  
 Reverse voltage (typical): 5V  
 Power dissipation (total): 135mW  
 Peak wavelength

red:	650nm
green:	565nm

Viewing angle: 65°

Manufacturer's Code	Type	MPS Code
HLMP-4000	5mm	CZ45Y
HLMP-0800	2 x 5mm	CZ46A

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2115	Price each exc. VAT	inc. VAT each
		25+ 100+ 1000+ 1+	
CZ45Y	HP Bi-Colour Round	£1.330	£1.210 £1.090 £1.620
CZ46A	HP Bi-Colour Rect	£1.070	£0.939 £0.626 £1.500

## Flashing LED's

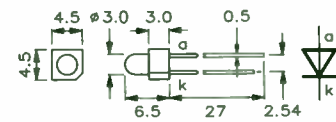
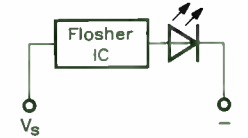
### Flashing LEDs 3mm Types

*Kingbright*

A range of LEDs which flash approximately twice a second when a voltage between 3.5V and 13V is connected to them. Within the supply voltage range no series resistor is required. The cathode is denoted by the flat or chamfer on the body and the short lead.



Voltage range: 3.5V to 12V (13V max)  
 Reverse voltage (max): 0.5V  
 Flash frequency: 2Hz ( $\pm 1\text{Hz}$ ) at 9V



Dimensions in mm

**Specification:**

Red	Green	Yellow	Hibri red	Super red
Light output typical at $V_F = 9\text{V}$	2mcd	8mcd	8mcd	60mcd
Forward current average at 9V	8.5mA	9mA	9.5mA	16.5mA
Power dissipation (max)	200mW	200mW	200mW	240mW
Peak wavelength	660nm	565nm	595nm	625nm

All colours have a diffused package and 100° viewing angle. A panel-mounting clip is not available to suit this LED.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

### Tri-Colour LED

*Kingbright*

A single LED, encapsulated in a diffused white package with three leads, that can be made to emit light of any colour of the spectrum from green through to red. Six types are available, in 3mm, 5mm and 10mm diameter round packages, a 5 x 2mm rectangular package, a 3mm super bright type and a high brightness type in a 5mm round package. All types are common cathode which is the central, longest lead. The red anode is the medium length lead and the green anode is the shortest.



Normal and Super Bright Types	Red	Green
Forward voltage at $I_F = 20\text{mA}$ :	2V	2.2V
Forward current (max):	30mA	30mA
Reverse voltage:	5V	5V
Power dissipation (max):	105mW	105mW
Peak wavelength:	625nm	565nm

Case Size (dia)	3mm	5mm	Rect	10mm	3mm Sup. bright
Typical light output $I_F = 20\text{mA}$ :	20mcd	5mcd	4mcd	9mcd	90 to 300mcd
Viewing angle:	60°	120°	100°	140°	100°

High Brightness Type	Red	Green
Light output at $I_F = 20\text{mA}$ :	100 to 300mcd	40 to 80mcd
Wavelength:	660nm	565nm
Viewing angle:	60°	60°

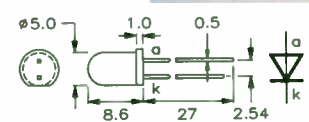
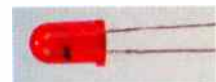
Panel mounting clips are available for 5mm and 10mm types, see LED clips.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2122	Price each exc. VAT	inc. VAT each
		25+ 100+ 1000+ 1+	
GW62S	Multicolour LED 3mm	£0.197	£0.172 £0.115 £0.760
YH75S	Multicolour LED 5mm	£0.138	£0.103 £0.090 £0.800
QRS4J	Multicolour LED Rect	£0.196	£0.172 £0.115 £0.760
UK29G	Multicolour LED 10mm	£0.359	£0.314 £0.209 £0.840
CJ53H	Multicolour Hi-Bri	£0.378	£0.331 £0.220 £0.840
CH09K	Multi-HB LED 3mm	£0.373	£0.326 £0.218 £0.800

### 5mm Types

*Kingbright*



Dimensions in mm

Red	Green	Yellow	Hibri red	Super red
Light output typical at $V_F = 9\text{V}$	2mcd	8mcd	12.5mcd	12.5mcd
Forward current average at 9V	8.5mA	9mA	9.5mA	16.5mA
Power dissipation (max)	200mW	200mW	200mW	240mW
Peak wavelength	660nm	565nm	595nm	625nm

All colours have a diffused package and 120° viewing angle. For panel-mounting clip see LED Clips.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2107	Price each exc. VAT	inc. VAT each
		25+ 100+ 1000+ 1+	
QY96E	Flashing LED Red	£0.390	£0.290 £0.210 £0.790
QY97F	Flashing LED Green	£0.390	£0.290 £0.210 £0.790
UK35Q	Flashing LED Ylw 5mm	£0.330	£0.260 £0.190 £0.990
UK36P	HiBri Flash Red 5mm	£0.490	£0.300 £0.270 £1.020
UK37S	Super Flash Red 5mm	£0.490	£0.440 £0.410 £1.190

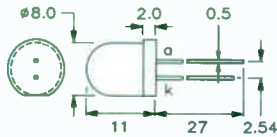
## 8mm Types

Kingbright



Hibri red    Green    Yellow    Super red    Ultra red

Light output typical at  $V_F = 9V$   
 12.5mcd    8mcd    12.5mcd    120mcd    800mcd  
 Forward current average at 9V  
 9.5mA    9mA    9.5mA    16.5mA    16.5mA  
 Power dissipation (max)  
 200mW    200mW    200mW    240mW    240mW  
 Peak wavelength  
 625nm    565nm    595nm    660nm    660nm



Dimensions in mm

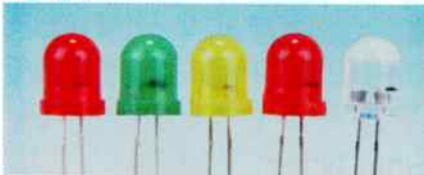
Ultra-bright red has a water-clear package and 90° viewing angle while the others have a diffused package and 140° viewing angle. For panel-mounting clip see LED Clips.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2110	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
UK38R	HIBri Flash Red 8mm	£0.664	£0.531	£0.442	£1.500
UK38N	Flashing LED Grn 8mm	£0.656	£0.525	£0.438	£1.460
UK40T	Flashing LED Ylw 8mm	£0.690	£0.552	£0.460	£1.460
UK41U	Super Flash Red 8mm	£0.748	£0.598	£0.498	£1.560
UK42V	Ultra Flash Red 8mm	£0.751	£0.601	£0.501	£1.560

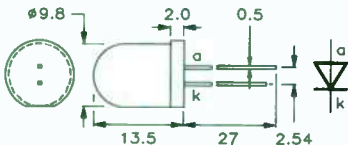
## 10mm Types

Kingbright



Hibri red    Green    Yellow    Super red    Ultra red

Light output typical at  $V_F = 9V$   
 12.5mcd    8mcd    12.5mcd    120mcd    800mcd  
 Forward current average at 9V  
 9.5mA    9mA    9.5mA    16.5mA    16.5mA  
 Power dissipation (max)  
 200mW    200mW    200mW    240mW    240mW  
 Peak wavelength  
 625nm    565nm    595nm    660nm    660nm



Dimensions in mm

Ultra-bright red has a water-clear package and 90° viewing angle while the others have a diffused package and 140° viewing angle. For panel-mounting clip see LED Clips.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2113	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
UK43W	HIBri Flash Red 10mm	£0.694	£0.555	£0.463	£1.560
UK44X	Flashing LED Grn 10mm	£0.701	£0.561	£0.468	£1.540
UK45Y	Flashing LED Ylw 10mm	£0.691	£0.553	£0.461	£1.540
UK46A	Super Flash Red 10mm	£0.761	£0.609	£0.508	£1.590
UK47B	Ultra Flash Red 10mm	£0.786	£0.628	£0.524	£1.590

## LED Accessories

### LED Clips



Panel mounting clips to suit 3mm, 5mm, 8mm and 10mm round LEDs. The following types are available:

	Panel cut-out (diameter)	Bezel size (diameter)	Overall length
3mm Clip	4.4mm	6mm	5mm
5mm Clip	6.35mm	8mm	6.8mm
5mm Clip Convex	8mm	9.5mm	12.5mm
5mm Clip Concave	8mm	9.5mm	15mm
8mm Clip	12mm	14mm	16.5mm
10mm Clip	14mm	16mm	18mm

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2071	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
YY39N	LED Clip 3mm	£0.025	£0.020	£0.016	£0.090
YY40T	LED Clip 5mm	£0.056	£0.044	£0.037	£0.120
UK14Q	LED Clip Convex 5mm	£0.090	£0.070	£0.050	£0.190
UK15R	LED Clip Concave 5mm	£0.090	£0.078	£0.076	£0.190
UK16S	LED Clip 8mm	£0.120	£0.110	£0.100	£0.230
UK17T	LED Clip 10mm	£0.130	£0.120	£0.110	£0.250

### LED Covers



Attractive coloured covers for LEDs which also serve to clip the LED on the front panel. Suitable for use with 3mm and 5mm dia. LEDs, the covers increase the viewing angle up to 180° and give a finished appearance. The cover has a flat top marked with Fresnel rings and striated lines for maximum light dispersion. The 5mm covers simply clip into a 6.35mm (1/4in.) panel cut-out while 3mm types need a 4.4mm (0.171in.) cut-out and the LED then clips in from the rear. Suits panels 1.6mm to 3.2mm thick for 5mm types and 0.8mm to 1.6mm for 3mm types. Overall diameter: 7mm for 5mm types, 5mm for 3mm types. Overall length: 11mm for 5mm types and 7.3mm for 3mm types. Available in three colours: Clear, Green, and Red. 5mm type also available in yellow.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2072	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
UF91Y	Min CipLite Clear	£0.120	£0.090	£0.085	£0.210
UF92A	Min CipLite Green	£0.120	£0.090	£0.085	£0.210
UF93B	Min CipLite Red	£0.120	£0.090	£0.085	£0.210
YH54J	CipLite Clear	£0.169	£0.135	£0.113	£0.260
YH55K	CipLite Green	£0.169	£0.135	£0.113	£0.260
YH56L	CipLite Red	£0.169	£0.135	£0.113	£0.260
YH57M	CipLite Yellow	£0.169	£0.135	£0.113	£0.260

## Urgent Requirement?

Call and collect from your local Maplin store.

## Panel Mount LED's

### LED Chrome Bezel

A smart, panel mounting chrome bezel for standard 5mm (0.2in.) size round LEDs. The bezel requires a single hole 7.5mm (5/16in.) diameter, and is secured by a nut and lock-washer. The bezel has a removable PVC grommet at the rear which has two holes to take the twin leads of the LED. The grommet is then pushed down onto the base of the LED before soldering, and the assembly pressed into the body of the bezel until the flange of the LED is hard against the internal step with the grommet flush. The bezel is 10mm diameter and 5mm deep. Total length 15.5mm.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2073	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
FM38R	Chrome LED Holder	£0.420	£0.280	£0.190	£0.650

### Panel Mounting LEDs



A very attractive panel-mounting LED available in a large or small chromed bezel or a black bezel. All three types are available with red or green LEDs. Forward voltage 2V at 20mA.

Dimensions	Small	Large	Black
	chrome	chrome	chrome
Panel fixing hole	5mm	8mm	8mm
Bezel dia. front	5mm	8.2mm	9mm
Bezel dia. rear	6mm	9.76mm	10mm
Bezel length	3mm	4mm	5mm
Overall length	18mm	24mm	25mm
Lead length	6mm	6mm	9mm
Cathode denoted by		Thicker wire	Short lead

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2074	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
YY59P	Chrome LED Small	£1.060	£0.852	£0.710	£1.620
QY46A	Chrome LED Small Grn	£1.120	£0.898	£0.749	£1.620
YY60Q	Chrome LED Large Red	£1.170	£0.936	£0.780	£1.740
QY47B	Chrome LED Large Grn	£1.410	£1.130	£0.943	£1.740
QY48C	Black Bezel LED Red	£1.020	£0.818	£0.682	£1.660
QY49D	Black Bezel LED Grn	£1.200	£0.967	£0.806	£1.660

### Miniature Round Panel Mounting LED



A miniature red or green LED in a red or green polycarbonate package with a flat round display. The front is engraved with Fresnel rings to give maximum dispersion. Cathode is denoted by the thicker wire. Dimensions 21mm long. Front face 6mm diameter. Mounting hole required 5mm diameter. Forward voltage 2.2V at 20mA for red and 2V at 20mA for green.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2075	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
UF79L	Min Pan LED Red	£0.660	£0.610	£0.515	£0.950
UF90B	Min Pan LED Green	£0.760	£0.710	£0.595	£0.990

### Miniature High-Top Panel Mounting LED



A miniature red LED in a red polycarbonate package with a high-top round display. The front is engraved with Fresnel rings and the sides are striated to give maximum dispersion. Cathode is denoted by the thicker wire. Dimensions 22mm long. Front diameter 5mm at front, 5.5mm at rear. Mounting hole required 5mm diameter. Forward voltage 2.2V at 20mA.

Retail Unit Price each (inc. VAT).

Order Code	Type 3076	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
UF81C	Hi-Top Pan LED Red	£0.842	£0.760	£0.710	£0.990

### Panel Mounting 12V LED with Plastic Bezel



A red or green LED in a red or green polycarbonate package with a round slightly domed front face. The package has an internal resistor so that it may be connected directly to 12V. The anode is denoted by a white spot. Dimensions 30.5mm long. Front face 8.5mm diameter. Mounting hole required 7mm diameter. Forward current approx. 15mA at 12V.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 3077	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
UF83E	12V Pan Plas Red LED	£0.845	£0.676	£0.563	£1.180
UF84F	12V Pan Plas Gm LED	£0.920	£0.736	£0.614	£1.500

### Panel Mounting 12V LED with Chrome Bezel



This LED is identical to the one above, but has an attractive chrome bezel around the front face. Dimensions 31mm long. Front face 10mm diameter. Mounting hole required 7mm diameter.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

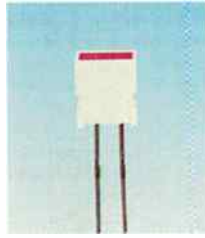
Order Code	Type 3078	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
UF85G	12V Pan Chrm Red LED	£1.090	£0.879	£0.733	£1.540
UF86T	12V Pan Chrm Gm LED	£1.120	£0.897	£0.748	£1.740

### LED Lightbars

#### Rectangular LEDs

##### Hewlett-Packard

Rectangular light bars that consist of an epoxy encapsulated LED lamp surrounded by a rectangular plastic case. The encapsulant is tinted to match the colour of the emitted light. The flat top surface is exceptionally uniform in light emission and the plastic case eliminates light leakage from the sides of the device. Viewing angle 100°. The cathode is denoted by the longest lead. Overall size: 6.22 x 3.68mm.



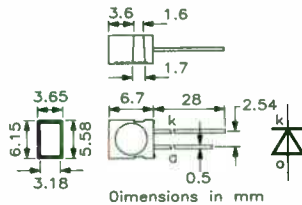
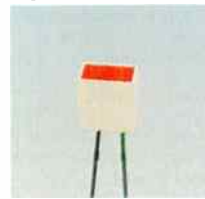
Specification:	Red	Green	Yellow
Light output typical at I <sub>F</sub> =20mA:	4.8mcd	6.0mcd	6.0mcd
Forward voltage at I <sub>F</sub> =20mA:	2.2V	2.3V	2.2V
Forward current (maximum):	90mA	90mA	60mA
Reverse voltage (maximum):	5V	5V	5V
Power dissipation (maximum):	135mW	135mW	85mW
Peak wavelength:	635nm	565nm	583nm
Manufacturer's Code		MPS Code	
HLMP-T200	Red	CZ42V	
HLMP-T300	Yellow	CZ43W	
HLMP-T500	Green	CZ44X	

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 3088	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
CZ42V	HP Rect LED Red	£0.658	£0.526	£0.438	£0.900
CZ43W	HP Rect LED Yellow	£0.658	£0.526	£0.438	£0.900
CZ44X	HP Rect LED Green	£0.655	£0.524	£0.437	£0.900

#### Rectangular Shaped LEDs

A rectangular shaped LED that gives a bright, evenly lit, solid bar of colour over the area 5.6 x 3.2mm. The lamps may be easily stacked to form bargraph meters. Overall dimensions: 6.4 x 3.8 x 6.7mm deep. Available in Red, Green and Yellow.



A panel mounting clip to suit these LEDs is available. Panel cut-out 8 x 6mm (5/16 x 7/32in.). Bezel: 9.4 x 6.9mm. The cathode is the left-hand lead when the package is placed with the indented circle in the package facing you. Forward voltage at I<sub>F</sub> = 20mA is 2V. Light output at I<sub>F</sub> = 20mA is 4mcd for all colours. Viewing angle is 120°.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

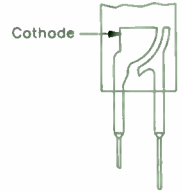
Order Code	Type 3079	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
QW96E	Rect LED Red	£0.138	£0.110	£0.092	£0.500
YH60Q	Rect LED Green	£0.139	£0.111	£0.093	£0.500
YH61R	Rect LED Yellow	£0.138	£0.110	£0.092	£0.500
YH62S	Rect LED Clip	£0.049	£0.039	£0.033	£0.150

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### Panel Indicator LEDs

##### Kingbright

A range of panel indicator LEDs with flat tops moulded in various shapes: rectangular, square, cylindrical, triangular and arrowhead. The LEDs are designed to press-fit into panels etc.



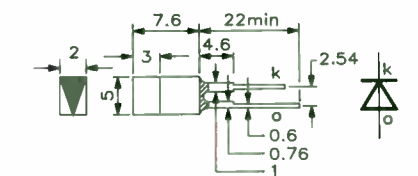
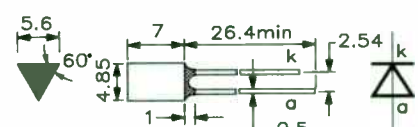
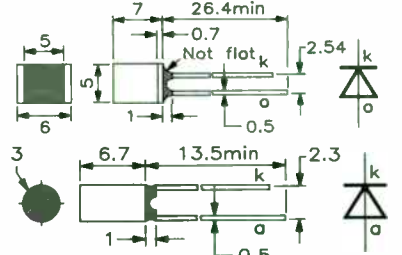
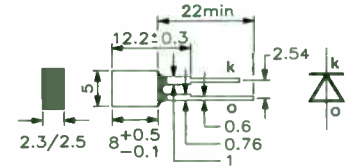
All shapes (typical ratings)	Light output at I <sub>F</sub> = 20mA	Forward voltage at I <sub>F</sub> = 20mA	Peak wave-length
Red	6mcd	2V	625nm
Green	4mcd	2.2V	565nm
Yellow	6mcd	2.1V	595nm

##### All colours:

Forward current (max):	30mA
Reverse voltage (max):	5V
Power dissipation (max):	105mW

The LEDs have a diffused top to the lens which gives a viewing angle of 70° for arrowhead and triangular, 100° for cylindrical, and 120° for square and rectangular.

Shapes available:	Code	Size of top
Rectangular	R1	5x2.5mm
Square	S3	5x5mm
Cylindrical	C2	3mm diameter
Triangular (equilateral)	T4	5.6mm per side
Arrowhead (isosceles)	A5	5.1mm long sides 2mm short side



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 3083	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
YY45Y	Shape LED R1 Red	£0.086	£0.069	£0.057	£0.320
YY46A	Shape LED R1 Green	£0.068	£0.054	£0.045	£0.320
YY48C	Shape LED R1 Yellow	£0.085	£0.068	£0.057	£0.320
YY51F	Shape LED S3 Red	£0.086	£0.068	£0.057	£0.320
YY52G	Shape LED S3 Green	£0.070	£0.056	£0.047	£0.320
YY53H	Shape LED S3 Yellow	£0.089	£0.071	£0.059	£0.320
YH72P	Shape LED C2 Red	£0.095	£0.076	£0.064	£0.330
YH73Q	Shape LED C2 Green	£0.085	£0.068	£0.057	£0.330
YH74R	Shape LED C2 Yellow	£0.091	£0.073	£0.061	£0.330
YY54J	Shape LED T4 Red	£0.106	£0.086	£0.071	£0.380
YY55K	Shape LED T4 Green	£0.090	£0.072	£0.060	£0.380
YY56L	Shape LED T4 Yellow	£0.092	£0.074	£0.061	£0.380
YY57M	Shape LED A5 Red	£0.098	£0.078	£0.065	£0.380
YY58N	Shape LED A5 Green	£0.094	£0.075	£0.063	£0.380

Account Enquiries: 01702 554187

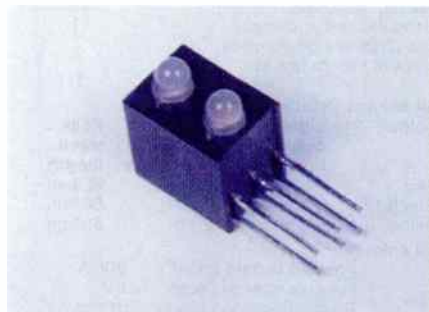
Sales Tel: 01702 554000 • Fax: 01702 554001 • Technical Helpline: 01702 556001

Export carriage charges (1,2 etc.) and price information see back of catalogue. † symbol in price block indicates White Stocks Last.

## Circuit Board Indicators

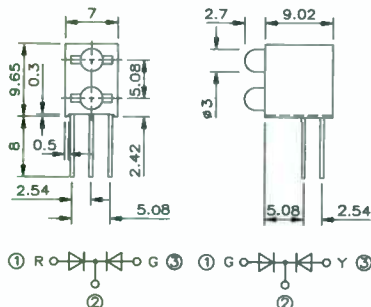
### PCB Mounting Twin Bi-Colour LEDs

Kingbright



Two 3mm bi-colour LEDs mounted vertically in a black plastic housing and designed for PCB mounting. The LEDs have a viewing angle of 60°, and are available with either two red/green LEDs (PD37S) or two green/yellow LEDs (PD38R) in the package.

Specification:	High Eff. Red	Green	Yellow
Max. light output:	30mcd	8mcd	8mcd
Peak wavelength:	625nm	565nm	590nm
Forward voltage:	2V	2.2V	2.1V
Capacitance:	12pF	45pF	10pF
Power dissipation:	105mW	105mW	105mW
DC forward current:	30mA	25mA	30mA
Reverse voltage:	5V	5V	5V
Reverse current:	10µA	10µA	10µA
Light output and wavelength quoted at IF=20mA.			

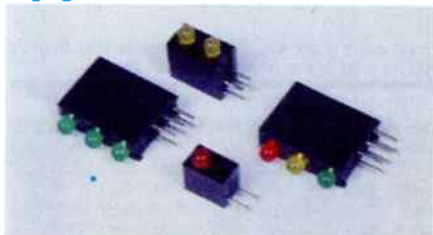


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

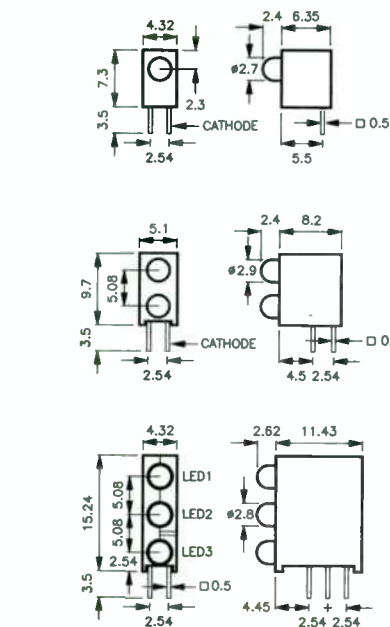
Order Code	Type 12011	Price each exc. VAT	inc. VAT each
PD37S	RA BiCol LED Red/Gm	£0.377	£0.302
PD38R	RA BiCol LED Gm/Yel	£0.377	£0.252

### 3mm LED Logic Status Indicators

Kingbright



A range of 3mm logic status LED indicators that are ideal for card edge mounting. They are housed in a black case to enhance contrast ratio and have pre-trimmed leads for PCB mounting. The range are all diffused with a viewing angle of 60°. Available with either one, two or three of the same colour in the package in high efficiency red, super bright red, green or yellow. PD18U is a 'traffic light' arrangement with one each of a high efficiency red (LED1), yellow (LED2) and green (LED3) in the package - ideal for model railways etc.



Specification:	High Red	Super Bright Red	Green	Yellow
Maximum light output	50mcd	300mcd	32mcd	32mcd
Peak wavelength (IF=20mA)	625nm	660nm	565nm	590nm
Forward voltage:	2.0V	1.85V	2.2V	2.1V
Capacitance:	12pF	95pF	45pF	10pF
Power dissipation:	105mW	100mW	105mW	105mW
DC forward current:	30mA	30mA	25mA	30mA
Reverse voltage:	5V	5V	5V	5V
Reverse current:	10µA	10µA	10µA	10µA
Maximum light output is quoted at IF=10mA except for super bright version when IF=20mA.				

#### Order Codes

Colour	1 x LED	2 x LED	3 x LED
Red	PD07H	PD11M	PD15R
Super Red	PD08J	PD12N	PD16S
Green	PD09K	PD13P	PD17T
Yellow	PD10L	PD14Q	PD19V
Traffic light version			PD18U

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 12001	Price each exc. VAT	inc. VAT each
PD07H	RA LED 3mm Red	£0.137	£0.110
PD08J	RA LED 3mm SRRed	£0.237	£0.189
PD09K	RA LED 3mm Gm	£0.127	£0.101
PD10L	RA LED 3mm Yel	£0.137	£0.110
PD11M	RA LED 3mm Red x2	£0.319	£0.255
PD12N	RA LED 3mm SRRed x2	£0.480	£0.384
PD13P	RA LED 3mm Gm x2	£0.274	£0.219
PD14Q	RA LED 3mm Yel x2	£0.319	£0.255
PD15R	RA LED 3mm Red x3	£0.396	£0.317
PD16S	RA LED 3mm SRRed x3	£0.604	£0.483
PD17T	RA LED 3mm Gm x3	£0.396	£0.317
PD19V	RA LED 3mm Yel x3	£0.396	£0.317
PD18U	Traffic Light LED3mm	£0.477	£0.381

### PCB Mounting 5mm LEDs

Kingbright

PCB mounting LEDs with diffused coloured lenses giving a very wide viewing angle of 160°. The LEDs are mounted in a black plastic housing and viewed from the front the cathode is the right-hand lead.



	Red	Green	Orange	Yellow
Light output typical at IF = 20mA	20mcd	10mcd	20mcd	20mcd
Forward voltage at IF = 20mA	2V	2.2V	2V	2.1V
Forward current (max)	30mA	30mA	30mA	30mA
Reverse voltage (max)	5V	5V	5V	5V
Power dissipation (max)	105mW	105mW	105mW	105mW
Peak wavelength	625nm	565nm	625nm	595nm

Dimensions:  
Front face: 6 x 6mm. Housing depth: 9mm.  
The LED protrudes by 3.2mm. Lead spacing: 2.5mm.  
Lead length: 3.5mm.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

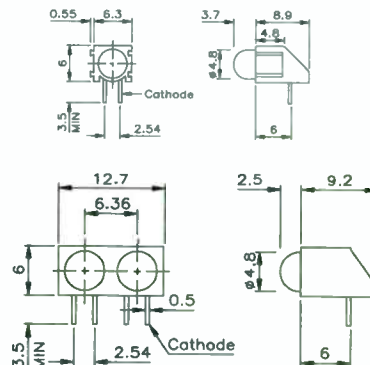
Order Code	Type 2090	Price each exc. VAT	inc. VAT each
QY86T	PCB LED Red	£0.101	£0.080
QY87U	PCB LED Green	£0.105	£0.084
QY88V	PCB LED Yellow	£0.124	£0.099
QY89W	PCB LED Orange	£0.113	£0.090

### High Brightness PCB Mounting 5mm LEDs

Kingbright



A high brightness PCB mounting range of 5mm LEDs available singly, or in horizontal arrays of two or three LEDs in a choice of four colours. The LEDs are mounted in black plastic cases to enhance the contrast ratio and have pre-trimmed leads for PCB mounting. Viewing angle is 60°. The single LED version can be interlocked to make extra long arrays of single or multiple colours.



Specification:	High Eff. Red	Super Bright Red	Green	Yellow
Maximum light output:	32mcd	300mcd	20mcd	20mcd
Peak wavelength:	625nm	660nm	565nm	590nm
Forward voltage:	2.0V	1.85V	2.2V	2.1V
Capacitance:	12pF	95pF	45pF	10pF
DC forward current:	30mA	30mA	25mA	30mA
Reverse voltage:	5V	5V	5V	5V
Reverse current:	10µA	10µA	10µA	10µA

**Order Codes**

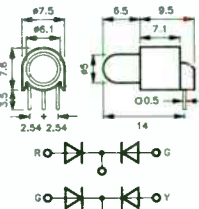
Array	High Eff. Red	Super Bright Red	Green	Yellow
1 x LED	CP53H	PD45Y	CP54J	CP55K
2 x LED	PD25C	PD26D	PD27E	PD28F
3 x LED	PD29G	PD30H	PD31J	PD32K

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 12026	Price each exc. VAT	inc. VAT each
CP53H	PCB Hibri Red	£0.134	£0.107
PD45Y	PCB Superbri Red	£0.226	£0.181
CP54J	PCB Hibri Green	£0.101	£0.080
CP55K	PCB Hibri Yellow	£0.138	£0.111
PD25C	RAH 5mm LED Red x2	£0.237	£0.189
PD26D	RAH 5mm LED SRd x2	£0.340	£0.272
PD27E	RAH 5mm LED Grn x2	£0.237	£0.189
PD28F	RAH 5mm LED Yel x2	£0.237	£0.189
PD29G	RAH 5mm LED Red x3	£0.358	£0.287
PD30H	RAH 5mm LED SRd x3	£0.566	£0.453
PD31J	RAH 5mm LED Grn x3	£0.340	£0.272
PD32K	RAH 5mm LED Yel x3	£0.358	£0.287

## PCB Mounting Bi-Colour 5mm LED

Kingbright



A single PCB mounting 5mm LED with three leads offering a choice of either red and green or green and yellow light emission. The LED is housed in a black plastic case to enhance the contrast ratio and has a viewing angle of 60°.

Order Code	Colours	High Eff. Red	Green	Yellow
CP52G	Red/Green	90mcd	70mcd	60mcd
PD20W	Green/Yellow	625nm	565nm	590nm
<b>Specification:</b>	<b>High Eff. Red</b>	2V	2.2V	2.1V
Maximum light output:	12pF	45pF	45pF	10pF
Peak wavelength:	105mW	105mW	105mW	105mW
Forward voltage:	30mA	25mA	30mA	30mA
Capacitance:	5V	5V	5V	5V
Power dissipation:	10µA	10µA	10µA	10µA
DC forward current:	Light output and peak wavelength measured at IF=20mA.			
Reverse voltage:				
Reverse Current:				

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 12026	Price each exc. VAT	inc. VAT each
CP52G	PCB LED Bi-Colour	£0.245	£0.196
PD20W	PCB Bi LED Grn/Yel	£0.264	£0.211

## 5mm Right Angled Lamp

Hewlett-Packard

A red LED with a tinted diffused lens that is housed in a right-angled black plastic package. The cathode is the right-hand pin, when viewed from the front, with the pins pointing downwards.



Specification	Value
Luminous intensity @ IF=20mA:	4.0mcd
Maximum current IF:	50mA
Peak wavelength:	655nm
Maximum reverse voltage:	5V
Viewing angle:	90°

Dimensions: 13.3 x 6.22 x 6.22mm overall  
Lead pitch: 2.54mm  
Lead length: 3.7mm  
Manufacturer's Code: HLMP5000

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2096	Price each exc. VAT	inc. VAT each
CZ40T	Right Angle Lamp	£0.470	£0.376

## 5mm LED Housing

Hewlett-Packard

A right-angled housing for standard 5mm LEDs in black plastic.  
Size: 9 x 6.22 x 6.22mm.



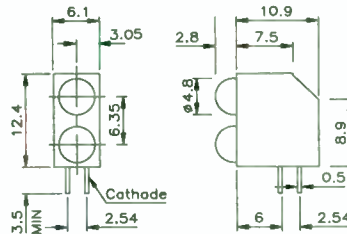
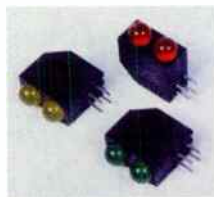
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2098	Price each exc. VAT	inc. VAT each
CZ41U	RA 5mm LED Housing	£0.310	£0.280

## Dual 5mm LED Logic Status Indicators

Kingbright

A range of dual 5mm logic status LED indicators that are ideal for card edge mounting. They are housed in a black case to enhance contrast ratio and have pre-trimmed leads for PCB mounting. The LEDs are all diffused with a viewing angle of 60°. Available in high efficiency red, super bright red, green or yellow.



Specification:	High Eff. Red	SuperBright Red	Green	Yellow
Maximum light output:	32mcd	300mcd	20mcd	20mcd
Peak wavelength:	625nm	660nm	565nm	590nm
Forward voltage:	2V	1.85V	2.2V	2.1V
Capacitance:	12pF	95pF	45pF	10pF
Power dissipation:	105mW	100mW	105mW	105mW
DC forward current:	30mA	30mA	25mA	30mA
Reverse voltage:	5V	5V	5V	5V
Reverse current:	10µA	10µA	10µA	10µA

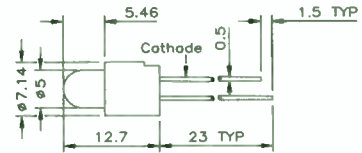
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 12004	Price each exc. VAT	inc. VAT each
PD21X	RAV 5mm LED Red x2	£0.237	£0.189
PD22Y	RAV 5mm LED SRd x2	£0.340	£0.272
PD23A	RAV 5mm LED Grn x2	£0.237	£0.189
PD24B	RAV 5mm LED Yel x2	£0.237	£0.189

## 5mm Fixed Height LED Circuit Board Indicators

Kingbright

This range of diffused LEDs have a built-in spacer so that the overall height of the LED is 12.7mm from the circuit board. The LED is firmly held by the spacer and so requires no additional form of support or glue. The range includes super bright red, high efficiency red, green, super bright green and yellow and all types are suitable for back panel illumination. The cathode is clearly marked on the package and all have a viewing angle of 60°.



Specification:	High Eff. Red	Super Bright Red	Green	Super Bright Green	Yellow
Max. light output:	80mcd	300mcd	32mcd	60mcd	32mcd
Peak wavelength (IF=20mA):	625nm	660nm	565nm	565nm	590nm
Forward voltage:	2V	1.85V	2.2V	2.2V	2.1V
Capacitance:	12pF	95pF	45pF	45pF	10pF
Power dissipation:	105mW	100mW	105mW	105mW	105mW
DC forward current:	30mA	30mA	25mA	25mA	30mA
Reverse voltage:	5V	5V	5V	5V	5V
Reverse current:	10µA	10µA	10µA	10µA	10µA
Light output is quoted at IF=20mA, except super bright versions when IF=10mA.					

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11998	Price each exc. VAT	inc. VAT each
PD02C	5mm LED Red 12.7 Spc	£0.140	£0.112
PD03D	5mm LED SRd 12.7 Spc	£0.230	£0.184
PD04E	5mm LED Grn 12.7 Spc	£0.134	£0.107
PD05F	5mm LED SGrn 12.7 Spc	£0.146	£0.116
PD06G	5mm LED Yel 12.7 Spc	£0.146	£0.116



RS12750  
BS EN ISO 9002

Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

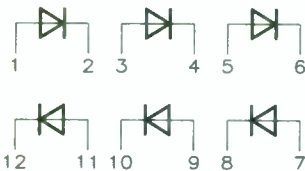
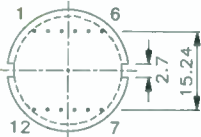
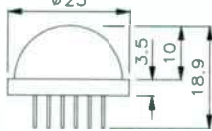


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## Giant Red LED

**Kingbright**

A giant round red LED made up from a group of six LEDs in a matrix with separate anodes and cathodes brought out to 12 PCB pins on a DIL matrix. Pins are placed at 2.54mm (0.1in.) intervals in two rows of 6 pins each, spaced 15.24mm (0.6in.) apart. LED body is 23mm in diameter with a dome 10mm high. Material is diffused red. Luminous intensity is 10 to 21.8mcd @ 10mA for each diode.

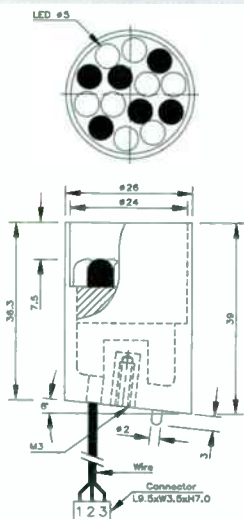


Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
GW65V	Giant Red LED	£0.951	£1.950

## 26mm LED Cluster

**Kingbright**



A 26mm highly visible LED cluster that is housed in a waterproof package with hood, and is suitable for in and outdoor information boards. The cluster has 14 x 5mm LEDs, made up from six superbright red and eight superbright green LEDs. This will also

allow a 'mixed' orange colour to be generated. Red and green cathodes are denoted by matching coloured wires.

**Specification: (red IF=20mA, green IF=40mA)**

Typical luminous intensity  
 red: 2400mcd  
 green: 2800mcd  
 Viewing angle: 40°  
 Typical forward voltage  
 red: 10.5V (12V max.)  
 green: 8.4V (9.4V max.)  
 Peak wavelength  
 red: 660nm  
 green: 570nm  
 Reverse current VR=18V  
 red: 100µA  
 green: 100µA  
 Maximum DC forward current  
 red: 30mA  
 green: 60mA  
 Maximum power dissipation  
 red: 0.4W  
 green: 0.6W  
 Operating temperature range: -25°C to +60°C

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

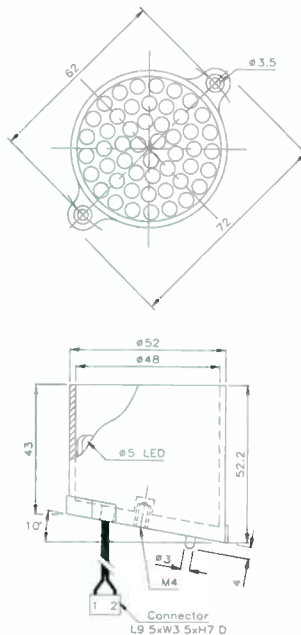
Order Code	Type	Price each exc. VAT	inc. VAT each
PD00A	Big LED 26mm	£4.410	£8.780

## 52mm Red LED Cluster

**Kingbright**



A high intensity 52mm red LED cluster housed in a waterproof plastic housing that is suitable for large in or outdoor display applications such as sign or message boards. The cluster comprises of an array of superbright GaAlAs LEDs and has a maximum luminous intensity of 23000mcd.



**Specification (IF=200mA)**  
 Maximum luminous intensity: 23000mcd  
 Viewing angle: 40°  
 Typical forward voltage: 9.6V (11.2V)  
 Peak wavelength: 660nm

Maximum reverse current: 100µA @ VR=18V  
 Power dissipation: 2.5W max.  
 DC forward current: 250mA max.  
 Reverse voltage: 5V max.  
 Operating temperature range: -5°C to +65°C

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
PD01B	BL0307-50-44	£12.900	£17.610

## Bar Graph Displays

### 10 Segment Display

**Kingbright**

A 10-segment LED ladder encapsulated in a 20-pin DIL package. Designed for use as solid state level indicators, each LED is completely separate from the others in the package. The LEDs may be driven from the LM3914, LM3915 or LM3916 bargraph driver ICs.



The displays are available in red or green and may be stacked end to end.

**Specification:**  
 Max forward current per segment: 30mA  
 per package: 200mA  
 Light output at IF = 20mA: 4.0mcd  
 Forward voltage at IF = 20mA: 2.0V  
 Peak inverse voltage: 5V

Package size: 25 x 10 x 8mm high excluding pins.  
 Pin length: 6mm  
 Pin spacing: 7.26 x 2.54mm (0.3 x 0.1in.) (standard 20-pin DIL IC spacing).

The anodes are denoted by product code marks printed on that side of the package.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
BY65V	Red Bargraph Dsply	£1.260	£2.980
YG33L	Green Bargraph Dsply	£1.090	£2.980

### 10-Segment LED Bar Array

**Kingbright**



An attractively finished 10-segment bar red display which is suitable for either front or rear panel mounting. The LEDs are bright and evenly illuminated. The display is common anode connected to pins 1 and 12 and the board has a gold plated edge connector with 2.54mm (0.1in.).

**Specifications**  
 Light output typical at IF = 10mA: 2mcd  
 Forward voltage at IF = 10mA: 2V  
 Forward current (max): 30mA  
 Reverse voltage (max): 5V  
 Power dissipation (max): 120mW  
 Peak wavelength: 665nm

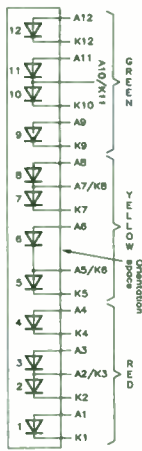
**Dimensions**  
 Overall size: 68 x 14 x 6.65mm deep  
 Bezel size: 66 x 6 x 2mm deep  
 Fixing holes in PCB: 60mm centres x 2.4mm dia.  
 Fixing holes in bezel: 62.4mm centres x 1.6mm dia.  
 LED size: 5.1 x 1.6mm

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YH76H	Red 10-Seg Bargraph	£0.810	£2.480



**Multicolour Array**  
Kingbright



An attractively finished 12-segment bargraph array with bright evenly illuminated LEDs in three groups of four LEDs green, yellow and red. Ideal for solid-state VU meters etc. Pins are on 2.54mm (0.1in.) centres. Front is slightly raised and finished in matt black.

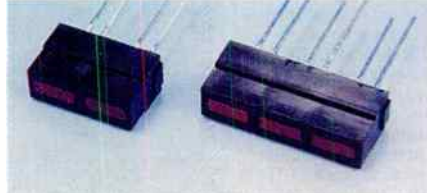
Specification:	Green	Yellow	Red
Light output typical at $I_F = 20\text{mA}$	2mcd	4mcd	4mcd
Forward voltage at $I_F = 20\text{mA}$	2.2V	2.1V	2V
Forward current (max)	30mA	30mA	30mA
Reverse voltage (max)	5V	5V	5V
Power dissipation (max)	105mW	105mW	120mW
Peak wavelength	565nm	635nm	665nm

**Dimensions:**  
Overall size: 57.5 x 7 x 8mm.  
Front face protrudes by 0.5mm and is 55.5 x 5mm across.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2130	Price each exc. VAT	inc. VAT each
FE26D	Multicolour Bargraph	£1.510 100+ £1.210 250+ £1.010	1+ £2.980

**Multi-LED Arrays**  
Kingbright



A unique range of 2-way and 3-way end-stackable LED arrays available in red, green and yellow, enabling multiple arrays of any number of segments with the same or various colours to be assembled. The housings are black and designed to push fit into a panel cut-out 4.76mm (3/16in.) high and 7mm per LED long. The LED windows are diffused to give a wide viewing angle. Cathode denoted by short lead.

Specification:	Red	Green	Yellow
Light output typical at $I_F = 20\text{mA}$	1.2mcd	1.1mcd	1.5mcd
Forward voltage at $I_F = 20\text{mA}$	2V	2.2V	2.1V
Forward current (max)	30mA	30mA	30mA
Reverse voltage (max)	5V	5V	5V
Power dissipation (max)	120mW	105mW	105mW
Peak wavelength	665nm	565nm	585nm

Dimensions (mm):	2 segment	3 segment
Type	2 segment	3 segment
Overall size (excl. leads)	14 x 6.13 x 8.6	21 x 6.13 x 8.6
Panel cut-out	14 x 4.76	21 x 4.76
LED window size	5.4 x 1.95	5.4 x 1.95

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

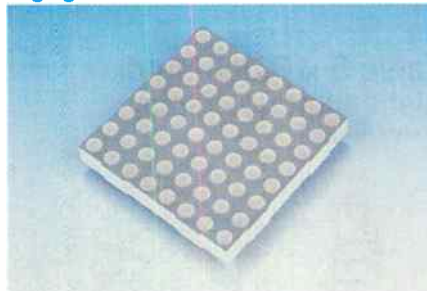
Order Code	Type 2134	Price each exc. VAT	inc. VAT each
YH77J	Dual LED Array Red	£0.214 25+ £0.171 100+ £0.143 500+ £0.610 1+	
YH78K	Tri LED Array Red	£0.340 25+ £0.272 100+ £0.227 500+ £0.820 1+	
YH79L	Dual LED Array Green	£0.229 25+ £0.183 100+ £0.152 500+ £0.610 1+	
YH80B	Tri LED Array Green	£0.368 25+ £0.294 100+ £0.245 500+ £0.820 1+	
YH81C	Dual LED Array Yellow	£0.245 25+ £0.196 100+ £0.163 500+ £0.730 1+	
YH82D	Tri LED Array Yellow	£0.369 25+ £0.295 100+ £0.246 500+ £0.930 1+	

**Alpha-Numeric Displays**

**Dot Matrix**

**Bi-Colour Dot Matrix Display**

Kingbright

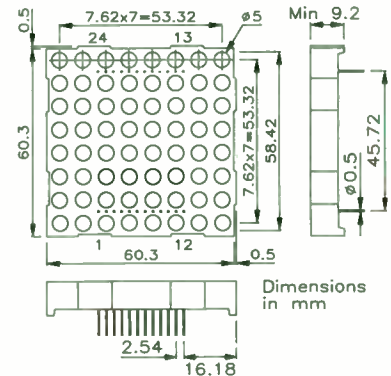
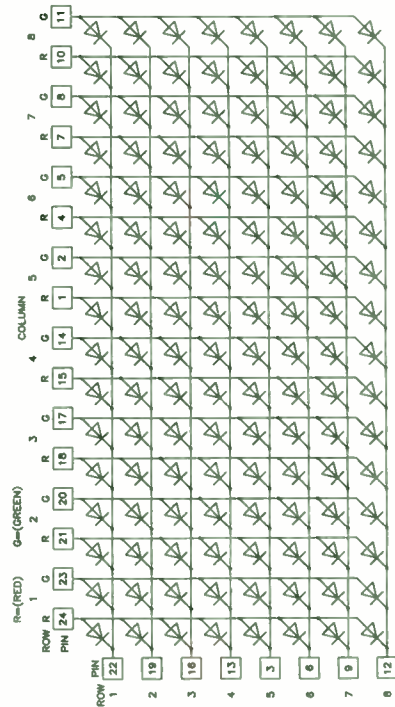


A large 8 x 8 LED dot matrix display with an effective illuminated area of 58mm high x 53mm wide. The complete ASCII character set can be shown on it, and the package has slots and tongues in the sides so that rows of displays for moving messages, etc., can be precisely aligned. The display has 64 diffused, circular 5mm windows for the LEDs set into a neutral grey background. Each location actually contains a bi-colour LED and can show red or green or a combination of the two colours. The LEDs are high brightness types, and while the row connections are common to each colour, the column connections are duplicated so that each colour is individually accessible; any single location can be a specific colour. To achieve this the package has 24 PCB pins organised into two rows on a 2.54mm (0.1in.) matrix; each row of 12 is spaced 45.72mm (1.8in.) apart.

It will be seen from the connection diagram that the column pins are arranged in adjacent pairs, where each pin in the pair provides for red and green respectively. All cathodes are connected to the row pins. The display has a wide viewing angle and high, even brightness. The display is the right way up if pin 1 is at bottom left when viewed from the front.

Specification	Red	Green
Luminous intensity:	3600 $\mu\text{cd}$	1800 $\mu\text{cd}$ @ $I_F = 10\text{mA}$

Viewing angle 150° 150°  
Dimensions 60.3 x 50.3 x 9.2mm  
deep not including pins  
Manufacturer's Code TBA23-12E GWA



Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2136	Price each exc. VAT	inc. VAT each
GW63T	Bi-Colour Dot Matrix	£8.840 10+ £7.070 25+ £5.890 100+ £16.230 1+	



Sales: 01702 554000  
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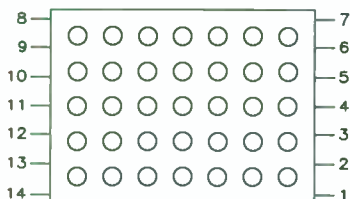
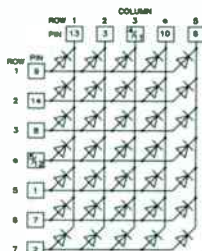
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## Large Dot Matrix Display

Kingbright



A 5 x 3 x 7 red dot matrix array on which the complete ASCII character set could be displayed. The package has slots and tongues in the sides so that rows of displays for moving messages etc., may be precisely aligned. The display has 35 diffused round 5mm circles flat with a grey plastic surround. The matrix is shown in the drawing; the cathodes are connected to the column pins. Pins 4/11 and 5/12 are commoned. For example, to light the centre LED connect pin 5 or 12 through a series resistor to +V and pin 4 or 11 to negative. The display has a wide viewing angle and high, even brightness. With the display vertical, pin 1 is at the lower left looking from the front. This is still true even if display is rotated through 180° top to bottom.



### Specification:

Light output typical at  $I_F = 20\text{mA}$ : 1.5mcd  
 Forward voltage at  $I_F = 20\text{mA}$ : 2V  
 Forward current (max): 30mA  
 Forward current peak: 150mA at 10% duty cycle (100Hz to 1kHz)  
 Reverse voltage (max): 5V  
 Power dissipation (max): 100mW  
 Peak wavelength: 635nm  
 Dimensions: 53 x 38 x 8.5mm deep excluding pins.

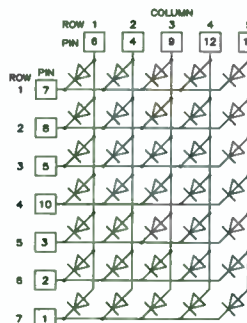
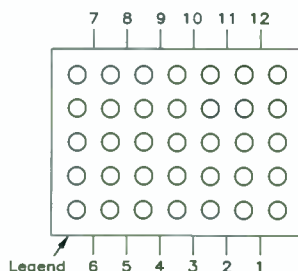
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
FT61R	5 x 7 LED Array	£2.990 25+ £2.390 100+ £1.990 1+	£5.360

## Small Dot Matrix Display

Kingbright

Similar to Large Display, but pins are not symmetrical. LEDs are 2mm diameter and the anodes are connected to the column pins. Overall size: 17.8 x 12.7 x 6.3mm deep. All other specifications as FT61R.

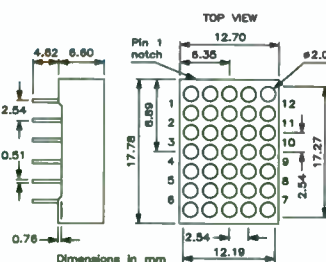


Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
FE25C	Small 5 x 7 LED Array	£2.160 10+ £1.730 25+ £1.440 100+ £1.140 1+	£4.610

## Large 5 x 7 Dot Matrix Alphanumeric Display

Hewlett Packard



A large 5 x 7 dot matrix alphanumeric display that is available in either 26.5mm (1.04in.) or 17.3mm (0.68in.) character height packages. The devices are bright and very clear; the 26.5mm character can be read up to a distance of 18m (12m for 17.3mm package). The devices are X/Y stackable and have a common bussed anode. Typical applications include electronic instrumentation, computer peripherals, point-of-sale terminals, weighing scales, and industrial electronics. High-efficiency red light output.

**Specification:**

	17.3mm	26.5mm
Luminous intensity per dot (typical):	2800µcd	3500µcd
Peak wavelength:	635nm	635nm
Forward voltage $I_F=50\text{mA}$ :	3.5V typical	3.5V typical
Reverse voltage:	25.0V typical	25.0V typical
Average power per dot:	75mW	75mW
Peak forward current per dot:	90mA	90mA
Average forward current per dot:	15mA	15mA

The 26.5mm font has a 10.2mm (0.4in.) dual-in-line (DIP) configuration, and the 17.3mm font has an industry standard 7.6mm (0.3in.) DIP configuration.

**N.B. Device requires a suitable driver IC to display alphanumeric.**

**Manufacturer's Code** MPS Code  
 HDSP-L201 CZ50E  
 HDSP-4501 CZ51F

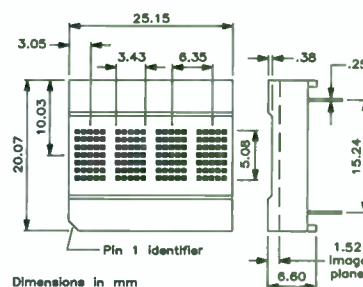
Price each is shown. Order quantities less than 0 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CZ50E	5x7 Matrix 17.3 Disp	£4.780	£5.620
CZ51F	5x7 Matrix 26.5 Disp	£5.420	£6.380

## 4-Character 5.0mm Smart 5 x 7 Alphanumeric Display

Hewlett-Packard

This 5.0mm 4-character, high efficiency red, 5 x 7 dot matrix display is driven by an on-board CMOS IC. The IC stores and decodes 7-bit ASCII data and displays it using a 5 x 7 font. Multiplexing circuitry and drivers are also incorporated in the IC which has fast set-up and hold times which make it easy to interface with a microprocessor.



Dimensions in mm

Pin No.	Function	Pin No.	Function
1	CE <sub>1</sub> Chip Enable	10	GND
2	CE <sub>2</sub> Chip Enable	11	D <sub>0</sub> Data Input
3	CLR Clear	12	D <sub>1</sub> Data Input
4	CUE Cursor Enable	13	D <sub>2</sub> Data Input
5	CU Cursor Select	14	D <sub>3</sub> Data Input
6	WR Write	15	D <sub>4</sub> Data Input
7	A <sub>1</sub> Address Input	16	D <sub>5</sub> Data Input
8	A <sub>0</sub> Address Input	17	D <sub>6</sub> Data Input
9	V <sub>DD</sub>	18	BL Display Blank

### Specification

Average luminous intensity per digit: 1-1mcd at  $V_{DD}=5V$   
 Peak wavelength: 655nm  
 Dominant wavelength: 640nm  
 Supply voltage  $V_{DD}$ : 5V nominal  
 Input current, 4-digits, 20 dots/character: 160mA maximum  
 Manufacturer's Code: HDLO-2416.

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CZ53H	4C Alphanumeric Disp	£15.850 5+ £15.200 10+	£20.590 1+

## Seven Segment Displays

### 7.6mm (0.3in.) Micro Bright 7-Segment Display

Hewlett-Packard

An LED 7-segment display that is designed for viewing distances up to 3m. The device is housed in a standard industry size package and pin-out (2.54mm lead centres). The device features a common anode, a right-hand decimal point, and is available in either high-efficiency red or green. This low current display is ideal for portable applications.



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 e-mail: Sales@maplin.co.uk

**Specification**

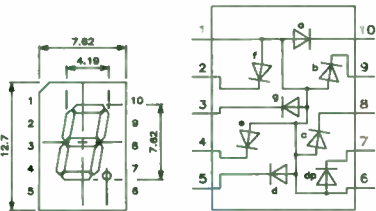
Luminous intensity per segment at  $I_F=20mA$ :  
Peak wavelength:  
Average power per segment:  
Peak forward current per segment:  
DC forward current per segment:  
Reverse voltage per segment maximum:  
3-0V

	Red	Green
Luminous intensity per segment at $I_F=20mA$ :	5390 $\mu$ cd	3400 $\mu$ cd
Peak wavelength:	635nm	566nm
Average power per segment:	105mW	105mW
Peak forward current per segment:	90mA	90mA
DC forward current per segment:	30mA	30mA
Reverse voltage per segment maximum:	3-0V	

## 14.2mm 7-Segment Displays

**Hewlett-Packard**

A range of 14.2mm. (0.56in.) LED 7-segment displays that are designed for viewing distances up to 7m (23ft.). The devices are housed in an industry standard size package and pin-out. The devices are available in high-efficiency red or green and have low current requirements, making them ideal for portable applications.



Manufacturer's Code	Colour	MPS Code
HDSP-7501	Red	CZ54J
HDSP-7801	Green	CZ55K

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

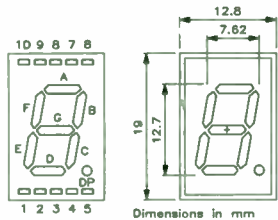
Order Code	Type 2185	Price each exc. VAT	inc. VAT each
CZ54J	0.3in 7-Seg Red	25+ £1.480 100+ £1.350 1000+ £1.170	1+ £2.150
CZ55K	0.3in 7-Seg Green	25+ £1.800 100+ £1.650 1000+ £1.430	1+ £2.590

## 12.7mm Display

**Kingbright**

High brightness 12.7mm (0.5in.) display featuring highly legible, bold, solid segments, fast switching, low power consumption, and compatibility with integrated circuits.

Available in two types in Red only.



Type 1: Common anode: Right-hand decimal point.  
Type 4: Common cathode: Right-hand decimal point.

**Characteristics:**

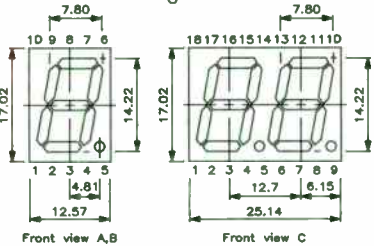
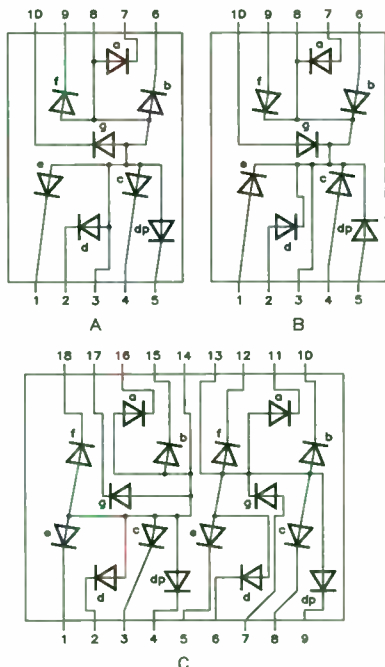
Luminous intensity: 1.3mcd at  $I_F = 20mA$  (per segment).  
Forward voltage: 2V at  $I_F = 20mA$  (per segment)

**Electrical Connections**

Pin No.	Type 1	Type 4
1	Segment E	Segment E
2	Segment D	Segment D
3	Common Anode	Common Cathode
4	Segment C	Segment C
5	DP	DP
6	Segment B	Segment B
7	Segment A	Segment A
8	Common Anode	Common Cathode
9	Segment F	Segment F
10	Segment G	Segment G

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2187	Price each exc. VAT	inc. VAT each
FR39N	1/2in Display Type 1	25+ £0.577 100+ £0.520 1000+ £0.433	1+ £1.420
FR41U	1/2in Display Type 4	25+ £0.564 100+ £0.507 1000+ £0.423	1+ £1.420



Specification	Red	Green
Luminous intensity per segment at $I_F=10mA$ :	2800 $\mu$ cd	2500 $\mu$ cd
Peak wavelength:	635nm	566nm
Average power per segment:	105mW	105mW
Peak forward current per segment:	90mA	90mA
DC forward current per segment:	30mA	30mA
Forward voltage per segment $I_F=20mA$ :	2-1V	2-1V

Manufacturer's Code	Colour	Type	Out line
HDSP-5501	Red	Common anode r.h. decimal	A
HDSP-5503	Red	Common cathode r.h. decimal	B
HDSP-5521	Red	2-digit common anode r.h. decimal	C
HDSP-5601	Green	Common anode r.h. decimal	A
HDSP-5621	Green	2-digit common anode r.h. decimal	C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

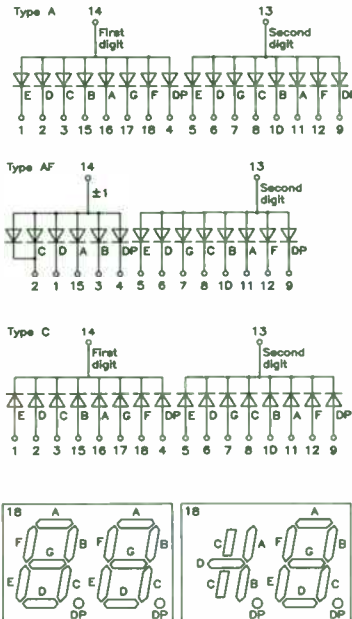
Order Code	Type 2158	Price each exc. VAT	inc. VAT each
CZ56L	0.56in Red Com Anode	25+ £1.250 100+ £1.120 1000+ £0.938	1+ £1.500
CZ57M	0.56in Red Com Cathd	25+ £1.250 100+ £1.120 1000+ £0.938	1+ £1.500
CZ58N	0.56in Red C Anodex2	25+ £3.230 100+ £3.140 1000+ £2.980	1+ £4.070
CZ59P	0.56in Grm Com Anode	25+ £1.980 100+ £1.840 1000+ £1.690	1+ £2.390
CZ60Q	0.56in Grm C Anodex2	25+ £3.190 100+ £2.870 1000+ £2.390	1+ £5.220

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## Double Digit Display

**Kingbright**

A 2-digit display available in red or green. Digits are 14.22mm (0.56in.) high with high contrast and wide viewing angles. All types have a right-hand decimal point.



**Ratings per segment:**

Luminous intensity: 1.3mcd at  $I_F = 20mA$   
Forward voltage: 2V at  $I_F = 20mA$   
Max forward current: 30mA

Type 'A': 2-digit (8.8.) Common anode. Type 'AF': 1 1/2-digit ( $\pm 1.8.$ ) Common anode. Type 'C': 2-digit (8.8.) Common cathode. Overall dimensions: 25 x 19 x 8mm. Pin spacing: 15.24 x 2.54mm (0.6 x 0.1in.) (18-pin). These displays may be used with direct drive or multiplexing type drivers.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2166	Price each exc. VAT	inc. VAT each
BY66W	DD Display Type A	25+ £1.040 100+ £0.942 1000+ £0.785	1+ £2.620
FA01B	DD Display Typ A Grn	25+ £1.110 100+ £1.000 1000+ £0.836	1+ £3.060
BY67X	DD Display Type AF	25+ £1.640 100+ £1.480 1000+ £1.230	1+ £3.580
BY68Y	DD Display Type C	25+ £0.987 100+ £0.888 1000+ £0.740	1+ £2.620
FA02C	DD Display Typ C Grn	25+ £1.030 100+ £0.860 1000+ £0.790	1+ £3.060



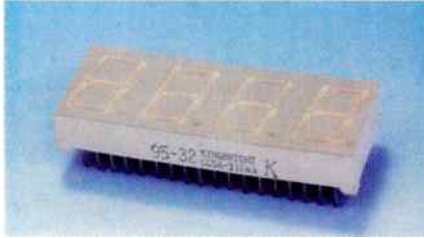
Stockist of Assessed Capability

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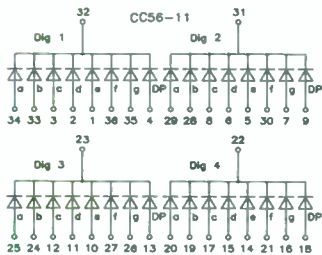
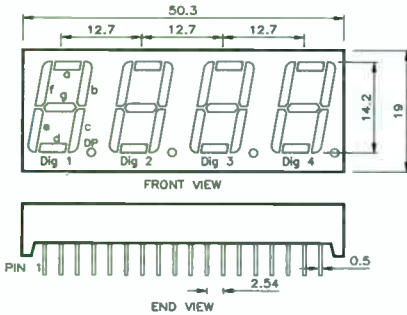
RS12750  
BS EN ISO 9002  
Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System.

## Four Digit Displays

Kingbright



A range of four-digit LED common cathode displays with high contrast and wide viewing angles. All types have right-hand decimal points. Available in red, amber and green. Luminous intensity is 2-2mcd at  $I_F=20\text{mA}$ .

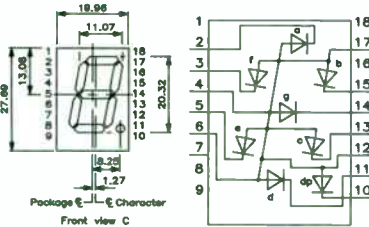


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CH23A	4-Dig Red CC Display	£2.570	£5.920
CH24B	4-Dig Gm CC Display	£2.110	£4.780
CH25C	4-Dig Amb CC Display	£2.960	£4.780

## 20mm 7-Segment Display

Hewlett-Packard



A 20mm (0.8in.) LED 7-segment display that is designed for viewing distances up to 10m (33ft.). The devices are housed in an industry standard package and pin-out. The device is available in high-efficiency red or green and has low current requirements, making it ideal for portable applications. Configured has common anode with right-hand decimal point.

Specification	Red	Green
Luminous intensity per segment:	4800µcd ( $I_F=20\text{mA}$ )	1500µcd ( $I_F=10\text{mA}$ )
Peak wavelength:	635nm	566nm
Average power per segment:	105mW	105mW
Peak forward current per segment:	135mA	90mA
DC forward current		

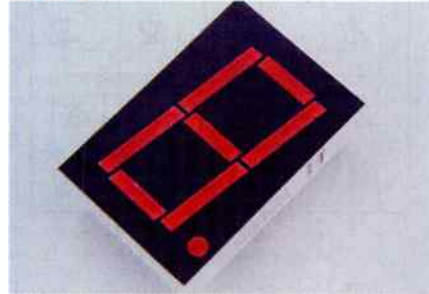
per segment:	40mA	30mA
Forward voltage per segment:	3.0V ( $I_F=20\text{mA}$ )	3.0V ( $I_F=10\text{mA}$ )
Manufacturer's Code	Colour	MPS Code
HDSP-3901	Red	CZ61R
HDSP-8601	Green	CZ62S

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

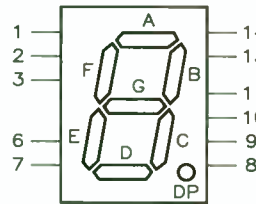
Order Code	Type	Price each exc. VAT	inc. VAT each
CZ61R	0.8in Red 7-Seg Disp	£2.300	£2.760
CZ62S	0.8in Gm 7-Seg Disp	£2.160	£3.580

## 26mm (1in.) Display

Kingbright

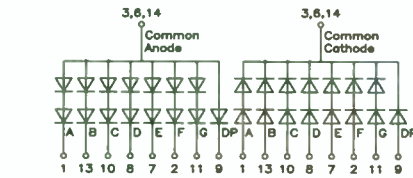


A very large display with an overall character height of 26mm (1in.). Available with common anode or common cathode in red.



### Specification

Light output typical at  $I_F = 20\text{mA}$ : 2.4mcd  
 Forward voltage: 2.2V per diode (i.e. 4.4V for all segments except DP)  
 Max forward current: 30mA  
 Overall dimensions: 32.9 x 22.4 x 8.5mm  
 Pin length: 6mm  
 Pin spacing: 15.24 x 2.54mm (0.6 x 0.1in.) (14-pin)



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
FA03D	1in Disply Com Anode	£1.030	£3.060
FA04E	1in Disply Com Cathd	£1.030	£3.060

## 44.5mm(1.8in.) Bi-Colour Display

Kingbright

A high brightness, 44.5mm high 7-segment display with bold, legible and solid segments which can be lit in either red or green, or a combination of the two.

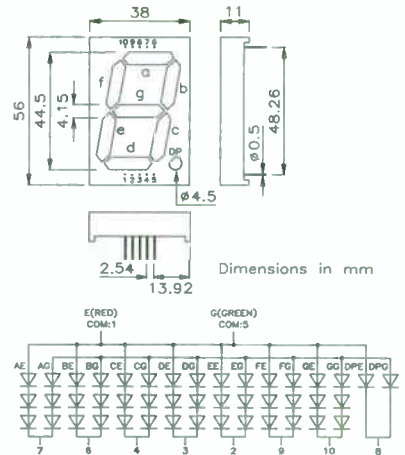
This is achieved through the use of two common anodes, one for red and the other for green.

The individual segments can be activated by an open collector 7-segment driver in the normal way, and multiplexed displays are also possible, switching the relevant colour's anode pin. The package has 10 PCB pins, two of which are the anodes, and the remainder the segment and decimal point connections, organised into two rows of 5 pins on a 2.54mm matrix, with the rows spaced 48-26mm apart.

Specification: Red Luminous intensity: 30000 µcd @  $I_F 10\text{mA}$   
 Green Luminous intensity: 30000 µcd @  $I_F 10\text{mA}$   
 Dimensions: 56 x 38 x 11mm deep not including pins

Manufacturer's Code

SBA18-11 EGWA



Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
GW64U	1.8in. Bi-Colour	£3.190	£6.710

## 100mm (4in.) Display

Kingbright

An extremely large with a display overall character height of 100mm (4in.) Display colour is red. Available with common anode.



### Specification (at $I_F = 20\text{mA}$ )

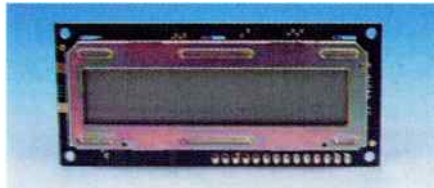
Typical light output  $V_F$ : 21mcd  
 7.4V segment  
 3.7V decimal point  
 $I_F$  (max.): 60mA segment  
 30mA decimal point  
 Overall dimensions: 122mm x 90mm x 15mm  
 Pin length: approx 9mm  
 Pin Spacing: 5.08mm (0.2in.)

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## LCD Character Display Modules

Hitachi



A range of dot matrix LCD modules that contain a HD44780 LSI controller for character display. The modules can be interfaced to 4-bit or 8-bit MPU directly, and can display 192 standard characters plus 8 user programmable symbols. Character generator RAM is also built-in (80 x 8 bits, 80 characters maximum), which can be read from the MPU. The modules feature low power consumption, and are powered from a single +5V supply. Their light weight and compactness make them ideal for a wide range of applications including telephone, typewriters, portable computers, industrial equipment etc. The displays are either of the 'twisted nematic' or 'supertwist' type. Type LM09XMLN features LED backlighting which is also 5V powered.

Optical Specification	'Twisted Nematic'	'Supertwist'
Viewing angle:	20°	40°
Contrast ratio:	2	3
Typical response time (rise):	250ms	400ms
Typical response time (fall):	250ms	450ms

## LM020L 16 Character x 1 Line

### Specification

Type:	Twisted nematic
Module size:	80 x 36 x 12 mm
Effective display area:	64.5 x 13.8mm
Character size (5 x 7 dots):	3.07 x 5.73mm
Character pitch:	3.77mm
Dot size:	0.55 x 0.75mm
Weight:	25g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 2182	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DK65V	16x1 Char Disp Modul	£10.620	£9.030	£7.670	£12.490

## LM016L 16 Characters x 2 Lines

### Specification

Type:	Twisted nematic
Module size:	84 x 44 x 12mm
Effective display area:	61 x 15.8mm
Character size (5 x 7 dots):	2.96 x 4.86mm
Character pitch:	3.55mm
Dot size:	0.56 x 0.66mm
Weight:	35g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 2184	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DK63T	16x2 Char Disp Modul	£11.490	£10.100	£8.890	£13.490

## LM018L 40 Characters x 2 Lines

### Specification

Type:	Twisted nematic
Module size:	182 x 35.5 x 13mm
Effective display area:	154 x 15.3mm
Character size (5 x 7 dots):	3.2 x 4.85mm
Character pitch:	3.7mm
Dot size:	0.6 x 0.65mm
Weight:	65g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 2185	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DK64U	40x2 Char Disp Modul	£21.260	£19.140	£17.220	£24.990

## LM032XMBL 20 Characters x 2 Lines

### Specification

Type:	Supertwist
Module size:	116 x 39 x 10.05mm
Effective display area:	83 x 18.6mm
Character size (5 x 7 dots):	3.2 x 4.85mm
Character pitch:	3.7mm
Dot size:	0.6 x 0.65mm
Weight:	50g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 2187	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DK66W	20x2 Char Disp Modul	£17.010	£15.310	£14.540	£19.990

## LM092XMLN 40 Characters x 2 Lines with LED Backlight

### Specification

Type:	Supertwist
Module size:	192 x 35.5 x 15.3mm
Effective display area:	154 x 15.3mm
Character size (5 x 7 dots):	3.2 x 4.85mm
Character pitch:	3.7mm
Dot size:	0.6 x 0.65mm
Dot pitch:	0.65 x 0.7mm
LED supply current:	250mA maximum

Retail Unit Price each (inc. VAT).

Order Code	Type 2188	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DK67X	40x2 Char Disp +LED	£41.260	£35.900	£31.230	£48.490

## Electroluminescent Panels

### Electroluminescent Panels and Power Supply



Electroluminescent panels available in either rectangle or round format with a distinctive green light output. The panels are lightweight, pliable, and are suitable for a wide range of applications such as warning indicators, safety harnesses etc.



The separate power supply measures only 79 x 36 x 20mm and using two 'AA' batteries (not included, order code JY48C), will power a panel for up to 100 hours. A three position slide switch selects either OFF; ON (constant) or ON (flashing). The 110V AC 700Hz output is supplied via two leads that are soldered directly to the panel. Although the output is high impedance, care must be taken to ensure there is no risk of shock or short circuits. Note the panels are not supplied with a power supply.

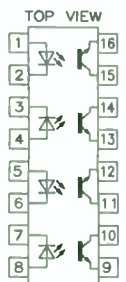
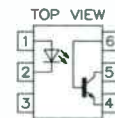
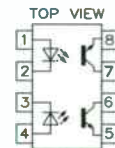
Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 1221	Price each exc. VAT			inc. VAT each
		5+	10+	25+	1+
AZ84F	EL Panel 64mm	£4.650	£4.390	£3.390	£10.930
AZ85G	EL Panel 32x128mm	£4.900	£4.680	£3.600	£11.120
AZ86T	EL Driver Module	£3.670	£3.200	£2.460	£10.560

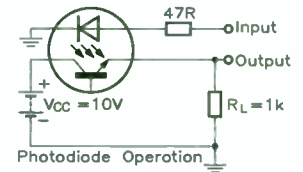
## Optocouplers

### Opto Transistor Isolator

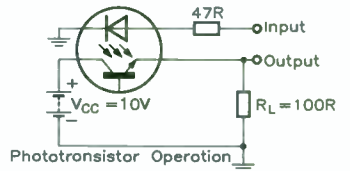
Siemens



Optically coupled infra-red emitting diodes and phototransistors in dual in-line packages. Single type is in a 6-pin DIL package, dual type is in an 8-pin DIL package and quad type is in a 16-pin DIL package.



On the single type, a base lead is provided so that the device may be biased in the conventional manner.



### Absolute maximum ratings

Input to output voltage:	1500V
Collector-base voltage (V <sub>CBO</sub> ):	70V
Collector-emitter voltage (V <sub>CEO</sub> ):	30V (dual and quad 20V)
Emitter-base voltage (V <sub>EB0</sub> ):	7V
Input diode reverse voltage:	3V
Input diode continuous forward current:	100mA
Continuous power dissipation:	
LED:	150mW
Phototransistor:	150mW
Total:	250mW (quad 450mW)

### Electrical characteristics (typical):

Input diode static reverse current (at V <sub>R</sub> = 3V):	<10µA
On state collector current (V <sub>CE</sub> = 0.4V, I <sub>F</sub> = 16mA)	
Phototransistor operation (I <sub>B</sub> = 0):	7mA
Photodiode operation (I <sub>E</sub> = 0):	20µA
Off-state collector current (V <sub>CE</sub> = 10V, I <sub>F</sub> = 0)	
Phototransistor operation (I <sub>B</sub> = 0):	1nA
Photodiode operation (I <sub>E</sub> = 0):	0.1nA
h <sub>FE</sub> (V <sub>CE</sub> = 5V, I <sub>C</sub> = 10mA, I <sub>F</sub> = 0):	300
Input diode V <sub>F</sub> at I <sub>F</sub> = 16mA:	1.2V
Collector-emitter saturation voltage (I <sub>C</sub> = 2mA, I <sub>F</sub> = 16mA, I <sub>B</sub> = 0):	0.25V
Input to output resistance (diode leads shorted to transistor leads shorted at V <sub>in</sub> to V <sub>out</sub> = 1.5kV):	10 <sup>11</sup> Ω
Input to output capacitance:	1pF
Max operating frequency phototransistor operation:	>125kHz
photodiode operation:	>250kHz
Min transfer ratio:	13%

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2198	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
WL35Q	Opto-Isolator	£0.660	£0.550	£0.510	£0.900
YY62S	Dual Opto-Isolator	£0.990	£0.836	£0.657	£1.660
YY63T	Quad Opto-Isolator	£2.020	£1.830	£1.440	£2.810

## Opto Darlington Isolator

An optically coupled gallium arsenide infra-red emitting LED and NPN silicon photo-Darlington transistor in a 6-pin DIL package. A base lead is provided so that the device may be biased in the conventional manner if desired. Pin-out is the same as WL35Q.

### Absolute maximum ratings:

Input to output voltage:	1500V
Collector-base voltage ( $V_{CBO}$ ):	30V
Collector-emitter voltage ( $V_{CEO}$ ):	30V
Emitter-base voltage ( $V_{EBO}$ ):	7V
Input diode reverse voltage:	3V
Input diode continuous forward current:	100mA
Continuous power dissipation	
LED:	150mW
Photo-Darlington:	150mW
Total:	250mW

### Electrical characteristics (typical):

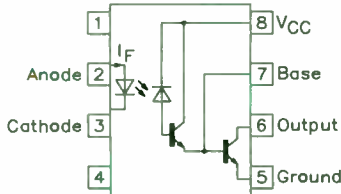
On-state collector current ( $V_{CE} = 1V, I_F = 10mA$ ):	100mA
Off-state collector current ( $V_{CE} = 10V, I_F = 0$ ):	100nA
$h_{FE}$ ( $V_{CE} = 5V, I_C = 10mA, I_F = 0$ ):	15,000
Input diode forward voltage (VF):	1.5V
Collector-emitter saturation voltage ( $I_C = 125mA, I_F = 50mA, I_B = 0$ ):	1V
Input to output resistance (diode leads shorted to transistor leads shorted at $V_{in}$ to $V_{out} = 1.5kV$ ):	$10^{11}\Omega$
Input to output capacitance:	1pF
Max operating frequency:	>10kHz
Min transfer ratio:	300%

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
WQ70M	Darlington Isolator	£0.680	£0.570	£0.530	£1.070

## High Gain Opto Isolator 6N139

Siemens



A high sensitivity, high speed split-Darlington opto isolator. Speeds up to 300kbit/s are possible.

### Specification

Supply voltage ( $V_{CC}$ ):	5V (18V max)
LED input current:	0.5mA (20mA max)
Output current:	60mA max
LED $V_F$ at $I_F = 0.5mA$ :	1.37V
LED reverse voltage:	5V max
Isolation voltage:	3000V DC
Current transfer ratio:	800% at $I_F = 0.5mA$ 900% at $I_F = 1.6mA$ ( $V_F = 1.42V$ )

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
RA59P	Hi-Gain Opto 6N139	£1.080	£0.870	£0.800	£2.870

## High Sensitivity, High Voltage Opto Transistor Isolator Q.T.C.

Q.T.C.

This opto-isolator is similar to WL35Q, except that it has a min transfer ratio of 100% and a 7500V peak isolation voltage (5300V RMS). Pin-out is the same as WL35Q.

### Absolute maximum ratings:

Input to output voltage:	7500V peak, 5300V RMS
Collector-base voltage ( $V_{CBO}$ ):	70V
Collector-emitter voltage ( $V_{CEO}$ ):	70V

Emitter-base voltage ( $V_{EBO}$ ):	7V
Input diode reverse voltage:	3V
Input diode continuous forward current:	90mA
Continuous power dissipation:	
LED:	135mW
Phototransistor:	200mW
Total:	260mW

### Electrical characteristics (typical):

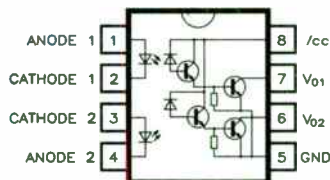
$h_{FE}$ ( $V_{CE} = 5V, I_C = 100\mu A$ ):	500
Input diode $V_F$ at $I_F = 10mA$ :	1.2V
Input to output capacitance:	0.5pF
Max operating frequency:	>100kHz
Min transfer ratio:	100% at $I_F = 10mA$

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
RA57M	Hi-Sensitivity Opto	£0.400	£0.330	£0.310	£0.720

## HCPL-2731 Dual Input, High Gain Optocoupler

Hewlett-Packard



A dual low input current, high gain, optocoupler that provides an extremely high current transfer ratio (CTR) and excellent input-output common mode transient immunity. The device contains a separated pair of GaAsP LEDs optically coupled to a pair of integrated high gain photo detectors. Additional features include: a low input current requirement (0.5mA), low output saturation voltage (0.1V typical) and a minimum CTR of 400% with an input current of 0.5mA. This makes the device ideal for use in low input current applications such as MOS, CMOS and low power logic interfacing or RS232C data transmission systems.

### Specification:

Current transfer ratio	
$I_F = 0.5mA, V_O = 0.4V,$	1800 typical
$V_{CC} = 4.5V:$	Supply and output voltage: 7V maximum
Average input current:	20mA each channel
Reverse input voltage:	5V maximum
Input power dissipation:	35mW max. per channel
Output current:	60mA max. per channel
Output power dissipation:	100mW per channel

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
C264U	HCPL-2731	£2.990	£2.880	£2.210	£3.900

## High Voltage Opto-isolators

General Instruments

Two opto-isolator devices in a 6-pin DIL package comprising a gallium arsenide infra-red emitting diode optically coupled to a monolithic silicon phototransistor. The input to output isolation can be up to 7,500V peak guaranteed, and the device meets or exceeds all JEDEC registered specifications. Of the two versions available, the 4N25 has a faster switching time of 2.8µs and a higher current gain, whereas the 4N36 is 7.5µs.

LED forward voltage:	4N25 1.15V	4N36 1.15V	@ $I_F = 10mA$
Capacitance:	18pF	18pF	
Collector/emitter dark current:	50nA	50nA	@ $V_{CE} = 10V$
$V_{CE}$ maximum:	30V	30V	
$V_{CB}$ maximum:	70V	70V	
$h_{FE}$ :	500	400	

Collector/base capacitance:	19pF	19pF	@ 1MHz
Collector/emitter saturation voltage:	0.15V	0.14V	
Turn-on time:	2.8µs	7.5µs	(LED $I_F = 10mA$ )
Turn-off time:	4.5µs	5.7µs	
Isolation voltage:	7,500	7,500	VAC @ 60Hz
Isolation resistance:	$10^{11}\Omega$	$10^{11}\Omega$	@ 500V
Isolation capacitance:	0.2pF	0.2pF	

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
AY44X	4N25	£0.336	£0.305	£0.240	£0.480
AY45Y	4N36	£0.336	£0.305	£0.240	£0.460

## Low-Current Optocoupler SFH618-2

Siemens



A transistor optocoupler in a DIP-4 package with a low current input and a very high coupling transfer ratio (CTR), typically 120%. The device has good CTR linearity relative to forward current and a high  $V_{CEO}$  of 55V DC. The device can be 'end stacked' if necessary (2.54mm spacing).

### Specification

Emitter - maximum ratings	
Reverse voltage:	6V
DC forward current:	50mA
Surge forward current ( $\leq 10\mu S$ ):	2.5A
Total power dissipation:	70mW
Detector - maximum ratings	
Voltage	
$V_{CEO}$ :	55V
$V_{ECO}$ :	7V
Collector current:	50mA
Surge collector current ( $\leq 1ms$ ):	100mA
Total power dissipation:	150mW
Coupling capacitance:	0.25pF
Coupling transfer ratio	
$I_F = 1mA, V_{CE} = 0.5V:$	63% to 125%
$I_F = 0.5mA, V_{CE} = 1.5V:$	75% ( $\geq 32\%$ )

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
CY94C	SFH618-2	£0.700	£0.691	£0.543	£0.900

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## Low-Current Optocoupler SFH628-2

Siemens



A transistor optocoupler housed in a DIP-4 package with a low current input, and a very high coupling transfer ratio (CTR), typically 160%. Two infra-red GaAs emitters are wired in parallel, but opposite polarity, to allow the device to operate with an AC input. The optocoupler has good CTR linearity relative to forward current and a high  $V_{CEO}$  of 55V DC. The device can be 'end stacked' if necessary (2.54mm spacing).

### Specification

**Emitter** – maximum ratings  
 Forward voltage  $I_F = \pm 5\text{mA}$ :  $\pm 1.1\text{V}$  ( $\leq 1.5\text{V}$ )  
 DC forward current:  $\pm 50\text{mA}$   
 Surge forward current ( $\leq 10\mu\text{s}$ ):  $\pm 2.5\text{A}$   
 Total power dissipation:  $70\text{mW}$

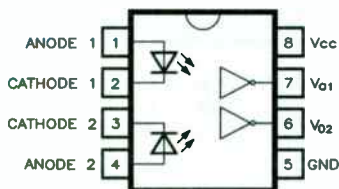
**Detector** – maximum ratings  
 Voltage  $V_{CEO}$ :  $55\text{V}$   
 Voltage  $V_{ECO}$ :  $7\text{V}$   
 Collector current:  $50\text{mA}$   
 Surge collector current ( $\leq 1\text{ms}$ ):  $100\text{mA}$   
 Total power dissipation:  $150\text{mW}$   
 Coupling capacitance:  $0.25\text{pF}$   
 Coupling transfer ratio  
 $I_F = 1\text{mA}, V_{CE} = 0.5\text{V}$ :  $63\%$  to  $200\%$   
 $I_F = 0.5\text{mA}, V_{CE} = 1.5\text{V}$ :  $100\%$  ( $\geq 32\%$ )

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
CY938 S	SFH628-2	£0.740	£0.673	£0.529	£1.100

## HCPL-2631 Dual Channel TTL Compatible Optocoupler

Hewlett-Packard



Dual channel optically coupled logic gates that are housed in a 8-pin DIL package. Each channel combines a GaAsP LED and an integrated high gain photodetector. The photons are collected in the detector by a photodiode and the current is amplified by a high gain linear amplifier that drives a Schottky clamped open collector output transistor. The internal shield guarantees a common mode transient immunity of  $1000\text{V}/\mu\text{s}$ . The design provides maximum AC and DC circuit isolation while achieving LSTTL and TTL compatibility.

### Specification (maximum ratings each channel)

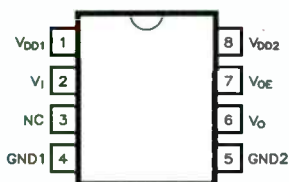
Supply voltage:  $5.5\text{V}$   
 Input current low level:  $250\mu\text{A}$   
 Input current high level:  $15\text{mA}$   
 Fan out TTL load:  $8$   
 Average forward input current:  $15\text{mA}$   
 Reverse input voltage:  $5\text{V}$   
 Output collector current:  $16\text{mA}$   
 Output collector voltage:  $7\text{V}$   
 Output collector power dissipation:  $60\text{mW}$

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

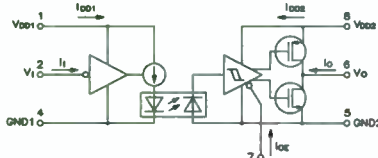
Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
CZ65V	HCPL-2631	£4.180	£3.760	£3.290	£4.990

## HCPL-7100 High-Speed CMOS Optocoupler

Hewlett-Packard



An optocoupler that combines CMOS IC technology, a high-speed high-efficiency AlGaAs LED and an optimised light coupling system to achieve low power requirements – just  $10\text{mA}$  including the LED. The device requires just two bypass capacitors for complete CMOS/TTL compatibility. A CMOS or TTL logic signal controls the LED driver IC. The detector IC incorporates an integrated photodiode, a high-speed transimpedance amplifier and a voltage comparator with hysteresis. The 3-state output is controlled by the output enable pin  $V_{OE}$ .



TRUTH TABLE (POSITIVE LOGIC)

INPUT	ENABLE	OUTPUT
H	H	Z
L	H	Z
H	L	H
L	L	L

### Specification:

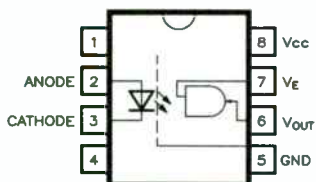
Supply voltage:  $5.0\text{V}$   
 Logic high input voltage:  $2.0\text{V}$  minimum  
 Logic low input voltage:  $0.8\text{V}$  maximum  
 Logic high output enable voltage:  $2.0\text{V}$  to  $5.0\text{V}$   
 Logic low output enable voltage:  $< 0.8\text{V}$   
 Input signal rise and fall time:  $1\text{ms}$   
 Average output current:  $25\text{mA}$   
 TTL fanout:  $6$

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
CZ66W	HCPL-7100	£5.580	£5.070	£3.980	£6.690

## 6N137 TLL Compatible Optocoupler

Hewlett-Packard



TRUTH TABLE (POSITIVE LOGIC)

LED	ENABLE	OUTPUT
ON	H	L
OFF	H	H
ON	L	H
OFF	L	H

The 6N137 combines a GaAsP light emitting diode and an integrated high gain photo detector. An enable input is provided that allows the detector to be strobed, and the detector IC output is an open collector Schottky clamped transistor. An internal shield provides a guaranteed common mode transient immunity of  $1000\text{V}/\mu\text{s}$ . The design provides maximum AC and DC circuit isolation while achieving TTL compatibility. Suitable for high-speed logic interfacing, input/output buffering and line receivers.

### Specification: (maximum ratings)

Input current low level:  $250\mu\text{A}$   
 Input current high level:  $15\text{mA}$   
 Supply voltage (output):  $5.5\text{V}$

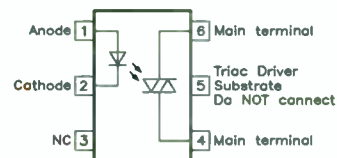
High level enable voltage:  $2.0\text{V}$  min  
 Low level enable voltage:  $0.8\text{V}$  max  
 Fan-out (TTL):  $8$   
 Output collector current:  $50\text{mA}$   
 Output collector power dissipation:  $85\text{mW}$

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
CZ63T	6N137	£1.520	£1.380	£1.090	£2.490

## Opto Triac Isolator

Motorola



An optically coupled gallium arsenide infra-red emitting LED and triac in a 6-pin DIL package. The triac has a  $400\text{V}$  rating (suitable for  $240\text{V}$  AC mains) and  $I_T$  rms of  $100\text{mA}$  maximum.

### Characteristics:

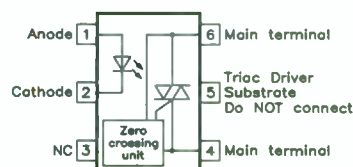
Forward voltage ( $V_F$ ) at  $I_F = 30\text{mA}$ :  $1.3\text{V}$   
 Continuous forward current:  $60\text{mA}$  max  
 LED current needed to latch output:  $15\text{mA}$   
 Holding current:  $200\mu\text{A}$   
 Reverse voltage:  $3\text{V}$  max  
 PIV triac:  $400\text{V}$   
 $I_T$  (rms) triac:  $100\text{mA}$   
 Isolation voltage:  $7500\text{V}$  peak,  $5300\text{V}$  rms

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
QQ10L	Triac Isolator	£0.940	£0.855	£0.671	£1.190

## Opto Zero-Crossing Triac Isolator

Motorola



An optically coupled gallium arsenide infra-red emitting LED and zero-voltage crossing triac in a 6-pin DIL package. The triac has a  $400\text{V}$  rating (suitable for  $240\text{V}$  AC mains) and  $I_T$  rms of  $100\text{mA}$  maximum.

Forward voltage ( $V_F$ ) at  $I_F = 30\text{mA}$ :  $1.3\text{V}$   
 LED current required to latch output:  $7\text{mA}$   
 Max forward current:  $60\text{mA}$   
 Reverse voltage (max):  $6\text{V}$   
 Isolation voltage:  $7500\text{V}$  peak,  $5300\text{V}$  RMS  
 PIV triac:  $400\text{V}$   
 $I_T$  triac:  $100\text{mA}$

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
RA56L	Optotriac + Zero Crs	£1.120	£0.900	£0.643	£1.980

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## SFH2030 Silicon Photodiode

**Siemens**

A silicon photodiode fabricated in PIN planar technology that can be operated either as a photodiode, with reverse voltage, or as a photovoltaic cell. The device is in a 5mm package and has solder tab terminals with 2.54mm (0.1in.) lead spacing. Typical applications include industrial electronics, measuring and controlling devices, light-activated switches and fibre optic transmission systems. The device features a short switching time, high spectral sensitivity, low capacitance and a clear plastic lens. A daylight filter option SFH2030F is also available. Short lead/flat on body denotes cathode.



Specification:	SFH2030	SFH2030F
Reverse voltage:	30V	30V
Power dissipation:	100mW	100mW
Spectral sensitivity VR=5V	80(±25)nA/lx	—
Spectral sensitivity VR=5V	wavelength= 950nm, Ee=0.5mW/cm2: —	—
25(±15)nA/lx	—	—
Wavelength of max.	—	—
Spectral range of	sensitivity: 850nm 900nm	—
800 to 1000nm	photosensitivity: 400 to 1100nm	—
Spectral sensitivity	(wavelength 850nm):	—
0.62A/W	0.62A/W	—
Half angle:	±20°	±20°
Forward voltage	Ee=0, IF=100mA 1.3V	1.3V
Capacitance:	11pF	11pF

Price each is shown. Order quantities less than 100 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CY90X	SFH2030	£0.480	£0.890
CY91Y	SFH2030F	£0.702	£0.990

## Light Responsive Devices

### Photodiode

A high speed PIN photodiode designed to operate in the reverse bias mode. It offers low capacitance with high speed and high photosensitivity.

The photodiode chip is moulded in a 5mm half round black infra-red transmissive plastic package. This device is intended for remote control applications. Cathode denoted by shorter lead. Similar to TIL100, in different package.



#### Absolute maximum ratings:

Reverse voltage: 20V  
Power dissipation: 150mW

#### Electrical characteristics:

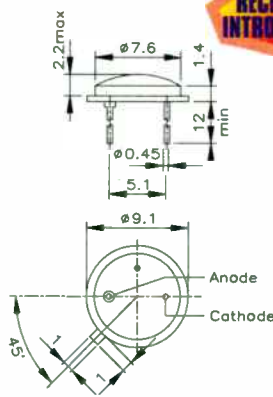
Dark current: 30nA (max)  $V_R = 10V$   
Light current: 60µA (950nm, 1000Lux)  
Peak spectral response: 950nm

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YH71N	Infra-Red Photodiode	£0.350	£1.360

## Low Profile Infra-Red Photodiode

**RECENTLY INTRODUCED**



A sensitive infra-red photodiode with high output and fast response designed for a wide range of applications including remote control for TV, VCR, audio; smoke detector; camera; strobe; exposure meter etc. The device has a wide receive angle and is package in a low profile TO5 epoxy resin case.

#### Specification

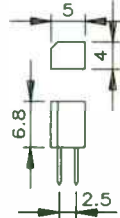
Open circuit voltage: 0.38V typical  
Short circuit current: 75µA @ 1000lux  
Dark current  $V_R=10V$ : 100nA typical  
Peak wavelength: 900nm  
Angle of view: ±60°  
Operating temperature: -20°C to +80°C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JA31J	Lo Profile Ph Diode	£0.798	£1.750

## BPW41N Photodiode Detector

A fast PIN silicon photodiode housed in a compact plastic package. With a peak response at 950nm, and a wide detection angle



**RECENTLY INTRODUCED**

#### Specification

Sensitivity @ L = 85nm: 0.6A/W  
Active area: 7.5mm<sup>2</sup>  
Peak response: 940nm  
Response time: 50ns  
Capacitance: 25pF  
Reverse voltage: 32V max.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
GS26D	BPW41N	£0.700	£0.900

## SFH309 Phototransistor

**Siemens**

A silicon phototransistor in a standard T1 (3mm) size plastic package, ideal for low-cost, high volume applications such as IR remote control etc. The device matches with infra-red emitter SFH409 and has good linearity, and a narrow acceptance angle of 32°.

Lead spacing: 2.54mm.

#### General Specification:

Wavelength of maximum photosensitivity: 880nm



Spectral range of photosensitivity: 380nm to 1125nm  
Half angle: ±16°  
Capacitance: 5.3pF  
Collector emitter voltage: 35V  
Collector current: 15mA  
Collector peak current (<10µs): 75mA  
Power dissipation at 25°C: 165mW  
Photocurrent, collector to emitter (1000 lux,  $V_{CE} = 5V$ ): 5mA typical

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CY86T	SFH309	£0.390	£0.490

## SFH300-2 Phototransistor

**Siemens**

A highly sensitive, linear NPN silicon phototransistor, enclosed in a tubular 5mm plastic package that can be easily mounted into holes and preformed plastic sleeves, e.g., LED mounting assemblies. The device features a clear plastic lens, a 50° acceptance angle and a very low dark current. The collector has the shortest leg and is next to the flat on the package base.



#### Specification

Wavelength of maximum photosensitivity: 850nm  
Spectral range of photosensitivity: 420nm to 1130nm  
Half angle: ±25°  
Capacitance: 6.5pF  
Collector emitter voltage: 35V  
Collector current: 50mA  
Collector peak current: 100mA (<10µs)  
Power dissipation at 25°C: 200mW  
Dark current: 5nA  
Photocurrent, collector to emitter (1000lux,  $V_{CE} = 5V$ ): 0.63mA to 1.25mA

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP64U	SFH300-2	£0.330	£0.490

## Infra-Red Phototransistor

A low cost, high quality NPN silicon phototransistor, having high illumination sensitivity, fast response time and low dark current. Encapsulated in a 3mm water clear resin package. The collector is denoted by a flat on the package and the shorter of the two leads; there is no access to the base terminal. Similar to TIL78.



#### Absolute maximum ratings:

$V_{CE}$ : 20V  
 $P_{TOT}$ : 75mW

#### Electrical characteristics:

Light current ( $V_{CE} 3V, 880nm, 1000Lux$ )  
Min: 1.0mA  
Max: 20mA  
Dark current ( $V_{CE} 10V$ )  
Max: 0.1µA  
Peak spectral response: 880nm

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YY66W	Infra-Red Sensor	£0.154	£0.900

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## Photo-Darlington Transistor MEL12

A very high sensitivity silicon planar NPN photo-Darlington transistor featuring a very high light current and low dark current.

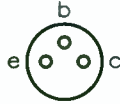


### Absolute maximum ratings

$V_{CBO}$ : 60V  
 $V_{CEO}$ : 40V  
 $V_{EBO}$ : 10V  
 $I_C$ : 150mA  
 $P_{TOT}$ : 200mW

### Electrical Characteristics:

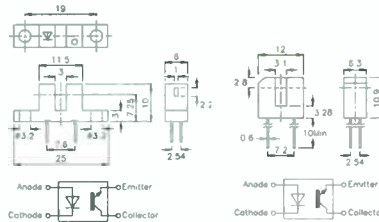
(open-circuit base typical)  
 Light current ( $V_{CE} = 5V @ H = 2mW/cm^2$ ): 3mA  
 Dark current ( $V_{CE} = 5V$ ): 100nA



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
HQ61R	MEL12	£1.450	£1.160	£0.829	£1.900

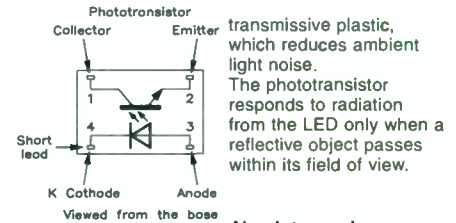
## Opto Switches



Two slotted opto switches consisting of a miniature infra red emitter and matching receiver housed in a choice of plastic packages, with or without mounting lugs. Ideal for edge detection or for use with rotating slotted disks for speed or distance measurement or counts. IR diode max  $I_F=60mA$ ,  $V_F=1.5V$  max. Phototransistor  $V_{CEO}=30V$  max. Power dissipation=100mW,  $I_C=0.5mA$  min when coupled, dark current 100nA max.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
CH18U	Slotted Opto Switch	£0.544	£0.435	£0.311	£2.620
CH19V	Slit Opto Sw 2 HI Fx	£0.537	£0.429	£0.307	£2.700



### ratings

#### IR LED ratings:

Forward DC current: 50mA  
 Peak forward current: 3-0A (Pulse width 1µs, 300pps)  
 Reverse voltage: 2-0V  
 Power dissipation: 75mW

#### Phototransistor ratings:

Collector-emitter voltage: 30V  
 Emitter-collector voltage: 5V  
 Collector current: 25mA  
 Power dissipation: 75mW

#### Electrical characteristics

##### IR LED ratings:

Forward voltage: 1.7V,  $I_F = 20mA$   
 Reverse current: 100µA,  $V_F = 2V$

##### Phototransistor ratings:

Dark current: 100nA,  $V_{CE} = 5V$   
 On-state current: 350µA (min) 700µA (typ)  
 $I_F = 20mA$ ,  $V_{CE} = 5V$ ,  $d^* = 1.27mm$   
 Saturation voltage: 0.4V  
 $I_F = 20mA$ ,  $I_C = 100µA$ ,  $d^* = 1.27mm$

\*Note: d = distance of reflective surface from sensor.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
UK81C	Sensor QPB706B	£2.230	£1.780	£1.270	£4.110

## Phototransistor BPX25

### Zetex

A high sensitivity silicon planar NPN phototransistor for general purpose use. Top of package (TO18) is lensed.



### Absolute maximum ratings:

$V_{CBO}$ : 32V  
 $V_{CEO}$ : 32V  
 $V_{EBO}$ : 5V  
 $I_C$ : 100mA  
 $P_{TOT}$ : 300mW



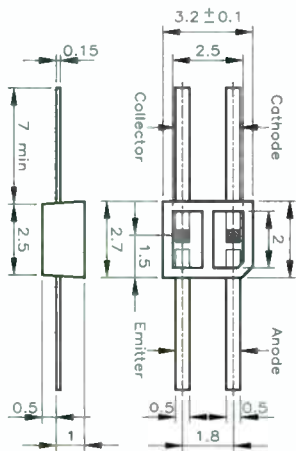
### Electrical characteristics:

(open-circuit base, except for  $h_{FE}$  typical)  
 Light current ( $V_{CE} = 6V @ 1000 lux$ ): 13mA  
 Dark current ( $V_{CE} = 24V$ ): 100nA  
 $h_{FE}$  ( $V_{CE} = 6V$ ,  $I_C = 2mA$ ): 500  
 Peak spectral response: 800nm  
 Cut-off frequency (Note 1): 200kHz  
 Note 1: Improved switching times can be obtained by connecting the base lead to give a quiescent bias current.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
QF30H	BPX25	£2.610	£2.090	£1.490	£4.230

## Photo Reflector SY-CR102



A photo emitting diode and a phototransistor housed in a compact package that can be used for counting, rotational speed etc. The device has a very fast rise/fall time - just 1ms.

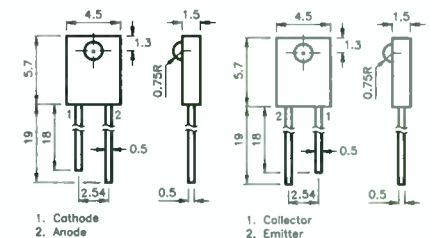
### Specification ( $I_F=20mA$ , $I_{CE}=1mA$ , $V_{CE}=5V$ )

Photocurrent ( $R_L=20k$ ): 230µA min.  
 Saturation ( $R_L=20k$ ): 0.4V  
 Cross talk: 1.0µA  
 Dark current ( $I_F=0mA$ ): 100nA  
 $V_F$ : 1.7V  
 $V_{ECO}$  ( $I_{CE}=1mA$ ): -3V  
 $V_{CEO}$  ( $I_{CE}=1mA$ ): 12V  
 Rise time: 1ms  
 Fall time: 1ms

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	250+	1+
JA26D	Reflective Sensor	£0.387	£0.309	£0.221	£2.180

## Infrared Transmitter/Receiver Diode



An infrared transmitter diode and a matching receiver photo-transistor in side looking packages, ideal for mounting at the edge of a PCB or where beam break detection or data coupling is required. Max forward current for the diode is 100mA continuous, 1A peak (300pps, 1µs pulse). Luminous intensity is 1.8mW at  $I_F=50mA$ , with a 30° viewing angle. Phototransistor  $V_{CEO}$  is 30 Volts, with a max dissipation of 100mW. Light  $I_C = 20mA$  max and dark current is 100nA max, viewing angle 70°, rise/fall times=5µs @  $R_L=1k$ .

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
CH10L	Side Looking IR TX	£0.149	£0.119	£0.085	£0.820
CH11M	Side Looking IR RX	£0.151	£0.121	£0.086	£0.820

## Photo Reflective Infra-Red Sensor

This device consists of an infra-red emitting diode and an NPN silicon phototransistor mounted side by side on parallel axes in a black plastic housing. Both emitting diode and phototransistor are moulded in infra-red



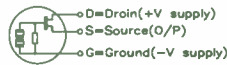
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**Infra-Red Devices**

**Infra-Red Detector PIS201S**

A sensitive, low noise, two element type pyroelectric infra-red detector with a 5µm filter and an internal FET amplifier. The device has a wide field of view of 42° on the Y-axis, and 43° on the X-axis.



**Specification**

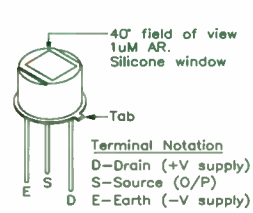
Supply voltage range: 2 to 15V DC  
 Output loading: 10kΩ to 100kΩ  
 Operating temperature range: -40°C to +70°C  
 Characteristics at 25°C, supply = 5V, load = 47kΩ.  
 Voltage responsivity: 300mV pk-to-pk (amplified by 40dB)  
 Output balance: (V1-V2)/(V1+V2) x 100 ≤15% (V1, V2 = voltage from each element)  
 High temperature noise: 300mV pk-to-pk @ 45°C (amplified by 73dB)  
 Cut-on wavelength: 5.0 ±0.5µm  
 Light loss: 0.5% max. @ λ<4.5µm  
 Transmittance: 70% min. @ λ7.0 to 13.0µm

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AJ77J	PIS201S	£2.250	£3.180

**Infra-Red Detector E600ST0**

Murata



This device is a sensitive, low noise, pyroelectric infra-red detector, which uses a ceramic ferroelectric dual sensing element, a silicon optical filter reduces the effect of RF interference.

**Characteristics at 25°C**

Sensitivity (500°K, 1Hz, 1Hz): 3.9mV pt-pk  
 Specific detectivity: 1.0 x 10<sup>9</sup>cmHz<sup>1/2</sup>/W  
 Wavelength range: 5 to 14µm  
 Rise time: <25msec  
 Field of view: 40°  
 Supply voltage: +3 to +15V  
 Operating temperature range: -25 to +55°C

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UR69A	IR Detector E600ST0	£3.950	£7.860

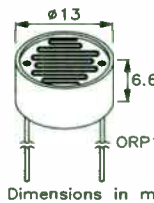
**Photoconductive Cell**

Silonex

A cadmium sulphide photoconductive cell sensitive to visible light. It has a maximum sensitivity in the green, yellow, orange and red parts of the spectrum (wavelengths: 480-690nm). Resistances quoted are those measured when the cell is illuminated by a lamp



of colour temperature 2854°K. For other light sources the cell resistance should be multiplied by the following approximate factors.



**Source of illumination**

Incandescent radiation at colour temperature of 1500°K: x0.5  
 2000°K (oil-fired burner-yellow flame): x0.66  
 Sunlight: x1.33  
 White fluorescent light: x2  
 Where cell is operated from a 50Hz AC source the resistance values are between 1 and 1.3 times those for DC.

Type	Incidence of illumination	Cell resistance	Min. dark resistance at 50 lux
ORP12	End-on	6000Ω	1MΩ
ORP12	Min bright resistance	80Ω*	Max. power dissipation 250mW
			Max. cell voltage 320V

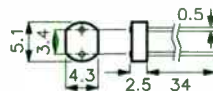
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
HB10L	LDR ORP12	£0.890	£1.490

**Miniature Light Dependent Resistors**



A range of miniature cadmium sulphide (CdS), light dependent resistors. The cells have a maximum voltage rating of 100V DC and a maximum power dissipation of 50mW



Order Code	Max. Resistance at 10lux	Min. Resistance at darkness (0lux)
AZ81C	11kΩ	0.5MΩ
AZ82D	33kΩ	2MΩ
AZ83E	120kΩ	5MΩ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ81C	LDR 11K	£0.177	£1.200
AZ82D	LDR33K	£0.177	£1.200
AZ83E	LDR120K	£0.177	£1.200

**SFH409 GaAs Infra-Red Emitting Diode**

Siemens

A GaAs infra-red emitting diode in a standard T1 (3mm) size plastic package, that has been designed for a variety of low-cost, high volume applications, e.g., IR remote control and other consumer and entertainment products. The device is an excellent match with SFH309 phototransistor, and features high pulse power, good long term



stability and a 40° wide beam. Lead spacing: 2.54mm.

**General Specification**

Peak wavelength emission: 850±20nm  
 I<sub>F</sub> = 100mA, t<sub>p</sub> = 20ms:  
 Spectral bandwidth at 50% of I<sub>MAX</sub> at I<sub>F</sub> = 100mA, t<sub>p</sub> = 20ms: 55nm  
 Radiant intensity: ≥16mW/sr  
 I<sub>F</sub> = 1A, t<sub>p</sub> = 100µs: 150mW/sr  
 Total radiant flux: 14mW  
 Half angle: ±20°  
 Switch time I<sub>F</sub> = 100mA: 1µs  
 Forward current: 100mA  
 Reverse voltage: 5V  
 Surge current (t = 10µs): 3A  
 Forward voltage: I<sub>F</sub> = 100mA: 1.3-0V  
 I<sub>F</sub> = 1A t<sub>p</sub> = 100µs: 1.9V  
 Breakdown voltage (I<sub>R</sub> = 100µA): 30V  
 Typical reverse current (V<sub>R</sub> = 5V): 0.01µA  
 Capacity (V<sub>R</sub> = 0V): 25pF  
 Power dissipation at 25°C: 165mW  
 Junction temperature: 100°C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CY84F	SFH409	£0.357	£0.580

**SFH487 GaAlAs High Power Infra-Red Emitting Diode**

Siemens

A very high power, high intensity, gallium aluminium arsenide infra-red emitting diode, that emits radiation in the near infra-red range (880nm peak). The emitted radiation, which can be modulated, is generated by forward flowing current. The device is enclosed in a 3mm plastic package with a clear blue plastic lens. Typical applications include IR remote control of colour TV receivers, smoke detectors, and other applications requiring very high power, such as IR touch screens.



**Specification**

Peak wavelength emission: 880nm  
 I<sub>F</sub> = 10mA: 880nm  
 Radiant intensity: I<sub>F</sub> = 100mA, t<sub>p</sub> = 20ms: ≥32mW/sr  
 I<sub>F</sub> = 1A, t<sub>p</sub> = 100µs: 300mW/sr  
 Total radiant flux: I<sub>F</sub> = 100mA, t<sub>p</sub> = 20ms: 25mW  
 Spectral bandwidth I<sub>F</sub> = 10mA: 80nm  
 Half angle: ±20°  
 Reverse voltage: 5V  
 Forward current: 100mA  
 Surge current (t = 10µs): 2.5A  
 Forward voltage: I<sub>F</sub> = 100mA t<sub>p</sub> = 20ms: 1.3-0V  
 I<sub>F</sub> = 1A t<sub>p</sub> = 100µs: 1.9V  
 Breakdown voltage (I<sub>R</sub> = 10µA): 30V  
 Reverse current (V<sub>R</sub> = 5V): 0.10µA  
 Capacity (V<sub>R</sub> = 0V): 25pF  
 Power dissipation at 25°C: 200mW  
 Junction temperature: 100°C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CY86V	SFH487	£0.540	£0.960

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## SFH487P GaAlAs High Power Infra-Red Emitting Diode

Siemens

A high power gallium aluminium arsenide infra-red emitting diode, with a very wide beam, that emits radiation in the near infra-red range (880nm peak). The emitted radiation, which can be modulated, is generated by forward flowing current. The device is enclosed in a 3mm plastic package with a flat lens. Typical applications are in digital shaft encoders and light interruptors for DC and AC operation.



### Specification

Peak wavelength emission	
$I_F = 10\text{mA}$ :	880nm
Radiant intensity	
$I_F = 100\text{mA}$ , $t_p = 20\text{ms}$ :	3-15mW/sr
$I_F = 1\text{A}$ , $t_p = 100\mu\text{s}$ :	35mW/sr
Total radiant flux	
$I_F = 100\text{mA}$ , $t_p = 20\text{ms}$ :	23mW
Spectral bandwidth $I_F = 10\text{mA}$ :	80nm
Half angle:	$\pm 65^\circ$
Reverse voltage:	5V
Forward current:	100mA
Surge current ( $t = 10\mu\text{s}$ ):	2-5A
Forward voltage	
$I_F = 100\text{mA}$ , $t_p = 20\text{ms}$ :	1-30V
$I_F = 1\text{A}$ , $t_p = 100\mu\text{s}$ :	1-9V
Breakdown voltage ( $I_R = 10\mu\text{A}$ ):	30V
Reverse current ( $V_R = 5\text{V}$ ):	0-10 $\mu\text{A}$
Capacity ( $V_R = 0\text{V}$ ):	25pF
Power dissipation at 25°C:	200mW
Junction temperature:	100°C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CY89W	SFH487P	£0.470	£0.900

Spectral bandwidth at 50% of $I_{MAX}$ at $I_F = 100\text{mA}$ , $t_p = 20\text{ms}$ :	55nm
Half angle:	$\pm 25^\circ$
Switch time $I_F = 100\text{mA}$ :	1 $\mu\text{s}$
Reverse voltage:	5V
Forward current:	130mA
Surge current ( $t = 10\mu\text{s}$ ):	3-5A
Forward voltage	
$I_F = 100\text{mA}$ , $t_p = 20\text{ms}$ :	1-30V
$I_F = 1\text{A}$ , $t_p = 100\mu\text{s}$ :	1-9V
Breakdown voltage ( $I_R = 10\mu\text{A}$ ):	30V
Reverse current ( $V_R = 5\text{V}$ ):	0-01 $\mu\text{A}$
Capacity ( $V_R = 0\text{V}$ ):	40pF
Power dissipation at 25°C:	210mW
Junction temperature:	100°C
Radiant intensity	
$I_F = 100\text{mA}$ , $t_p = 20\text{ms}$ :	15mW/sr
$I_F = 1\text{A}$ , $t_p = 20\mu\text{s}$ :	100mW/sr

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CY85G	LD271	£0.345	£0.560

## High Power Infra-Red Emitting Diode

A high power infra-red emitter, intended primarily for remote control applications. Encapsulated in a 5mm water-clear resin package. Cathode denoted by flat on package/shorter lead. Similar to TIL38.



### Absolute maximum ratings:

Power dissipation:	100mW
Forward current:	100mA
Reverse voltage:	5V

### Electrical characteristics:

Forward voltage:	1-7V ( $I_F = 100\text{mA}$ )
Light output:	20mW ( $I_F = 100\text{mA}$ )
Peak wavelength:	940nm

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YH70M	Infra-Red Emitter	£0.390	£0.890

## Miniature Infra-Red Source

A gallium arsenide infra-red LED. With a peak spectral wavelength of 940nm. Encapsulated in a 3mm water-clear resin package. Cathode denoted by flat on package/shorter lead. Similar to TIL32



### Absolute maximum ratings:

Power dissipation:	80mW
Forward current:	60mA
Reverse voltage:	5V

### Electrical characteristics:

Forward voltage:	1-6V ( $I_F = 40\text{mA}$ )
Light output:	3.5mW ( $I_F = 40\text{mA}$ )
Peak wavelength:	940nm

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YY65V	Infra-Red Source	£0.156	£0.940

## LD271 Infra-Red Emitter

Siemens

An infra-red emitting diode that emits radiation in the near infra-red range (950nm peak). The emitted radiation, which can be modulated, is generated by forward flowing current. The device is enclosed in a 5mm plastic package and has a lightly diffused grey plastic lens. This high intensity device has excellent long term stability and is designed to match with photodiode BP103B. A typical application is remote control of colour TV receivers.



### Specification

Peak wavelength emission	
$I_F = 100\text{mA}$ , $t_p = 20\text{ms}$ :	950 $\pm$ 20nm

## GaAs Infra-Red Photo Emitter

Temic

A photo emitting diode in the near infra-red range, suitable for remote control, light barrier and telecommunication.

The device features a metal base with a clear plastic lens and extremely high radiation power, and is suitable for pulse operation to 10A. The anode is the leg adjacent to the tag.

### Characteristics (max. ratings):

Reverse voltage:	5V
Forward current:	250mA
Forward peak current:	10A
Power dissipation:	300mW
Junction temperature:	100°C
Forward voltage $I_F = 250\text{mA}$ , $t_p \leq 100\text{ms}$ :	1-2V
Forward voltage (pulse) $I_{FM} = 10\text{A}$ :	4-2V max.
Radiant power $I_F = 250\text{mA}$ , $t_p \leq 100\text{ms}$ :	20mW
Radiant power (pulse) $I_{FM} = 10\text{A}$ :	500mW
Radiant intensity $I_F = 250\text{mA}$ , $t_p \leq 100\text{ms}$ :	40mW/sr
Radiant intensity (pulse) $I_{FM} = 10\text{A}$ :	1W/sr
Peak wavelength emission $I_F = 100\text{mA}$ :	950nm
Spectral half bandwidth $I_F = 100\text{mA}$ :	50nm
Angle of half intensity:	$\pm 20^\circ$

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
KW66W	IR Photo Emitter	£3.400	£6.340

## Fibre Optics

### Light Guide



A rugged polymethyl methacrylate fibre with a polymer cladding and black protective sheath which may be bent and handled in the same way as insulated wires without damage. Ideal for use in equipment to provide several light sources possibly in confined spaces from a single lamp some distance away.

The fibre as supplied has a roughly cut end and this should be cleanly sliced off using a razor blade or a very sharp knife. Light transmission can be increased by typically 33% by polishing the ends of the fibre after cutting.

Overall diameter:	2-2mm (0-1in.)
Fibre diameter:	1mm (0-04in.)
Refractive index:	1-49
Nominal aperture:	0-53
Acceptance angle:	$\pm 32^\circ$ max
Transmission attenuation:	1-2dB/m (20 - 25% per metre)

Spectral response (3dB):	385 to 880nm
Temperature range:	-40°C to +80°C
Flammability:	Supports combustion

Bending:	75mm per minute
Chemical resistance:	Attacked by organic solvents

Sold in continuous lengths in multiples of 1 metre. Max length in one piece 100m.

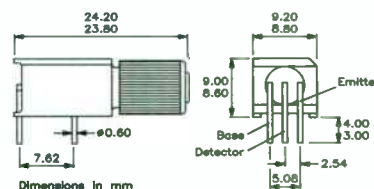
Price each is shown. Order quantities less than 100 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
XR56L	1mm Light Guide	£0.640	£1.490

## Phototransistor Detector

Siemens

The SFH350V is a NPN silicon phototransistor that is sensitive in the visible and near IR range, with a base lead connection for external biasing.



### Specification

Collector emitter voltage:	50V
Collector current:	50mA
Collector peak current ( $E_{10s}$ ):	100mA
Emitter base voltage:	7V
Power dissipation:	200mW
Storage and operating temperature:	-55°C to +100°C
Wavelength of max. sensitivity:	850nm
Spectral range of photosensitivity:	400 to 1100nm

Capacitance	
CCE:	9pF
CCB:	22pF
CEB:	20pF
Rise and fall time:	15 $\mu\text{s}$
Current gain $V_{CE} = 5\text{V}$ , $I_{CE} = 2\text{mA}$ :	500
Photocurrent at 600nm $V_{CE} = 5\text{V}$ :	0-8mA

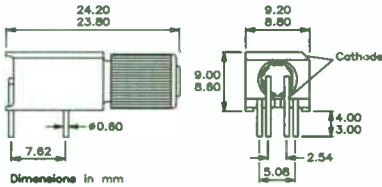
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CZ03D	SFH350V	£2.100	£4.500

## Photodiode Detector

Siemens

The SFH250V is a fast silicon PIN photodiode with very good linearity that is sensitive in the visible and near IR range.



### Specification

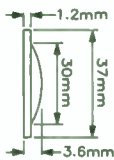
Reverse voltage: 30V  
 Operating and storage temperature: -55°C to +100°C  
 Power dissipation: 100mW  
 Wavelength of maximum sensitivity: 850nm  
 Spectral range of photosensitivity: 400nm to 1100nm  
 Dark current ( $V_R=20V$ ): 100nA  
 Rise and fall time of the photocurrent at 880nm, 10% to 90% of peak value: 10ns  
 at 880nm, 90% to 10% of peak value: 10ns  
 Capacitance: 11pF  
 Photocurrent at 660nm ( $V_R=5V$ ): 3.0µA

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CZ04E	SFH250V	£5.000 100+ £4.000 250+ £3.330	£5.980 1+

## Lenses

### Plastic Lens



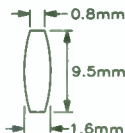
A cost effective, red plastic lens made from Oraglas VO52 and suitable for optoelectronic applications. The lens has an effective diameter of 30mm with a flat rim for mounting purposes resulting in an overall diameter of 37mm. Overall thickness 3.6mm. The focal length is approximately 80mm in the infra-red band.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
FA95D	Plastic Lens	£0.564 100+ £0.451 1000+ £0.376	£0.990 1+

### Glass Lens

A 25.4mm (1in.) focal length semi-precision glass lens. Size: 9.5mm diameter.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
HQ63T	Lens	£5.050 100+ £4.040 1000+ £3.360	£5.980 1+

## Lensholder

A black anodised aluminium lensholder, drilled to accept our 9.5mm lens in one end and photo-Darlington MEL12 in the other end. Outside dia. 12.7mm.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
HQ64U	Lensholder	£0.250 25+ £0.200 100+ £0.167 1000+ £2.380	£2.380 1+

## CCD Cameras

### B & W Camera Module with Infra Red LEDs



**NEW**

A small CCD video camera capable of producing a monochrome picture from both normal light and infra-red light with good resolution and detail. The infra-red capability makes the camera ideal for security applications. It includes six IR LEDs which together act as an infra-red lamp for IR illumination in the dark with a range of 2 to 3 metres.

### Specification

Image sensor: 1/3in CCD, 320,000 pixels  
 Scanning system: 2:1 Interlace  
 Resolution: 500(H) x 582(V) pixels  
 Horizontal Resolution: 380 TV lines  
 Scanning Freq.: H: 15.625 KHz±1% V: 50Hz±1%  
 Min Illumination lens: 1 lux, f2.0  
 Power Supply: 12V DC±1V, <160mA  
 Dimension: 54(w) x 38(h) x 25(d)mm  
 Weight: 33g

The Camera PSU and Cable kit, MU45Y, is recommended for easy installation and operation of this camera. The camera comes with a 3 way miniature pre-wired plug and socket with the following connections:

- +12V (denoted by angled corner)
- Video Out
- Gnd

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS05F 1	Cam Mod BW w IREDS	£63.820 1+ £57.440 4+ £54.240 10+	£74.990 1+
MU45Y	SCART+PSU Kit	£21.260	£24.990

### Monochrome CMOS Camera Module VVL 1043C



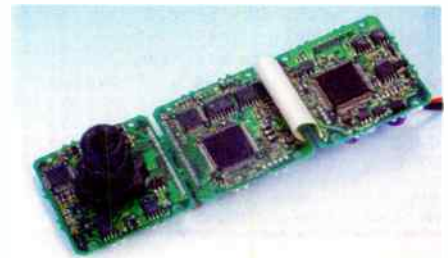
This camera module measures just 22 x 22mm and incorporates the latest surface mount CMOS technology to integrate the sensor array, array

circuitry and signal conditioning circuitry. There is an on-board voltage regulator and a video output buffer. Additionally, the camera is supplied with a clip-on lens. The sensor is a 384 x 287 array measuring 4.6mm x 3.4mm, with each pixel measuring 12 x 12µm, and has a sensitivity of 0.5 to 1lux which is comparable to many CCD cameras. The module has a 260 TV line resolution, a 1V pk-to-pk output into 75Ω, automatic exposure control and automatic gain control (18dB). Ideal for a wide range of applications including surveillance, access control, multimedia and teleconferencing.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ12N 1	CMOS Camera Module	£102.110 1+	£119.990 1+

### Sub-Miniature Colour CCD Video Camera



A miniature CCD camera capable of producing a superb full-colour picture in normal and reduced lighting conditions. This board replaces our popular AR59P. The fixed focus lens allows the CCD element to show a high degree of detail without the need for any special optics. This is because all the focusing is controlled by the in-built electronic iris. All the electronics of the camera are mounted on three press-out printed circuit boards. The three small sub-assemblies are interconnected by ribbon cable so that the module can be arranged to fit into a small enclosure. These sub-assemblies reduce the overall width to 42mm. The module requires a nominal 12V DC at 200mA and because it has an on-board regulator this voltage can vary from +11V to +13V DC.

### Specification

Area image sensor: 1/4 in interline transfer type CCD, 290,000 pixels  
 Resolution: 752(H) x 582(V) pixels  
 Scanning system: 625 lines, 2:1 interlace  
 Scanning Freq.: H: 15.625 KHz±1% V: 50Hz±1%  
 Horizontal Resolution: 380 TV lines  
 Standard illuminance: 1,000 Lux, f4.0, (3,200°K)  
 Minimum illuminance: 2.5 Lux, f1.4  
 Power supply voltage: 11 to 13V DC  
 Current consumption: 200mA or less  
 Operating temp. range: -10 to +45°C  
 Dimensions  
 Image Board: 42(w) x 42(h) x 33(l)mm  
 Main Board: 42(w) x 42(h) x 44(l)mm  
 Power: 42(w) x 42(h) x 12(l)mm  
 Weight: Approximately 52g

There are several feature connectors that give access to white balance manual over-ride, manual iris shutter speed over-ride and 8 character camera title generator. The Camera PSU and Cable kit, MU45Y, is recommended for easy installation and operation of this camera.

Retail Unit Price each (inc. VAT).

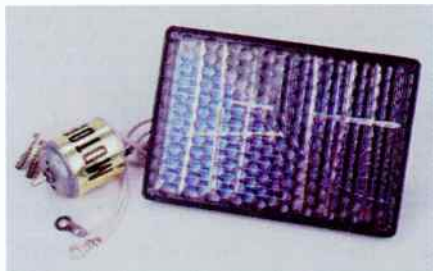
Order Code	Type	Price each exc. VAT	inc. VAT each
MS40T 11	CCD Colour Camera	£212.750 1+ £196.900 3+ £181.750 10+	£249.990 1+
MU45Y	SCART+PSU Kit	£21.260	£24.990

## Call and Collect

At all our stores nationwide. See the maps at the front of the catalogue for the nearest one to you.

## Solar Power

### Solar Cells



A range of solar cells that develop various voltages and currents and can be easily connected together to suit individual requirements. The output connections are threaded posts with nuts, and a metal strip is provided to connect the cells together. The cells are mounted in a rigid black plastic case. BZ47B includes a small electric motor that can be driven from the solar cell supplied.

#### Specification

All outputs are quoted for full sunlight.

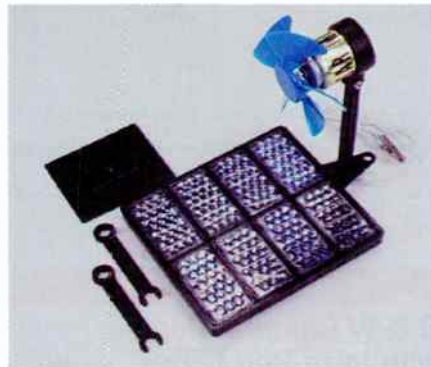
Type	V DC	mA	Size mm
BZ43W	0.45	200	55 x 35 x 12
BZ45Y	0.45	700	95 x 65 x 12
BZ46A	0.9	400	95 x 65 x 12
BZ47B	0.9	400	95 x 65 x 12

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2307	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
BZ43W	Cell 200mA 0.45V	£1.000	£0.807	£0.672	£2.380
BZ45Y	Cell 700mA 0.45V	£2.730	£2.180	£1.820	£4.780
BZ46A	Cell 400mA 0.9V	£2.710	£2.170	£1.800	£4.780
BZ47B	Cell With Motor	£3.360	£2.680	£2.240	£5.960

400mA), a small DC motor, connecting wire, plastic fan spinner and turntables, coloured spinner disks, coloured paper models, screws and nuts. An interesting kit for children to enjoy. A very informative booklet is included describing solar power in detail.

#### Advanced Kit



A more advanced kit that includes eight solar panels that produce 0.4V at 100mA each, and can be configured to produce 0.4V at 800mA or 3.2V at 100mA by connecting the cells in parallel or series, or a combination of both. It is possible to power small appliances, i.e. radios, personal cassettes, calculators from sunlight. A detailed booklet is included in the kit that explains how to connect up the cells. A small electric fan along with connecting straps and wire are included in the kit to demonstrate the use of solar power.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2310	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
BZ48C	Basic Solar Kit	£4.480	£3.480	£2.900	£8.420
BZ52G	Advanced Solar Kit	£8.320	£5.990	£4.990	£14.980

### Variable Voltage Charger Panel



A solar battery charger panel which will output 3V, 6V and 9V DC according to the position of a selector slide switch. Output current is up to 100mA at 3V (this position can also be used as 4.5V), and 50mA for both 6 and 9V settings. It has 2m of detachable twin core cable which is terminated in both a 4-way power jack adaptor and a pair of insulated crocodile clips. The 4-way adaptor has 2.5 and 3.5mm jack plugs and 2.5 and 3.5 DC power plugs. The retractable and adjustable stand can also be used as a carry handle or for hanging the panel. It can be used to directly power a personal stereo player which will normally operate from a 3V or 4.5V supply via the power jack or by connecting the clips across the player's main battery terminals. Two AA size rechargeable Ni-Cd batteries can also be charged by fitting them into the battery compartment on the rear of the panel. Charging time will vary depending upon the strength of sunlight available. Two batteries may take 7 to 10 hours to recharge. Overall size of panel 165 x 98 x 20mm including battery compartment. Depth of handle 30mm.

Retail Unit Price each (inc. VAT)

Order Code	Type 6432	Price each exc. VAT		inc. VAT each
		1+	1+	
CJ38R	Variable V Panel	£11.906		£13.990

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### Solar Cell Modules



Additional or replacement solar cell modules for the solar cells BZ43W to BZ47B. Can be added to make larger panels if desired. Each module can output 0.45V at 100mA and can be stacked in series or in parallel.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2306	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
CJ36P	Solar Cell Module	£0.790	£0.690	£0.490	£1.730

### 3V Solar Charger Panel



A solar battery charger panel which will output approximately 3V DC at up to 80mA. It has 2m of twin core cable attached to the panel terminated in both a 2.3mm DC power jack and insulated crocodile clips. The device can be used to directly power a personal stereo player which will normally operate from a 3V supply (2 x 1.5V batteries), via the power jack or by connecting the clips across the player's main battery terminals. The solar panel has a hinged stand and can be pointed in the direction of sunlight. Size of panel 95 x 65 x 8mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 6431	Price each exc. VAT		inc. VAT each
		1+	1+	
CJ37S	3V Charger Panel	£7.038		£8.270

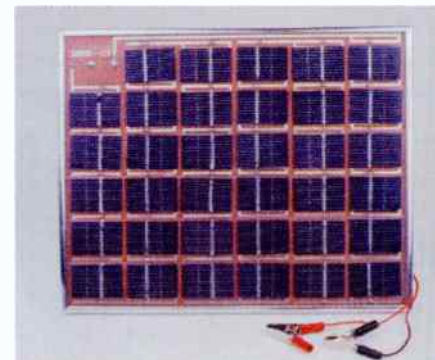
### Solar Cell Educational Kits

#### Basic Kit



An educational kit to help you explore solar energy power. The kit includes a solar panel (0.45V

### Solar Panels



A choice of two solar panels configured to give a nominal 12V, that are laminated in special resin with an ultraviolet inhibited polycarbonate surface. The panels are epoxy sealed into an aluminium frame, to withstand the rigours of weather. A suggested use for the solar panels is for charging sealed lead acid batteries, a blocking diode is built into the circuit to prevent the reverse flow of current from the battery to the solar panel during poor lighting conditions. Four hooks are provided on the back of the panels for easy mounting, and 2m of connecting cable with medium size crocodile clips are included, for connecting to a device or circuit. It is recommended that the panels be mounted in a position where they will receive maximum sunlight. The panels can be connected together either in parallel or series to increase the current or voltage output. The smaller panel produces an output current of 200mA approx. and can be configured to

Order £30 or above?

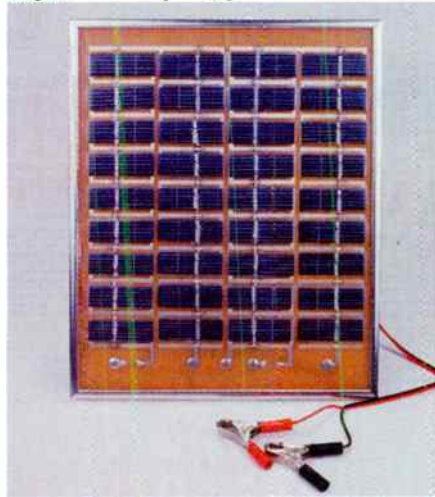
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produce two outputs of 6V at 250mA each, by removing a link on the back of the panel. The larger panel produces 12V at 500mA. approx.

**Specification**

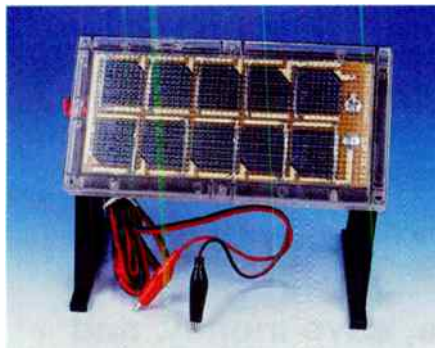
(bright sun) 250mA 500mA  
Voltage output: 12 to 16V DC max.  
Dimensions: 292 x 239 x 17mm 360 x 285 x 17mm  
Weight: 500g 700g



Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 2212	Price each exc. VAT			inc. VAT each
		5+	10+	25+	
BZ50E 1	Solar Panel 250mA	£34.990	£29.990	£27.000	£58.990
BZ51F 2	Solar 12V 500mA	£49.000	£44.99+	£40.250	£89.990

## Waterproof Solar Panels



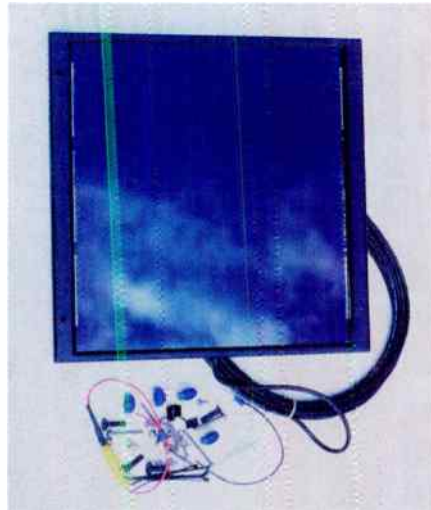
Two waterproof and corrosion resistant solar panels for outdoor use. The panels are weatherproof and resistant to wind, rain, humidity, snow, ice, sand, sea air and deterioration by ultraviolet light. These panels are intended to be used as battery chargers and lead acid battery trickle chargers. A reverse blocking diode is built in to prevent battery discharge and protect the panel cells. A tilt stand, made up from supplied parts, can be assembled and mounted on a vertical or horizontal surface, or can be free-standing to catch the sun (screws supplied). Each panel is provided with red and black leads terminated in either insulated crocodile clips or car battery style clamps. The mechanical construction is extremely strong and able to withstand heavy weights.

Order Code	Nominal voltage	Max. voltage	Nominal current	Max. current	Dimensions m.m
CJ41U	12V	16V	50mA	60mA	159 x 175 x 17
CJ40T	12V	16V	120mA	140mA	159 x 278 x 17

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2317	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
CJ41U	12V 50mA Panel	£16.990	£13.990	£10.640	£29.990
CJ40T 1	12V 120mA Panel	£24.990	£21.990	£19.030	£39.990

## Solar Charger Size 2



Use the clean, and dependable quiet energy from the sun to help your battery to keep its power. This trickle charger for an RV type battery and small appliances can run any combination of appliances, using up to 140W hours of power during a week. There are no moving parts or fuel to worry about, and the system is virtually maintenance free once it is up and running. Supplied with a comprehensive fitting kit including: 8m cable, mounting kit, line tap and battery hook-ups, connectors and a pre-wired fuse and diode. Five year warranty.

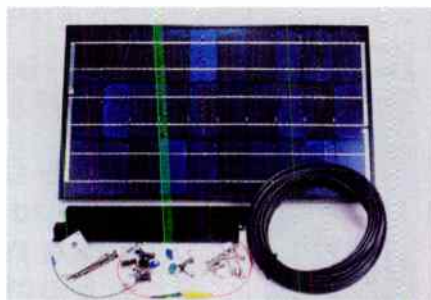
**Specification**

Max output: 300mA  
Typical Power/Wk.: 140W hours  
Dimensions: 356 x 330 x 19mm  
Net Weight: 1.82 kg

Retail Unit Price each (inc. VAT)

Order Code	Type 2242	Price each exc. VAT	inc. VAT each
WD37S 1	Solar Charger Size 2	£110.629	£129.990

## Solar Charger Size 3



This larger solar battery charger provides even more power for small appliances. During a week it can run any combination of small appliances using up to 600W total power. For example: a 20W lamp and a 230mm colour TV for 5 hours a week plus a CB radio for 9 hours a week. There are no moving parts or fuel to worry about and the system is virtually maintenance free once it's up and running. Five year warranty.

Supplied with a comprehensive fitting kit including 8m cable, mounting kit, line tap and battery hook-ups, connectors and a prewired fuse and diode.

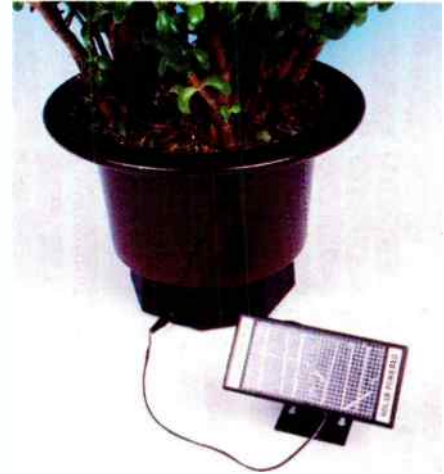
**Specification**

Max. output: 1.37A  
Typical power/week: 600W hours  
Dimensions: 558 x 330 x 38mm  
Net weight: 2.72kg

Retail Unit Price each (inc. VAT)

Order Code	Type 2208	Price each exc. VAT	inc. VAT each
WD38R 1	Solar Charger Size 3	£323.39	£379.990

## Solar Powered Plant Turner



A practical application for solar power, this 'Plant Turner' will support up to 13.6kg (30lb.) weight and slowly turn the plant during the day. This will help to promote healthier, well-developed plants, and no more lopsided plants! The small solar panel is attached to a 1m long flying lead, so the cell can be positioned for maximum sunlight. The turntable is 155mm in diameter and has a raised edge, and is finished in black plastic. Other possible uses include displays in shop windows or to create an eye-catching display inside cabinets. Bright incandescent light will also operate the 'Plant Turner'. Supplied with a multi-angle stand that can be attached to the solar panel to provide flexible mounting.

Dimensions: 161 x 65mm.

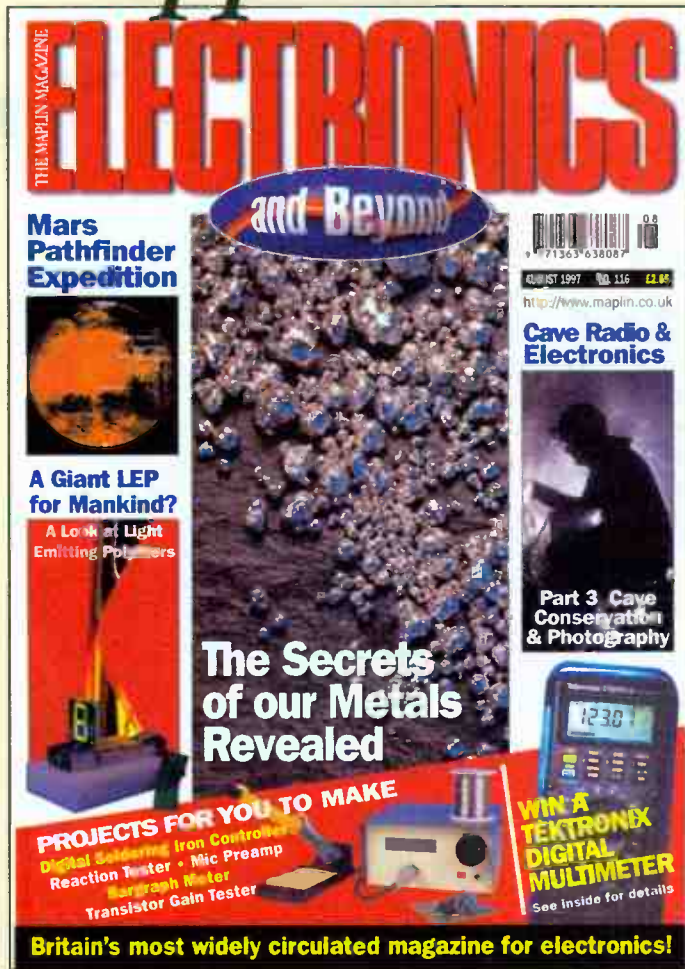
Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type 2218	Price each exc. VAT			inc. VAT each
		2+	5+	10+	
BZ49D 1	Plant Turner	£6.520	£5.990	£4.660	£12.990

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## COUNTERS

### TOTALISING COUNTERS

#### Magnetically Actuated Counter

Hengstler



A non-resettable, 6-digit totalising counter that is actuated by an exterior permanent magnet. With suitable magnets it is possible to achieve actuating distances of up to 50mm - the direction of approach of the magnet is not critical.

- ★ Contactless counting
- ★ Miniature size
- ★ Simple installation
- ★ Class IP 66 protection

#### Specification

Digit height:	4mm, visual
Operating life:	10,000,000 increments
Counting mode:	adding
Response flux density:	>10mT (100 Gauss)
Release flux density:	<4mT (40 Gauss)
Actuating speed:	2m/s
Counting frequency:	20 digits/sec max.
Case:	Makrolon
Weight:	12g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 17294	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MC16S	Magnetic Counter	£12.210	£11.600	£10.990	£14.350

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#### 12V DC Non-Resettable Mini Counter

Hengstler



A miniature 12V dc 6-digit counter offering low power consumption and high shock stability. The counter is designed for horizontal mounting and is available in two versions - PCB mounting (MC18U) with solder pins, and panel mounting (MC19V) with 0.6mm diameter wiring posts.

- H Totalising, non-resettable
- H Low power consumption
- H Two versions - PCB or panel mounting
- H Maintenance-free operation

#### Specification

Voltage:	12V dc
Power consumption:	78mW
Count input:	adding
Display:	6-digit, 4mm height
Operating life:	10,000,000 pulses
Pulse length:	50ms min
Counting frequency:	10Hz max.
Pulse duty factor:	1:1
Duty cycle at 25°C:	100%
Weight:	10g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 17296	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MC18U	PCB Mini Counter 12V	£9.400	£8.940	£8.460	£11.050
MC19V	PMnt Mini Cnter 12V	£9.400	£8.940	£8.460	£11.050

#### Lithium Battery-Powered Counter

Hengstler



A sophisticated pulse counter with a high contrast 8-digit LCD display that is powered by an internal lithium battery. The case is supplied with a mounting frame and is designed to fit a DIN size 24 x 48mm panel cut-out. The reset can be manual (which can be locked) or external input.

- ★ 7mm LCD display
- ★ 7-year nominal data retention
- ★ Programmable count input
- ★ Easy installation

#### Specification

Display:	8-digit, LCD, 7mm
Amplitude thresholds input:	up to 7.5kHz
input range:	<0.7V and >5V, max 40V dc
Active edge:	- or + edge programmable
Counting frequency:	programmable - 7.5kHz or 30Hz (attenuated for contacts)
Reset lock:	keylock input bridge to 0V
Reset:	manual (lockable) external, neg active edge attenuated 30Hz
Cut-out:	24 x 48mm with 32mm mounting depth

Retail Unit Price each (inc. VAT).

Order Code	Type 17292	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MC21X 1	TICO Counter	£27.200	£25.840	£24.480	£31.960

## HOURS RUN METERS

#### Mains Powered Panel Mounting Hour Meter

Hengstler



This mains powered, non-resettable hour meter is driven by a low-noise synchronous motor for high reliability and long life. The 7-digit, 5mm high contrast display is housed in a rugged polycarbonate case. The meter is supplied with a plastic spring-fit collet for panel mounting installations, and is provided with two bezels for 48 x 24mm and 48 x 48 cut-outs.

- ★ Simple installation
- ★ Highly visible 7-digit display
- ★ Counts to 99999.99 hours
- ★ Accept 2.5mm cable

#### Specification

Display:	7-digit, 5mm high counts to 99999.99 hours
Supply voltage:	230V ac ±15%
Power consumption:	0.5VA
Connections:	screw terminals for cables 2.5mm <sup>2</sup> max with AMP connector 6.3 x 0.8mm
Operating temp:	-10°C to +50°C
Weight:	50g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 17290	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MC20W	Hours Counter 230Vac	£13.290	£12.630	£11.970	£15.620

## MOVING COIL METERS

#### Signal Strength Meter

A square-faced signal strength meter which may be back-lit to show up a green scale. Scale is marked 'Signal' and 0 to 5 for calibration.



Sensitivity:	250µA FSD
Internal resistance:	675Ω ±5%
Dimensions:	40 x 40 x 29mm

Retail Unit Price each (inc. VAT).

Order Code	Type 5635	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
LB80B	Sig Strength Meter	£3.390	£2.750	£2.500	£3.990

#### 5A DC Meter

A neat, clear 5A DC meter, ideal for car battery chargers, or high current power supplies. The scale is colour graded for easy reading; blue from 0 to 2.5A, green from 2.5 to 3.5A and red from 3.5 to 5.5A. Connections are by 6.35mm (1/4in.) Lucar style push-on receptacle (HF10L). Overall size: 56 x 48 x 35mm. Scale size: 50 x 28 x 4mm (raised).



Retail Unit Price each (inc. VAT).

Order Code	Type 5638	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BZ32K	5A DC Meter	£2.590	£2.060	£1.830	£3.050

## Educational Ammeters and Voltmeters



These benchtop instruments offer exceptional value with their compact size and rugged construction. They provide a range of DC measurement of ±21/2% accuracy (±4% on 0-2A) with uniform scales and high levels of electrical and mechanical stability in the highly visible transparent covers. Dimensions 80 x 120 x 52mm Weight 200gm approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 12130	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CE54J	Bench Meter 0-1A	£6.800	£5.450	£4.750	£7.990
CE55K	Bench Meter 0-2A	£6.800	£5.450	£4.750	£7.990
CE56L	Bench Meter 0-5A	£6.800	£5.450	£4.750	£7.990
CE57M	Bench Meter 0-6V	£6.800	£5.450	£4.750	£7.990
CE58N	Bench Meter 0-15V	£6.800	£5.450	£4.750	£7.990

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charge as stated in our Terms & Conditions in the back of the catalogue)

## Rectangular Meters



A range of modern styled panel meters with snap-on plastic covers which can be removed to change scales or to fit scale illumination bulbs (please note that we cannot supply alternative scales). Plastic cover has a black lower portion with zero adjuster. The movement is wired to the larger pair of terminals at rear which include solder tags retained by M2.5 screws.

Front face size: 60 x 46mm  
Overall depth: 42mm  
Panel cut-out: 38mm (1.5in.)  
Accuracy: 2%

The following types (full scale deflection: FSD) are available.

FSD	Internal resistance	Scale marked
100-0-100µA DC	2100Ω	In 10µA steps
50µA DC	4300Ω	0 to 50µA in 1µA steps
100µA DC	3750Ω	0 to 100µA in 2µA steps
1mA DC	400Ω	0 to 1mA in 20µA steps
100mA DC	0-8Ω	0 to 100mA in 2mA steps

Retail Unit Price each (inc. VAT).

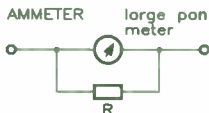
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RW98G2	2in. Pan Mt 100-0-100µA	£5.630	£4.890	£4.430	£6.620
FM98G	2in. Pan Meter 50µA	£5.630	£4.890	£4.430	£6.620
RW92A	2in. Pan Meter 100µA	£5.630	£4.890	£4.430	£6.620
RW94C	2in. Pan Meter 1mA	£5.630	£4.890	£4.430	£6.620
RX33L	2in. Pan Meter 100mA	£5.630	£4.890	£4.430	£6.620

## Large Meters



Large moving coil panel micro-ammeters having a 76mm (3in.) scale length. Calibrated 0-50 or 0-100, but front plastic cover unclips to facilitate fitting different scales to your design. (Please note that we do not stock spare scales.) Dimensions: 110 x 82 x 46mm deep. Internal resistance 50µA: 4300Ω; 100µA: 3750Ω. To convert these meters to read larger currents use the following formula:

$$\frac{x}{\text{FSD required (in amps)} - (y \times 10^{-6})} = R$$



To convert this meter to a voltmeter use the following formula:

$$\left( \frac{\text{Full scale voltage required (V)}}{y \times 10^{-6}} \right) - r = R_2$$

where R is the resistance required directly across the meter;  $R_2$  is the resistance required in series with either lead; x is 0.215 for the 50µA meter and 0.375 for the 100µA meter; y is 50 for the 50µA meter and 100 for the 100µA meter; and r is 4300 for the 50µA meter and 3750 for the 100µA meter.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RX54J	50µA Large Pan Meter	£7.800	£6.400	£5.930	£9.170
YJ96E	100µA Large Pan Meter	£6.670	£7.130	£6.540	£10.190

## Moving Iron Meters

A range of modern styled panel meters which have a transparent plastic cover and a white base. The coil is exposed at the rear and a set zero adjustment is not provided. The following types are available.



Range	Internal Resistance	Scale marked
2V to 15V	58Ω	0 to 2V then to 15V in 0.5V steps
0V to 30V		0 to 5V in 0.5V steps then to 30V in 1V steps
0V to 300V		0 to 50V in 1V steps then to 300V in 10V steps
0.1A to 1A		0 to 0.1A then to 1A in 0.02A steps
0.5A to 5A	0.028Ω	0 to 0.5A then to 5A in 0.1A steps
2A to 10A		0 to 2A then to 10A in 0.2A steps
2A to 15A	0.004Ω	0 to 2A then to 15A in 0.5A steps
4A to 25A	0.0018Ω	0 to 4A then to 25A in 0.5A steps

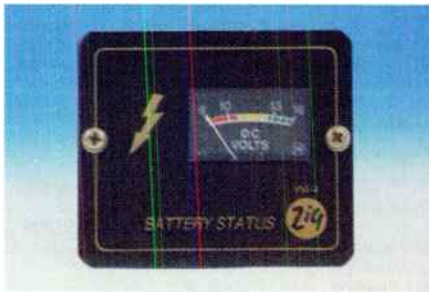
Front face size: 69.4 x 53.4mm  
Overall depth: 38mm  
Depth behind panel: 28mm  
Panel cut-out: 40mm diameter  
Accuracy: ±5%  
Suitable for AC or DC operation.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RX92A	Meter MI 15V	£11.710	£11.190	£10.040	£13.760
CE52G	Meter MI 30V	£11.480	£10.750	£9.650	£13.490
CE53H	Meter MI 300V	£13.600	£11.950	£10.950	£15.990
CE50E	Meter MI 1A	£11.480	£10.750	£9.650	£13.490
RX90X	Meter MI 5A	£11.710	£11.190	£10.040	£13.760
CE51F	Meter MI 10A	£11.480	£10.750	£9.650	£13.490
RX91Y	Meter MI 15A	£11.710	£11.190	£10.040	£13.760
RX93B	Meter MI 25A	£13.880	£12.430	£11.390	£16.310

## Battery Condition Meter

Zig



Ideal for automotive, marine and caravan applications using 12V battery electrics. Only two connections are needed for accurate and up to date analogue reading of your battery condition. The meter's scale reads from 9 to 16V with warning areas indicated on either side of the optimum voltage. Dimensions: 82 x 70 x 50mm.

Retail Unit Price each (inc. VAT).

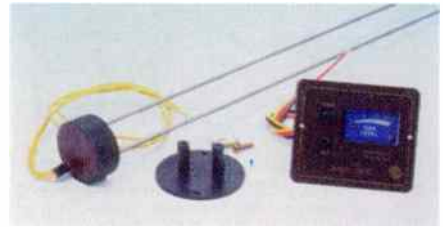
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
WD34M	VM4 Battery Meter	£13.010			£15.290

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## Water Level Gauge

Zig



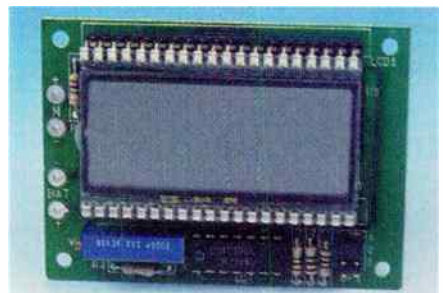
Ideal for caravans, motor homes, boats and all vehicles with on-board water storage, this versatile gauge is suitable for fresh or waste water, is safe to install in plastic or metal tanks (metal tank adaptor supplied), and can even be fitted to portable water carriers. At the push of a button the gauge provides an accurate reading of the tank's contents, right down to the last few litres. Dial calibration is also possible to accommodate different water conditions. Overall dimensions: 127 x 88 x 35mm. Probe length: 440mm (can be cut to size).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
WD35Q1	WG4 Water Gauge	£34.710			£40.790

## DIGITAL PANEL METERS

### Digital LCD Panel Meter



A compact, low cost digital panel meter which consists of a PCB based module for mounting in existing equipment, behind a front panel or for making a dedicated voltmeter type instrument. The LCD is 3 1/2 digits with a digit height of 13mm. The input is up to 200mV with a full scale at ±199.9mV with an accuracy of ±0.1% +1 digit. The module is capable of performing both digital voltmeter and ammeter functions, depending on how the input is configured with extra resistor chains (examples are shown in the instructions supplied). Applications can include custom power supply monitoring and other specialised voltmeter and ammeter uses. Input power is in the range of 9 to 12V DC and can be from battery or power supply. The panel meter OV rail must not be the same OV rail as the voltage being measured.

The panel meter uses 7106 IC which is a high performance, low power CMOS device and specifically designed as a 3 1/2-digit analogue to digital converter. Input impedance is extremely high, making it very easy to calculate resistor chain values without any danger of neglected input impedance introducing errors. An on-board preset can be used to precisely calibrate the circuit against incoming voltage levels.

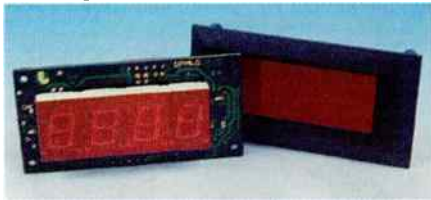
#### Specification

Input impedance: 1,000MΩ  
Accuracy: ±0.1% + 1 digit  
Measurement range: ±199.9mV  
Resolution: 100µV  
Indication method: LCD  
Power supply: 9 to 12V DC  
Current drain: 1mA typical  
Operating temperature range: 0°C to 60°C  
The module measures just 70 x 50 x 15mm high and has four M3 fixing holes at the corners on 58 x 39mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GW01B	DVM Meter Module	£11.050	£9.130	£8.420	£12.990

## LED Type



A compact low-cost LED Digital Panel Meter having a high brightness display. The meter is fitted with high efficiency 11mm LEDs and is supplied with a circularly polarised red filter and bezel giving a high contrast display. Auto-zero, auto-polarity, programmable decimal points and 200mV fsd are standard features and the meter may be easily programmed by the user to read volts, current etc. May be used in single-ended or differential mode, or to measure floating inputs.

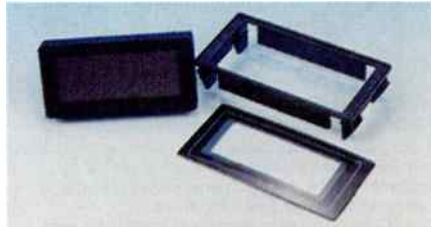
### Specification

Accuracy ( $\pm 1$  count): 0-05% typical (0-1% max.)  
 Linearity:  $\pm 1$  count  
 Sample rate: 3 per second  
 Temp. stability: 150ppm/ $^{\circ}$ C  
 Temp. range: 0 $^{\circ}$ C to 50 $^{\circ}$ C  
 Supply voltage: 5V (5-5V max.)  
 Supply current: 100mA (200mA max.)  
 Max. DC input voltage:  $\pm 20$ V  
 Input impedance: 100M $\Omega$   
 Overall dimensions: 72 x 36 x 27mm deep  
 Panel cut-out: 68 x 33mm  
 Supplied with connectors, bezel, mounting hardware and full instruction sheet.

Retail Unit Price each (inc. VAT).

Order Code	Type 3648	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FM85G 1	LED Panel Meter	£30.370	£27.900	£27.030	£35.690

## 10mm LCD Type



A uniquely compact LCD DPM with pins designed to plug directly into a 28-pin DIL socket. The meter may be panel mounted using the separate snap-in bezel (supplied). The low profile bezel incorporates a flat reverse-printed window giving a superb appearance. The meter features auto-zero, auto-polarity, 200mV FSD, 10mm digit height and programmable decimal points. On board solder pads for essential interconnections make selection of operating mode quick and easy with the minimum of external wiring. Very low current consumption allows long battery life. A whole range of useful annunciators are available on separate pins.

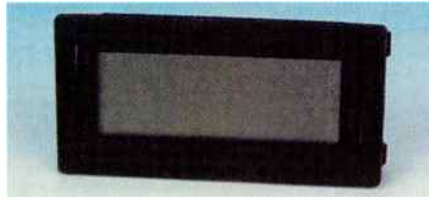
### Specification

Accuracy ( $\pm 1$  count): 0-05% (0-1% max)  
 Linearity:  $\pm 1$  count  
 Sample rate: 3 per second  
 Temperature stability: 100ppm/ $^{\circ}$ C  
 Temperature range: 0 $^{\circ}$ C to 50 $^{\circ}$ C  
 Supply voltage: 7-5V to 15V (9V nom.)  
 Supply current: 150 $\mu$ A  
 Max DC input voltage:  $\pm 20$ V  
 Input leakage current: 1pA (10pA max.) ( $V_{in} = 0$ V)  
 Low battery threshold: 7-5V  
 Overall dimensions: 40 x 20 x 7mm thick  
 Pin length: 4mm  
 Display area: 33 x 13mm  
 Bezel dimensions: 48 x 24mm  
 Panel cut-out: 45 x 22-2mm  
 Supplied with detailed instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type 3647	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FD89W	10mm LCD DPM	£23.390	£22.440	£21.270	£27.490

## 12-5mm LCD Type



A uniquely compact LCD DPM designed to plug directly into a 40-pin DIL socket. The unit is pin-compatible with the 7106/26/36 range of ICs and can be used to directly replace the separate parts otherwise required. The meter may be panel mounted using the separate snap-in bezel supplied. The low profile bezel incorporates a flat reverse-printed window giving a superb appearance. The meter features auto-zero, auto-polarity, 200mV FSD, 12-5mm digit height and programmable decimal points. On-board solder pads for essential interconnections make selection of operating mode quick and easy with the minimum of external wiring. Very low current consumption allows long battery life. A whole range of useful annunciators are available on separate pins.

Electrical specification as 10mm type left except:  
 Overall dimensions: 52 x 25 x 7mm thick  
 Pin length: 4mm  
 Display area: 45 x 16mm  
 Bezel dimensions: 60 x 30mm  
 Panel cut-out: 57 x 27mm  
 Supplied with detailed instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type 8829	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FD88V	12.5mm LCD DPM	£23.390	£21.470	£21.110	£27.490

## DISPLAY MODULES

### Counter Module



An electronic Counter Module with 5-digit LCD display. The display increases by 1 every time a positive-going edge is applied to pin 3. A reset is available, and a tone output which can drive a piezo sounder directly and beeps on every count and on reset. Square wave outputs at 512Hz and 32768Hz are also provided.

### Specification

Working voltage: 1-5V DC  
 Current: 2 $\mu$ A standby  
 8 $\mu$ A average when counting  
 00000 to 99999 (resets to 00000 after count 99999)  
 Count range:  
 Max. input frequency: 7Hz  
 Input voltage range: 1V to 1-5V  
 Min. duration pulse: <100 $\mu$ s  
 Overall size: 68 x 35 x 24mm  
 A plastic bezel (FE35Q) is available for use with this module, size 68 x 35mm and increases the overall depth of the module to 27mm. The module requires a 1-5V AA cell (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type 3279	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FS13P	Counter Module	£8.500	£7.550	£6.220	£9.990

### Small Clock Module FM-882

A compact digital clock module that uses a quartz crystal to provide an accuracy of  $\pm 15$  seconds per month. Four digits show hours and minutes for a 12 hour period with AM and PM indicators. Operates from one GE-13 silver oxide button cell (FM28F) and draws a maximum of



5-5 $\mu$ A, which results in a battery life of approximately one year. The clock has an integral flanged bezel and can be snapped into a panel cut-out of 50 x 25mm. Makes an ideal small, low-cost and accurate digital clock suitable for a wide range of applications.

### Specification

Digit height: 10mm  
 Oscillator frequency: 32-768kHz  
 Accuracy: 15s/month  
 Operating voltage range: 1-2V to 1-8V  
 Battery life: 1 year approx.  
 Dimensions  
 panel cut-out (body): 45 x 25mm  
 depth: 15mm  
 bezel: 49 x 29mm

Retail Unit Price each (inc. VAT).

Order Code	Type 3331	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YU05F	Small Clock Module	£7.650	£6.580	£5.810	£8.990

### Small Temperature Module FM-880LPEX



- ★ 11mm High Digital Temperature Display
- ★ 0-1 $^{\circ}$ C Temperature Resolution
- ★ Low Current Consumption
- ★ Buzzer Output
- ★ External Temperature Sensor Probe

A compact and highly accurate temperature module ideal for use in applications where external/remote temperature sensing is required. The module covers temperatures in the range -40 $^{\circ}$ C to +50 $^{\circ}$ C in 0-1 $^{\circ}$ C steps, sampling period is 15 seconds. The external probe is supplied pre-connected to the module, cable length is 3 metres. Provision is made for either internal (silver oxide watch type battery, provided) or external power supply (nominally 1-5V), current consumption is 10 $\mu$ A. Connections are provided for display/setting enabling maximum and minimum temperature points, which are used to trigger a buzzer output. Connections may be made to the module using a 7-way minicon housing (female) and terminals (not supplied).

### Specification

Temperature measuring range: -40 to +50 $^{\circ}$ C  
 Resolution: 0-1 $^{\circ}$ C  
 Supply current: 10 $\mu$ A (average)  
 Sample period: 15 seconds  
 Operating voltage: Min. 1-25V  
 Nom. 1-5V  
 Max. 1-65V  
 Accuracy: -40 to +25 $^{\circ}$ C,  $\pm 1$ %  
 +25 to +50 $^{\circ}$ C,  $\pm 2$ %  
 External probe length: 3m  
 Battery type: SG13  
 Battery life: 1 year  
 Storage temperature: -20 to +60 $^{\circ}$ C  
 Dimensions: 49 x 29 x 15-2mm

### Pin Functions

Pin 1 - +V (1-5V)  
 Pin 2 - 0V  
 Pin 3 - Buzzer output  
 Pin 4 - Display lower temperature limit  
 Pin 5 - Lower/higher limit set/reset  
 Pin 6 - Advance lower/higher limit  
 Pin 7 - Display higher temperature limit

Retail Unit Price each (inc. VAT).

Order Code	Type 3334	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YU07H	Small Temp Mod Ext	£9.350	£7.090	£6.380	£10.990

See Stock Code Index For More Price Breaks

## Temperature Module

A very versatile digital thermometer module with the LCD display and circuitry on a small pcb with a 16-way solder edge connection.



The pcb is fixed to a small plastic bracket that houses the battery. The module has an on-board temperature sensor or an external probe or probes may be fitted. By making the appropriate connections to the module the following functions are available:

- ★ **Temperature display in °C or °F.**
- ★ **12-hour clock display.**
- ★ **Set minutes and hours of clock.**
- ★ **Temperature sampling rate once per second or once per 10 seconds.**
- ★ **Set high and/or low temperature detector.**
- ★ **Output goes high when high temperature set point exceeded.**
- ★ **Separate output goes high when below low temperature set point.**
- ★ **Pulse output when either set point reached.**
- ★ **4kHz alarm output for 6 seconds after either set point reached.**

The module also has a serial data output and a 13-bit code is sent at every sample-time containing the current temperature in BCD format. A further output transmits the data clock. A comprehensive operations manual is supplied with the module. It shows how to connect relays to the temperature set point outputs, how to connect a buzzer to the alarm output, and how to connect external probes to the module. Full details are also given on the serial data output and how to read it.



### Specification

Range: -19.9°C to 69.8°C  
0°F to 159.8°F

Resolution: 0.1°C, 0.1°F

Accuracy: -10°C to +40°C  
±1°C at 1.5V  
-20°C to -10°C  
±2°C at 1.5V  
+40°C to +70°C  
±2°C at 1.5V

Temperature set points: 1° steps

Display: 3 1/2-digit 12.7mm high LCD display

Clock: 12-hour clock

Clock accuracy: ±0.5s/day

Working voltage: 1.5V (1.25V to 1.65V)

Average current: 15µA approx.

Battery life: >1 year

Overall size: 68 x 35 x 23mm deep

A plastic bezel is also available for use with the module, size 68 x 35mm and increases overall depth of module to 27mm.

External probes are also available:

Probe length: 40mm

Probe diameter: 7mm at base, 4mm at tip.

The probe is supplied connected to 3m approx, of miniature 2 core cable 2mm diameter with open end. Note that the accuracy of the meter decreases by ±2.5°C per 3m of cable and may be unstable with long wires or cable different from that supplied with probe. The meter itself will only operate in the temperature range -5°C to +50°C mainly because of the LCD display so for temperatures outside this range, the external probe will be required. Shortening the cable will improve the accuracy. The module requires a 1.5V AA cell (not supplied).

### Applications Information

Further applications information on using this module may be found in issue 71 of *Electronics - The Maplin Magazine* (XA71N). The article *Using Temperature Modules* gives details of how to interface this module to a PC to measure temperature. Requires Temperature Module Expansion Converter Kit (LM36P) and Programmable PC I/O Card (LP12N) - article includes BASIC program listing. Also, details of how to control relays and a buzzer are included. Requires Temperature Module Relay Card Kit (LM37S).

### Retail Unit Price each (inc. VAT).

Order Code	Type 3267	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FE33L	Temperature Module	£8.500	£6.380	£5.710	£9.990
FE35Q	Bezel Fr Temp Module	£0.255	£0.173	£0.143	£0.300
FE34M	Probe Fr Temp Module	£2.590	£1.990	£1.730	£3.050

## Min/Max Temperature Module



A maximum/minimum digital thermometer module with the LCD display and circuitry on a small pcb with a 16-way solder edge connection. The pcb is fixed to a small plastic bracket that houses the battery. The module has an onboard temperature sensor or an external probe or probes may be fitted. By making the appropriate connections to the module the following functions are available:

- ★ **Temperature display in °C or °F.**
- ★ **Set high or low temperature detector.**
- ★ **Output goes high when set points are exceeded.**
- ★ **Display high or low temperature settings.**
- ★ **Set sample rate to once every second or once per 15 seconds.**
- ★ **Pulse output when either set point is reached.**
- ★ **2kHz alarm output for approximately 1 minute when high or low temperature point is reached.**
- ★ **Recall the lowest or highest temperature reached since last reset.**



A comprehensive manual is supplied with the module, it shows how to connect relays to the temperature set point outputs, how to connect a buzzer to the alarm output, and how to connect external probes to the module.

### Specification

Internal Probe: -5°C to +50°C  
23°F to 122°F

Resolution: 0.1°C (0.1°F)

Accuracy: -5°C to 30°C ±1°C at 1.5V  
+31°C to +50°C ±2°C at 1.5V

External Probe, White (low range): -40°C to +50°C  
-40°F to 122°F

Accuracy

3 metre cable: -40°C to -21°C ±2°C at 1.5V  
-20°C to +25°C ±1°C at 1.5V  
+26°C to +50°C ±2°C at 1.5V

External Probe, Grey (high range): +20°C to +110°C  
68°F to 230°F

Accuracy

3 metre cable: +20°C to +34°C ±2°C at 1.5V  
+35°C to +75°C ±1°C at 1.5V  
+76°C to +110°C ±2°C at 1.5V  
1 second or 15 seconds

Sampling Rate: 1.5V (1.25V to 1.65V)

Working Voltage: 1.5V (1.25V to 1.65V)

Average Current: 10µA approx. (at 15 second sample rate)

Battery Life: >1 year

Overall Size: 68 x 35 x 23mm deep

A plastic bezel (FE35Q) is available for use with the module, size 68 x 35mm and increases the overall depth of the module to 27mm.

External probes are also available:

Probe Length: 40mm.

Probe Diameter: 7mm at base, 4mm at tip.

The probes are supplied connected to approximately 3 metres of miniature 2 core cable 2mm diameter with open end. Note that the accuracy of the meter decreases by ±2.5°C per 3m of cable and may be unstable with long wires or cable different from that supplied with the probes. The meter itself will only operate in the range -5°C to 50°C mainly because of the LCD display so for temperatures outside this range, the external probes will be required. Shortening the cable will improve the accuracy. The module requires a 1.5V AA cell (not supplied).

### Applications Information

Further applications information on using this module may be found in issue 71 of *Electronics - The Maplin Magazine* (XA71N). The article *Using Temperature Modules* gives details of how to control relays and a buzzer. Requires Temperature Module Relay Card Kit (LM37S).

### Retail Unit Price each (inc. VAT).

Order Code	Type 3267	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FP64U	Min/Max Temp Module	£10.200	£6.990	£6.220	£11.990
FP65V	Low Temp Probe	£2.540	£1.990	£1.730	£2.990
FP66W	High Temp Probe	£2.540	£2.300	£1.990	£2.990

## Wide Range Min/Max Temperature Module



A very versatile minimum/maximum temperature module with the LCD display and circuitry on one small PCB mounted on a battery holder, with a 17-way edge connection. The module uses an external probe to display temperatures in the range -10°C to +110°C with a resolution of one tenth of a degree, in centigrade or fahrenheit. The module records both the highest and lowest temperatures (maximum and minimum) measured by the probe, which are stored and updated in memory, and the max./min. values in memory can be displayed showing the highest lowest temperature reached since the memory was last cleared. The maximum/minimum threshold values are fully programmable. Also included is a 12 hour digital clock, a 4kHz max./min. alarm output, separate outputs for relay drivers or similar which go high for 1 minute if the relevant programmed temperature threshold is reached, and a further output which pulses at 4kHz for 1 minute if either threshold is reached and then remains high until reset. There is a separate connection for a complete system reset. The external probe is included.

### Specification

Range: -10°C to +110°C

Resolution: 0.2°C, 0.2°F

Accuracy: -10°C - 0°C ±1.5°C @ 1.5V  
0°C - 60°C ±1°C @ 1.5V  
60°C - 110°C ±1.5°C @ 1.5V

Sampling rate: 1 or 10 seconds switchable

Alarm output: 4kHz for 1 minute

Temperature set points: 1° steps

Display measuring range: °C or °F

Clock accuracy: ±0.5s/day

Working voltage: 1.5V DC (1.25V to 1.8V)

Average current: 10µA approx.  
@ 10s sample rate

Battery life: >1 year

Overall size: 68 x 35 x 23mm

A comprehensive manual is supplied with the module showing how to connect a buzzer circuit to the alarm output and relay drivers to the high/low threshold outputs, and connections for the various functions and programming modes. The plastic bezel (FE35Q) can be fitted and increases the overall depth of the module to 27mm. Note that the meter itself and mainly the LCD display will only operate in the range of -5°C to +50°C. The module requires a 1.5V AA cell (not supplied).

### Applications Information

Further applications information on using this module may be found in issue 71 of *Electronics - The Maplin Magazine* (XA71N). The article *Using Temperature Modules* gives details of how to control a buzzer and an LED. Requires Temperature Module Relay Card Kit (LM37S).

### Retail Unit Price each (inc. VAT).

Order Code	Type 3271	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YT99H	Temp Mod Wide Range	£11.900	£9.130	£7.400	£13.990

## Min/Max Dual Display Temperature Module



A minimum/maximum digital thermometer module with the LCD display and circuitry complete on a small pcb with an 11-way solder edge connection and integral battery holder. In operation the module records both the highest and lowest of external temperatures as measured by the module's own external probe. Maximum and minimum temperatures are stored and updated internally until reset. A max./min. temperature alarm function can be set to output a 2kHz tone upon either threshold being reached for external measurements. Especially useful is the module's ability to display both internal and external temperatures at once, ideal for example for providing at a glance a comparison between indoors and outdoors temperature differences. Temperatures displayed in degrees centigrade. The external probe is included.

### Specification

Internal sensor range: -5°C to +50°C  
 External probe range: -40°C to +50°C  
 Resolution: 0.1°C  
 Accuracy: -20°C - +30°C ±1°C @ 1.5V  
 -40°C - -20°C ±2°C @ 1.5V  
 +30°C - +50°C ±2°C @ 1.5V  
 Sampling rate: 15 seconds  
 Alarm output: 2kHz for 1 minute  
 Temp. set points: 1° steps  
 Working voltage: 1.5V (1.25V to 1.65V)  
 Average current: 20µA approx.  
 Battery life: >1 year  
 Overall size: 68 x 35 x 23mm deep

A comprehensive manual is supplied with the module showing how to connect a buzzer circuit to the alarm output and switches for the various functions and programming modes. The plastic bezel (FE35Q) can be fitted and increases the overall depth of the module to 27mm.

Note that the meter itself and mainly the LCD display will only operate in the range of -5°C to +50°C and it is this which limits the range of the internal sensor.

The module requires a 1.5V AA cell (not supplied).

### Applications Information

Further applications information on using this module may be found in issue 71 of *Electronics - The Maplin Magazine* (XA71N). The article *Using Temperature Modules* gives details of how to control a buzzer. Requires Temperature Module Relay Card Kit (LM37S) to control a buzzer.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YU00A	Dual Disp T Module	£11.900	£9.440	£7.750	£13.990

## Min/Max Humidity Module



A small module in the same style as our temperature modules and specifically designed to measure the relative humidity of air and record the minimum and maximum levels reached at any time since last reset. The module covers the range of 25%RH to 95%RH in 1% steps with a sampling rate of 1 second, and can be placed in a fixed location to monitor humidity, but must only be used indoors. The sensor is internal and no external probe is required. The display normally shows the current humidity value continuously, but will show the minimum and maximum values stored through the use of two momentary action push buttons (not supplied), which are identified by the word 'MIN' or 'MAX' in

the display. Both memories can be cleared by holding both buttons down. The display also shows the words, 'DRY' or 'WET' depending on the humidity. 'DRY' is approximately <53% and 'WET', >67%. There are a total of 11 connections to the module, four of which enable the module to output the currently measured value of either of the two stored values in the form of 4-bit parallel, packed BCD (Binary Coded Decimal). Each line of the 4-bit data packet begins with a pair of sync pulses, followed by its part of a bit pattern that informs the destination device whether the data is the current real-time, min. or max. reading, followed by two bits of binary data making up the two digits (most significant first), interleaved with sync pulses. The remaining data trains are specialised manufacturers codes and can be ignored. Similarly the specialised 'K' terminals can be ignored for most normal applications.

### Specification

Measuring range: 25%RH to 95%RH  
 Operating range of module: 32%RH to 90%RH, 0°C to 50°C  
 Resolution: 1%RH  
 Supply current: 20µA (average)  
 Sample rate: 1 second

Operating voltage: Min. 1.25V  
 Nom. 1.5V  
 Max. 1.65V

Accuracy: ±5%RH between 40 to 80%RH @ 25°C  
 ±7%RH below 40% or above 80%RH @ 25°C

Battery type: Single AA cell (not supplied)  
 Battery life: >1 year  
 Dimensions: 67 x 34 x 26mm

### Pin Functions

Pin 1 - display upper humidity limit  
 Pin 2 - display lower humidity limit  
 Pin 3 - +V (1.5V)  
 Pin 4 - BCD output bit 0  
 Pin 5 - BCD output bit 1  
 Pin 6 - BCD output bit 2  
 Pin 7 - BCD output bit 3  
 Pin 8 - K1 Not used  
 Pin 9 - K2 Not used  
 Pin 10 - K3 Not used  
 Pin 11 - 0V

### Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	+	+	
ZA38R	Humidity Module	£13.010			£15.290

## Min/Max Temperature and Humidity Module



This quality built module accurately measures the temperature and relative humidity inside a room or house (the RH is temperature compensated to maintain the best accuracy within the average indoor temperature range).

The module has its own internal sensor so no external probe is required unless an increase in the temperature range (to -58°C to 158°F) is desired. Both the temperature and humidity functions have memories to store the minimum and maximum values recorded since the last reset.

The right-hand side of the display is dedicated to humidity, showing current humidity continuously, min/max values (stored through the use of 2 momentary action push buttons, not supplied) and the words 'COMFORT', 'DRY' and 'WET' depending on the humidity. The left-hand side shows temperature in °C or °F and separate connections on the module's edge connectors are used to display min/max values while in 'MEM' mode.

There are a total of 20 connections to the module, each explained in the supplied manual. Not suitable for outdoor use.

### Specification

Humidity Range: 25%RH to 95%RH  
 Sample rate: 1 second  
 Accuracy: ±5%RH between 40-80%RH @ 25°C  
 ±7%RH below 40%RH or above 80%RH @ 25°C  
 Temperature Range: -50°C to +70°C  
 Sample rate: 1 or 10 seconds  
 Accuracy: ±1°C, 2°F  
 Operating range: 32%RH to 90%RH, 0°C to 50°C  
 Resolution: 1%RH and 1°C/F  
 Operating voltage: 3V DC nominal  
 Batteries: 2 x 'AAA' (not supplied)  
 Battery life: >1 year  
 Dimensions: 72 x 40 x 26mm

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JY50E	Duracell AAA	£0.757	£0.700	£0.650	£0.890

### Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
ZA39N	Temp/Humidity Module	£12.750	£11.450	£10.500	£14.990

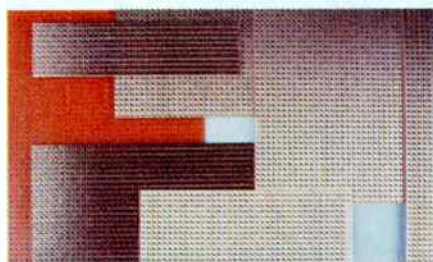


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## STRIPBOARD

### SRBP Matrix Boards



A range of SRBP boards punched with holes on a 2.54mm (0.1in.) matrix. Plain board and boards with copper strips on one side are available in various sizes.

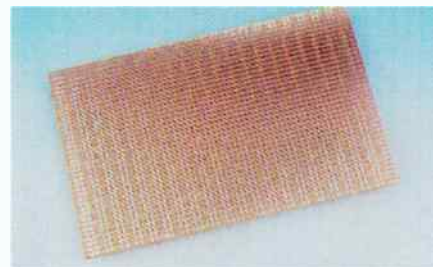
Type	Overall size (mm)	Number of copper strips	Number of holes in each strip
Plain 3962	160 x 100	none	39 x 62
Plain 3929	100 x 75	none	39 x 29
Plain 39117	300 x 100	none	39 x 117
Strip 1039	100 x 25	10	39
Strip 2939	100 x 74.1	29	39
Strip 2958	150 x 74.1	29	58
Strip 3939	100 x 100	39	39
Strip 3962	160 x 100	39	62
Strip 39117	300 x 100	39	117

All boards have 1mm dia. holes and are 1.6mm thick.

Retail Unit Price each (inc. VAT).

Order Code	Type 1917	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JP53H	Plain Board 3962	£1.430	£0.868	£0.790	£1.690
JP54J	Plain Board 3929	£1.010	£0.526	£0.490	£1.190
JU37S	Plain Board 39117	£2.920	£1.470	£1.250	£3.440
JP46A	Strip Board 1039	£0.612	£0.470	£0.400	£0.720
JP47B	Strip Board 2939	£1.520	£1.260	£1.070	£1.790
JP48C	Strip Board 2958	£2.340	£1.320	£0.990	£2.750
JP49D	Strip Board 3939	£1.720	£1.390	£1.070	£2.030
JP50E	Strip Board 3962	£2.460	£1.770	£1.440	£2.900
JP51F	Strip Board 39117	£4.240	£3.390	£2.760	£4.990

### Tripad Board



This board is specifically designed to mount dual-in-line integrated circuits and a great number of these and any other kind of component may be easily mounted. The board has 39 copper strips each with 62 holes and each strip is divided into 20 3-hole segments so that track cutting is virtually eliminated. The board is punched on a 2.54 x 2.54mm matrix with a 1mm diameter hole. Overall size 160 x 100mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1922	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JP52G	Tripad Board 3962	£2.970	£2.140	£1.830	£3.490

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Account holder or not, your order will be sent carriage paid.

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### DIP Board

Vero



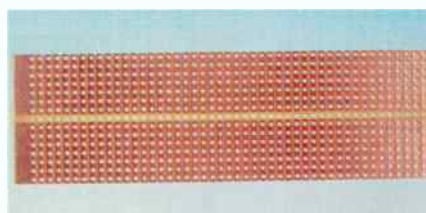
This board is specifically designed to mount dual-in-line integrated circuits and to assist in this two power rails run between the copper pad format to facilitate easy link-up of ground and voltage rail. Up to 20 14-pin or 28 8-pin DIL packages can be accommodated. A paper layout sheet is included. The board is punched on a 2.54 x 2.54mm matrix with a 1mm dia. hole. Overall size 157 x 114mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1920	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FL19V	DIP Board	£11.050	£7.990	£6.990	£12.990

### Stripboard

Vero



Suitable for all applications where a conventional tag strip or group board might be used, with the advantage that small or large components are neatly accommodated. Components can be mounted across or along the strips. Copper strips run across the board with a break through the centre equal to the width of one hole (2.54mm (0.1in.)), over the full length of the board.

Overall size:	213 x 38mm
Number of strips:	81
Number of holes in coppered part of each strip:	14
Total number of holes in each strip:	15
Hole size:	1mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 1918	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FL17T	Stripboard	£3.870	£2.720	£2.030	£4.550

### PC, PC-XT and PC-AT series Prototyping Boards



Prototyping boards for the IBM PC, PC-XT and PC-AT series of computers, which features a large prototyping area of independent 1mm dia. plated-through holes on a 2.54mm matrix. The fibreglass boards incorporate a gold plated 2.54mm edge connector and provision for fitting a 25-way D-type connector. Four versions are available: two are for use with PC and PC-XT machines, having a 2 x 31-way edge connector and either half (JU12N) or full

(JU13P) length card. The other two are for use with PC-AT machines, having 2 x 31-way and 2 x 18-way edge connectors.

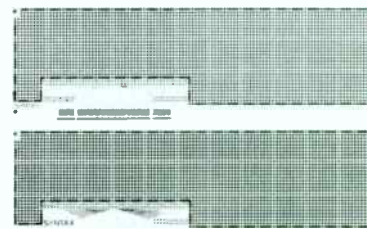
#### Dimensions

Full length:	333 x 110 x 1.6mm
Half length:	185 x 115 x 1.6mm

Retail Unit Price each (inc. VAT).

Order Code	Type 1923	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JU12N	Protobd XT1/2	£18.710	£12.880	£10.490	£21.990
JU13P	Protobd XT1/1	£22.110	£9.140	£7.180	£25.990
JU14Q	Protobd AT1/1	£22.970	£9.360	£7.360	£26.990
CH20W	Protobd AT1/2	£8.580	£6.820	£6.260	£10.090

### PS Prototyping Board



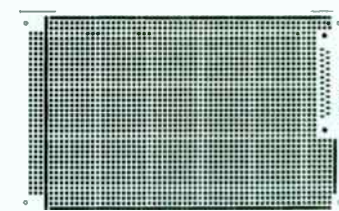
Prototyping board for the IBM PS/2 series of computers, which features IBM microbus compatibility and a large prototyping area of independent 1mm diameter plated-through holes on a 2.54mm matrix. The fibreglass board incorporates a top-surface groundplane and gold plated 1.27mm edge connector. The +5V contacts are shortened to ensure all other connections are made before power is introduced. 45 x 2-way and 11 x 2-way edge connectors. Suitable for IBM PS/2 Models 50, 60, 70 and 80. (Note: Model 30 uses PC AT type boards.)

Dimensions: 292 x 88 x 1.6mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1924	Price each exc. VAT		inc. VAT each
		1+	10+	
JU11M	PS2 Proto-Board	£7.650		£8.990

### Single Eurocard Size VME-Bus Prototyping Card



A fibre-glass prototyping card for use with equipment based on the Eurocard VME-Bus standard. This prototyping board is suitable for use in racks that accept single Eurocard size boards, which includes our Modular Rack System (see Enclosures). The board is single sided and has independent 1mm holes on a 2.54mm matrix. The board will accept a 32, 64 or 96-way DIN 41612 PCB connector and also a 25-way D-type connector (for suitable connectors see Connectors). Dimensions: 100 x 160 x 1.6mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1925	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JU15R	VME-Bus Board	£8.490	£2.650	£2.450	£9.980

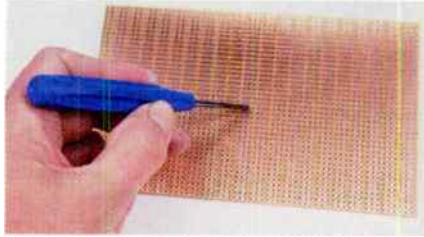
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**TOOLS FOR MATRIX BOARDS**

**Spot Face Cutter**

Vero



Designed for accurate and clean breaking of the copper strips on Stripboard. For best results use a light pressure.

Retail Unit Price each (inc. VAT).

Order Code	Type 1926	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FL24B	Pin 2145	£2.540	£1.400	£1.200	£2.990

**Pin Insertion Tool**

Vero



A tool to help in the insertion of PCB pins into PCBs. The tool is suitable for 1mm dia. pins type 2144 and 2145, and has an orange handle to aid identification.

Retail Unit Price each (inc. VAT).

Order Code	Type 1927	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FL27E	Tool 2151	£5.090	£4.260	£3.930	£5.990

**PCB PINS**

**Type 2140**

Double-ended pin 1.3mm (0.052in.) dia. Supplied in packs of 100.



Pins below are shown twice size.

Retail Unit Price each (inc. VAT).

Order Code	Type 1929	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FL20W	Pin 2140	£2.540	£2.030	£1.790	£2.990

**Type 2141**

Single-ended pin 1.3mm (0.052in.) dia. Supplied in packs of 100.



Retail Unit Price each (inc. VAT).

Order Code	Type 1930	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FL21X	Pin 2141	£2.540	£2.030	£1.790	£2.990

**Type 2144**

Double-ended pin 1mm (0.04in.) dia. Supplied in packs of 100.



Retail Unit Price each (inc. VAT).

Order Code	Type 1932	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FL23A	Pin 2144	£2.540	£2.030	£1.790	£2.990

**Type 2145**

Single-ended pin 1mm (0.04in.). Supplied in packs of 100.



Retail Unit Price each (inc. VAT).

Order Code	Type 1933	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FL24B	Pin 2145	£2.540	£1.400	£1.200	£2.990

**Gold Plated PCB Terminals (Eyelet)**



Miniature gold plated PCB terminals designed to be fitted to circuit boards to provide test points for voltage and waveform measurement. The terminal consists of a gold plated wire eyelet and a coloured heatproof ceramic insulating spacer. The lead-outs from the terminal are sprung and therefore the terminal will not drop out when the PCB is turned over for soldering. The terminal will stand 5mm above the PCB and the eyelet has an inside diameter of 2.6mm. The terminal requires a 1mm diameter hole in the PCB. Terminals are supplied in packs of ten, one each of the following colours; black, brown, red, orange, yellow, green, blue, purple, light-green and white.

Retail Unit Price each (inc. VAT).

Order Code	Type 1934	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JM02C	PCB Eyelet Terminal	£1.260	£0.620	£0.572	£1.490

**Gold Plated PCB Terminals (Pin)**



Miniature gold plated PCB terminals designed to be fitted to circuit boards to provide test points for voltage and waveform measurement. The terminal consists of a pin with protruding rings to position the terminal at the correct height and to prevent test clips from dropping off. The terminal is 9mm long overall and will stand 5-5mm above the PCB. The terminal requires a 0.8mm diameter hole in the PCB. Terminals are supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1935	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JM03D	PCB Pin Terminal	£1.430	£0.566	£0.522	£1.690

**Gold Plated PCB Terminals (Solder Bucket)**



Miniature gold plated PCB terminals designed to be fitted to circuit boards to provide an anchorage point for lead-out wires. The terminal consists of a pin with a protruding ring to position the terminal at

the correct height and a solder bucket for attaching a lead-out wire. The terminal is 11mm long overall and will stand 8mm above the PCB. The terminal will accept wires up to 1.2mm in diameter and requires a 1.62mm diameter hole in the PCB. Terminals are supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1936	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JM04E	PCB Solder Bucket	£2.540	£1.170	£1.080	£2.990

**Gold Plated PCB Terminals (Plain Pin)**

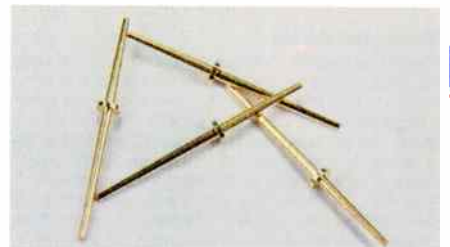


Miniature gold plated PCB terminals designed to be fitted to circuit boards to provide a test point, lead-out, etc. The terminal consists of a plain pin with a protruding ring to position the terminal at the correct height. The terminal is 10.5mm long overall and will stand 7.5mm above the PCB. The terminal requires a 0.65mm diameter hole in the PCB. Terminals are supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1939	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JM05F	PCB Plain Terminal	£1.520	£0.559	£0.516	£1.790

**Gold Plated PCB Terminals (Long Tapered Pin)**



Miniature gold plated PCB terminals designed to be fitted to circuit boards to provide a test point, lead-out, etc. The terminal consists of a tapered pin with protruding ring to position the terminal at the correct height. The terminal is 22.5mm long overall and will stand 13.5mm above the PCB. The terminal requires a 1.1mm diameter hole in the PCB. Terminals are supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type 1940	Price each exc. VAT			inc. VAT each
		1+	10+	100+	
JM06G	PCB Long Terminal	£1.690	£0.852	£0.739	£1.990

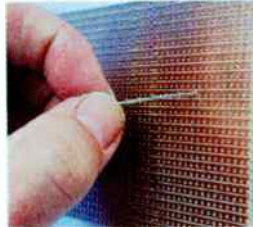
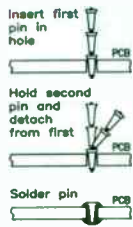
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## Through-PCB Pins

Harwin



Pins to provide a connection between tracks on opposite sides of printed circuit boards without the need for through-hole plating. Pins are inserted by hand then soldered on both sides. Pins fit 1mm dia. holes and are suitable for 1.6mm thick board. Pins are brass, tin/lead plated. Overall pin length: 3.5mm. Supplied in packs of 50 approx.

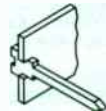
Retail Unit Price each (inc. VAT).

Order Code	Type 1043	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FL82D	Track Pin	£1.090	£0.589	£0.544	£1.290

## Wirewrapping Pin

Vero

The pin is suitable for wire wrapping and fits holes of 1mm dia. Single-sided Pin 0266 is sold in packs of 100.



Retail Unit Price each (inc. VAT).

Order Code	Type 1045	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FL80B	Pin 0266 Pk of 100	£5.350	£3.780	£3.490	£6.290

## WIRE WRAPPING SYSTEM

### Wirewrapping System

The wiring system enables fast construction of pcbs etc., requiring large numbers of wire links. It is very simple to use and the end result is neat, even when a large number of wires are packed into a small space. Simply wrap the wire around the terminal pin or component wire, set the tension on the Verowire pen and take the pen to the next component and wrap the wire there. The wire is insulated with a polyurethane coat, which is mechanically tough. Now simply solder the connections: under the extreme heat of the tip of the soldering iron, the polyurethane coat melts and the solder completes the joint.

## Wiring Combs

Vero



Plug-in wiring combs can be fitted to any circuit board that has 1mm diameter holes on a 2.54 x 2.54mm matrix. The combs are fitted to the wiring side of the board between the leads of the integrated circuits. They provide a guide and the pegs control and hold the wire ensuring a neat, stable layout. Sold individually and in packs of 100.

Retail Unit Price each (inc. VAT).

Order Code	Type 1053	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FP39N	Wiring Combs Pk 100	£16.160	£15.120	£13.950	£18.990

Retail Unit Price each (inc. VAT).

Order Code	Type 1055	Price each exc. VAT			inc. VAT each
		1+	5+	1+	
FY33L	Comb For Wiring Pen	£0.246	£0.190		£0.290

## Prototyping Pen



A plastic wiring tool supplied complete with one spool of wire as described below. Pen has an integral spring wire clamp for wire retention, advancement and retraction.

Retail Unit Price each (inc. VAT).

Order Code	Type 1049	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
HY16S	Wiring Pen	£9.350	£7.620	£6.600	£10.990

## Replacement Spools for Pen

Vero

A spool of 30swg copper wire with an 0.005mm coating of self-fluxing polyurethane. Max. voltage 600V DC. Current rating 100mA. Resistance: 0.86Ω per metre at 20°C. Length of wire on spool: 40m. Available in Red.

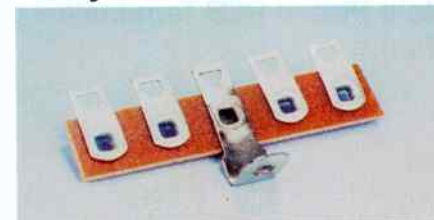


Retail Unit Price each (inc. VAT).

Order Code	Type 1051	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
HY17T	Spool Red	£2.540	£1.650	£1.430	£2.990

## TAGSTRIPS

### 5-Way



Five tags mounted on a paxolin strip where the middle tag is for screw fixing.

Retail Unit Price each (inc. VAT).

Order Code	Type 1056	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FM34M	5-Way Tagstrip	£0.417	£0.250	£0.220	£0.490

### 14-Way

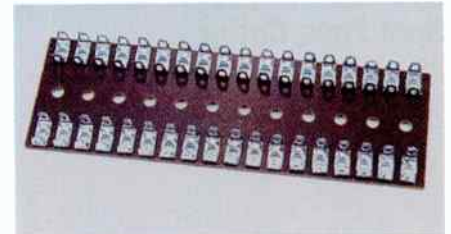


Fourteen tags mounted on a paxolin strip. Five of the tags are right-angled for mounting.

Retail Unit Price each (inc. VAT).

Order Code	Type 1057	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FL29G	14-Way Tagstrip	£0.672	£0.394	£0.360	£0.790

## Miniature Tag Board



Miniature SRBP base with 36 solder tags in two rows. Overall size: 117 x 38 x 7.5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1059	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FL11M	Tag Board	£1.690	£1.070	£0.990	£1.990

## PLUGBLOCK SOLDERLESS BREADBOARDS

### Plug Block Solderless Breadboards

A system for constructing circuits in such a way that the components can be used over and over again. Component wires are simply pushed into the boards where they are firmly held by double leaf spring contacts. To modify the circuit simply pull the components out and plug in again in the correct position.

## Euro Breadboard



This plugblock has a total of 600 contacts arranged in four blocks of 25 rows of five interconnected sockets on a 2.54 x 2.54mm matrix and four other rows of 25 interconnected sockets arranged around the edges of the main matrix for use as bus-bars. The distance between the two centre rows of sockets is 15.2mm, the spacing between the leads on a 24, 28 or 40-pin IC and the distance between the centre rows of sockets of both end blocks of contacts is 7.62mm, the spacing between leads on an 8, 14 or 16-pin IC package. Thus the block will hold up to six 14-pin and two 24-pin DIL packages for example. A non-slip rubber backing is fixed to the board and fixing is by four holes in the corners of the block into which will screw a No.4 self-tapper. The holes are 8BA clear. Horizontal rows are designated 1 to 25 whilst the four matrixed blocks are labelled A, B, C and D and the four bus-bar rows are labelled X1, X2, Y1 and Y2.

### Specification:

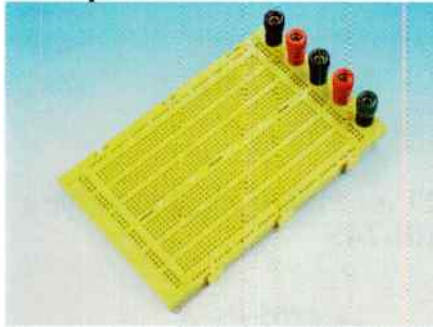
Contacts:	Nickel silver
Contact resistance:	<10mΩ
Contact rating:	1A
Contact life:	>5000 insertions
Accepts wire dia:	0.25 to 0.85mm
Dimensions:	92 x 82 x 10mm
Fixing holes:	78.5 x 68mm

Retail Unit Price each (inc. VAT).

Order Code	Type 1063	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YR83E	Eurobreadboard	£11.050	£8.360	£7.250	£12.990

See Stock Code Index For More Price Breaks

**Breadboard For Microprocessors**



A large version of the Eurobreadboard. In addition this plugblock has 5 large screw terminals -5V, +5V, -12V, +12V and Earth and colour-coded black, red, black, red and green respectively for connection to power supply. The plugblock has a total of 1422 contacts arranged in four blocks of 47 rows of four interconnected sockets, and two blocks of 47 rows of five interconnected sockets on a 2.54 x 2.54mm matrix and six other rows, four of 30 and two of 40 interconnected sockets arranged around the edges of the main matrix for use as bus-bars. A non-slip rubber backing is fixed to the board. Boards may be clipped together horizontally to form larger arrays and they will clip into the Professional Plugblock (YR84F) and the Bus Strip (YR85G).

All contact positions are clearly identified on an alpha-numeric grid.

**Specification:**

Contacts: Nickel silver  
Contact resistance: <10mΩ  
Contact rating: 1A  
Contact life: >5000 insertions  
Accepts wires dia: 0.25 to 0.85mm  
**Dimensions:** 159 x 109 x 21mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XX42V 1	MP Urobreadboard	£29.770	£27.780	£24.080	£34.990

Temperature range: -50 to +125°C  
Contact resistance: <10mΩ  
Contact rating: 1A  
Contact to contact capacity: 0.5pF  
Contacts: Nickel silver  
Contact life: >5000 insertions  
Accepts wires dia: 0.25 to 0.85mm  
**Dimensions:** 150 x 50 x 10mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YR84F	Prof Plugblock	£15.020	£11.480	£8.180	£17.660

**Bus-Strip Plugblock**



For use with our Professional Plugblock this block clips on to any side to provide additional bus-bars. The block has a total of 80 contacts arranged in two strips of forty interconnected sockets.

The rear plastic panel unclips to allow the contact arrangement to be seen and any contact strip to be changed should it ever be damaged. Other details as Professional Plugblock.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YR85G	Bus-Strip Plugblock	£5.210	£3.480	£2.980	£6.130

**Silver Plated Plugblock Type RH-10S**



A high quality plugblock with silver-plated contacts for low contact resistance. The plugblock has a total of 640 contacts arranged in two blocks of 64 rows of 5 interconnected sockets on a 2.54 x 2.54mm matrix. The distance between the two centre rows of sockets is 7.62mm and the block will hold up to nine 14-pin DIL packages for example. These boards will clip onto the Silver-Plated Bus Strips described below, and a clip-on component support bracket is also available separately. All contact positions are clearly marked on an alpha-numeric grid. Fixing is by self-adhesive foam insulating strip on the base of the block.

**Specification:**

Body material: ABS polymer  
Contact resistance: <1mΩ  
Contact rating: 1A  
Contacts: Silver-plated nickel-silver  
Contact life: >5000 insertions  
Accepts wires: 0.3 to 0.8mm diameter  
**Dimensions:** 172 x 38.5 x 8mm thick

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FD31J	Plugblock RH10S	£5.940	£3.520	£2.990	£6.990

**Business Account Holders**  
No Delivery Charges for any order

**Silver Plated Bus Strip Type RH-5DS**



For use as a bus strip with the RH-10S plugblock. This strip clips onto either side of RH-10S. Further blocks RH-10S can be clipped onto the far side of each RH-5DS. The block has a total of 100 contacts arranged in 4 interconnecting strips of 25 sockets.

**Specification as RH-10S.**

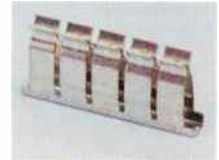
**Dimensions:** 172 x 12.5 x 8mm thick.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FD30H	Plugblock RH5DS	£1.710	£1.310	£1.060	£2.010

**Contact Strip**

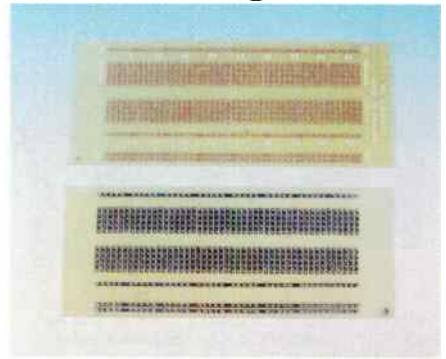
A single strip of five inter-connected contacts for replacement in our Professional Plugblock and Bus-Strip Plugblock.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	100+	1+
YR86T	Plugblock Contact Strip	£0.442	£0.283	£0.243	£0.520

**Professional Plugblock PCB**



An SRBP circuit board printed and punched in the same layout as our Professional Plugblock with tinned copper strips. When a prototype circuit is working properly it may be transferred lead for lead from the plugblock to the pcb for permanence.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YR87U	Plugblock PCB	£3.100	£2.050	£1.750	£3.650

**Businesses and Government Establishments – open a Maplin MPS Account**

Just complete form at back of catalogue

## Multi-Board



A novel plugblock having four separate strips which may be clipped together to form various configurations. For example the strips can be clipped together to form a 15.2mm or a 7.62mm centre channel for different size ICs. The pack consists of two strips each having 64 rows of 5 interconnected strips and two strips each having 4 rows of 25 interconnected strips. Further boards may be clipped on to make even larger arrays. Sockets are on a 2.54 x 2.54mm matrix. The plugblock provides a total of 840 contacts making this board exceptional value for money. The bracket described below fits onto this board.

**Specification:**  
 Body material: ABS polymer  
 Contact resistance: <10mΩ  
 Contact rating: 1A  
 Contacts: Nickel-silver  
 Contact life: >5000 insertions  
 Accepts wires: 0.3 to 0.8mm diameter  
**Dimensions:**  
 Large block: 172 x 21.5mm  
 Small block: 172 x 12.7mm  
 All plugged together: 172 x 68.5mm  
 Thickness: 8.5mm

Retail Unit Price each (inc. VAT).

Order Code	Type 1980	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FD29G	Multiboard Plugblock	£8.500	£4.510	£3.910	£9.990

## Silver Plated Plugblock Type RH-21B



A plugblock comprising one RH-10S and two RH-5DS plugblocks mounted on an attractive blue base with three terminal posts and a component bracket. This unit thus provides a total of 840 contacts. Specification as RH-10S above.  
**Dimensions:** 190 x 118 x 19mm thick.

Retail Unit Price each (inc. VAT).

Order Code	Type 1989	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YU79L	Plugblock RH21B	£10.730	£5.910	£5.070	£12.610

## Silver Plated Plugblock Type RH-32S



A plugblock comprising two RH-10S and three RH-5DS plugblocks mounted on an attractive blue base with three terminal posts and a component bracket. This unit thus provides a total of 1580 contacts.  
**Specification:** as RH-10S above.  
**Dimensions:** 190 x 168 x 19mm thick.

Retail Unit Price each (inc. VAT).

Order Code	Type 1991	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FD32K	Plugblock RH32S	£17.940	£9.180	£7.860	£21.090

## Silver Plated Plugblock Type RH-53S



A plugblock comprising three RH-10S and five RH-5DS plugblocks mounted on an attractive blue base with four terminal posts and a component bracket.

This unit thus provides a total of 2420 contacts.

**Specification:** as RH-10S above.  
**Dimensions:** 190 x 250 x 19mm thick.

Order Code	Type 1998	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YU57M	Interface Plugblock	£23.200	£18.740	£17.120	£27.260

## Silver Plated Plugblock Type RH-74S



A plugblock comprising four RH-10S and seven RH-5DS plugblocks mounted on an attractive blue base with four terminal posts and a component bracket. This unit thus provides a total of 3260 contacts.

**Specification:** as RH-10S above  
**Dimensions:** 245 x 270 x 19mm thick.

Retail Unit Price each (inc. VAT).

Order Code	Type 1990	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YU23A	Plugblock RH74S	£28.340	£17.060	£14.620	£33.310

## Silver Plated Interface Plugblock Type RH-34



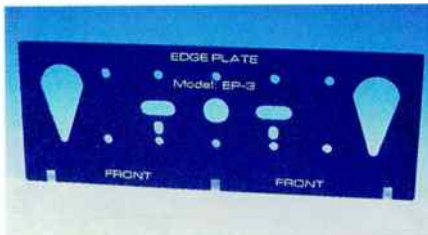
A plugblock comprising three RH-10S and four RH-5DS plugblocks mounted on an attractive blue base with four terminal posts, a component bracket and two 25-way D-connectors one male, one female. The two 25-way D-connectors are mounted on a removable plate. This unit provides a total of 2320 contacts.

**Specification:** as RH-10S above  
**Dimensions:** 230 x 255 x 19mm thick.

Retail Unit Price each (inc. VAT).

Order Code	Type 1993	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YU58N	Interface Plugblock	£37.800	£23.960	£20.540	£44.420

## Component Bracket EP-3



A clip-on component support bracket for use with the RH-10S plugblock. It clips onto either edge in place of the RH-5DS bus strip. The bracket has ten 4mm diameter holes, two 4mm x 6mm slots, two 6mm x 15mm slots, one 11mm diameter hole and two tapered holes 4mm to 19mm diameter. This enables potentiometers, rotary and toggle switches, lampholders and other components normally mounted on panels to be used with the plugblock.  
**Dimensions:** 172 x 65 x 1.75mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1987	Price each exc. VAT			inc. VAT each
		1+	10+	100+	
FD33L	Bracket EP-3	£0.936	£0.331	£0.284	£1.100

**All Customers**  
 No additional freight charges for heavy items

## Advanced Solderless Breadboard System



A range of solderless breadboard modules that can interconnect to suit individual requirements. The basic board AD-01 consists of four blocks of six columns of 28 rows, the sockets in each row being interconnected. The blocks are a standard DIP size apart, although MSI and LSI type chips can be used. At both ends of the blocks, there are two power busses, the 'Red' bus is made up of two separate rows of 12 connecting sockets, and the 'Black' bus is one row of 24 connecting sockets. There is an additional matrix of 30 by 6 sockets for non-dip type components, the six sockets in the vertical plane are interconnected. Each socket will accept solid wire from 20 to 30 swg (0.3 to 0.8mm). The base has a 'sticky' covering to hold the board firm on a workbench or surface. The AD-10 power block has 5 individual screw terminals that will accept 4.5mm Y-terminal, stripped wire or 4mm banana plug. Each terminal is connected to two sockets. The power block will snap lock onto the AD-01 base board to allow connections to the required power bus. The power block has the same 'sticky' base. After use the modules can be unlocked and remade into a different configuration.

AD-10 is 80 x 30mm. AD-01 is 117 x 80mm.  
AD-11 is one AD-01 and one AD-10. Size: 147 x 80mm.  
AD-12 is two AD-01 and one AD-10 mounted on a blue base board. Size: 183 x 168mm.



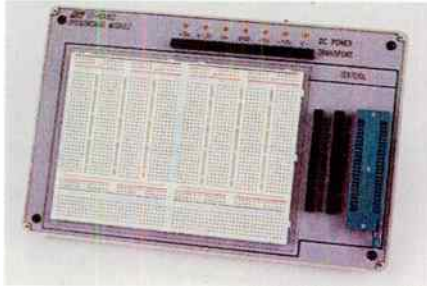
AD-14 is four AD-01 and one AD-10 mounted on a blue base board. Size: 335 x 168mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BZ13P	Breadboard AD-01	£6.700	£3.990	£3.560	£7.880
BZ12N	Power Block AD-10	£3.940	£2.490	£2.050	£4.630
BZ14Q	Breadboard AD-11	£9.870	£5.970	£5.430	£11.600
BZ15R	Breadboard AD-12	£15.800	£10.050	£9.130	£18.570
BZ16S	Breadboard AD-13	£19.750	£13.420	£12.200	£23.210
BZ17T	Breadboard AD-14	£25.680	£17.140	£15.580	£30.180

## Breadboard Module



A universal breadboard module that has been designed for students and professionals who need to perform analogue and digital experiments, and development work. The unit consists of two AD-01 (BZ13P) breadboards which have silver-coated spring terminals, and are designed to accept solid wire of 0.3mm to 0.8mm diameter. A 40-pin ZIF socket allows the breadboard to be used with large ICs such as RAM, ROM etc. Next to the ZIF socket there are two banks of 40 sockets, and every pin of the ZIF socket is connected to two of these sockets. These clearly marked banks of 40 sockets can be used to connect to the breadboards, or for taking measurements etc. The module has six independent 2mm power supply sockets (see Connectors Section for suitable plugs), marked  $\pm 5V$ ,  $\pm 12$  and  $\pm V$ , and a matching 0V socket. The  $\pm 5V$  and  $\pm 12V$  rails have reverse protection diodes and decoupling and filtering capacitors fitted, and the  $\pm V$  rails have reverse protection diodes. All the rails are connected to their own bank of ten sockets for connection to the breadboards or to the ZIF connecting sockets. Each breadboard has four power busses and provision for accepting MSI, LSI, and all DIP size chips in CPU bus connection. The module is housed in a durable, scratch-proof, plastic case with four rubber feet. Size 254 x 164 x 40mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CK50E	Breadboard + Zif	£54.230	£49.000	£47.890	£75.480

## Silver Plated Bus Strip AD-4D



A high-quality silver plated bus strip, type AD-4D. The contacts are arranged in two rows, 24 black and two sets of 12 red. Can be clipped to breadboards

AD-01(BZ13P), AD-10(BZ12N), AD-100(AG08J), AD-101(AG09K) and AD-102(AH10L), or other blocks of AD-4D.  
The blocks can be attached to a suitable clean flat surface with the self-adhesive pad on the base.  
Dimensions: 81 x 12 x 10mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AG07H	AD4D Plugblock	£1.260	£0.531	£0.483	£1.490

## AD-100 Breadboard



This breadboard consists of two sections; one section of 30 blocks of six rows labelled 'A' to 'F', and an identical section labelled 'G' to 'L'. Can be connected to AD-01(BZ13P), AD-4D(AG07H), AD-10(BZ12N), AD-101(AG09K) and AD-102(AG10L), or other blocks of AD-100(AG08J).  
Dimensions: 42 x 83 x 10mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AG08J	AD100 Plugblock	£2.110	£1.230	£1.120	£2.490

## AD-101 Breadboard



This breadboard is constructed from one of AD-4D(AG07H) and one of AD-100(AG08J) complete with a self-adhesive pad for attaching to a suitable surface. The breadboard can also be attached to AD-01(BZ13P), AD-4D(AG07H), AD-10(BZ12N), AD-100(AG08J) and AD-102(AG10L), or other blocks of AD-101.  
Dimensions: 83 x 52 x 10mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AG09K	AD101 Plugblock	£2.990	£1.660	£1.510	£3.520

## AD-102 Breadboard



This breadboard is constructed from two of AD-4D(AG07H) and one of AD-100(AG08J) in between. A self-adhesive pad is attached to the rear of the breadboard. Can also be connected to AD-01(BZ13P), AD-4D(AG07H), AD-10(BZ12N), AD-100(AG08J), AD-101(AG09K), or other AD-102 blocks.  
Dimensions: 62 x 83 x 10mm.

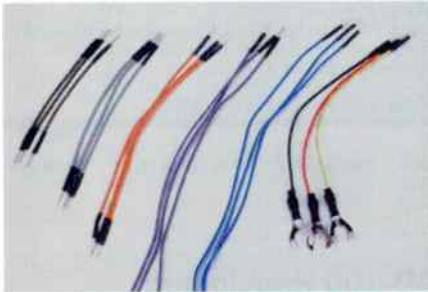
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AG10L	AD102 Plugblock	£4.060	£2.010	£1.830	£4.780

AD-13 is three AD-01 and one AD-10 mounted on a blue base board. Size: 265 x 168mm.



## Flexible Jumper Wires



Packs of flexible jumper wires for use with our plugblocks. Wires are terminated in hard pins at each end except Spade pack where each wire has a spade terminal on one end for use with terminal posts such as those on XX42V and FD32K. Wires are insulated 11 strands of 0.16mm copper conductor with a 7mm long, 0.6mm diameter pin.

Type	Colour	Flexible length	Overall length
50	Brown	50mm	75mm
70	Grey	70mm	95mm
100	Orange	100mm	125mm
150	Violet	150mm	175mm
200	Blue	200mm	225mm
Spade	-	100mm	128mm

\*Spade pack contains 4 wires coloured red, yellow, green and black.

All packs except spade pack contain 10 wires.

Retail Unit Price each (inc. VAT).

Order Code	Type 2013	Price each exc. VAT			inc. VAT each
		1+	10+	100+	
FS66W	10pk Jump Lead 50	£3.390	£2.000	£1.810	£3.990
FS67X	10pk Jump Lead 70	£3.390	£2.050	£1.870	£3.990
FS68Y	10pk Jump Lead 100	£3.390	£2.110	£1.920	£3.990
FS69A	10pk Jump Lead 150	£3.390	£2.470	£2.250	£3.990
FS70M	10pk Jump Lead 200	£3.390	£2.130	£1.930	£3.990
FS71N	4pk Spade Jump Lead	£1.960	£1.000	£0.909	£2.310

## Jump Wire Kit



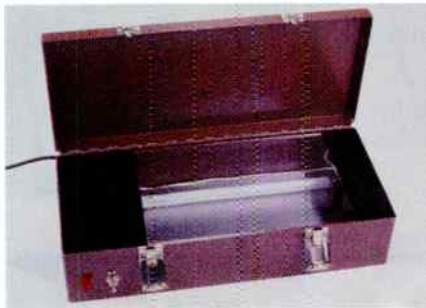
A kit containing 14 different length jumper wires for use with our plugblocks. Wires are stripped and formed at 90° at each end. There are 25 wires of each length:  
 2-54mm (0.1in.) uninsulated, 58mm (0.2in.), 7-62mm (0.3in.), 10-16mm (0.4in.), 12-7mm (0.5in.), 15-24mm (0.6in.), 17-78mm (0.7in.), 20-32mm (0.8in.), 22-86mm (0.9in.), 25-4mm (1in.), 50-8mm (2in.), 76-2mm (3in.), 101-6mm (4in.), 127mm (5in.). Wires are supplied in various colours and are 23swg solid tinned copper wire, and supplied in an attractive plastic case with a blue base and clear hinged lid with each length wire in a separate compartment. Overall size of box 270 x 124 x 30mm high.

Retail Unit Price each (inc. VAT).

Order Code	Type 2014	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FS65V	Jump Wire Kit	£10.850	£8.140	£6.990	£12.760

## PCB MAKING EQUIPMENT

### Ultra-Violet Light Exposure Unit



An attractive metal case finished in brown and containing two 8W ultra-violet tubes. Case size 406 x 177 x 102mm. The lamps are covered by a 4mm glass sheet masked to give a maximum exposure area of 254 x 157mm. The metal lid is hinged and clips down firmly at the front. A pressure pad fixed to the lid ensures an even and firm pressure on the PCB to keep it in good contact with the glass over the whole exposure area. The box incorporates a mains switch and indicator and is connected to the mains (240V AC) via mains lead supplied. The unit must be used with our Photo-etch board and after exposure the board must be developed using sodium hydroxide solution (caustic soda) available from most chemists (e.g. Boots) before etching in ferric chloride in the normal way. Full instructions for use are supplied with the exposure unit.

Retail Unit Price each (inc. VAT).

Order Code	Type 2026	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XY10L 5	UV Exposure Box	£84.250	£42.000	£30.000	£99.000

### Replacement UV Tubes

Spare tubes are available should replacements be required, for UV Exposure Box (XY10L).

Retail Unit Price each (inc. VAT).

Order Code	Type 2027	Price each exc. VAT			inc. VAT each
		1+	4+	12+	
FJ55K	Spare UV Tube Exp Bx	£9.870	£8.000	£6.990	£11.600

### Ultra-Violet Light Exposure Box

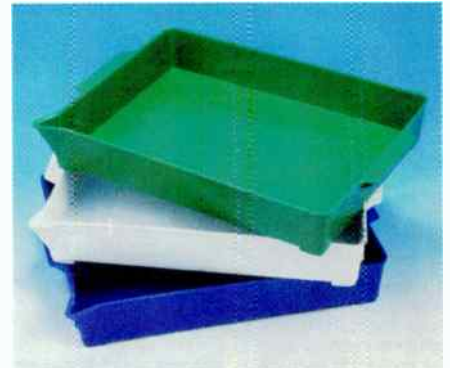


A large ultra-violet light exposure box for PCB production work. The exposure box is constructed from anodised aluminium and has a hinged laminated wood lid with side locks. The inside of the lid has a foam pressure pad to ensure the artwork and PCB are held firmly. The exposure box is equipped with four 15W 43cm ultra violet tubes which are controlled by an electronic exposure timer (adjustable via a front panel slot). The tubes are covered by 4mm glass which provides an exposure area of 369 x 241mm. Overall size: 495 x 95 x 320mm. Power requirements 240V AC 50Hz mains.

Retail Unit Price each (inc. VAT).

Order Code	Type 2030	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XM66W16	Lge UV Exposure Box	£194.890	£169.990	£160.310	£229.000

## Etching Trays



A range of PCB etching/cleaning trays made from 'Talc Feel Polypropylene', available individually in white, blue, green or in a set of all three. Dimensions: 370 x 275 x 60mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 10440	Price each exc. VAT		inc. VAT each
		1+	5+	
CH38R	Etch Tray White	£3.360	£2.750	£3.990
CH39N	Etch Tray Green	£3.360	£2.750	£3.990
CH40T	Etch Tray Blue	£3.360	£2.500	£3.990
CH34M	Etching Tray Set	£11.050	£8.250	£12.990

## 110°C Thermometer



A 300mm long glass mercury thermometer with accurate 1° graduations from -10°C to 110°C Ideal for use with etch tanks and similar applications.

Retail Unit Price each (inc. VAT).

Order Code	Type 13413	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JA60Q	110C Thermometer	£4.860	£3.900	£2.780	£5.720

## Low Cost Etch Tank



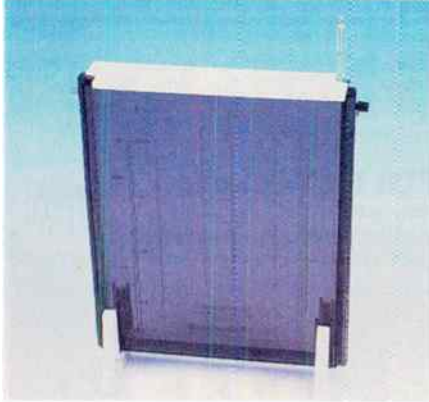
A low-cost PCB etching tank that will accept a PCB up to a maximum size of 200 x 250mm (160 x 250mm if heater used). The super slim translucent tank allows a large board to be etched with the minimum of solution. If the optional heater (JU66W) and pump (YZ69A) are used then etching time can be reduced by up to 80%. The graduated tank requires between 1litre and 1.5litres of ferric chloride at a temperature of approximately 50°C, and is suitable for use with double sided PCBs The

optional thermometer (JA60Q) is ideal for monitoring the solution temperature. Supplied with: brackets, air tube, clips and hanging wire.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ88V	Ni-Cd Slt & Lead	£2.160	£2.540

## Bubble Etching Tank

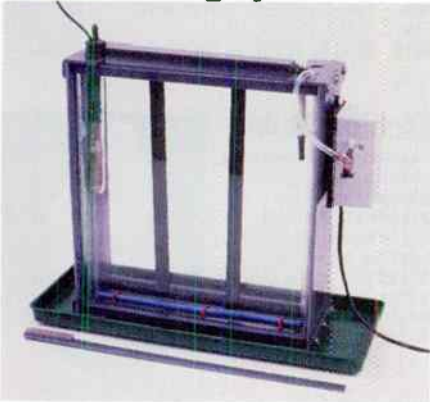


An ingenious and easy to use bubble etch tank. Ideal for development work in laboratories, schools, colleges and universities. The bubble etching tank consists of a smoked acrylic plastic tank, with integral air distribution channel, the PCB being etched may be clearly observed whilst in the tank. Supplied with the tank are two supporting feet which simply clip into place on the tank, a thermometer, air-tube, tank lid and lengths of titanium wire to support the PCB during etching (titanium wire will not be attacked by normal ferric chloride etching solution). Pump and heater are not supplied with the tank and must be purchased separately. Suitable pump and heater (YZ69A) and (JU66W) are available.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
YZ34M	Etch Tank	£37.870	£44.500
YZ69A	Etch Tank Pump	£12.750	£14.890
JU66W	Etch Tank Heater	£9.350	£10.790

## Bubble Etching System



An ingenious and easy to use bubble etch system that will greatly increase the throughput of small scale PCB production. Ideal for development work in laboratories, schools, colleges and universities. The bubble etching system consists of a durable rigid PVC frame to which the component parts are fitted. These are a glass etching tank, a thermostatic heater, a thermometer, an air distribution pipe and a diaphragm pump. A PCB holder, which can accommodate boards up to 180 x 260mm, allows easy insertion and removal of the board to be processed. A drip tray is provided to guard against spillages and a cleaning rod is also supplied to facilitate tank cleaning. The air flow circulates the etchant and this ensures that the temperature is maintained evenly and prevents coldspots. The etchant circulation results in fast and even etching over the surface of the board. The

etching process can be continually monitored through the clear glass tank. The frame has provision for a second identical tank to be added and this could be used for photo-resist developing, washing or as another etching tank. Accessories and spare parts are available separately, see below. Overall dimensions (excluding drip tray) 100 x 340 x 340mm. Power requirements 240V AC 50Hz mains, pump 5W, heater 100W.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XM67X	Bubble Etch Unit	£126.800	£149.000

## Bubble Etch Spare Parts and Accessories

The following items are available as spare parts and also for adding a second tank to the main unit. A PCB holder; a glass tank; a 100W thermostatic heater; a diaphragm pump and an air distribution pipe.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YZ05F	Bble Etch PCB Holder	£11.840	£13.920
YZ06G	Bble Etch Glass Tank	£44.460	£52.250
YZ07H	Bble Etch Heater	£27.660	£32.510
YZ08J	Bble Etch Pump	£24.220	£28.460
YZ09K	Bble Etch Air Dist	£10.850	£12.780

## PCB Component Mounting and Soldering Frame



An ingenious and flexible solution to component insertion and soldering problems. The extruded aluminium frame will hold a PCB with dimensions up to 185 x 235mm. The first stage of PCB assembly is to clamp the board in position using the adjustable clamp bars. The PCB is held firmly by 8 spring clips and the components can now be inserted. Once insertion is complete, the foam padded lid is fitted, which holds the components in position. The frame is then turned over and the underside of the board can be soldered and leads cropped without components falling out. Overall size 260 x 240 x 50mm. Supplied unassembled.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XM72P	PCB Assembly Frame	£44.460	£52.250

## Printed Circuit Board Clamps

A plastic moulded clamp for holding printed circuit boards of up to 3mm max. thickness. The clamp can also be screwed onto a board as part of a jig assembly for testing purposes. The clamp has been designed to be used with the various contact probes, so the PCB is sitting on the probes with the clamps holding the board in place. A lever with a thumb platform allows the PCBs to be removed with ease, whilst a wide base enables the user to screw the clamp into the desired position. Base measures: 34 x 25mm Height to PCB level: 12mm Total height: 30mm

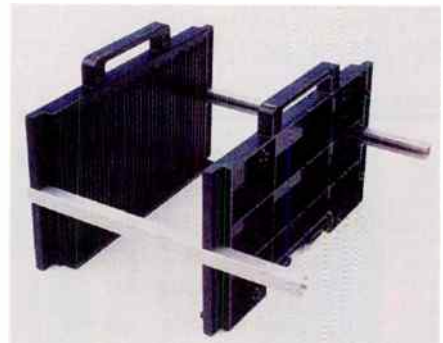


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KU16S	PCB Clamps	£1.320	£1.560

## Conductive Rack for PCBs

CIFF



A modular rack system that has been designed for safely holding PCBs during all stages of assembly, cleaning or testing. The width of each module is easily adjusted from 0 to 290mm, by sliding one side panel along the aluminium extrusion and tightening 2 screws. The module is stackable in all directions so that racks of unlimited height and depth may be constructed. The two front handles are used for holding the assembly, and two back strips are provided which, when fitted, prevent the PCBs from sliding out of the back of the rack. Two moulded hooks are supplied for wall mounting the modules. The plastic sides are antistatic so sensitive devices may be safely stacked in PCBs without special precautions, other than earthing the rack.

### Supplied Parts:

Side assemblies:	2
320mm long aluminium extrusions:	2
Back strip:	2
Wall hooks:	2
Nut holders:	4
Nuts/bolts:	10 sets

Manufacturer's Code	Type	MPS Code
PC-01C	conductive	DH21X

Retail Unit Price each (inc. VAT).

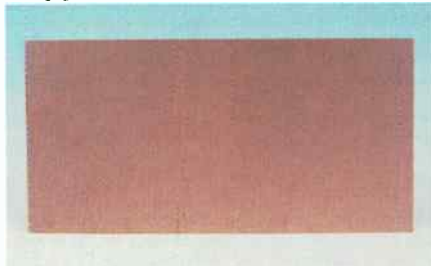
Order Code	Type	Price each exc. VAT	inc. VAT each
DH21X	PCB Conductive Rack	£20.410	£23.990

**Free delivery for all Maplin MPS Business Account Holders!**

(Additional Charge for Guaranteed Next Day Delivery see front of catalogue.)

## ETCHING EQUIPMENT

### Copper-Clad Boards



A range of copper-clad boards suitable for making your own printed-circuit boards.

The following types and sizes are available:

Single-sided SRBP:

- 203 x 102mm (8 x 4in.) (Small single)
- 254 x 152mm (10 x 6in.) (Medium single)
- 305 x 203mm (12 x 8in.) (Large single)

Double-sided SRBP:

- 203 x 102mm (8 x 4in.) (Small double)
- 254 x 152mm (10 x 6in.) (Medium double)
- 305 x 203mm (12 x 8in.) (Large double)

Single-sided Fibreglass:

- 203 x 102mm (8 x 4in.) (Small single)
- 254 x 152mm (10 x 6in.) (Medium single)
- 305 x 203mm (12 x 8in.) (Large single)

Double-sided Fibreglass:

- 203 x 102mm (8 x 4in.) (Small double)
- 254 x 152mm (10 x 6in.) (Medium double)
- 305 x 203mm (12 x 8in.) (Large double)

Retail Unit Price each (inc. VAT).

Order Code	Type 2112	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
HX00A	PCB SRBP Smil Single	£1.060	£0.580	£0.414	£1.250
WF38R	PCB SRBP Med Single	£1.420	£0.960	£0.686	£1.680
WF39N	PCB SRBP Lrg Single	£2.560	£1.720	£1.220	£3.010
FA55K	PCB SRBP Small Doubl	£1.120	£0.720	£0.514	£1.320
FA56L	PCB SRBP Med Doubl	£1.840	£1.150	£0.919	£2.170
FA57M	PCB SRBP Lrg Doubl	£3.080	£1.990	£1.710	£3.620
HX01B	PCB F.Glass Smi Sngl	£1.940	£1.490	£0.990	£2.290
WF40T	PCB F.Glass Med Sngl	£2.660	£1.880	£1.340	£3.130
WF41U	PCB F.Glass Lrg Sngl	£4.060	£2.990	£2.180	£4.780
FA58N	PCB F.Glass Smil Dbl	£1.640	£0.990	£0.786	£1.930
WF42V	PCB F.Glass Med Dbl	£2.450	£1.940	£1.380	£2.880
FA59P	PCB F.Glass Lrg Dbl	£4.110	£2.590	£2.370	£4.830

### Pre-Sensitised Copper-Clad Board



Single and double-sided copper clad SRBP and glass fibre boards coated with a positive photoresist suitable for use with our UV exposure box. The boards are covered with light proof protective film, which should not be removed until the board is used. The PCB should be exposed using our UV exposure box and a circuit overlay transparency. Exposure time will be from 8 to 15 minutes. Mix together 0.5l approx with one teaspoonful of sodium hydroxide (available from most chemists) and pour into a tray (CH38R). Gently rock the exposed PCB in the tray until the unwanted photo resist is dissolved away. Etch the board in a bath of ferric chloride and after rinsing, expose the PCB in the UV box for a further 10 minutes. Wash off all the remaining etch resist in a tray of sodium hydroxide solution.

Sizes Available

Single-sided SRBP	Order Code
100 x 75mm (size 1)	JP55K
160 x 100mm (size 2)	JP56L

300 x 210mm (size 6) JP57M

Single-sided Fibreglass

100 x 75mm (size 1)	FA60Q
160 x 100mm (size 2)	BW19V
220 x 100mm (size 3)	KU13P
233.4 x 160mm (size 4)	KU14Q
233.4 x 220mm (size 5)	KU15R
300 x 210mm (size 6)	FA63T

Double-sided Fibreglass

100 x 75mm (size 1)	FA61R
160 x 100mm (size 2)	FA62S
300 x 210mm (size 6)	FA64U

Retail Unit Price each (inc. VAT).

Order Code	Type 2035	Price each exc. VAT			inc. VAT each 1+
		1+	5+	25+	
JP55K	SRBP P/Etch Smi Sngl	£1.260	£0.790	£0.463	£1.490
JP56L	SRBP P/Etch Med Sngl	£2.260	£1.050	£0.815	£2.680
JP57M	SRBP P/Etch Lrg Sngl	£7.810	£5.120	£3.940	£9.180
FA60Q	F/Glass Size1 Single	£1.690	£0.890	£0.657	£1.990
BW19V	F/Glass Size2 Single	£3.380	£2.360	£1.680	£3.980
KU13P	SRBP Size3 Single	£4.450	£2.990	£2.400	£5.230
KU14Q	F/Glass Size4 Single	£6.110	£4.820	£3.700	£7.180
KU15R	F/Glass Size5 Single	£9.080	£5.990	£5.490	£10.670
FA63T	F/Glass Size6 Single	£11.050	£7.370	£5.940	£12.990
FA61R	F/Glass Size1 Double	£1.860	£0.990	£0.743	£2.190
FA62S	F/Glass Size2 Double	£3.220	£2.290	£1.880	£3.790
FA64U	F/Glass Size6 Double	£10.200	£7.930	£6.390	£11.990

### Student Etch Pack



A basic, beginners etching kit that allows the constructor to produce boards in a 'freehand' style, quickly and easily. The kit offers a considerable saving over buying the parts separately.

Contents

PCB etch resist marker pen	1	(HX02C)
FeCl etching fluid 250ml	1	(WF10L)
SRBR board 203 x 102mm	5	(HX00A)
Green etch tray	1	(CH39N)

Retail Unit Price each (inc. VAT).

Order Code	Type 13405	Price each exc. VAT		inc. VAT each 1+
		1+	5+	
GT07H	Student Etch Pack	£11.900	£9.990	£13.990

### PCB Starter Kit

Press-n-Peel



A comprehensive kit of parts to produce professional looking PCBs easy and quickly. The kit includes the 'Press-n-Peel' transfer system for marking out the boards prior to etching. Full instructions included.

Kit contents

1 pack	assorted single-side copper boards (10 x 8, 9 x 6, 8 x 6, 7 x 5, 6 x 4, 5 x 3)
1 off	tray for etching boards
1 off	tray for rinsing boards
1 off	500g SP etchant
1 off	permanent etch resist pen
5 off	sheets of Press-n-Peel
1 off	100ml approx. of Press-n-Peel stripper
1 pack	10 paper wipes
1 pair	safety glasses
2 pairs	latex gloves
1 pack	data sheets inc. Health and Safety

Retail Unit Price each (inc. VAT).

Order Code	Type 17252	Price each exc. VAT			inc. VAT each 1+
		1+	3+	5+	
MC50E1	Starter Kit	£55.310	£52.500	£51.000	£64.990

### PCB Etch Powder

Press-n-Peel



- ★ Safer, and excellent value compared to ferric chloride
- ★ Excellent stability
- ★ Etching time is 5 to 10 minutes at 45°C
- ★ 1kg makes 5l of etch solution

This sodium persulphate based etch powder has been specifically developed for etching copper laminate used in the electronics industry. The product exhibits excellent stability in use leaving surfaces clean, even and free of staining. 1kg will make 5l of etch solution, or 200g per litre. 4.5l of water is heated to between 40 to 50°C and the powder is slow stirred into the water. When dissolved, top up to 5l with water. The solution should last between 4 to 8 weeks, but is dependent upon the volume of copper in solution.

N.B To prevent premature breakdown of the solution, do not operate in excess of 50°C. Supplied in 1kg tubs.

Retail Unit Price each (inc. VAT).

Order Code	Type 17355	Price each exc. VAT			inc. VAT each 1+
		1+	3+	5+	
MC49D	Etchant 1kg	£11.050	£10.500	£9.950	£12.990

### Etching Fluid

A plastic bottle containing 250ml of high concentration ferric chloride etching fluid. The fluid can be used as supplied, but should be diluted with 250ml of water before use (i.e. one part etchant, one part water). Childproof container.



Retail Unit Price each (inc. VAT).

Order Code	Type 2102	Price each exc. VAT			inc. VAT each 1+
		1+	12+	36+	
WF10L	Etcher Fluid	£6.900	£4.890	£4.100	£8.110

**Business Account Holders**  
No Delivery Charges for any order



## Ferric Chloride Crystals

Electrolube



A pack of Ferric Chloride (FeCl<sub>3</sub>) crystals for etching copper clad boards. Packet contains sufficient crystals to make one pint of solution. Dissolve in 250ml of warm water. Store and etch in plastic or glass vessels. With regular stirring, etching will take about 20 minutes or longer depending on how many times solution has been used before. One pint will etch about 2260sq.cm. (350sq.in.).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XX12N	Etch Crystals	1+ £6.110 10+ £3.990 50+ £3.550	1+ £7.180

## Printed Circuit Board Etch Resist Marker Pen



A nylon tipped pen for fast fabrication of perfect printed circuit boards. The ink adheres perfectly to copper and is completely resistant to ferric chloride and other usual etchant solutions. Draw the planned circuit onto a thoroughly cleaned copper laminated board and allow to dry. Then immerse the board in etching fluid until the copper is dissolved. The ink can then be removed with Degreasing Solvent or PCB Cleaner, and the circuit board is then ready to be drilled and assembled. This pen is capable of producing thin, delicate lines allowing for quite a condensed track layout if required. It can also be used as an indelible marker felt tip pen for an enormous range of materials especially metals.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HX02C	PCB Pen	1+ £1.940 25+ £1.490 100+ £0.990	1+ £2.290

## Dalo Etch Resist Marker Pen



An etch-resist marker pen similar to the one above, but having better adhesion to the board if it is not perfectly clean of grease and oxides.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FP40T	Dalo Pen	1+ £3.390 12+ £1.990 120+ £1.890	1+ £3.990

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## Polishing Block



Block is ultrafine non-metallic polishing compound bonded in an elastic material which wears evenly. It cleans, degreases and polishes in one clean simple procedure, totally eliminating the need for abrasive pastes, water washes and solvent washes. It has been designed primarily for cleaning copper-clad boards prior to application of resist inks, or finished circuits prior to tin/silver/gold plating. It is equally useful for cleaning contacts, switch gears, potentiometers, connectors, adjustable transformers etc. Supplied individually.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HX04E	Polish Block	1+ £2.370 12+ £1.790 120+ £1.310	1+ £2.790

## Positive Photoresist Aerosol Spray

Electrolube

An aerosol can of positive photoresist for coating copper-clad board. To use, first use a fine grade emery cloth or polishing block to remove dust, dirt, grease, fingermarks and oxide from the copper surface. Rinse well and dry thoroughly. The coating must be applied in subdued light. Shake the can, place the board horizontally in a dust-free area, then holding the can at a 30° to 45° angle, from a distance of 20 to 30cm spray with smooth strokes in a zig-zag pattern. Leave in low light for 5 minutes until touch-dry. Move to a dark well-ventilated area and leave for 24 hours (or heat to 80°C for 15 minutes, but do NOT use an open flame or incandescent element). The board may now be used in the normal way, with our UV Light Box. Available in 150g/200ml cans.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YM62S	Pos Photores 150g	1+ £8.500 12+ £5.890 36+ £5.080	1+ £9.990

## Universal PCB Developer

A sodium-hydroxide free PCB developer that is supplied in free flowing odourless granules and is ready for dilution with water. Suitable for single or double sided PCBs, and all applications such as prototype work is 10g of granules with 100ml of water, or the full 250g would make up to 2.5l of developer.

The ideal temperature for dilution and developing is room temperature, i.e. approximately 20°C.

Development time will depend on the complexity of the board design, dilution ratio of the solution and the temperature.

After development, the board should be rinsed thoroughly and dried either in air or an oven. Always wear protective gloves and goggles and avoid contact with the eyes and skin, but in case of contact, flush liberally with water.

Ensure all containers and utensils used with this product are made from strong chemical resistant plastics or glass.

Do not use any equipment made from metal.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AP01B	PCB Developer	1+ £6.800 12+ £4.290 36+ £3.780	1+ £7.990

## Photoresist Developer

Electrolube

For use with positive photoresist PCBs, the developer must be diluted 4:1 with water before use. Place the prepared board in the solution for 30 to 90 seconds at 20°C. Development is complete when the shiny copper shows through on the non-image areas. Rinse the board thoroughly with water to halt the development process. When the board is dry it is ready for etching. Supplied in 250ml bottle.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YJ38R	Photoresist Devlop.	1+ £4.240 12+ £3.090 36+ £2.170	1+ £4.990

## PCB Cleaner

Electrolube

An aerosol solvent especially for removing contaminants and oxidation from printed circuit board conductors, and removing flux residues that result from soldering operations. Before using on plastics, test a small area first. Supplied in 200ml and 400ml aerosol cans.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM83E	Fluxclene	1+ £4.280 12+ £2.990 36+ £2.410	1+ £5.030

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC98G	Fluxclene 400ml	1+ £4.900 5+ £4.660 10+ £4.410	1+ £5.760

## Black Tak Kit

Loctite

A tough instant adhesive for strain relief and mounting larger components to PCBs. Black Tak adhesive with activator cures fast at room temperature and provides tough joints resistant to high temperature. Withstands impact shocks, cleavage loads and stresses caused by thermal shock. Uses include mounting large components to PCB, strain relief large components, elimination of lead stress on high profile components, strain relief on cable connections and reinforcement of terminal wires.

Kit contains:

- ★ 20g adhesive 4105
- ★ 25ml spray activator 7455
- ★ 2 dispensing needles

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YC08J	Black Tak Kit	1+ £20.720 10+ £19.170 25+ £18.430	1+ £24.350

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**Discoveries**  
THE WORLD OF ELECTRONICS AND BEYOND

## Tak Pak Kit

**Loctite**

An instant adhesive for wire tacking and component mounting. Tak Pak Kit gives excellent performance on substrates used in PCB assemblies.

Tak Pak high viscosity instant adhesive with activator cures in seconds at room temperature. Withstands high temperature and thermal cycling. Use for wire tacking and anchoring and component mounting.

**Kit contains:**

- ★ 20g adhesive 382
- ★ 25ml spray activator 7455
- ★ 2 dispensing needles



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YC07H	Tak Pak Kit	1+ £19.260 10+ £19.170 25+ £18.430	1+ £22.640

## Output Kit

**Loctite**



A thermally conductive adhesive which cures rapidly at room temperature. It is designed for bonding electronic components to heat sinks or PCBs. The high thermal conductivity provides excellent heat dissipation.

**Kit contains:**

- ★ 25ml adhesive 315 in syringe
- ★ 18ml activator in brush top bottle

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YC06G1	Output Kit	1+ £26.190 10+ £25.200 25+ £24.600	1+ £30.780

## Tempflex Kit

**Loctite**



A completely non-corrosive sealant adhesive paste for use on corrosion sensitive substrates.

The single component translucent paste cures at room temperature to form a high strength flexible rubber. Adhesion to metals, plastics, ceramics and glass is excellent. Tempflex meets MIL A 46146B, Group II, Type 1. The flexible material properties remain constant from -55°C to +300°C and withstand long term exposure at 250°C.

Especially designed for critical applications on military, industrial and automotive electronics under harsh environments. Uses include stress relief, bonding PCBs to housings, sealing and gasketing electrical devices, protecting and encapsulating corrosion sensitive parts and repairing silicone rubber gaskets.

**Kit contains:**

- ★ 40ml adhesive sealant 5145 in tube
- ★ 2 dispensing needles

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YC09K	Tempflex	1+ £6.540 10+ £6.080 25+ £5.850	1+ £7.690

## Peelable Coating Mask

**Electrolube**

A flexible, solvent resistant latex for masking components, connectors and other items prior to applying a conformal coating, to ensure that sensitive items, and areas requiring further processing are not coated. The mask can be applied to adjustable pots, IC sockets etc. to prevent ingress of coating. The high film strength of the mask means that it can be peeled away by hand without breaking or leaving residues. Note that this product contains ammonia and therefore must be applied and allowed to dry in a well-ventilated area. Supplied in 250ml bottles.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YT48C	Peelable Coat 250ml	1+ £5.420 12+ £3.990 36+ £3.550	1+ £6.370

## Bloc'Lube

**Electrolube**

A one part, air drying, tamper evident seal for screws, nuts, tuneable items and other "factory fixed" components where evidence of unauthorised access is required. It is also ideal for application onto rotary controls to ensure that settings do not move under vibration loads etc. Available as 15ml bottle with integral brush in colours red or green.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC36P	Bloc'lube Red	1+ £2.050 5+ £1.960 10+ £1.860	1+ £2.420
FC37S	Bloc'lube Green	1+ £2.050 5+ £1.960 10+ £1.860	1+ £2.420

## Clear Protective Lacquer

**Electrolube**

A general purpose convenient coating designed to protect PCB's from environmental attack. Also ideal for protecting ferrous metals from corrosion. Gives a high quality glossy finish, good resistance to humidity, good surface resistivity and circuits can be resoldered through the lacquer. 100% Ozone Friendly. Supplied in 200ml aerosol.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YB75S	PCB Lacquer	1+ £3.180 5+ £3.020 10+ £2.620	1+ £3.740

**All Customers**  
No additional freight charges for heavy items

## Acrylic Conformal Coating

**Electrolube**

A flexible transparent acrylic conformal coating which can be used to protect printed circuit boards and sensitive electronic circuitry from the effects of humidity and corrosion. Ideal for sealing EHT and high voltage conductors, and can be used for additionally insulating automotive HT circuits against the weather, for example. Does not crack or discolour, conforms to international specifications. Disappears quickly and easily on the application of a soldering iron, hence the circuit is not difficult to service or modify afterwards. Supplied in a 400ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM82D	Acrylic Confl Coating	1+ £6.400 12+ £4.690 36+ £3.670	1+ £7.530

## High Performance Acrylic Conformal Coating

**Electrolube**

A flexible transparent acrylic coating specially formulated for the protection of electronic circuitry to meet the highest defence and aerospace industry requirements. Possesses excellent adhesion under all climatic conditions. It is resistant to mould growth and has a temperature range of -60 to +130°C. It has excellent dielectric properties and is fluorescent under ultra-violet light as an aid to inspection. Can be soldered through without fear of highly toxic gases being produced e.g. isocyanates. It is non-corrosive to cadmium and zinc plate (contains no phenols). It can be totally removed with 1.1.1 trichloroethane. Supplied in 200ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YT50E	HPA Conformal Coat	1+ £6.700 12+ £5.340 36+ £4.030	1+ £7.880

## Very High Temperature Conformal Coating

**Electrolube**

A flexible, transparent modified silicone resin conformal coating specially formulated for the protection of electronic circuitry to meet the highest defence and aerospace industry requirements. Possesses excellent adhesion under all climatic conditions and is resistant to a wide range of solvents. Excellent resistance to mould growth and ultra-violet light. Wide temperature range from -70 to +200°C.



The coating produces a high gloss finish, exceptionally low oxygen permeability and high surface resistivity. It has good dielectric properties at all frequencies, and is fluorescent under ultraviolet

light as an aid to subsequent inspection. Can be soldered through without fear of highly toxic gases being produced, e.g. isocyanates. Non-corrosive to cadmium and zinc plate (contains no phenol). Supplied in 200ml aerosol can.

Retail Unit Price each (inc. VAT).

Order Code	Type 2002	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
YP74R	-70x200 Conformal	£7.390	£5.390	£4.460	£8.690

## ETCH RESISTANT DRAFTING AIDS

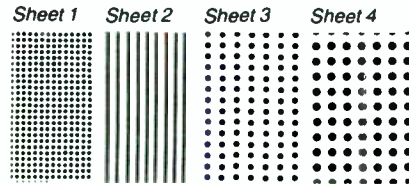
### PCB Transfers

A range of high quality rub-down black symbols suitable for making printed circuit boards. Available as individual sheets or one of each in a starter kit of fourteen sheets. All symbols are acid resistant, have a clear sharp outline and are fully lightproof. The specially designed transparent symbol carrier prevents stresses being imparted to the symbol during application and eliminating symbol edge tearing. The carrier retains its shape even during heavy handed application or the use of unsuitable rub-down tools. The customised symbol adhesive prevents unwanted side-effects and guarantees optimum symbol adhesion. Sheet size 210 x 94mm.

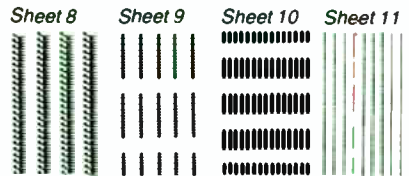
#### How to use:

Rub down the printed circuit board with Polish Block or fine abrasive paper to give a good finish to the copper surface. Do not use liquid cleaners or water and keep the board dry and clean whilst you are working. Mask the unwanted symbols on the transfer card being used, with the release paper backing, or cut out the required symbol place in position on the printed circuit board (tacky side down), then rub the reverse side of the symbol with a ball pen or soft pencil lead. Lift off the clear film and smooth over by rubbing the release paper over the symbol to make sure there is no lift at the edges. The printed circuit board may now be etched to remove the unwanted copper. When complete, wash under water and rub the transfer away with Polish Block, fine wire wool or scouring powder. You will then have a professional looking printed circuit board, ready to drill and assemble.

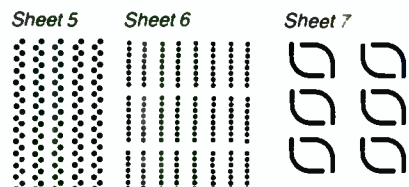
#### Sheet details:



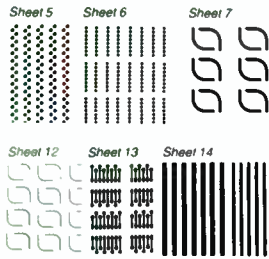
- Sheet 1 2176 circle pads 1.6 x 0.38mm.
- Sheet 2 20 straight lines 170 x 1.61mm.
- Sheet 3 480 circle pads 2.54 x 0.45mm.
- Sheet 4 351 circle pads 3.6 x 0.79mm.



- Sheet 5 210 transistor pad sets, each circular pad is 2.4 x 0.32mm.
- Sheet 6 45 16 pad DIL ICs spaced at 7.62 x 2.54mm (0.3 x 0.1in.), each circular pad is 2.16 x 0.38mm.
- Sheet 7 90° bend lines, fifteen bends 2.25mm wide, twelve bends 3.0mm wide.



- Sheet 8 8 rows of 68 pairs of pads with 'between-pad' tracks, pads are 2.54mm diameter.
- Sheet 9 77 sets of 8 pads 1.6 x 0.34mm with through tracks for DIL IC's.
- Sheet 10 0.1 inch spaced edge connector fingers, 12 rows of 32 fingers.
- Sheet 11 21 straight lines 170 x 0.65mm.



- Sheet 12 90° bend lines, 24 bends 0.65mm thick, 24 bends 1.61mm thick.
  - Sheet 13 33 sets of DIL IC pads with leads and offset holes.
  - Sheet 14 7 straight lines 170 x 3.0mm, 8 straight lines 170 x 2.25mm.
- The kit contains one each of all of the 14 sheets listed.

Retail Unit Price each (inc. VAT).

Order Code	Type 2140	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XH66W	Transfer Sheet 1	£0.672	£0.390	£0.290	£0.790
HX46A	Transfer Sheet 2	£0.672	£0.390	£0.290	£0.790
HX47B	Transfer Sheet 3	£0.672	£0.390	£0.290	£0.790
XH67X	Transfer Sheet 4	£0.672	£0.390	£0.290	£0.790
HX49D	Transfer Sheet 5	£0.672	£0.390	£0.290	£0.790
HX63T	Transfer Sheet 6	£0.672	£0.390	£0.290	£0.790
HX64U	Transfer Sheet 7	£0.672	£0.390	£0.290	£0.790
XH68Y	Transfer Sheet 8	£0.672	£0.390	£0.290	£0.790
XH69A	Transfer Sheet 9	£0.672	£0.390	£0.290	£0.790
HX67X	Transfer Sheet 10	£0.672	£0.390	£0.290	£0.790
HX68Y	Transfer Sheet 11	£0.672	£0.390	£0.290	£0.790
HX63E	Transfer Sheet 12	£0.672	£0.390	£0.290	£0.790
HX64F	Transfer Sheet 13	£0.672	£0.390	£0.290	£0.790
XH70M	Transfer Sheet 14	£0.672	£0.390	£0.290	£0.790
HX44X	Transfer Kit	£7.480	£5.990	£4.890	£8.790

### Black Tapes

0-031in.	0-100in.
0-040in.	0-125in.
0-050in.	0-150in.
0-062in.	0-200in.
0-080in.	

A black crepe tape with a matt finish for high quality photographic reproduction. The crepe tape can be made into tight curves without distortion at the edges. A good adhesion is obtained even on irregular surfaces. Tapes are on 16.46m rolls. The following types are available.

Retail Unit Price each (inc. VAT).

Order Code	Type 6311	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BW21X	Track Tape 31	£1.690	£1.390	£0.990	£1.990
BW22Y	Track Tape 40	£1.690	£1.390	£0.990	£1.990
BW23A	Track Tape 50	£1.690	£1.390	£0.990	£1.990
BW24B	Track Tape 62	£2.110	£1.790	£1.080	£2.490
BW25C	Track Tape 80	£2.110	£1.790	£1.080	£2.490
BW26D	Track Tape 100	£2.110	£1.790	£1.080	£2.490
BW27E	Track Tape 125	£2.110	£1.790	£1.160	£2.490
BW28F	Track Tape 150	£2.540	£2.190	£1.430	£2.990
BW29G	Track Tape 200	£2.540	£2.190	£1.430	£2.990

### Black Circles

Die-cut circles manufactured in black crepe and supplied in the form of a roll with half of each symbol stuck to a clear carrier tape. To apply, separate the circles from the carrier, release the

film from its protective backing paper and position carrier with circle on the artwork or PCB. Then having applied pressure to the circle, gently pull away the carrier film at an angle leaving the circle securely in position. This method is undoubtedly the most simple, accurate and speedy way to make PCB artwork.

Circles are supplied in rolls of 250 circles.

The following sizes are available.

Outside dia. (in)	Inside dia. (in)	Outside dia. (in)	Inside dia. (in)
0-075	0-02	0-15	0-04
0-100	0-03	0-2	0-04
0-125	0-03		

Retail Unit Price each (inc. VAT).

Order Code	Type 2124	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BW30H	Pad 075	£3.390	£2.490	£1.570	£3.990
BW31J	Pad 100	£3.390	£2.490	£1.590	£3.990
BW32K	Pad 125	£3.390	£2.490	£1.450	£3.990
BW33L	Pad 150	£3.390	£2.490	£1.570	£3.990
BW34M	Pad 200	£3.390	£2.490	£2.020	£3.990

### Dual-In-Line IC Clusters

Sixteen circles arranged in a 2.54 x 7.62mm (0.1 x 0.3in.) pitch (1:1) or a 5.08 x 15.2mm (0.2 x 0.6in.) pitch (2:1), to suit ICs up to 16-pin DIL.

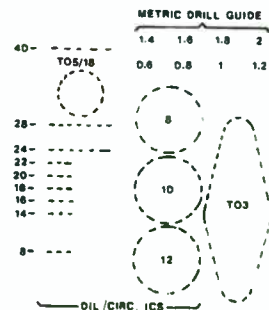
Symbols can be laid end to end and/or split to make them wider to suit any size IC package.

These pads offer a considerable time saving over using individual pads. Supplied in rolls of 100 16-pin DIL grouped symbols. These pads are not suitable for use directly on PCBs, only for artwork masters.

Retail Unit Price each (inc. VAT).

Order Code	Type 2125	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BW39N	IC Pads 100	£6.800	£4.650	£3.990	£7.990
BW40T	IC Pads 200	£8.500	£6.030	£5.990	£9.990

### Drafting Template



A clear plastic template to speed the job of placing pads for PCB artworks. Holes are laid out over the template in various patterns and pitches; simply lay the template over the artwork or PCB, put a pin through the appropriate holes to lightly mark the position, remove the template and put the pads down centred on the marks. The following patterns are marked on the template. DIL packages up to 40-pin at 0.3in and 0.6in. pitch as applicable, TO5, TO18 and TO3 transistor packages including fixing holes for TO3, 8-pin, 10-pin and 12-pin round IC packages. In addition there are a series of precision holes to check drill sizes between 0.6mm and 2mm where drills are often too small to be marked on the shank. Manufactured in clear plastic. Overall size: 64 x 51mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 2127	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BW41U	Drafting Template	£1.690	£1.490	£1.290	£1.990

## Drafting Film Pack



A pack containing 5 sheets of polyester drafting film and one sheet of 2.54 x 2.54mm (0.1 x 0.1in.) grid. Lay one sheet of film on the grid which then assists in exact placing of the tracks and pads that make up the artwork. The piece of film with artwork on it is then placed on the UV exposure unit with the coppered photoresist board on top of it and the lid closed. The artwork may be altered or re-used whenever required. Sheet size: 248 x 150mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BW20W	Phot-Etch Drafting Pk	£3.940	£2.790	£1.930	£4.630

## Press-n-Peel PCB Transfer System



RECENTLY INTRODUCED

Create high precision professional PCB layouts quickly and easily. These 8 1/2" x 11" ("letter" setting on printers) sheets are designed for use with Laser printers or photocopiers. Print directly from a graphics program or photocopy (after reversing the image as necessary) onto the sheet. Then simply iron onto a copper-clad board using your domestic iron (steam setting not recommended). Leave to cool for a few minutes then peel the sheet from the board leaving the layout ready to be etched as normal. Supplied in a pack of 5 sheets.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
AB15R	Press-N-Peel PCB	£12.750	£12.120	£11.800	£14.990

## PCB DESIGN SOFTWARE

### PCB Designer for Windows



- ★ Easy to use – you can be up and running in minutes
- ★ Familiar Windows layout and toolbar operation

### ★ Excellent value for money

PCB Designer is an MS Windows application that enables you to design artwork for producing Photoetch PCBs. Its main design goal is to make this process as easy as possible for the user. It is written for Windows 3.1 in enhanced or standard mode, with 2MBytes of extended memory. Since it is a Windows application it will support any printer for which you have a Windows driver. The program emulates a conventional drawing board, onto which you can place pads, tracks, ICs, etc. For example, to add an IC to the board you click on the IC button (there are predefined sizes of 8, 14, 16 and 20 pins and a custom size) on the toolbar, then click on the layout at the point where you want each IC. Tracks are added in a similar way. You can add elbows to a track simply by placing the mouse cursor on a straight section of track, pressing the left mouse button and dragging the new node to where you want it. The track behaves as though it was a piece of elastic. SMT pads are available from a second, floating toolbar. The program will allow you to produce single and double sided PCBs. You can edit each side independently, or both at once. When printing, you have the option to print the layout in colour or monochrome. Export layouts via the Windows clipboard in WMF format. The package is ideally suited to the home, educational and small business user. Available on 3.5in. 720K floppies only.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
CH42V	PCB Designer for Win	£51.560			£60.590

## Quickroute - Integrated Schematic & PCB Design System for Windows.

### Quickroute Systems

A totally integrated schematic and PCB design system for Windows 3.1, 95 and NT, containing all the tools necessary for creating great looking schematics and professional PCBs. Two versions of the packages are available with the following common features:

- ★ Metric or imperial measurements with resolution of 0.02mm/0.001in.
- ★ Supports designs upto 600 x 600mm
- ★ Pad/track sizes can be customised
- ★ Support for arcs, polygons, polylines, ellipses, rectangles, filled shapes
- ★ Windows fonts Quickroute vector fonts - suitable for rotation, mirroring, reflection etc.

A range of symbol libraries are supplied which can be edited and added to. Full clipboard support with cut, copy and paste, colours that can be customised, part bins for storing frequently used objects, multiple button bars and tool tips. Comprehensive online help and RouteASSIST technology (assisted PCB track placement) included with all versions of Quickroute. All products are boxed (except libraries) and include a comprehensive printed manual and 89mm/3.5in. disk.

The minimum system requirement is a 386 PC with 4M of RAM, Windows 3.1, NT or 95, 5M hard disk space and a Windows compatible mouse. A 486 PC with 8M of RAM is recommended.



### Quickroute 3.5 Personal

This is the entry level system, that has the above features plus the following:

- ★ PCB design supports 2 copper layers, 2 silk

- screen, through layer and solder mask layers
- ★ RouteASSIST technology automates placement of PCB tracks
- ★ Check Rats function automatically removes redundant rat lines after manual routing, or use of RouteASSIST
- ★ Supports Windows compatible printers and plotters

The package includes a set of symbols for schematic and PCB design (passives, transistors, linear, TTL, etc.).

### Quickroute 3.6 Designer

This a professional product offering all the feature of 3.5 Personal plus:

- ★ Schematic capture - turns a schematic into a PCB rats nest at the touch of a button
- ★ Auto-routing will automatically route PCBs using 1 or 2 copper layers.
- ★ Design rule checking will check to see if any pads or tracks are too close
- ★ Connectivity Checking will compare your PCB with the originating schematic and give a pass or fail if there are any differences schematic and PCB design



### SMARTRoute 1

This a powerful and versatile Windows 32-bit autorouter that 'plugs-in' to Quickroute 3.6 and automatically updates Quickroute's menus with new features and options. QSMARTRoute allows the user to set both global options and group options (associated with groups of nets, e.g. power rails, digital busses etc.). Global options include strategy (normal, No 45°, digital, minimise via, custom etc.), grid size, iterations and max layers (1 or 2). Group options include strategy (no vias, no 45°, custom, etc.), track & via spacing, layers used and priority. Strategies can be fully customised and comprehensive documentation is supplied. SMARTRoute requires at least a 386/486 PC with 8M of RAM, Windows 95, NT or 3.1, 5M of hard disk space, and a Windows compatible mouse. Note more memory may be required for larger boards.

### Library Pack 1 -CMOS & SMT

This library pack contains 114 CMOS 40xxx/45xx series schematic symbols and 95 D/A and A/D converter schematic symbols. Package includes manual and 89mm/3.5in disk.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
CH41U	Designer3.5 Personal	£68.750			£80.790
VO57M	Designer 3.6	£149.000			£175.080
VO58N	SMARTRoute 1	£149.000			£175.080
GT05F	Extended Library Pk	£38.670			£45.440

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## Easy-PC with Libraries

### Number One Systems

An extensive Computer-Aided Design (CAD) software package that will produce superb PCB artworks and circuit diagrams. Easy-PC provides very comprehensive features, is very fast and yet using its main features can be learnt within an hour. It is aimed at those who



already own an IBM PC/XT/AT or equivalent, still use manual design methods or have been put off changing to a CAD system by the cost of existing software. Easy-PC permits the design of PCBs of up to 43.2cm (17in.) square, with up to 8 track layers and 2 silk screen layers. Drill templates and solder-resist artwork can also be produced with precision and accuracy. Many major component types (including surface mount) are stored in a 'library' and new symbols can be defined if required. Interconnecting tracks of eight different widths and pads of many different shapes and sizes are stored in the library, and can be extracted at any time. Suitable tracks and pads can be found for all major applications, which include signal, logic and power circuits. Components, pads and edge connectors are 'placed' onto a grid (with a resolution of 0.05mm), and interconnecting tracks are 'laid' between them. Track angles can be fixed at 45°, 90° or any user-defined value. The software is menu-driven and can be used with the cursor keys or a mouse. The final design can be output to a penplotter or a dot-matrix printer, and may be reduced or enlarged in scale. If enlarged, then the artwork can be 'photo-reduced' to the correct size with a great improvement in quality, particularly if a dot-matrix printer is used. This process will also allow image transfer directly to film, the result being artwork that can be used with the standard UV photo-etch process. Multiple copies could be produced so that the simultaneous processing of several boards could be achieved if small batch manufacture is intended. The circuit diagram program is similarly easy to use, and offers superb results of publishable standard, although as with the PCB design software the overall quality would depend on the printing device used. The Easy-PC package includes comprehensive instruction manual/tutorial, 133mm (5 1/4in.) and 89mm (3 1/2in.) program discs, a large symbol library, unlimited free telephone support and any software updates issued within 6 months of the date of purchase.

The two Easy-PC libraries supplied with the package contain between them over 1500 Schematic and PCB layout symbols that can be used with the Easy-PC program. The Schematic program contains a collection of over a thousand drawing symbols covering thirteen logic families and a range of popular microprocessors, memories and support chips. It also has board layout symbols for single and double Eurocards. The Surface-Mount program contains over 500 PCB component land patterns from simple two-pin passive devices through DILs, Quads, Flat-packs, Ceramic and Plastic Chip Carriers, to a 244-pin PLCC. All the symbols in both libraries are fully compatible with Easy-PC, and may be used freely alongside symbols from Easy-PC's own library. Supplied on two 89mm (3 1/2 in.)

### System Requirements:

The hardware required to run this software is an IBM PC/XT/AT/386, or a true compatible, running DOS 2.0 (or later), with a minimum of 512k memory and having at least CGA graphics capability. A maths co-processor is not required. A mouse (Microsoft or equivalent) is not essential but is highly recommended. If a printer is to be used, this can be a laser or a 9 or 24-pin print head that is compatible with IBM graphics systems.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GL01B	2 Easy PC CAD	£74.900 £72.000 £70.700	£88.010

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GK87U	ELIB 1 Software	£38.670 £35.450 £34.240	£45.440

## Easy-PC Professional

### Number One Systems



Easy-PC Professional is a powerful, yet easy to use, second-generation software package for the production of quality Printed Circuit Board Layouts and Schematic Circuit Diagrams. It is a development of the British Design Award-winning Easy-PC. The 'Professional' has the automatic schematic to PCB translation, checking and simulation facilities which do not appear in its predecessor. The Easy-PC Professional will run on any industry standard PC under MS-DOS version 3 or later. A Hard Disk, a VGA or EGA screen and 640K of RAM are required. Easy-PC Professional will accept drawing files from Easy-PC for updating and maintenance purposes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GK57M	1 EasyPC Pro SWare	£144.450 £143.770 £126.650	£169.730

## Easy-PC Professional 74HC and HCT Libraries

### Number One Systems

This library contains complete components for the 74HC and 74HCT logic families including the DIL PCB patterns. This library is fully compatible with all other EASY-PC Professional libraries and components from all libraries can be freely mixed in a single design.

This library comes with a comprehensive instruction booklet which includes listings of all the available components. Following the listings there is a series of drawings illustrating each of the schematic components, their pin names, and the pin numbers used on the PCB patterns. These are shown actual size, and are followed by the PCB patterns at twice actual size. Accompanying the booklet is an 89mm (3 1/2in.) program disk.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AR30H	PC Pro 74HC/HCT	£47.900 £45.650 £42.930	£56.290

## EASY-PC Upgrades to EASY-PC Professional XM

### Number One Systems

For owners of EASY-PC and EASY-PC Professional it is now possible to upgrade to the very latest and advanced EASY-PC Professional XM. Please note that in both cases the original software must be present on the machine for the upgrade to work.

EASY-PC to EASY-PC Professional XM - GS20W  
EASY-PC Professional to EASY-PC Professional XM - GS21X

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS20W	EPC to EPCProXM UG	£170.000 £125.000	£199.750
GS21X	EPCPro to ProXM UG	£100.000 £74.500	£117.500

## EASY-PC Professional XM

### Number One Systems



This sophisticated suite of software programs can either be used in stand-alone or as part of an integrated design environment. Integration is built in to each of the programs making them appear to the user as a complete package. If multiple programs are installed, you can simply draw the schematic with **EASYPC Professional XM**, - analogue sections of the circuit can be simulated within **ANALYSER III**. Modifications can be made to the circuit configuration and component values until the simulations give the performance required, at which point the design can be translated directly onto the PCB. The optional multi-pass autorouter, **MultiRouter**, helps produce perfectly routed layouts in record time. The effect of the parasitic components introduced by the printed circuit layout on the analogue performance can be simulated using **LAYAN**.

### EASY-PC Professional XM

This is a powerful, easy to use, software package for the production of quality schematic circuit diagrams and PCB layouts. It also provides schematic capture and an integrated design environment for analogue and digital simulation of the schematic and electro-magnetic simulation of the final PCB layout. After creating your schematic you simply switch to PCB Layout mode and all of your components and connections are waiting for you or the screen. All that remains to be done is to position the components within the board outline and route the connections, either manually or with our fast, powerful autorouter, **MultiRouter**.

### Main Features

- ★ Schematic Diagrams and PCB's up to 812 x 812 mm with 0.0254 mm resolution.
- ★ Up to 16 layers including silk-screen legends, plus solder resist.
- ★ 16 user selectable track sizes from 0.0254 to 812mm.
- ★ 16 user selectable pad sizes from 0.002" to 32.0" (0.0254 to 812 mm) with configurable aspect ratio
- ★ Wide selection of pad shapes, with and without holes, including edge fingers and surface mount pads.
- ★ Design Rule Checking with Auto-zooming graphical error reporting
- ★ Supplied with extensive component libraries for both schematics and layouts plus the ability to create new devices as required.
- ★ Surface mount component support.
- ★ Outputs to 9 and 24 pin dot matrix printers, HP LaserJet compatible laser and Ink-jet Printers and HPGL (A&B) Pen Plotters.
- ★ Creates Gerber and Excellon manufacturing files.
- ★ Parts Lists, Net Lists and Unconnected Pin Reports.

EASY-PC Professional XM requires a 386 DX or better processor, 4MB RAM, MSDOS 4.01 or higher, 6MB hard disk space, VGA display and a mouse.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS22Y	EASYPC Pro XM	£245.000 £178.000	£287.880

Order £30 or above?  
Account holder or not, your order will be sent carriage paid.  
(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## MultiRouter

Number One Systems



MultiRouter is a powerful multi-pass autorouter for EASY-PC Professional XM that can help you produce perfect double-sided layouts in record time. MultiRouter combines the latest routing technologies to ensure that your tracks get through where other routers fail. Gridless routing handles difficult components like D-connectors and surface-mount packages, making the maximum use of available space. 'Shove-aside' ensures that design rules are obeyed, while 'Rip-up' and 'Re-try' keeps trying problem areas until a solution is found. Multi-pass routing refines the layout, mitring corners, removing unnecessary track segments and vias, with the option of fattening tracks wherever possible. MultiRouter will complete most designs in minutes, saving you days of layout design time.

### Main Features

- Single or Double-sided Autorouter
- Advanced Routing - Gridless or On-Grid - this is ideal for surface-mount and optional on-grid vias for is ideal for ATE and allows allows Fine-line Design.
- Controllable.
- Multi-pass Routability check permits fast placement check before routing.
- Mitring - avoids acid-traps.
- Very fast operation - 140 components on a 210 by 100 mm board 100% routed in under 10 mins on a 75 MHz Pentium.
- Force No Vias allows tack change layout at component pins - ideal for prototypes and avoids plated-through holes.
- Memory Router allows fast routing for repetitive connections such as memory planes.

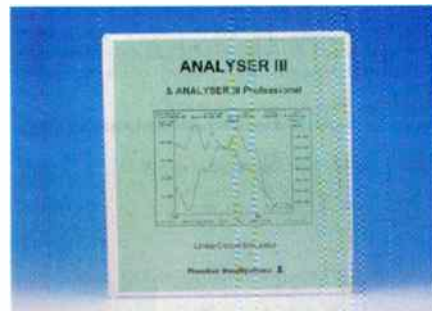
MultiRouter works with and requires EasyPC Professional XM plus an additional 20MB of free disk space and a minimum of 8MB of memory. Extra disk space and memory will enhance performance. Routing capacity is only limited by available memory and disk space. there are no restrictive pin limits.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	2+	
GS23A	Multi Router	£295.000	£215.000	£346.630

## Analyser III Professional

Number One Systems



A linear circuit simulation program that is ideal for use in the design of audio, IF, RF and microwave amplifiers, matching networks, filter circuits, linear ICs etc. Circuits can be made from bipolar transistors, FETs, op-amps, resistors, capacitors, inductors, simple and tapped transformers, both microstrip and co-axial transmission lines and general two-port blocks characterised by Y-parameters or S-parameters. The software can take

the net list from an EASY-PC Professional schematic and the partial element equivalent circuit from a LAYAN electromagnetic simulation of the PCB, or substrate, and analyse the performance of the complete design. The simulator performs exceptionally fast computation of gain, phase, input/output impedances, S-parameters, Y-parameters, VSWR, stability criteria and group delay over a very wide frequency range and produces results in a clear easy-to-read, graphical or tabular form.

### Main Features

- Super fast simulation speed - over 500 frequency points per node, per second (66MHz 486DX2)
- Frequency range of 0.001Hz to over 20GHz
- Smooth graphical output with up to 100 frequency points per run
- Linear or logarithmic scaling
- Auto scaling of all displays will minimise searching
- for results but scales can be fixed to allow for comparison with previous runs.
- Magnitude and phase, or real and imaginary output components
- Auto set-up on previously simulated circuits saves time and ensures meaningful results
- Direct readout of cursor values from graphical display
- Supplied with a library containing 100 device models

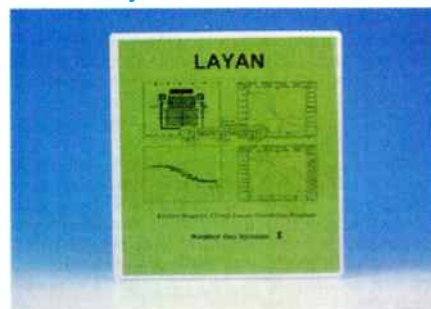
Analyser III Professional requires a 286 or better, 2MB to 16MB RAM, EGA or better and a mouse.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	2+	
GS24B	Analyser III	£195.000	£142.000	£299.130

## LAYAN

Number One Systems



This is an electromagnetic simulator which takes the PCB layout information from EASY-PC Professional XM and computes the effects of the electrostatic and electromagnetic fields of the metallisation pattern. LAYAN produces a partial element equivalent circuit of the layout including capacitive and inductive couplings, inductance and resistance of the tracks. LAYAN even allows for skin effect, and dielectric losses. The net list of the partial element equivalent circuit is automatically combined with the original net list from the schematic and the whole is fed into ANALYSER III Professional for analysis. When complex PCB structures are involved such as stripline filters, coupler etc., their S-parameters can be saved and then used as design block within the schematic for phenomenally fast stimulations of very complex systems.

### Main Features

- Track, polygon and via resistance including skin effect at high frequencies.
- Self and mutual inductances.
- Capacitances.
- Dielectric losses.
- Close or distant or no ground plane.
- Plated conductor layers (2).
- Distributed coupling effects.
- Transmission line effects.

LAYAN allows accurate simulation of printed couplers, filters, inductors, capacitors, stubs, transformers, transmission lines etc. This software is superb for all analogue AF, IF, RF and microwave design verification in any application where the layout itself can have an effect on the performance of the design. This can lead to a dramatic decrease in the need, or even eliminate, the need for design

iterations.

LAYAN works with and requires EASY-PC Professional XM and ANALYSER III Professional and needs a 386DX or better processor with 4MB to 16MB RAM and 20MB hard disk space. (a faster processor is recommended)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	2+	
GS25C	Layan	£495.000	£495.750	£518.630

## Seetrax Ranger 1



- ★ Schematic (circuit diagram) entry
- ★ Automatic net list generation
- ★ Optional manual net list entry
- ★ Multi-layer PCB component and track layout
- ★ High resolution component placement
- ★ 16 track widths and pad sizes
- ★ Expandable component outline library
- ★ Autorouter included

Ranger 1 is a powerful software package aimed at designing complex printed circuit boards with the greatest of ease. The package consists of three modules: Schematic Capture, PCB Layout and Autorouter. These three packages are designed to use a consistent database structure, ensuring 100% compatibility for data transfer between modules. The sophistication of this software does demand somewhat more than basic hardware to operate. You will need an IBM XT/AT, PS2 or equivalent, with 640K-bytes of continuous RAM (not separate 512K blocks); and a fixed or hard drive is essential. The software is supplied on 4 x 133mm (51/4in.) discs and 2 x 89mm (31/2in.) disks. The computer also requires the minimum of an EGA graphics card and compatible monitor. A mouse or graphics tablet is also required. The software is designed to operate in an MS/DOS or OS/2 environment. The output device can be a penplotter emulating HP-GL (Hewlett Packard Graphics Language), a disk file, dot-matrix printer, NC drilling and routing machines, Cannon bubblejet printers or Gerber file. Ranger 1 offers the user the means to design printed circuit boards in a way that is both easy to learn and fast to use. Extensive use is made of menus to lead the operator through the design cycle, menu selection being acted on through either the mouse or a graphics tablet. A complete spectrum of designs can be produced, from simple, single-sided boards using leaded components, through to multi-layer designs going as far as 13 copper layers and surface mounted devices on both sides.

### Specification:

#### Schematic Capture Software:

1. Macro generation for commonly used circuits.
2. 2,300 symbols per drawing.
3. Five standard drawing sheet sizes from A5 to A1.
4. Up to 8 drawing sheets per whole drawing.
5. More than 500 symbols per library volume.
6. Up to 100 library volumes.
7. 256 pins per symbol.
8. 3,500 signals per drawing sheet.
9. Signal connectivity retained through all drawing sheets.
10. Automatic generation of net list.
11. Part codes and pin numbers automatically allocated.
12. Up to eight power rails per design.
13. Non-electrical capability for drawing blanks, etc.

#### PCB Design Software:

1. Macro generation for commonly used circuits.
2. 1,400 components per board.
3. Multilayer design up to 16 layers.
4. Extensive component outline library.

5. Complex true component shapes.
6. True track width representation.
7. Component flip for placement on other side of double sided board.
8. Input from ASCII or Futurenet possible.
9. Imperial or metric scales with a resolution to one thousandth of an inch or 0.01mm.
10. Board can be up to 81 x 81cm (32 x 32in.) in size.
11. Automatic clearance checking of space between tracks to one thousandth of an inch resolution.
12. Up to 256 pins per component.
13. Interactive component renaming, back annotated to circuit schematic.
14. Automatic security data dump.
15. Silkscreen legends for both sides of board with part code flip-over can be made.
16. Automatic check of artwork against net list.
17. Automatic net reconnection for minimum connection length.
18. Powerful window function for mass editing.
19. 8,000 connections per board.

**Autorouter Software:**

1. Power routing strategy.
2. Memory routing strategy.
3. Orthogonal routing strategies with user definable costing.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
GL02C 1	Ranger 1 PCB CAD	£101.420	£78.880	£71.360	£119.170

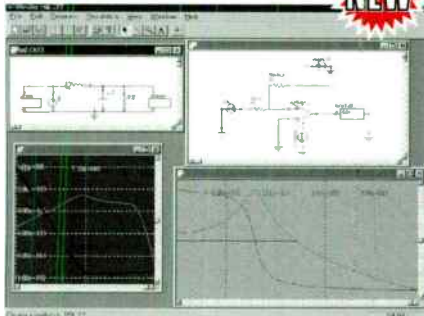
- ★ Open multiple circuits at the same time
- ★ Display results in timing diagrams or tables
- ★ Run simulations in real time or step by step
- ★ Customise the rise and fall times of components and change from typical to worst case analysis
- ★ Supplied on 3.5in. disk, Windows 95/NT compatible

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1	1+	
H661R 1	B2 Analog Simulation	£199.000	£233.830	£233.830
H962S 1	B2 Logic Simulation	£199.000	£233.830	£233.830

**SPICE SIMULATION PACKAGE**

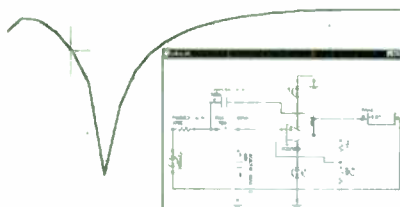
**B<sup>2</sup> Spice Analogue and B<sup>2</sup> Logic Circuit Analysis Software**



A choice of two sophisticated circuit analysis programs offering exceptional value-for-money, with easy of use and performance.

B<sup>2</sup> Spice - Analogue offers a wealth of features including:

- ★ Fully 32-bit using the 3F5 SPICE engine
- ★ 1000s of models from 11 major manufacturers, including a dedicated model editing package as part of the software
- ★ Set up all simulation options
- ★ Import and export SPICE netlists
- ★ Fourier, noise, sensitivity, distortion, AC sweep, plus much more
- ★ Highly accurate whether testing simple circuits or analysis of complex waveforms
- ★ Customise the display of information in tables and graphs
- ★ No limit on maximum circuit size
- ★ Supplied on CD-ROM, Windows 95/NT compatible



B<sup>2</sup> Logic - Digital has the following features:

- ★ Fully integrated and interactive

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FIRST NUMBER Protection against solid objects	SECOND NUMBER Protection against liquids	THIRD NUMBER Protection against mechanical shock
0 No Protection	0 No Protection	0 No Protection
1 Protected against solid objects over 50 mm, eg accidental touch by hands	1 Protected against vertically falling drops of water	1 Impact 0.225 joule
2 Protected against solid objects over 12mm , eg fingers	2 Protected against direct sprays of water up to 15° from the vertical	2 Impact 0.375 joule
3 Protected against solid objects over 2.5mm (tools + wires)	3 Protected against sprays 60° from the vertical	3 Impact 0.50 joule
4 Protected against solid objects over 1mm (tools + small wires)	4 Protected against water sprayed from all directions - limited ingress permitted	5 Impact 2.00 joules
5 Protected against dust - limited ingress (no harmful deposit) permitted	5 Protected against low pressure jets of water from all directions -	7 Impact 6.00 joules
6 Totally protected against dust	6 Protected against strong jets of water, eg for use on shipdecks - limited ingress permitted	9 Impact 20.000 joules
	7 Protected against the effects of immersion between 15cm and 1m	<p><b>Note;</b> The third digit is not specified by the British Standards Institute but is used by some International Standards to indicate resistance to impact</p>
	8 Protected against long periods of immersion under pressure	





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## MAINS ADAPTORS

### VARIABLE

#### Regulated Variable PSU

Unlross



These plug-in units are regulated to keep the output voltage constant at all output currents. Two models are available with maximum output currents of 300mA and 500mA. Voltage output is switchable for 3, 4.5, 6, 7.5, 9 and 12V DC, via a front mounted switch with screwdriver slot. A second, similar switch reverses the polarity of the output as required. A LED indicator shows when the unit is on. Body dimensions: (excluding mains pins) 300mA version: 70 x 52 x 43mm  
500mA version: 80 x 73 x 58mm

Retail Unit Price each (inc. VAT).

Order Code	Type 226	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YB23A	Mains Adpt Reg 300mA	£8.580	£6.570	£5.910	£10.090
JG01B	Mains Adpt Reg 500mA	£10.200	£8.250	£7.400	£11.990

#### Regulated Variable 1200mA

Unlross

- ★ 1.2A Regulated Output
- ★ Reversible polarity
- ★ Range of Adaptors

RECENTLY INTRODUCED



A regulated desktop power supply with output voltages of 1.5, 3, 4.5, 6, 7.5, 9 & 12V, selected via a top-mounted switch with a screwdriver slot. Maximum output current is 1200mA. An LED indicator shows when the unit is powered. Dimensions: 77 x 150 x 62mm excluding leads.

Retail Unit Price each (inc. VAT).

Order Code	Type 226	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
VN10L	Var Mains Adptr 1.2A	£11.900	£10.700	£9.850	£13.990

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## Unregulated 300mA Variable



This unit has outputs of 3, 4.5, 6, 7.5, 9 and 12V DC at 300mA (max). The unit is not stabilised and therefore at low current drains the voltage rises. At less than 150mA this rise could be considerable. If you wish to use this adaptor at current drains less than 150mA you should increase voltage slowly from the lowest voltage setting until the input is at the required voltage.  
(A meter placed across any of the 3 spare spider connections will allow you to monitor the voltage.)

Retail Unit Price each (inc. VAT).

Order Code	Type 226	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
XX09K	AC Adptr Unreg 300mA	£6.000	£3.430	£2.980	£7.060

## Unregulated 800mA Variable



This unit has outputs of 3, 4.5, 6, 7.5, 9 and 12V DC at 800mA (max). There is a power 'on' indicator and a polarity switch. In addition to the four standard output plugs, the unit has a 1.3mm Walkman-type plug as well. Overall size of body 98 x 67 x 57mm. Note that this unit is unregulated and therefore at low current drains, the voltage can approach double the full load voltage.

Retail Unit Price each (inc. VAT).

Order Code	Type 227	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YM85G	AC Adptr Unreg 800mA	£8.580	£4.450	£3.690	£10.090

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## FIXED

### Fixed Voltage Unregulated Mains Adaptors



A range of high quality fixed-voltage, unregulated mains adaptors for personal computers, radios, calculators, video games, cassette players, small TVs and battery operated equipment, which do not require a regulated power supply. The adaptors feature short circuit protection, plus automatic thermal and overload cut-off. The output is via a flying lead with a multi-type plug featuring 1.3, 2.1 & 2.5mm DC plugs and 2.5 & 3.5mm jack plugs. Polarity is centre positive when the '+' symbols on the output lead are aligned, and is reversible.

Output voltage	Output current	Order code
9V	500mA	GS74R
12V	500mA	GS75S
15V	500mA	GS76H

Retail Unit Price each (inc. VAT).

Order Code	Type 226	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GS74R	Unreg 9V 500mA PSU	£8.070	£7.150	£6.500	£9.490
GS75S	Unreg 12V 500mA PSU	£8.070	£7.150	£6.500	£9.490
GS76H	Unreg 15V 500mA PSU	£9.350	£7.950	£7.050	£10.990

### High Quality Fixed Voltage Regulated Mains Adaptors



A range of high quality fixed voltage regulated mains adaptors for personal computers, radios, calculators, video games, cassette players, small TVs and battery operated equipment. The adaptors feature short circuit protection, plus automatic thermal and overload cut-off. The regulated output ensures a constant DC supply with minimal ripple. The output is via a flying lead with a multi-type plug featuring 1.3, 2.1 & 2.5mm DC plugs and 2.5 & 3.5mm jack plugs. Polarity is centre positive when the '+' symbols on the output lead are aligned, and is reversible.

Output voltage	Output current	Order code
3V	300mA	JC89W
6V	300mA	JC90X
7.5V	500mA	GS77J

9V	500mA	JC91Y
12V	500mA	JC92A
12V	1.5A	JC93B
15V	300mA	GS78K



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GS77J	Reg 7.5V 500mA PSU	£9.770	£8.720	£7.950	£11.490
GS78K	Reg 15V 300mA PSU	£10.620	£9.100	£8.150	£12.460

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	50+	
JC89W	3V 300mA Mains Adptr	£7.640	£7.210	£7.100	£8.990
JC90X	6V 300mA Mains Adptr	£7.640	£7.210	£7.100	£8.990
JC91Y	9V 500mA Mains Adptr	£9.770	£9.080	£8.920	£11.460
JC92A	12V 500mA Mains Adptr	£9.770	£9.080	£8.920	£11.460
JC93B	12V 1.5A Mains Adptr	£19.140	£17.060	£16.320	£22.460

## High Quality Switched-Mode Mains Adaptors



A range of high quality fixed-voltage, switched mode, regulated mains adaptors for personal computers, computer peripherals, radios, calculators, video games, cassette players, TVs and other battery/low voltage operated equipment, requiring higher output currents.

The adaptors feature short-circuit protection, plus automatic thermal and overload recovery. The regulated output ensures a constant DC supply with minimal ripple. Output for the single-voltage types is via a flying lead with a 2.1mm DC plug. Mains input for all models is via an IEC connector, a suitable mains lead for UK use is stock code MK41U. Mains input voltage range is 100-240V, 50/60Hz.

Output voltage	Output current	Dimensions	Order code
5V	4A	110 x 60 x 33mm	GS82D
12V	2.5A	110 x 60 x 33mm	GS83E
15V	2A	110 x 60 x 33mm	GS84F
24V	1.25A	110 x 60 x 33mm	GS85G

A multi-voltage model is also available providing outputs of 5V @ 3A, +12V @ 1.5A, & -12V @ 0.2A. It has a 2m output lead terminated in a 5-pin 180 DIN plug.

Dimensions: 140 x 60 x 40mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GS82D	5V 4A SMPSU	£29.770	£25.900	£23.400	£34.190
GS83E	12V 2.5A SMPSU	£29.770	£25.900	£23.400	£34.190
GS84F	15V 2A SMPSU	£29.770	£25.900	£23.400	£34.190
GS85G	24V 1.25A SMPSU	£29.770	£25.900	£23.400	£34.190
GS81C	5 & -12V SMPSU	£42.540	£36.500	£32.250	£48.190

## AC/AC Mains Adaptor Plugs



A range of quality mains AC/AC adaptor plugs ideal for electronic keyboards and other AC powered equipment. Power is supplied via a 1.8m lead terminated in a 2.5mm connector.

Overall dimensions: 50 x 65 x 65mm  
Input: 230V AC 50Hz

Code	Output Voltage	Max. Current
GS79L	6V AC	500mA
GU09K	9V AC	500mA
GU10L	12V AC	500mA
GS80B	15V AC	400mA

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GS79L	6V 500mA AC O/P PSU	£9.350	£8.700	£8.100	£10.990
GU09K	9V 500mA AC O/P PSU	£9.350	£8.420	£7.950	£10.990
GU10L	12V 500mA AC O/P PSU	£9.350	£8.420	£7.950	£10.990
GS80B	15V 400mA AC O/P PSU	£9.350	£8.700	£8.100	£10.990

## BENCH POWER SUPPLIES

### HOBBYIST

## 13.8V Regulated Mains Power Units



A range of four power units with a fixed 13.8V output, ideally suited for powering CB radios, communications transceivers and other devices that require a 13.8V supply. The power supplies are available in 3A, 5A, 7A and 10A versions (continuous rated output current). All four power supply units are finished in a smart black steel enclosure, with illuminated rocker-type on/off switch and two terminal posts (black and red) for the 13.8V output. A mains protection fuse is housed in a fuse holder on the rear panel. The power supplies have short-term overload and short-circuit protection to guard against momentary accidental misconnection, but the units can be damaged by prolonged abuse.

### Specification

Input:	240V AC 50Hz
Output voltage:	13.8V
Output current:	3A: 3A continuous, 5A surge 5A: 5A continuous, 7A surge 7A: 7A continuous, 9A surge 10A: 10A continuous, 12A surge

surge	3A: <0.5V 5A: <0.5V 7A: <1V 10A: <1V
Voltage regulation	3A: <0.5V 5A: <0.5V 7A: <1V 10A: <1V

Ripple voltage	3A: <3mV 5A: <3mV 7A: <1mV 10A: <1mV
Overall size	3A: 141 x 141 x 82mm 5A: 141 x 141 x 82mm 7A: 187 x 181 x 113mm 10A: 187 x 181 x 113mm
Weight	3A: 1.95kg 5A: 2.9kg 7A: 3.8kg 10A: 5.25kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
XM20W4	3A 13.8V DC PSU	£21.260	£17.750	£16.250	£24.990
XM22Y6	5A 13.8V DC PSU	£29.770	£25.500	£22.150	£34.990
XM21X8	7A 13.8V DC PSU	£38.280	£33.250	£31.500	£44.990
XM19V12	10A 13.8V DC PSU	£51.050	£42.000	£37.500	£59.990

## 30V 2A



A good quality regulated power supply ideal for the hobbyist's work bench. The unit will supply up to 2A at up to 30V, and has a separate ammeter and voltmeter. The ammeter reads 0 to 2.5A and the voltmeter reads 0 to 30V. A rotary control sets the output voltage from 0 to 15V with voltage range switch to the left and 15 to 30V with switch to the right. The output current can be limited to between about 300mA and 2.2A by the rotary control marked 'current'. Three output terminal posts are provided marked '-', 'ground' and '+'. The 'ground' terminal is connected to the chassis and mains earth.

### Specification

Input:	210 to 250V AC
Output:	0 to 30V DC in two ranges
Current:	0 to 2A
Voltage regulation:	Load: <0.1% (30mV) for a no load to full load change Line: <0.15% (45mV) for a 10% line voltage change
Current regulation:	Load: 0.2% max for a 30V DC load voltage change Line: 0.2% max + 3mA for a 10% line voltage change
Ripple and noise:	<250µV rms
Output mode:	Automatic crossover between constant voltage and constant current operation

Overload protection:	By an adjustable electronic current limiting circuit and fuse in AC input
Current limiting:	Adjustable from 1% to 110% of rated load current
Dimensions:	205 x 100 x 195mm deep

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XG89W8	Bench PSU 2A 30V	£93.600	£85.000	£75.000	£109.990

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## Triple Power Supply



A cost-effective quality power supply, in a strong galvanized steel case, with two fixed outputs and a 0 to 30V DC output up to 2.5A max. The fixed outputs are of 5 and 12V DC, each with a 0.5A max. rating. Overload and short circuit protection is provided. A separate analogue voltmeter and ammeter display the output settings for the adjustable supply; the voltmeter reading 0 to 30V and the ammeter reading 0 to 2.5A. The output voltage is continuously variable over the range using the 'voltage' control, whilst the current can be limited from 0 to 2.5A using the 'current' control. The two fixed outputs are fed out through 'snap-on' terminals and the variable supply is available at a pair of terminal posts. The various terminals are marked '+' and '-' and coloured red and black respectively.

### Specification

Power requirements: 230V AC/50Hz  
 Variable output: 0 to 30V DC  
 Maximum current: 2.5A  
 Fixed output 1: 5V DC/0.5A max.  
 Fixed output 2: 12V DC/0.5A max.  
 Ripple & noise: 5mV  
 Line regulation: 0.05% + 10mV  
 Load regulation: 0.05% + 10mV  
 Dimensions: 200 x 150 x 145mm  
 Weight: 2.8kg

Retail Unit Price each (inc. VAT).

Order Code	Type 5501	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GW08J10	PSU 60V 1A	£119.140	£115.000	£110.000	£139.990
AL36R	GW08 Std Calib	£149.140			£175.240
AL39N	GW08 NAMAS Calib	£174.140			£204.610

consumption and dissipation is reduced by a multiple level power saving system which selects lower ratios of the main supply transformer secondary automatically if the output falls below the relevant threshold. The output is provided via three (+), (-) and chassis ground front panel screw terminal posts which accept 4mm wander plugs, spade terminals or stripped wires. Includes overload and reverse polarity protection.

### Specification

	CV Mode	CC Mode
Input:	230V AC ±10% 50/60Hz	
Output:	0 to 60V DC	0 to 1A DC
Load regulation:	0.01% +3 to 5mV	0.02% +3mA
Line regulation:	0.01% +3mV	0.02% +3mA
Ripple & noise:	0.5mV rms	3mA rms
Dimensions:	128 x 145 x 285mm	
Weight:	5kg	

Retail Unit Price each (inc. VAT).

Order Code	Type 5501	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GW08J10	PSU 60V 1A	£119.140	£115.000	£110.000	£139.990
AL36R	GW08 Std Calib	£149.140			£175.240
AL39N	GW08 NAMAS Calib	£174.140			£204.610

## Single 30V 3A DC Power Supply

Instek



A high quality DC power supply providing 0 to 30V DC at up to 3A max. A separate voltmeter and ammeter are provided for monitoring the output. Voltage output is continuously variable over the range with one 'coarse' rotary control, and is accompanied by an additional 'fine' control which can vary output over 10% of the set value. In addition the voltage level can be remote controlled from an external source and the output can be switched to handle continuous or dynamic loads. Current limiting is provided by further 'coarse' and 'fine' rotary controls, and with these the power supply can be forced to leave 'constant voltage' mode and enter 'constant current' mode. Here the output current is maintained for a given setting of the current control by the output voltage being varied to keep the current constant. A novel feature is a power saving device which selects a lower ratio of the main supply transformer secondary automatically if the output falls below 15V. The output is provided via three (+), (-) and chassis ground front panel screw terminal posts which accept 4mm wander plugs, spade terminals or stripped wires. Includes overload and reverse polarity protection.

### Specification

	CV Mode	CC Mode
Input:	230V AC ±10% 50/60Hz	
Output:	0 to 30V DC	0 to 3A DC
Load regulation:	0.01% +5mV	0.02% +3mA
Line regulation:	0.01% +3mV	0.02% +3mA
Ripple & noise:	0.5mV rms	3mA rms
Dimensions:	128 x 145 x 285mm	
Weight:	5kg	

Retail Unit Price each (inc. VAT).

Order Code	Type 5501	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GW09K10	PSU 30V 3A	£127.650	£119.000	£112.000	£149.990
AL40T	GW09 Std Calib	£157.650			£185.230
AL41U	GW09 NAMAS Calib	£182.650			£214.610

## Digital Single 30V 3A DC Power Supply

Instek



A high quality DC power supply providing 0 to 30V DC at up to 3A max. The instrument includes an auto-ranging digital voltmeter (DVM) with front panel LCD display, and which can also function as a digital ammeter, for monitoring voltage or current output as required according to the setting of the front panel VOLTS/AMPS selector switch. Voltage output is continuously variable over the whole range with one 'coarse' rotary control, accompanied by an additional 'fine' control which can vary output over >5% of the set value. In addition the voltage level can be remote controlled from an external source and the output can be switched to handle continuous or dynamic loads. Current limiting is provided by further 'coarse' and 'fine' rotary controls, and with these the power supply can be forced to leave 'constant voltage' mode and enter 'constant current' mode. Here the output current is maintained for a given setting of the current control by the output voltage being varied to keep the current constant. As an aid, green and red front panel LEDs signal either 'CV' (constant voltage) or 'CC' (constant current) mode as active. Power consumption and dissipation is reduced by a multiple level power saving device which selects lower ratios of the main supply transformer secondary automatically if the output falls below the relevant threshold. The output is provided via three (+), (-) and chassis ground front panel screw terminal posts which accept 4mm wander plugs, spade terminals or stripped wires. Includes overload and reverse polarity protection.

### Specification

	CV Mode	CC Mode
Input:	230V AC ±10% 50/60Hz	
Output:	0 to 30V DC	0 to 3A DC
Load regulation:	0.01% +3mV	0.02% +3mA
Line regulation:	0.01% +3mV	0.02% +3mA
Ripple & noise:	0.5mV rms	3mA rms
Dimensions:	128 x 145 x 285mm	
Weight:	4kg	

Retail Unit Price each (inc. VAT).

Order Code	Type 5501	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GW10L5	PSU 30V 3A Digital	£178.710	£170.000	£162.000	£209.990
AL42V	GW10 Std Calib	£208.710			£245.230
AL43W	GW10 NAMAS Calib	£233.710			£274.600

## Single 60V 1A DC Power Supply

Instek



A high quality DC power supply with an output of 0 to 60V DC at up to 1A max. A separate voltmeter and ammeter are provided for monitoring the output. Voltage output is continuously variable over the range with one 'coarse' rotary control, and is accompanied by an additional 'fine' control which can vary output over 10% of the set value. In addition the voltage level can be remote controlled from an external source and the output can be switched to handle continuous or dynamic loads. Current limiting is provided by further 'coarse' and 'fine' rotary controls, and with these the power supply can be forced to leave 'constant voltage' mode and enter 'constant current' mode. Here the output current is maintained for a given setting of the current control by the output voltage being varied to keep the current constant. Power

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## Dual Tracking 30V 3A DC Power Supply

Instek



A high quality DC power supply featuring two 0 to 30V DC outputs, which can operate either as two entirely independent single ended supplies, or be combined in tracking mode to produce equal dual (+) and (-) supply rails, both continuously variable from one single control, with a central commoned rail. Each supply can deliver up to 3A max. in either mode. Separate voltmeters and ammeters are provided for monitoring each output. Voltage output for each independent supply is continuously variable over the range with one rotary control. In addition the output can be switched to handle continuous or dynamic loads. Similarly, current limiting is provided for each by a further rotary control, and with this either supply can be forced to leave 'constant voltage' mode and enter 'constant current' mode. Here the output current is maintained for a given setting of the current control by the output voltage being varied to keep the current constant. As an aid, red and green front panel LEDs for each channel signal either 'CV' (constant voltage) or 'CC' (constant current) mode as active. Power consumption and dissipation is conserved by a dual level power saving device which selects lower ratios of the main supply transformers' secondaries automatically if the outputs fall below the relevant thresholds. Outputs are presented via two pairs of front panel screw terminal posts which accept 4mm wander plugs, spade terminals or stripped wires and include two chassis earth terminal posts.

Also provided is one fixed, 5V DC 3A maximum output, regulated supply to TTL logic circuit standard. It is overload and reverse polarity protected and has an overload LED, and the output is available on a pair of 4mm terminal posts on the front panel.

### Specification

	CV Mode	CC Mode
Input:	230V AC $\pm 10\%$ 50/60Hz	50/60Hz
Outputs, each:	0 to 30V DC	0 to 3A DC
Load regulation:	0.01% +3-5mV	0.02% +3mA
Line regulation:	0.01% +3mV	0.02% +3mA
Ripple & noise:	<1mV rms	<3mA rms

### 5V DC supply

Deviation limits:	5V $\pm 250$ mV
Load regulation:	<10mV
Line regulation:	<5mV
Output current:	3A DC $\pm 10\%$ max.
Dimensions:	255 x 145 x 335mm
Weight:	11.5kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW11M11	PSU 30 3A Dual	£260.840 £262.000 £250.000	£329.990
AL44X	GW11 Std Calib	£310.840	£365.230
AL45Y	GW11 NAMAS Calib	£335.840	£394.610

## Single 30V 6A DC Power Supply

Instek



A high quality DC power supply providing 0 to 30V DC at up to 6A max. Separate volt and ammeters are provided for monitoring the output. Voltage output is continuously variable over the range with 'coarse' and 'fine' rotary controls. In addition the output can be switched to handle continuous or dynamic loads. Current limiting is provided by further 'coarse' and 'fine' rotary controls, and with these the power supply can be forced to leave 'constant voltage' mode and enter 'constant current' mode. Here the output current is maintained for a given setting of the current control by the output voltage being varied to keep the current constant. As an aid red and green front panel LEDs signal either 'CV' (constant voltage) or 'CC' (constant current) mode as active. Power consumption and dissipation is kept to a minimum by a multiple level power saving device, which selects lower ratios of the main supply transformer secondary automatically if the output falls below the relevant thresholds. The output is via two front panel screw terminal posts which accept 4mm wander plugs, spade terminals or stripped wires. A similar chassis earth terminal post is also provided. Includes overload and reverse polarity protection.

### Specification

	CV Mode	CC Mode
Input:	230V AC $\pm 10\%$ 50/60Hz	50/60Hz
Output:	0 to 30V DC	0 to 6A DC
Load regulation:	0.01% +5mV	0.02% +3mA
Line regulation:	0.01% +3mV	0.02% +3mA
Ripple & noise:	<1mV rms	<3mA rms
Dimensions:	255 x 145 x 335mm	
Weight:	11.5kg	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW14O11	PSU 30V 6A	£255.310 £238.000 £220.000	£299.990
AL50E	GW14 Std Calib	£285.310	£335.230
AL51F	GW14 NAMAS Calib	£310.310	£364.610

## CONVERTORS

### 12 VOLT

## Car Voltage Step-down Converter



An easy-to-use car voltage step-down converter and regulator which simply plugs into any cigar lighter socket and converts the car battery supply to

any of seven levels, 1.5V, 3V, 4.5V, 6V, 7.5V, 9V or 12V DC. The output is selected by a 7-way slide switch and max. current rating for each voltage is as follows:

12V	800mA	9.6W
9V	700mA	6.3W
7.5V	500mA	3.75W
6V	400mA	2.4W
4.5V	350mA	1.58W
3V	300mA	900mW
1.5V	250mA	375mW

Fitted with a 1.7m long lead terminated with a moulded 2-pin line socket. To this any one of six little right-angled adaptor plugs can be connected in either polarity. These comprise a 3.5mm jack, then miniature 1.3mm, standard 2.1 and 2.5mm, 'narrow sleeve' 2.1mm (5mm o/d), and 'fat sleeve' 1.3mm (5.5mm o/d) power plugs, one of which should fit nearly all items using these types of connectors. (For 2.5mm use a 3.5/2.5mm adaptor.) A flexible plastic keeper strip has six holes to hold all adaptors. All power plugs are long reach type for both short and long reach sockets. Max. insertion depth of car plug, 55mm; diameter 20mm. Dimensions of regulator unit 80 x 55 x 28mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JY53H	Car Power Adaptor	£7.650 £4.770 £3.920	£8.990

## Car Battery to 230V Mains Converter



A very efficient and compact 12V car battery to 230V AC converter, that can be used to power domestic appliances up to 200W. Designed to be permanently installed in the vehicle with direct connections to the battery, by two heavy duty leads. A third low current signal lead taken to the ignition switch turns the unit on and off via an internal electronic relay. The mains output, indicated by a neon light, is by a standard 13A socket. The unit is fitted with an audible warning that sounds when the battery is becoming discharged. The warning tone gets louder as the battery voltage falls, and if the battery voltage falls below a critical level, the unit will switch off. The unit is designed to operate with the car engine idling when supplying high power continuously. Overcurrent protection is provided, so that if the unit is plugged into unsuitable equipment, for a short time, it will not be damaged.

### Specification

Voltage input:	11V to 15V DC, 12V nominal
Input current:	1A approx. for every 10W of load
Output voltage:	0.3A approx. with no load
	230V AC RMS nominal, 216V to 255V RMS over continuous load range up to 1-1A
Power output:	200W continuous, 250W short term, 500W surge
Size:	141 x 94 x 45mm
Weight:	800g

### Mounting Bracket Kit

A mounting bracket kit for permanent installation of the 12V DC to mains converter is also available.

Retail Unit Price each (inc. VAT).

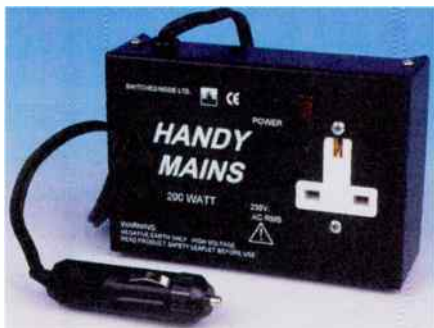
Order Code	Type	Price each exc. VAT	inc. VAT each
KR64U 1	12VDC/230VAC PSU	£95.310 £79.750 £71.750	£111.990
KR65V	Fixing Kit	£5.080 £4.550 £4.300	£5.990

Order £30 or above?

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## Handy Mains Inverter



### CC86T - 12V Handy Mains Inverter

Similar to the Car Battery Converter KR64U but mounted on an alloy base with a pressed steel cover and plugs directly into the cigar lighter socket of cars with negative earth. It converts 11V to 15V DC to 230V AC RMS 48-53Hz 200W continuous, 250W short term and 500W surge. Powers domestic appliances up to 200W continuously by a standard UK 13A socket outlet. There is an audible warning if the battery voltage drops too low (approximately 11V) and the unit turns off when the voltage falls below approximately 10V. The output is a stepped quasi sine wave. A red neon indicator illuminates when an output is present. Over current protection is provided to prevent any damage. If overloaded the output will 'latch off', requiring the load to be removed and the plug withdrawn from the cigar lighter socket to reset it. A 30A fuse in the supply input helps prevent damage should the unit be seriously overloaded or misconnected; this is user replaceable. There is a wiring kit available for a direct connection to a high current source if the in-car lighter wiring is insufficient. Under no circumstances should the cigar lighter fuse be changed for a higher fuse rating as this can result in a fire hazard.

#### Specification

Voltage input: 11V to 15V DC, 12V nominal  
 Input current: 1A approx. for every 10W of load  
 Output voltage: 230V AC RMS nominal, 216V to 255V RMS over continuous load range up to 1.1A  
 Power output: 200W continuous, 250W short term, 500W surge  
 Size: 141 x 94 x 45mm  
 Weight: 739g

#### Direct Wiring Kit

A heavy duty wiring kit that can be used in conjunction with this product is available (CC87U).

### GT82 - 24V Handy Mains Inverter

Similar to CC86 but for use with a 24V battery.

#### Specification

Voltage input: 20V to 36V DC  
 Input Current: 1 amp (at 12V) or 0.5 amp (at 24V) for every 10W of load.  
 Voltage output: 240V AC rms nominal, 216 to 255 V rms over continuous load range up to 1.1amps.  
 Power output: 200 watts continuous, 250 watts short term. Surge capability of 500 W  
 Size: 141 x 94 x 45mm  
 Weight: 739g

Retail Unit Price each (inc. VAT).

Order Code	Type 217	Price each exc. VAT	inc. VAT each
CC86T	Mobile Mains Adaptor	£93.600	£109.990
GT82D	24V Mains Inverter	£127.650	£149.990

## Movable Converter Direct Wiring Kit



A heavy duty wiring kit for the movable converter (CC86T). Contains a cigar lighter socket mounted on the end of two metres of heavy duty flex which can be connected to heavy current supply that has a fuse rating in excess of 20A. Used when existing car cigar lighter circuit is not capable of supporting the power requirements of the Movable Converter. It is essential that the supply to the cable is correctly fused. The positive lead should not be connected directly to the battery under any circumstances.

#### Specification

Voltage input: 11V to 15V DC  
 Current Rating: 20A  
 Fuse Rating: 30A maximum

Retail Unit Price each (inc. VAT).

Order Code	Type 218	Price each exc. VAT	inc. VAT each
CC87U	Direct Wiring Kit	£7.650	£9.990

## Mains Voltage Inverters

Merlin Equipment



Anyone who has access to a rechargeable 12V car battery can operate mains powered equipment without having to depend on a nearby mains supply or a noisy generator. Essential for any equipment which must be operated in a motor vehicle or isolated place, or during a power cut, these inverters simply and silently convert 12V DC power from a vehicle battery into 230V AC mains equivalent power with very accurate voltage and frequency tolerances.

Four models cover almost all conventional, domestic equipment applications ranging from sophisticated devices such as computer equipment, Hi-Fi, TV and VCR through to microwave ovens, power tools, coffee makers and small refrigerators. Each unit draws very little current when offload, and includes low battery, overload and overheating protection. Housed in rugged, lightweight and splashproof diecast cases, they are virtually maintenance free once fitted.

Four modules with different power outputs are available and each type is especially suitable to operate the following:

150W TV, computers, recharging of cordless hand tools, Hi-Fi, communications equipment.  
 Supplied with connectors for laptop computers.  
 Dimensions: (H) 40 x (W) 115 x (L) 115mm.

250W As above plus VCRs and small power tools.  
 Supplied with IEC connector.  
 Dimensions: (H) 40 x (W) 115 x (L) 150mm.

800W As above plus microwaves, small refrigerators, toasters, heavy-duty power tools and small vacuum cleaners.

Dimensions: (H) 76 x (W) 229 x (L) 254mm.  
 1500W All the foregoing and also large

refrigerators, small freezers, large AC motors and high-power or professional radio/Hi-Fi equipment. Dimensions: (H) 76 x (W) 229 x (L) 381mm.



#### Specification

##### General, all units:

Input voltage range: 10 to 15V DC  
 Output voltage: 230V AC rms  $\pm 5\%$   
 Output frequency: 50Hz  $\pm 0.02\%$   
 Output waveform: Phase corrected quasi-sinusoidal  
 Better than 90%

#### Efficiency:

Output power	Continuous	5 min. max.	Surge
150W type	145W	200W	400W
250W type	225W	350W	500W
800W type	800W	1000W	1/2HP*
1500W type	1500W	2000W	3/4HP*

\* i.e. up to starting capacity for AC motor rated as shown

Type	150W	250W	800W	1500W
No load current:	70mA	150mA	300mA	600mA
Weight:	520g	570g	2-3kg	3-7kg

Retail Unit Price each (inc. VAT).

Order Code	Type 219	Price each exc. VAT	inc. VAT each
RC08J 1	DC-AC Inverter 150W	£93.600	£109.990
RC09K 2	DC-AC Inverter 250W	£127.650	£149.990
RC10L 5	DC-AC Inverter 800W	£340.410	£399.990
RC11M 9	DC-AC Inverter 1500W	£563.180	£649.990



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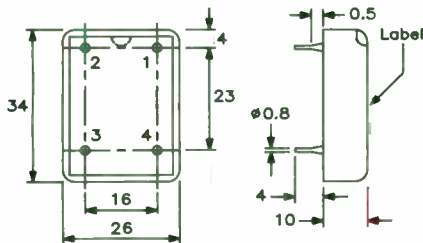
DC/DC

DC-DC Converter

Astec



A low-cost high-efficiency DC to DC converter for generating an additional, low-current -15V power rail from a main +5V DC supply. Simply supply +5V input and the output will give -15V DC. Power output up to 1W is possible, with perfect regulation due to an in-built filter capacitor.



All dimensions in mm

Specification

Input voltage: +5V DC  $\pm 20\%$   
 Efficiency: 75%  
 Temperature coefficient: 0.08%/°C  
 Line regulation: 0.8%  
 Load regulation: 1%  
 Output ripple: 500mV peak-to-peak

Pin Assignments

Pin 1: V in (common)  
 Pin 2: +V in  
 Pin 3: -V out  
 Pin 4: +V out (common)

For some circuits it may be necessary to connect a series inductor in the region of 1 $\mu$ H, between load and regulator. On the load side of the inductor a filter capacitor of 47 $\mu$ F can be used. Both these precautions help to improve ripple and immunity to noise spikes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FE59P	DC/DC Conv -15V	£3.990	£3.990

Miniature PCB Mounting DC/DC Converters

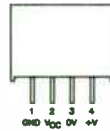
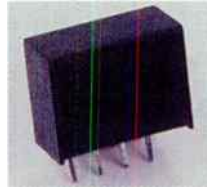
Newport Components

A range of miniature and sub-miniature, high-efficiency DC/DC converters, the outputs of which are isolated to 1000V DC relative to the input, made possible through the use of tiny toroidal ferrite transformers. With efficiencies of up to 80% and a physical bulk down to the scale of a logic IC, these devices are ideal for eliminating complex power busses on PCBs, or special (and inconvenient) provisions for extra odd supply lines from the main PSU, by providing them anywhere where the additional or isolated power rail is required locally. Furthermore any number of them can be used together in a system. All converters are 100% 'burned-in' and triple tested. They feature a high power to density ratio equivalent to 1.4W per cm<sup>3</sup>, which is probably the highest currently available. Derating at temperatures above 70°C is required. The operating temperature range is -50°C to +125°C. In all cases a switched mode method is employed at a typical frequency of 100kHz, with a

no-load power consumption of 100mW. This efficiency makes them compatible with battery powered applications.

The packages are SIP (Single Inline Pin) with full epoxy encapsulation rated to UL94-VO within a flame retardant, polyurethane case. Any converter can be soldered into place just like any other IC or SIL array, and no heatsinks are necessary for the rated performance. Input voltages are 5V or 12V DC depending on type. Pin '1' is marked with a dot. Pins are spaced 2.54mm (0.1in.) and are 3mm long on all types.

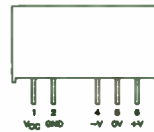
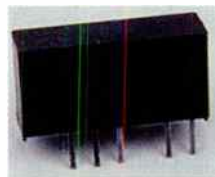
Single Output Types



The NME range operate from a 5V or 12V DC input, and provide an isolated single positive output of 5V, 12V or 15V DC, depending on type. The delivered power is 1W total and up to 200mA is available from a 5V output, 84mA from a 12V output, and 67mA from a 15V output. Each device is contained in a 4-pin inline package measuring only 11.5 x 6 x 10mm high.

Type	Input voltage	Output voltage	Output current mA	Load regulation
NME0505S5V (7 max.)	5V	5V	200	10%
NME0512S5V (7 max.)	12V	12V	84	10%
NME1205S12V (15 max.)	5V	5V	200	10%
NME1212S12V (15 max.)	12V	12V	84	10%
NME1215S12V (15 max.)	15V	15V	67	10%
NME0515 5V (7 max.)	15V	5V	67	10%

Dual Output Types



Each of the NMA range provides dual  $\pm 5V$ ,  $\pm 12V$  or  $\pm 15V$  DC supply rails with centre-tapped 0V from a single 5V or 12V DC input, depending on type, with a total power throughput of 750mW. Up to 100mA is available from the 5V output type, 42mA from each of the 12V outputs and 25mA from each of the 15V. The device is contained in a 6-pin inline package (pin 3 is excluded, not used) measuring only 19.5 x 7 x 10mm high.

Type	Input voltage	Output voltage	Output current mA	Load regulation
NMA0512S	5V(7 max)	$\pm 12V$	42	10%
NMA0515S	5V(7 max)	$\pm 15V$	34	10%
NMA1205S	12V(15 max)	$\pm 5V$	100	10%
NMA1212S	12V(15 max)	$\pm 12V$	42	10%
NMA1215S	12V(15 max)	$\pm 15V$	25	10%

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
AH18U	NME0505S	£7.480 £5.990	£5.490 £8.790
JY55K	NME0512S	£7.480 £5.990	£5.490 £8.790
AH19V	NME1205S	£7.480 £5.990	£5.490 £8.790
AH20W	NME1212S	£7.480 £5.990	£5.490 £8.790
JY57M	NME1215S	£7.220 £5.990	£5.490 £8.490
JY56L	NME0515S	£7.220 £5.990	£5.490 £8.490
AH14Q	NMA0512S	£7.480 £5.990	£5.490 £8.790
AH15R	NMA0515S	£7.480 £5.990	£5.490 £8.790
AH16S	NMA1205S	£7.480 £5.990	£5.490 £8.790
AH17T	NMA1212S	£7.480 £5.990	£5.490 £8.790
JY54J	NMA1215S	£7.480 £5.990	£5.490 £8.790

## IP Ratings

FIRST NUMBER Protection against solid objects	SECOND NUMBER Protection against liquids	THIRD NUMBER Protection against mechanical shock
0 No Protection	0 No Protection	0 No Protection
1 Protected against solid objects over 50 mm, eg accidental touch by hands	1 Protected against vertically falling drops of water	1 Impact 0.225 joule
2 Protected against solid objects over 12mm , eg fingers	2 Protected against direct sprays of water up to 15° from the vertical	2 Impact 0.375 joule
3 Protected against solid objects over 2.5mm (tools + wires)	3 Protected against sprays 60° from the vertical	3 Impact 0.50 joule
4 Protected against solid objects over 1mm (tools + small wires)	4 Protected against water sprayed from all directions - limited ingress permitted	5 Impact 2.00 joules
5 Protected against dust - limited ingress (no harmful deposit) permitted	5 Protected against low pressure jets of water from all directions -	7 Impact 6.00 joules
6 Totally protected against dust	6 Protected against strong jets of water, eg for use on shipdecks - limited ingress permitted	9 Impact 20.000 joules
	7 Protected against the effects of immersion between 15cm and 1m	<b>Note;</b> The third digit is not specified by the British Standards Institute but is used by some International Standards to indicate resistance to impact
	8 Protected against long periods of immersion under pressure	





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## PROJECT CONSTRUCTION RATINGS

All the projects in this section have been rated for ease or difficulty of construction to help you to decide before you buy a kit, whether its construction will be within your capabilities. The projects are rated from 1 to 5, which may be interpreted as follows:

- 1** Projects rated 1 are simple to build and understand and are suitable for absolute beginners. They require only the minimum of tools such as soldering iron, cutters, pliers, wire-strippers and possibly a screwdriver. They do not require any test gear or setting-up.
- 2** Projects rated 2 are easy to build, but not suitable for absolute beginners. They require some test gear, usually a multimeter and may require setting-up or testing.
- 3** Projects rated 3 are average. They require some skill in their construction or more extensive setting-up.
- 4** Projects rated 4 are advanced. They require a fairly high level of skill in construction. They may require some specialised test gear or their setting-up may be quite complex.
- 5** Projects rated 5 are complex. They require a high level of skill or they may require specialised test gear or are complex in construction or require complex wiring. These projects are recommended for skilled constructors only.

**PLEASE NOTE:** Construction details are included in the kits.

## Constructors Guide

A leaflet containing much practical information and advice on the more mechanical aspects of project building. The leaflet is normally included with every kit, and is an essential aid for the beginner. It covers component recognition, how to solder and then how to check for correct solder joints, handling semiconductors etc. The information provided could also be valuable to the more experienced project builder.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XH79L	Constructor Guide	£0.300	£0.300 NV

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## Audio Hi-Fi & Loudspeakers

### Hi-Fi Projects

#### K4040 Stereo Valve Amplifier 3



- ★ Can be used with 4Ω or 8Ω loudspeakers
- ★ 2 x 90W rms output power
- ★ Soft-start and standby
- ★ 230V AC or 115V AC 50/60Hz mains supply selectable
- ★ One main circuit board
- ★ High quality capacitors
- ★ Reduced wiring (compared to K4000)
- ★ Simple bias adjustment

Most of us cannot afford a ready-built high power valve amplifier, but this kit changes all that, so that anyone can enjoy the superb 'valve sound'. To many people, the sound of valves cannot be surpassed either by bi-polar transistors or FETs. In developing this amplifier, special attention was paid to the housing. Indeed, it was decided to not hide the expensive valves, so that your eyes can have something to enjoy. Four EL34s are used in each channel to generate the high power output. Very high quality toroidal core ultra-linear output transformers are employed to provide outstanding sound quality.

The K4040 is a redesigned version of the popular and respected K4000, it includes a number of changes that make the amplifier easier to build and setup, more attractive in appearance and even more pleasing to the ear in use:

#### K4040 Improvements

One main circuit board - a few minor circuit changes have been made to improved stability with different loads.

High quality capacitors are used throughout the circuit, for improved performance and stability.

Less wiring means less connections which could result in added noise and distortion.

Servicing is less cumbersome due to removable bottom cover and front panel.

Restyled enclosure with brushed aluminium front panel and chrome-plated vertical mirror panel.

Chrome rings cover valve bases of all visible valves.

Four attractive chromed feet

Heavy duty gold-plated speaker terminals

Standby circuit keeps the amp up and running between listening sessions, thus improving valve-life.

Softstart circuit enhances valve life.

Input mute during power-up and standby.

Bias adjustment is no longer a cumbersome job.

Behind the removable front panel the bias adjustment trimmers and switches are accessible.

An LED-display eliminates the need for a multimeter - very convenient for regular inspection of correct biasing

#### Specification

Output power:	2 x 90W rms in class AB 2 x 15W in class A
Speaker impedance:	4Ω or 8Ω
Bandwidth:	8Hz to 80kHz
Harmonic distortion:	0.1% @ 1kHz/1W
S/N ratio:	>105B (A-weighted)
Channel separation:	67dB at 90W
Input impedance:	100kΩ
Input sensitivity:	0dB (0.775mV rms) for 90W
Damping factor:	25
Overall feedback:	18dB
Weight:	20kg
Dimensions:	425 x 130 x 350mm

#### Kit and Special Parts

A complete kit of parts is available.

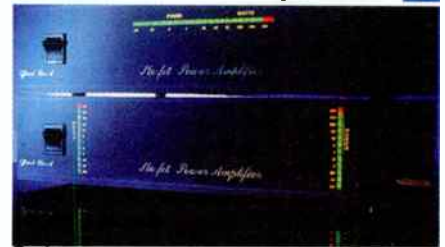
#### Kit Building Service

If you would like to purchase this project, but feel you are unable to construct it, then why not let our trained technicians fully build and test it for you. Please contact our Customer Services department for pricing details.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VFB3E	1	K4040 Valve Amp Kit	£578.710 £520.840 £679.990

#### K4020 300W Stereo/600W Mono MOSFET Amplifier 4



#### Features

- ★ High power
- ★ Low distortion
- ★ Highly efficient
- ★ Comprehensive protection circuitry

#### Applications

- ★ Hi-fi systems
- ★ Disco applications
- ★ Laboratories
- ★ Studio monitoring

Two 300W mono MOSFET amplifier modules (Velleman Kit K4010) can be combined into a superb 300W stereo version, or a bridged 600W mono amplifier. A very special circuit design ensures the output stage always produces a Class A configuration, without loss of unnecessary power. The amplifier requires no adjustment and features speaker switch-on delay and protection, as well as thermal and short-circuit protection. The kit includes transformer, housing and all necessary heatsinks. An optional LED power meter K4021 is available separately.

#### Specification

Power output per channel	
Music power:	300W into 4Ω, 200W into 8Ω (600W bridged operation)
rms power:	150W into 4Ω, 100W into 8Ω (300W bridged operation)
Power output bridged	
Music power:	600W
rms power:	300W into 8Ω
Harmonic distortion:	0.008% @ 1W 1kHz, 90W 1kHz
Damping factor:	>300
Input impedance:	47kΩ
Input sensitivity:	1V rms
Frequency response:	3Hz to 120kHz (-3dB)
Power bandwidth:	5Hz to 50kHz (-1dB)
Signal-to-noise ratio:	112dB (A-weighted at full power)
Protection:	Thermal, DC and short circuit
Speaker switch-on delay:	2 seconds
Speaker DC protection	
trip voltage:	>±1V
Thermal protection	
trip temperature:	90°C
Efficiency:	>70%
Power consumption:	440W maximum
Dimensions:	427 x 95 x 382mm (including connectors and feet)

#### Additional Component Parts List for Kit

Zip Wire	30cm	(XR39N)
Solder Tag M3	1	(LR64U)
Spade Terminal	4	(HF10L)
Spade Terminal Cover	4	(FE65V)
Fuse 20mm 5A	1	(RA12N)
Heatshrink Sleeve CP32	5cm	(BF88V)
Wire 32/0-2 Green/Yellow	5cm	(XR38R)
Double Bubble Epoxy Glue	1	(FL45Y)

#### Optional Items

The following items, not included in the kit, may also be required.

Nylon Mains Plug 13A	1	(RW67X)
Fuse 5A	1	(HQ33L)
IEC Mains Lead	1	(BW99H)

Insulating Boot for Fuseholder 1 (FT35Q)  
Insulating Cover for Mains Connector 1 (JK66W)

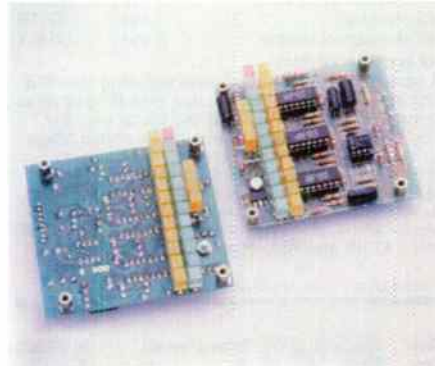
**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 71 XA71N.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF17T	29 Velleman Kit K4020	£306.370	£359.590

**K4021 Power Meter For 300W/600W MOSFET Amplifiers**



**Features**

- ★ 12-LED display
- ★ LED scale illumination
- ★ Wide range of power indication

**Applications**

- ★ 300W/600W MOSFET amplifier
- ★ Power monitoring for your own amplifier
- ★ In-car audio
- ★ Disco equipment

These power meters are designed to give a visual representation of the output power from amplifiers built around the 300W MOSFET amplifier modules (Velleman Kit K4010). A visual indication of the instantaneous power output of your amplifier is useful in that you can 'see' if you are about to exceed the loudspeakers, maximum input power level, or by running the amplifier into clipping, which can easily damage the tweeters.

Two boards, one board for each channel, are mounted vertically to provide a professional visual display of power output for each channel. If the amplifiers are bridged, the meters are mounted horizontally and connected in series. Each board uses 12 LEDs to indicate the power out, and 16 LEDs for scale illumination. The scales can be 0-001W to 100W/8Ω or 0-002W to 200W/4Ω (mounted vertically) or 0-001W to 400W/8Ω (mounted horizontally, divided over 24 LEDs) for bridged mono. The boards require ±40V DC that is supplied by the amplifier.

**Specification**

Number of LEDs (power indication): 12  
Number of LEDs (scale illumination): 16

Power supply (from amplifier module): ±40V DC at 60mA (maximum)

PCB size: 72 x 78mm

Scale (8Ω load, 300W): 0-001W, 0-005W, 0-01W, 0-05W, 0-1W, 0-5W, 1W, 5W, 10W, 50W, 75W, 100W

Scale (4Ω load, 300W): 0-002W, 0-01W, 0-02W, 0-1W, 0-2W, 1W, 2W, 10W, 20W, 100W, 150W, 200W

Scale (8Ω load, 600W bridge mode): 0-001W, 0-002W, 0-005W, 0-01W, 0-02W, 0-05W, 0-1W, 0-2W, 0-5W, 1W, 2W, 5W, 10W, 15W, 20W, 40W, 60W, 80W, 100W, 150W, 200W, 250W, 300W, 400W

**Kit and Special Parts**

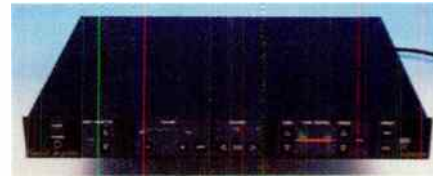
A complete kit of parts (including the PCB) is

available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 72 XA72P, and instruction leaflet XU53H.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF18U	1 Velleman Kit K4021	£28.920	£33.990
XU53H	Power Meter Leaflet	£0.500	£0.500 NV

**K4100 Digital Controlled Preamplifier**



- ★ Inputs for phono, CD, tuner, and two cassette decks
- ★ Graphic equaliser loop
- ★ LED display of all settings
- ★ Full digital control of all functions
- ★ Switched mains output
- ★ Operational IR remote control

A superb digital preamplifier designed to complement the K4000 Valve Amplifier and the K4020, K4005, K4010 and K4004 high powered MOSFET amplifiers, but equally suited to any high quality amplifier. Digital control eliminates the need for conventional potentiometers, all functions being selected and operated by front panel mounted push-buttons. The K4101 I/R transmitter, which is available separately, is used to remotely control the functions. The preamplifier offers a phono input which is suitable for moving magnet or high output moving coil cartridges. Other inputs include CD and tuner, plus two tape monitor loops and a graphic equaliser loop. A switched mains output allows the rest of the installation to be switched on and off, and the power-up default setting can be programmed to individual requirements.

**Specification**

Input sensitivity/impedance

Phono: 5-5mV/50kΩ  
CD: 500mV/32kΩ  
Tuner: 360mV/22kΩ  
Tape 1 & 2: 360mV/22kΩ

Rated output voltage

Line: 1V  
Tape: 360mV  
Equaliser: 130mV

S/N ratio

Phono: 75dB (A-weighted, rated output)  
Tape/CD/Tuner: 100dB (A-weighted, rated output)

THD:

0-01%

Frequency response(-3dB): 8Hz to 150kHz

Channel separation:

90dB

Crosstalk:

-98dB

RIAA deviation:

±0-5dB (20Hz to 20kHz)

Headphone output:

280mW into 32Ω

Power consumption:

6W maximum

Mains output:

5A switched

Dimensions:

420 x 50 x 350mm

Weight:

5kg

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). The optional infra-red remote control is also available separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE46A	15 Velleman Kit K4100	£187.220	£219.990
XT61R	VE46 Mod Sheet	£0.400	£0.400 NV
VE47B	1 Velleman Kit K4101	£39.140	£45.990

**K4500 Digital Synthesizer FM Tuner**



- ★ Superb sound quality
- ★ Remote control facility (when used with VE47B Infra-red transmitter)
- ★ Complements the VE99H stereo valve amplifier and VE46A digitally-controlled preamplifier
- ★ Search tuning - adjustable sensitivity
- ★ 8-LED signal strength indicator
- ★ 40 available presets
- ★ Two selectable aerial inputs
- ★ Preset station naming

This unit is a microprocessor-controlled single-conversion VHF stereo FM phase-locked loop tuner with alphanumeric display and infra-red remote control facility. The tuner has been designed to complement the Digitally-Controlled Preamplifier (Velleman Kit K4100). This tuner offers many features, one of which is the selection between two 75Ω aerial inputs. This would allow two aerials to be pointing in different directions, for the reception of VHF programmes from different transmitters. Even with a decent aerial, mounted on the roof, wall, or in the loft, there will always be stations too weak to be heard. For this reason, an adjustable 'stop' sensitivity is provided on the rear panel; this is adjusted so that only the very weakest stations are overlooked when the tuner is operating in 'seek' mode. The tuner is provided with a total of 40 presets to cope with the growing number of VHF broadcasters. A unique feature of this superb tuner is that each of the 40 channels can be assigned a 4-character 'identification tag', such as the abbreviated station name. Station frequency and identification apart, the unit also stores the selected aerial socket, and can even remember which station it was last tuned to on powering up from either 'stand-by' mode or from the mains.

An infra-red remote receiver is incorporated into the unit; this is compatible with the 15-Channel Infra-Red Transmitter that also controls the Digitally-Controlled Preamplifier.

**Specification**

Tuning range: 87.5 to 108MHz, in 50kHz steps  
Sensitivity: 5-5dBu (1-8μV)  
S/N ratio: 80dB (A-weighted)  
Distortion

mono: 0-08%  
stereo: 0-2%

Channel separation: 40dB (1kHz)  
Frequency response: 5 to 15kHz (-3dB)

Output voltage: 550mV (100% modulation)  
Number of presets: 40

Supply voltage: 220V to 240V AC  
No. of 75Ω aerial inputs: 2

**Optional Items**

The following items, not included in the kit, may also be required.

Heat shrink CP24 1m (BF87U)  
Silicone grease tube 1 (HQ00A)  
Hex trim tool 1 (BR48C)

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects 67 XA67X, and instruction leaflet XU29G.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF20W	1 Velleman Kit K4500	£173.600	£203.990
XU29G	VHF/FM Tuner Leaflet	£0.400	£0.400 NV
VE47B	1 Velleman Kit K4101	£39.140	£45.990



## K4101

2

### Preamplifier Infra-Red Control Transmitter

- ★ 15 channels
- ★ Remote control of preamplifier and tuner
- ★ 21 keys
- ★ 'Click-touch' keypad
- ★ Robust aluminium case

This 15-channel infra-red transmitter is designed to remotely control the digitally controlled preamplifier K4100 (VE46A) and the tuner K4500 (VF20W). In the case of the tuner, a special safety key has been provided which allows you to preserve the memory content for stations to avoid unwanted overwriting. The keypad features a superb 'click-touch' design which has a characteristic responsive feel, unlike other membrane designs which offer no tactile feedback whatsoever. Additionally, 'click-touch' offers a high degree of protection against moisture ingress. A red LED, visible from the keypad, shows that the unit is functioning when a key is pressed and gives some idea as to the condition of the battery. The transmitter is housed in an attractive and robust aluminium case.

#### Specification

Range: 30m maximum  
Tx carrier frequency: 38kHz  
Identification codes: 6  
Independent channels: 15  
Power supply voltage: 9V (PP3 battery)  
Current consumption standby: 0.1µA  
transmit: 10mA average  
Dimensions: 175 x 50 x 23mm

#### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 59 XA59P.

#### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE47B	Velleman Kit K4101	£39.140	£45.990

### Millennium 4-20 20W Audio Valve Power Amplifier

4



#### Features

- ★ Class AB1 push-pull output
- ★ Non-hybrid traditional 4-valve design
- ★ Simplified construction using PCBs
- ★ Expandable modular concept
- ★ Mono or stereo options
- ★ No setting up required
- ★ Minimal test equipment needed
- ★ Suitable for UK/Europe and USA Mains

#### Applications

- ★ Domestic hi-fi/stereo music systems
- ★ Small-scale public address
- ★ Musical instrument amplification

An affordable, 20W valve amplifier guaranteed to turn any capable, domestic stereo system into

something a bit special, emitting a wonderfully gutsy bass even at low volume, together with 'an extra something' in the mid and treble ranges. Closely resembling Mullard's '520' design of the early sixties, the amplifier benefits hugely from the superior quality of modern components. Modern materials have produced transformer cores that are half the size of those of 20 years ago, yet with better specification. High-speed capacitors achieve a competent, even sparkly, HF performance, and high stability resistors help push the S/N ratio to nearly 90dB, making a nonsense of the myth that valve circuits are inherently noisy.

The construction concept is modular and there are only two basic kits: the PSU module, and the amplifier module. Each kit contains everything required to build the basic module, including a pre-punched aluminium chassis (203 x 152 x 63mm), and a PCB to simplify construction. The chassis are joined to form either a traditional 'monobloc' (single amplifier and PSU), or a full stereo assembly (having 1 x PSU, 2 x amplifier modules). The PSU is capable of powering a stereo pair of amplifiers. Project rating is 4, but no special setting up is required and initial testing only needs an ordinary multimeter.

#### Specification of Power Supply Unit

Transformer (primary)  
Input voltage: 230V AC 50Hz or 115V AC 60Hz  
Valve heater (secondary)  
Circuit type: Earthed centre-tap balanced AC  
Heater output voltage: 6.3V AC 50Hz (3.15V - 0 - 3.15V)  
7A maximum  
Heater output current:  
HT secondary o/p voltage: 350V AC maximum  
HT secondary o/p current: 250mA maximum  
HT DC output voltages, no load: 480V to 500V DC  
single amplifier powered: 430V to 440V DC (half load)  
two amplifiers powered: 370V to 400V DC (full load)  
HT ripple: <6% of total DC at full load

Power consumption,	HT	Heater	Total	Mains current
single amplifier:	55W	22W	77W	>320mA
two amplifiers:	96W	44W	140W	<700mA

Cold switch-on mains in-rush current at full load: >800mA  
Primary side protection: 1A 'quick-blow' fuse  
Main line DC HT protection: 250mA anti-surge fuse  
Unloaded or open-circuit HT reservoir discharge method: Constant leakage resistor  
Unloaded HT reservoir discharge time: 1 minute approx., 500V to 0V

#### Specification of Amplifier

Amplifier type: Class AB1 'Ultra-Linear'  
Line supply voltage (HT): 400V to 450V DC  
HT current consumption: 125mA nominal (HT = 440V)  
Heater current consumption: 3.5A  
Max. output power: 20W rms (27W absolute maximum., HT = 440V)  
Gain: 30dB  
Input sensitivity: 220mV for 20W Output  
Input impedance: 1MΩ (500kΩ if volume control added)  
Frequency response: 25Hz to 30kHz ±0.5dB at 20W -3dB at 75kHz at 20W <10Hz to <40kHz ±0.5dB at 1W

Signal-to-noise ratio: 89dB  
Output noise (input grounded), hum: <3mV peak  
white noise: <2mV peak  
Harmonic distortion: 0.05% (0.1% at 27W)  
Output impedance: <0.2Ω

#### Output Transformer Details

Primary anode-to-anode impedance (Ra/a): 6-6kΩ  
Screen grid taps: 43% from CT  
Winding distribution: Five sections of interleaved primary and secondary

windings  
Speaker load matching: 8Ω only  
Low frequency cut-off: 25Hz at 20W throughput  
Primary resonant frequency: 80kHz approx.

Valves: 1 x EF86, 1 X ECC83, 2 X EL34  
monobloc, 304 x 203 x 165mm stereo, 457 x 203 x 165mm

#### Optional Items

The following items are not included in the kit, but may also be required.

8-2Ω 25W wire-wound Resistor (dummy-load)	1	(P8R2)
470k single pot log	1	(FW27E)
470k dual pot log (alternative)	1	(FX14Q)
10M (alternative)	1	(M10M)
Gold chassis phono skt red	1	(JZ06G)
Gold chassis phono skt blk	1	(JZ05F)
Stick-on feet square	1 Pkt	(FD75S)
M3 x 10mm steel screw	1 Pkt	(JY22Y)
M3 steel nut	1 Pkt	(JD61R)
M3 shakeproof washer	1 Pkt	(BF44X)

#### Kit and Special Parts

A complete kit for each module, including the PCB and transformer, is available (but excluding optional items) to build one PSU and one mono amplifier. The kits are now supplied with pre-punched boxes for even easier assembly (available separately). In addition, complete monobloc and stereo assembly kits are also available as BJ35Q and BJ36P. Full construction details can be found in Maplin Magazine/Projects Books 73 and 74, XA73Q and XA74R, and instruction leaflets XU45Y, XU46A.

#### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU11M	Valve Amp PSU Kit	£55.310	£64.990
LU12N	Mono Valve Amp Kit	£55.090	£69.990
BJ35Q	Mono Valve Amp & PSU	£119.140	£139.990
BJ36P	Stereo Valve Amp&PSU	£170.200	£199.990
GH59P	Valve Amp PSU PCB	£3.820	£4.490
GH60Q	Valve Amp Mono PCB	£3.820	£4.490
AS97F	Millenium PSU Case	£11.050	£12.990
AS98G	Millenium Amp Case	£11.050	£12.990
AS99H	Millenium Case Link	£1.260	£1.490
XU45Y	Millenium PSU Lft	£1.000	£1.000 NV
XU46A	Millenium Amp Lft	£1.400	£1.400 NV



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## 'Newton' Stereo Valve Pre-amplifier

4



- ★ Simple PCB construction
- ★ Compact stereo module
- ★ Versatile connection options
- ★ Onboard low-impedance line driver
- ★ Low-noise DC heater supply
- ★ Passive RIAA equalisation
- ★ High output
- ★ Wide dynamic range

### Specification

Phono stage  
 Input impedance: 51kΩ + 330pF\*  
 Line output impedance: 1kΩ  
 Overall gain, phono to line: 48dB @ 1kHz  
 Line output level: 1 to 2V peak (2.5mV @ 1kHz for 5cm/s)  
 Signal to noise ratio: 40 to 60dB (depending on cartridge)

RIAA equalisation network type: Passive optimised

\*Select values to match the requirements of the cartridge used.

### Tone Control Stage

Line input impedance: 1MΩ  
 Main output (to power amp) impedance: <10kΩ  
 Overall gain: 6dB flat  
 Frequency response: 20Hz to 20kHz ±0.5dB, 2dB @ 100kHz

Output noise: <200µV peak max.  
 Signal to noise ratio: 60dB for 100mV input level

Line input signal level: 0dB typical  
 Maximum permissible input level before onset of clipping: 6V pk-to-pk  
 Bass boost and cut: +16dB and -12dB @ 20Hz max.

Treble boost and cut: +18dB and -19dB @ 20kHz max.

Balance offset boost: +3dB max.  
 Tone control network type: Passive Baxandall  
 Power supply: 230 to 240V @ 50Hz or 115 to 120V @ 60Hz  
 Power consumption: 30W approx.

### RIAA Phono Module

Test conditions  
 Input signal level: 2.5mV peak, 1kHz  
 Input source impedance: 600Ω via 1.5m screened lead

HT supply: 300V + 100mV ripple @ 100Hz  
 Input impedance: 51kΩ + 330pF\*  
 Buffered output impedance: <1kΩ

(using V2):  
 Overall gain: 48dB @ 1kHz  
 Output levels, with simulated magnetic cartridge input moving coil, = 2.5mV @ 1kHz/630mV

signal to noise ratio: >39dB  
 moving magnet, = 5.5mV @ 1kHz 1.5V

signal to noise ratio: >43dB

Real conditions (example = Tenorel TMC10 moving coil cartridge, O/P = 2.5mV @ 1kHz for 5cm/s)  
 Output level in use: 2V peak  
 Signal to noise ratio: >52dB (nearer 60dB)  
 V1a & b triode stage gain: 34dB each  
 Equalisation network type: Passive RIAA standard

Power requirements:  
 HT supply: 300 to 350V DC  
 HT current consumption: 15mA incl. bufFer  
 Heater supply #1: 12.6V DC @ 300mA\*\*  
 Heater supply #2: 6.3V AC @ 300mA

\* Select values to match the requirements of the cartridge used.

\*\* DC heater must be regulated and one side connected to signal I/P 0V near V1.

It was only logical that the 'Millennium 4-20' 20W power amplifier should have a valve preamplifier to partner it. It should be noted, however, that the 'Newton' need not be restricted to serving the 'Millennium' alone, and it is easily capable of filling in as the front end for other power amplifiers, valve types or otherwise.

In addition, it is often necessary for a stereo preamplifier to cater for many other items of equipment to be connected to it, and simultaneously be able to provide line level outputs to tape recorders and receive other signal sources, such as from a tuner, CD, etc., even for off-tape monitoring, via multi-way selector switches. This versatility can extend to providing a number of auxiliary mains outlets for the other equipment, thus saving on the number of multiple plugblocks required.

The 'Newton' design exploits polycarbonate and polypropylene capacitors for best sound quality, high-speed electrolytics and very low noise, high stability metal film resistors. The result is a very compact preamplifier, that performs extremely well and is very reliable.

The three basic modules consist of a complete Power Supply Unit, the self-contained RIAA equalised Phono Pre-amplifier PCB, and similarly a Tone Control PCB. Each is available as a separate kit, where the PSU and the Phono Module each includes a suitable aluminium chassis.

### Optional Items

The following items, not included in the kits, may also be required.

Euro Outlet	As Req	(HL42V)
Insulating Cover for Euro Outlet	As Req	(JK69A)
Square Stick-on Feet	1 Pkt	(FD75S)
2-pole 6-way Rotary Switch	As Req	(FF74R)
4-pole 3-way Rotary Switch	As Req	(FF76H)
Twin Phono Socket	As Req	(JK15R)
Quad Phono Socket	As Req	(BW74R)
Octal Phono Socket	As Req	(JK17T)
Gold Phono Socket Black	As Req	(JZ05F)
Gold Phono Socket Red	As Req	(JZ06G)
Grounding Post	As Req	(JL99H)
Aluminium Sheet 16 swg	1 Sht	(LH13P)
Knob K8C	As Req	(YR66V)
15mm Solid Aly Knob K8A	4	(YR64U)
M3 Shakeproof Washer	1 Pkt	(BF44X)
M3 Steel Nut	1 Pkt	(JD61R)
M3 x 10mm Steel Bolt	1 Pkt	(JY22Y)

### Kit and Special Parts

Complete kits of parts (including the PCBs) are available (excluding optional items). The PCBs and front panel label are available separately. Full construction details may be found in Maplin Magazine/Projects Books 85 and 86, XA85G and XA86T, and instruction leaflets XV10L, XV11M and XV12N.

### Retail Unit Price each (inc. VAT).

Order Code	Type 7589	Price each exc. VAT 1+	inc. VAT each 1+
LT75S	Newton Pre-Amp PSU	£42.540	£49.990
LT76H	Newton I/P Module	£34.030	£39.990
LT77J	Newton Tone Control	£34.030	£39.990
KP75S	Newton Preamp Label	£2.970	£3.490
GH98G	Valve Preamp PSU PCB	£3.390	£3.990
GH99H	VPreamp Phono PCB	£4.240	£4.990
GJ00A	VPreamp Tone PCB	£5.090	£5.990
XV10L	Newton PSU Lift	£1.000	£1.000 NV
XV11M	Newton Phono Lift	£1.200	£1.200 NV
XV12N	Newton Tone Lift	£1.000	£1.000 NV

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## Velleman Equaliser System

3



A high quality equaliser system comprising the following kits:

K4300: Spectrum analyser display.  
 K4301: Pink noise generator.  
 K4302: 10 band graphic equaliser (two required for stereo).  
 K4303: Power supply and switching module (the switching module mounts onto the front panel).

### Equaliser

Number of bands: 10  
 Centre frequencies: 32,64,125,250,500, 1k,2k,4k,8k,16kHz  
 Bandwidth: 5Hz to 100kHz (-3dB)

Amplification (controls in flat position): 0dB  
 Control range: ±10dB  
 Total harmonic distortion: <0.02% (1kHz/0dB)  
 Signal-to-noise ratio (controls in flat position): >110dB (A-weighted to 0.775mV)

Stereo separation: >95dB (1kHz/0dB)  
 Max. output voltage: 2.5V rms  
 Input impedance: 4.7kΩ  
 Output impedance: 1kΩ

### Pink Noise

Pseudo random digital noise  
 Clock frequency: Adjustable from 30 to 100kHz

Pink noise filter: -3dB/octave (20Hz to 20kHz)  
 Output voltage: 150mV rms  
 Output impedance: 1kΩ

### Spectrum Analyser

Number of bands: 10  
 Centre frequencies: 32,64,125,500, 1k,2k,4k,8k,16kHz  
 Power bandwidth: 20Hz to 20kHz (±2dB)  
 Range: 20dB  
 Resolution: 2dB/LED

Sensitivity: line input: adjustable from 1V to 2V rms  
 microphone input: adjustable from 1mV to 20mV rms

Input impedance: line input: 100kΩ  
 microphone input: 10kΩ

## Front Panel For Graphic Equaliser System

A pre-formed front panel and accompanying panel foil for the modular graphic equaliser system.

### Optional Items

The following item, not included in the system kits, may also be required, to complete the system.  
 48.3cm (19in.) Rack Mounting Case 1 (XJ24B)

### Kits and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details and a list of additional parts for interconnection of modules will be found in the Maplin Magazine/Projects Book 74 XA74R, and instruction leaflet XU73Q.

### Retail Unit Price each (inc. VAT).

Order Code	Type 2544	Price each exc. VAT 1+	inc. VAT each 1+
VE41U	Velleman Kit F4302	£25.520	£29.990
XU73Q	Gr Eq Panel Leaflet	£0.800	£0.800 NV

**PHONE/FAX**  
 for next day delivery **PHONE: 01702 554000**  
**by 5pm** **FAX: 01702 554001**

## K4300 Audio Spectrum Analyser 3



### Features

- ★ 10 frequency bands monitored on 10 linear bargraphs; centre frequencies 32Hz, 64Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz and 16kHz
- ★ 10 LED bargraph for each band; 2dB for each LED, giving 20dB range
- ★ Microphone input
- ★ Single +12V DC power requirement
- ★ High input impedance (100kΩ) – will not load audio system
- ★ Can be used in its own right, or as part of a system

### Applications

- ★ Setting up speaker systems
- ★ Checking adjustment of graphic equaliser
- ★ Assuring a flat frequency response

A spectrum analyser is an invaluable tool for monitoring the composition of audio signals particularly in a sound system that utilises a graphic equaliser. In such a system, control across the spectrum is produced by 'boost' and 'cut' over multiple frequency ranges instead of the standard 'bass' and 'treble' controls. The spectrum analyser then visually displays the results of the graphic equaliser's settings on a group of LEDs arranged in a bank of 10 bands.

The spectrum analyser monitors pink noise from the output of an audio system enabling any corrective adjustment of the graphic equaliser controls to be displayed as a 'flat' response.

This kit can be used on its own or in conjunction with a pink noise generator (kit K4301, order as VE43W), a 10 band graphic equaliser (kit K4302, order as VE44X).

### Specification

Supply current: 0.75A (DC)  
 Power supply: 2 x 9V AC, or 12 to 15V DC  
 Range: 20dB (10 LEDs, 2dB per LED)  
 10 Bands: 32Hz, 64Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz, 16kHz

Line input level: Adjustable, 100mV to 2V rms  
 Line input impedance: 100kΩ  
 Microphone preamplifier gain: 40dB  
 Microphone input impedance: 10kΩ

### Optional Parts

The following items, not included in the kit, may also be required.

Insulated Spacer M3 x 20mm	2 Pkts	(FS38R)
Insulated Spacer M3 x 10mm	1 Pkt	(FS36P)
Screw M3 x 12mm	1 Pkt	(BF52G)
Steel Nut M3	1 Pkt	(JD61R)
Rotary Switch SW4B	1	(FF75S)
Phono Socket	4	(YW06G)
Open Chassis Socket 6.3mm	1	(HF91Y)
Wire 7/0-2 10m Black	1	(BL00A)
Wire 7/0-2 10m Red	1	(BL07H)
Single Core Lapped Screen	1	(XR12N)
Ribbon Cable 20-Way	As Req	(XR07H)

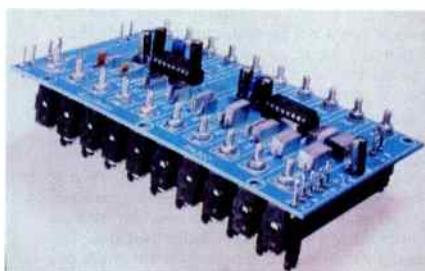
### Kit and Special Parts

A complete kit of parts (including the PCBs) is available (excluding optional items). Full construction details may be found in instruction leaflet XU43W.

Retail Unit Price each (inc. VAT).

Order Code	Type 2364	Price each exc. VAT	inc. VAT each
VE42V	Velleman Kit K4300	£65.520	£76.990
XU43W	Spectrum Analyser Lft	£0.800	£0.800 NV

## K4302 Mono Graphic Equaliser Module 2



### Features

- ★ Compact size
- ★ Low distortion
- ★ Low cost
- ★ 10dB of cut or boost across 10 frequency ranges
- ★ 5V to 12V DC single-rail power requirement

### Applications

- ★ Modular equaliser systems
- ★ Disc and PA equipment
- ★ Updating hi-fi equipment
- ★ In-car applications
- ★ Home recording and electronic music

A graphic equaliser allows you to bring out the best sound from your audio system – room acoustics or speaker coloration problems are brought under control by allowing the audio response to be tailored to personal preference.

The Graphic Equaliser kit allows ten narrow, but overlapping frequency bands across the audio range to be cut or boosted. These bands are arranged around centre frequencies of 32Hz, 64Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz and 16kHz, which are adjustable by moving the sliding potentiometers from the centre flat position, to cut or boost at a specific frequency, or group of frequencies. Note that two kits will be required for stereo. Suitable knobs are available (VX18U).

### Specification

Frequency bands: 32Hz, 64Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz and 16kHz  
 ±10dB per band

Cut/boost: 0dB output, flat  
 Frequency response: 5Hz to 100kHz (-3dB)  
 Signal to noise ratio: 110dB (IHF A-weighted, 0dB output, flat)

Distortion: 0.02% (1kHz, all controls in 'flat' position)  
 Power supply: 5 to 12V DC at 10mA (regulated)

Overall dimensions: 145 x 77 x 35mm (excluding slider shafts)

### Optional Items

The following items, not included in the kit, may also be required.

Slider Knobs	10 or 20	(VX18U)
Screened Cable	As Req	(XR15R)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Project Book 71 XA71N, and in instruction leaflet XU50E.

Retail Unit Price each (inc. VAT).

Order Code	Type 2371	Price each exc. VAT	inc. VAT each
VE44X	Velleman Kit K4302	£30.620	£35.990
VX18U	Velleman KNGGRAPH	£0.842	£0.990
XU50E	10 Band Equ. Leaflet	£0.800	£0.800 NV

## K4301 Pink Noise Generator 2



### Features

- ★ AC or DC supply
- ★ Low cost
- ★ Easily adaptable to produce white noise
- ★ Flexibly designed and small PCB
- ★ Pseudo-random noise generation utilising digital techniques

### Applications

- ★ Calibration of graphic equaliser in conjunction with a spectrum analyser
- ★ Noise generators
- ★ Electronic music

A pink noise generator is a device that produces noise of constant amplitude across the whole audio band. Many pink noise generators utilise a zener diode or reverse-biased transistor, working at a deliberately low current, as a noise source which leads to unpredictable results. By utilising a pseudo-random bit pattern generator, a much more reliable result is obtained.

The Pink Noise Generator Module is intended for use with a graphic equaliser, in conjunction with the Spectrum Analyser (Kit K4300 VE42V).

This system, typically used in a domestic environment, allows compensation for speaker frequency response, the effect of room size on frequency response, soft furnishings, hard walls, and other sources of absorption and reflection.

### Specification

Clock frequency adjustment: 30kHz to 100kHz  
 Output level: 150mV rms (clock running at 40kHz)

Output impedance: 1kΩ  
 Pink noise filter: -3dB/octave (20Hz to 20kHz)

Power supply requirement: 9 to 12V AC, or 12 to 15V DC at 5mA  
 43 x 72mm

### PCB dimensions:

### Optional Items

The following items, not included in the kit, may also be required.

Screw-Cap Phono Plug White	2	(HQ59P)
Screened Cable	As Req	(XR15R)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 72 XA72P, and instruction leaflet XU54J.

Retail Unit Price each (inc. VAT).

Order Code	Type 2367	Price each exc. VAT	inc. VAT each
VE43W	Velleman Kit K4301	£9.350	£10.990
XU54J	Pink Noise Gen Lft	£0.250	£0.250 NV

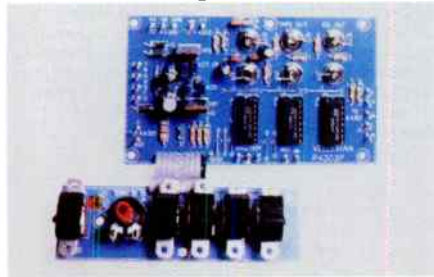
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## K4303 Power Supply and Switching Unit

3



- ★ Input from line or noise generator
- ★ Tape output from lines or equaliser
- ★ Spectrum analyser input from line or microphone

- ★ Line output from line input or equaliser

This Power Supply and Switching Unit module has been designed for use with the Modular Graphic Equaliser System, which is made up from the following modules.

Audio Spectrum Analyser	K4300 (VE42V)
10-Band Graphic Equaliser	K4302 (VE44X)
Pink Noise Generator	K4301 (VE43W)
Front Panel	F4302 (VE41U)

This kit performs three functions. These are:

1. To provide a regulated power supply for the above modules.
2. To provide all the necessary switching functions.
3. Includes a front panel mounted line input sensitivity control.

### Kit and Special Parts

A complete kit of parts (including the PCB) is available. Full construction details may be found in Maplin Magazine/Projects Book 73 XA73Q, and instruction leaflet XU66W.

Retail Unit Price each (inc. VAT).

Order Code	Type 2373	Price each exc. VAT	inc. VAT each
VE45Y	Velleman Kit K4303	£27.220	£31.990
XU66W	Equi PSU/Input Lift	£0.530	£0.500 NV

## Power Amplifiers

### LM386 Amplifier

1

The LM386 is a general purpose power amplifier designed for use in low voltage applications and requires minimal external components to operate. It is ideal for use in applications where a low power amplifier is required, i.e. radio receivers, intercoms, etc. Output power into 8Ω is 325mW.



### Specification (typical)

Supply Voltage (V <sub>S</sub> ):	4V to 12V DC
Quiescent Current:	4mA
Output Power (P <sub>OUT</sub> ):	325mW
Voltage Gain:	46dB
Bandwidth:	300kHz
THD:	0.2%
Input Bias Current:	250nA

Note: As this board is intended as a 'building-block' project it is not eligible for our 'Get-you-working' service.

### Kit and Special Parts

A complete kit of parts to build the basic LM386 amplifier is available (note: kit does not include R1, which has to be selected on test). The high quality fibre-glass PCB is also available separately. PCB dimensions: 29.2 x 29.2mm. Full construction details may be found in Maplin Magazine/Projects Book 29 XA29G, and instruction leaflet XU38R.

Retail Unit Price each (inc. VAT).

Order Code	Type 2700	Price each exc. VAT	inc. VAT each
LM76H	LM386 Kit	£4.240	£4.990
GC96T	LM386 PCB	£1.690	£1.990
XU38R	LM386 Amplifier Lift	£0.500	£0.500 NV

## TDA2822 Stereo Audio Amplifier

1



- ★ Easy to build
- ★ Low quiescent current
- ★ Low crossover distortion
- ★ Supply voltage down to 3V
- ★ Stereo headphone jack socket

The TDA2822 is a monolithic integrated circuit and with the rest of the components on the printed circuit board, it offers a small yet powerful stereo amplifier module. Because of its wide supply voltage range (3V to 15V) it is well suited to portable battery operated applications.

### Specification

Test conditions:	PSU = 9V, Output load = 8Ω
Input sensitivity:	26mV rms
Input impedance:	47kΩ at 1kHz
Quiescent current:	8mA
Maximum current:	260mA
Output power:	650mW rms per channel
Power bandwidth:	40Hz to 150kHz (-3dB)
Distortion:	0.9% thd
Output noise:	40μV

### Kit and Special Parts

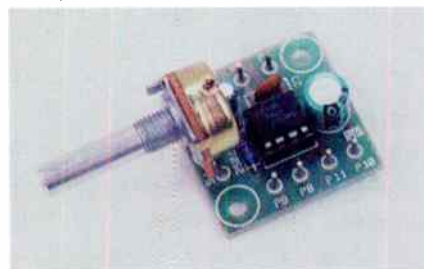
A complete kit of parts is available and pcb is also available separately. Full construction details may be found in instruction leaflet XU37S. PCB dimensions: 72.4 x 44.5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 2702	Price each exc. VAT	inc. VAT each
LP03D	TDA2822 Stereo Pwr Amp	£9.350	£10.990
GE21X	TDA2822 PCB	£2.540	£2.990
XU37S	TDA2822 Amp Leaflet	£0.800	£0.800 NV

## TDA7052 1W Power Amplifier Module

1



- ★ Low Component Count
- ★ Low Power Consumption
- ★ Short Circuit Protected
- ★ No External Heatsink Required

An application circuit using the TDA7052 1W mono power amplifier IC, and ideal for use in low power applications such as portable battery powered equipment, because it requires very little in the way of external components to function. This is entirely a general purpose module and will find uses where simple but effective audio power amplification is needed. Typical uses for the module could include low power audio amplification for portable radios, cassette recorders/players, toys, games, intercoms, and related devices; the high gain capability of the circuit makes it ideal for use in intercoms and baby alarms, where the module may be used to amplify signals from a microphone direct with very little pre-amplification to a suitable level to drive a loudspeaker directly. Provision for a volume control can be made directly on the board.

### Specification

Power supply range:	3 to 15V DC
Supply current:	4mA quiescent @ 6V 340mA max. @ 6V for 1W into 8Ω
Distortion:	0.7% THD @ 1kHz & 0.1W
Output power:	1W rms max. @ 6V
Voltage gain:	39dB
Size:	32 x 32mm

### Kit and Special Parts

A complete kit of parts is available. The pcb is also available separately. Full construction details may be found in the Maplin Magazine/Projects Book 37 XA37S, and instruction leaflet XU36P. PCB dimensions: 31.75 x 31.75mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 2708	Price each exc. VAT	inc. VAT each
LP16S	TDA7052 Kit	£5.940	£6.990
GE41U	TDA7052 PCB	£2.540	£2.990
XU36P	TDA7052 Amp Lift	£0.500	£0.500

## K4001 7W Amplifier

1



This small amplifier is constructed around the TDA2003 IC, capable of delivering 4W rms. The IC is completely thermally and short-circuit protected. A conventional DC supply can be connected as supply. Overload and short-circuit protected.

### Specification

Music power output:	7W/4Ω
RMS output:	3.5 W/4Ω and 2W/8Ω
THD:	0.05% (1W/1kHz)
Frequency response:	20Hz to 20kHz (-3dB)
S/N ratio:	86dB (A weighted)
Input sensitivity:	40mV/150kΩ
Supply voltage:	15V DC (8 to 18V DC possible) at 0.5A
Dimensions:	55 x 35mm

Retail Unit Price each (inc. VAT).

Order Code	Type 10502	Price each exc. VAT	inc. VAT each
VF55K	K4001 7W Amp Kit	£7.650	£8.990

## K2637 Super Mini Mono 2.5W Audio Amplifier

1



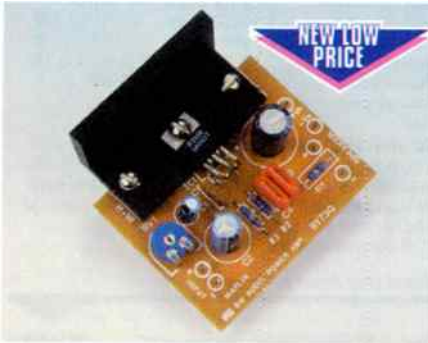
Small board complete with both pre- and power amplifier. No adjustment required. Short circuit protected.

Power supply:	4.5 to 15V DC
Input sensitivity:	power amplifier 150mV (12V) pre-amplifier: 20mV (12V)
Output power:	2.5W max. (4Ω, 12V)
Dimensions:	42 x 32 x 27mm

Retail Unit Price each (inc. VAT).

Order Code	Type 2004	Price each exc. VAT	inc. VAT each
VE12N	Velleman Kit K2637	£7.650	£8.990

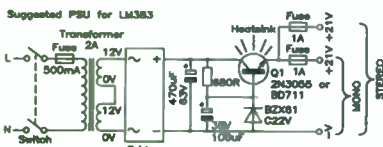
## 8W Power Amplifier 1



A hi-fi 8W amplifier using the LM383. One of our most popular kits, this amp is offered at a very low price and is an ideal building-block module for use in many audio projects. For more details see the specification of the LM383 in the Semiconductor Section of this catalogue.

- Parts List For Suggested Power Supply**
- Fuse 500mA Anti-surge (A/S) (WR18U)
  - Fuse 1A (A/S) (WR19V)
  - Fuse 1A Additional for Stereo (WR19V)
  - Transformer 2A (YK15R)
  - Bridge Rectifier SO05 (QL09K)
  - 470µF 63V Electrolytic Capacitor (FB74R)
  - 100µF 35V Electrolytic Capacitor (FB49D)
  - Resistor 680Ω (M680R)
  - Zener Diode 22V BZX61C22V (QF61R)
  - Power Transistor 2N3055 or BD711 (YH98G) (WH15R)

Mains switch as required (see switches section).  
Heatsink as required (see end of semiconductor section).



### Kit and Special Parts

A complete kit of all the parts needed to build the 8W amplifier shown above (not including the PSU) is offered at a very competitive price. The PCB is also available separately.

Retail Unit Price each (inc. VAT).

Order Code	Type 2712	Price each exc. VAT	inc. VAT each
LW36P	8W Amp Kit	£8.500	£9.990
BY73Q	8W Amp PCB	£1.260	£1.490

## 12V Public Address System 2



- ★ Two 8W rms Amplifiers
- ★ Maximum of 10 x 8 Ω Speakers can be Driven
- ★ Supplied from 12V Car Battery

A Public Address amplifier that operates from a 12V car battery, and producing up to 10W per channel specifically to drive arrays of public address loudspeakers. Input for a single microphone is provided by a mono 6-35mm (1/4 in.) jack socket. Bandpass limiting of 300Hz to 3kHz neatly excludes very low and high frequency harmonics in speech areas which are unnecessary for PA use, leaving

the bandpass area free of excessive distortion. Megaphone type speaker arrays that would be used have their own similar bandpass characteristics. Without recourse to power bridging designs or power inverter techniques the amplifier can produce 10 to 20W rms of power output, using the robust TDA2005 power amp IC, from a single 12V supply. The IC contains 2 such amplifiers each capable of driving loads down to 1-6Ω, or five 8Ω speakers. A combined total of 16W can be achieved from ten such speakers.

**Specification**

- Supply voltage: 6V to 17V DC
- Min. supply current: 100mA
- Max. supply current: 2-25A
- Rated power output: 8W rms. per ch. (16W pk)
- Both channels running: 16W rms. total at 1kHz
- Input sensitivity: 2mV continuously variable for rated output

- Load impedance: 1-6Ω max. to 8Ω min.
- Power response: 680Hz to 2kHz
- Input: Single 6-35mm mono jack
- Output: Twin 6-35mm jacks

Includes input sensitivity preset and volume control.

### Optional Items

The following items, not included in the kit, may also be required.

- Jack Plug 2 off (HF87U)
- PA Front Panel (FP59P)
- Battery Clip 2 off (HF26D)
- Wire 3202 Red (XR36P)
- Wire 3202 Black (XR32K)

### Kit and Special Parts

A complete kit of all parts for the 12V PA Amplifier excluding the front panel. The pcb (size 144 x 82mm), pre-drilled case, and printed adhesive front panel are also available separately. Full construction details may be found in instruction leaflet XV00A. PCB dimensions: 144-8 x 82-6mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 2718	Price each exc. VAT	inc. VAT each
LM17T	PA Kit	£25.520	£29.990
GD31J	PA Board	£3.820	£4.490
YP12N	Car PA Case Drilled	£13.180	£15.490
FP59P	PA Front Panel	£3.820	£4.490
XV00A	Public Address Lift	£0.800	£0.800 NV

## 15W Power Amplifier 2



### Features

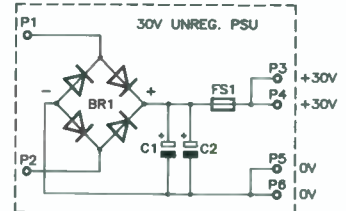
- ★ 15W RMS output power (into 4Ω load)
- ★ Short-circuit protected
- ★ Low distortion
- ★ Amplifier and power supply kits available
- ★ Low-cost

### Applications

- ★ Superior replacement amplifier module for most music centres
- ★ Monitor amplifier
- ★ Bench amplifier

The original Hi-Fi 15W amplifier, using the TDA 2030 IC, has been around for 12 years and has been a consistently good seller. By a careful redesign of the original PCB layout, and a few judicious component changes, the performance has been considerably improved over the original. The total harmonic distortion has been reduced to less than 0-1%, with a very useful increase in output power. All this adds up to an extremely versatile, compact amplifier. The output is short-circuit proof,

and the built-in thermal protection means that the IC is capable of surviving most fault conditions. The IC should be bolted directly to the heatsink bracket after smearing a small amount of heat transfer compound (not supplied in kit) onto the mating surfaces. The tab of the IC is connected internally to pin 3, and is at 0V potential; this pin must always be connected to the most negative part of the amplifier circuit. It may be desirable to isolate the tab from the heatsink by using an insulating bush and greaseless washer and leave pin 7 of the IC unconnected.



A suitable 30V DC unregulated power supply kit is also available (excluding transformer). One kit is required for each amplifier, but only one transformer is required, a toroidal type (YK86T), for either mono or stereo operation. For mono applications, the two secondaries are wired in parallel (red and blue wires to pin 1 of PSU, yellow and grey wires to pin 2 of PSU). For stereo each secondary winding feeds a separate PSU module (red to pin 1 of PSU 1, yellow to pin 2 of PSU 1; blue to pin 1 of PSU 2, grey to pin 2 of PSU 2).

### Specification

(Using LT24B PSU module(s) and YK86T transformer)

Maximum supply voltage: 40V DC

Output short circuit protection: Continuous

Input sensitivity for maximum output

- 4Ω speaker load: 244mV RMS (-10-03dB)
- 8Ω speaker load: 288mV RMS (-8-59dB)

Total harmonic distortion

- mono into 4Ω: 0-05% (15W RMS)
- mono into 8Ω: 0-05% (11W RMS)
- stereo into 4Ω: 0-1% (15W RMS)
- stereo into 8Ω: 0-1% (11W RMS)

Bandwidth

- 4Ω: 20Hz to 100kHz
- 8Ω: 10Hz to 100kHz

### Optional Items

The following items, not included in the kit, may also be required.

### 15W Amplifier

- Heatsink 4Y 1 (FL41U)
- TO220 1 (WR23A)
- Heat Transfer Compound 1 Tube (HQ00A)
- Heavy Duty Speaker Cable As req. (XR60Q)

### PSU

- Neon Switch Red 1 (YR70M)
- Fuse 32mm (11/4in.) 1A 1 (WR11M)
- Toroidal Transformer 120VA 24V 1 (YK86T)
- Fuseholder 1 (FA39N)
- Fuseholder Boot 1 (FT35Q)
- Tie Wrap 102 1 (BF91Y)
- Miniature Mains Cable As req. (XR01B)
- Strain Relief Grommet 5R2 1 (LR48C)
- Push-on Receptacles 1 Pkt (HF10L)
- Push-on Receptacle Covers 1 Pkt (FE65V)
- Tag 2BA Solder 1 Pkt (BF27E)
- Chassis Mounting Phono Skt 2 (YW06G)
- Chassis Mount 2 pin DIN Skt 2 (HH31J)

### Kit and Special Parts

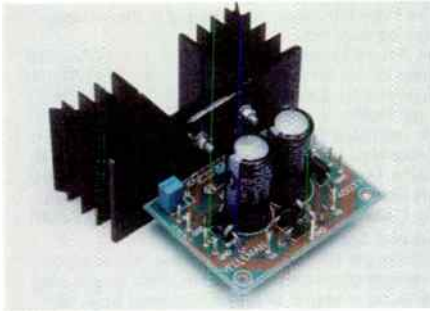
A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items) for the 15W amplifier and a separate kit is available for the 30V unregulated PSU. The PCBs and bracket are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 64 XA64U, and instruction leaflet XU07H.

Retail Unit Price each (inc. VAT).

Order Code	Type 2715	Price each exc. VAT	inc. VAT each
LT23A	15Watt Amplifier Kit	£8.500	£9.990
LT24B	30V Unreg PSU Kit	£7.650	£8.990
GH32K	15Watt Amplifier PCB	£2.110	£2.490
GH33L	30V Unreg PSU PCB	£2.110	£2.490
YC36P	15W Amp Bracket	£1.260	£1.490
XU07H	15 Watt Amp Leaflet	£0.800	£0.800 NV



## K4003 30W Stereo Amplifier 2



A small stereo amplifier based round the TDA1521 IC providing 15W rms/channel into 4Ω. The IC is thermally and short-circuit protected and includes suppression during switch on/off. Requires a suitable AC power rail.

### Specification

Output power rms	
into 4Ω:	15W/channel
into 8Ω:	10W/channel
Peak music power:	30W/channel into 4Ω
THD at 1W (1kHz):	0.07%
Channel separation:	70dB
S/N:	98dB A-weighted
Input sensitivity:	300mV/150kΩ
Supply voltage:	2 x 12V AC at 2A (stock code YK15R)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF53H	Velleman Kit K4003	£17.650	£23.990

## 20W Power Amplifier 2



This low distortion, high quality audio amplifier, based on the LM1875, is capable of delivering 25W into 4Ω to 8Ω loads and can be operated from split or single rail supplies. It also features short circuit and thermal protection. This amplifier is an ideal building-block module for use in many audio projects. Full construction details may be found in Maplin Magazine/Projects Book 30 XA30H.

### Specification

Supply Voltage:	60V(±30V) Max
Supply Current:	70mA (typical), P <sub>OUT</sub> 0W
Output Power (P <sub>OUT</sub> ):	25W, THD = 1%
Load Impedance:	4Ω to 8Ω
THD:	(f = 1kHz) 0.022%
P <sub>OUT</sub> = 20W, 4Ω load	(f = 20kHz) 0.07%
Full Power Bandwidth:	DC to 250kHz (-3dB)
Open Loop Gain (DC):	90dB
Slew Rate:	8V/μs

### Printed Circuit Board

A high quality fibre-glass PCB with printed legend is available for the basic LM1875 audio amplifier application. The board has provision for both single and split rail supply versions of the amplifier.

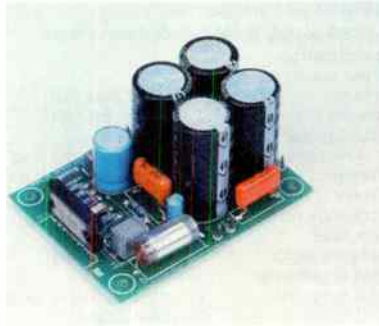
Note: As this board is intended as a 'building-block' project it is not eligible for our 'Get-you-working' service.

PCB dimensions: 73.7 x 68.6mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GE13P	LM1875 PCB	£2.970	£3.490

## TDA1514A 50W IC Power Amplifier 2



### Features

- ★ Star earthing
- ★ Small size (PCB, 57mm x 76mm)
- ★ Preselectable input sensitivity
- ★ Wide supply voltage range
- ★ Safe operating area (SOAR) protected
- ★ Short circuit protection
- ★ Thermal protection

The TDA1514A power amplifier is a high quality IC based power amplifier combining small size with high power output. The IC features protection against AC and DC short circuits when used with symmetrical supplies. The IC also includes an output mute circuit preventing 'clicks' and 'thumps' during switch on and switch off, thus eliminating the possibility of damage to delicate speakers. The amplifier is protected against thermal runaway and includes SOAR protection making the device almost indestructible. The IC has a wide supply range, the minimum requirements being ±9V to a maximum of ±30V. To deliver an output power of 50 watts the module requires a ±27.5V supply for an 8Ω load and a ±23V for a 4Ω load. Full construction details may be found in Maplin Magazine/Project Book 40 XA40T, and instruction leaflet XK56L.

### Specification

Supply voltage range:	±9V to ±30V DC
Input sensitivity:	300mV to 2V (adjustable)
Output impedance:	0-1Ω
Power output:	(V <sub>s</sub> = ±27.5V)
8Ω	40W RMS
4Ω	60W RMS
HD at -3dB of full output:	0.1%
Full power bandwidth (-3dB):	20Hz to 25kHz
Signal to noise ratio:	82dB
Peak output current:	6.4A
Quiescent current:	60mA
Supply ripple rejection:	(100Hz) 72dB
Slew rate:	10V/μs

### Optional Items

The following optional items are not included in the kit but may also be required.

Heatsink 2E	1	(HQ70M)
Insulator TO218	1	(UL74R)

### Kit and Special Parts

A complete kit of parts is available and the PCB is also available separately.

A ready assembled version is also available.

PCB dimensions: 57.2 x 76.2mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP43W	TDA1514 Power Amp	£17.010	£19.990
GE64U	TDA1514 Amp PCB	£5.090	£5.990
AM04E	TDA1514 Amp Assm	£25.520	£29.990
XK56L	TDA1514 D.F. Leaflet	£0.800	£0.800 NV

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## 50W Hi-Fi Power Amplifier 2



### Features

- ★ Very Low Distortion (<0.05% at 1kHz)
- ★ Unconditionally Stable
- ★ Damping Factor 80
- ★ Maximum Output 72W RMS at 1kHz (4Ω load)
- ★ Noise <-100dB
- ★ Easy to Build

### Applications

- ★ Hi-Fi Systems
- ★ Active Loudspeaker Systems
- ★ Sub-Woofer Amplifier
- ★ In-Car Amplifier

The Maplin 50W amplifier has been around for some time, and still sells extremely well - a tribute, no doubt, to the excellent design. The amplifier can readily form the basis of a high quality Hi-Fi system. Because of the low-cost of the kit, the amplifier can be used in an active loudspeaker system, or used to drive a sub-woofer. Such applications will require the amplifier(s) to be fed from suitable filter circuits. Another possible application is in-car amplification. Although if the amplifier(s) is to be used in a car, it would still have to be fed from a ±30V power supply. A suitable switch-mode power supply, that 'converts' the 12 to 14V output from a car battery to a suitable ±30V power supply, was discussed in 'Electronics' Issue 46, which is also available as a kit (LP39N).

### Specification

(With power supplies shown and extra heatsink)  
Power Output at 1kHz

	4Ω Load	8Ω Load
One Channel:	72W RMS	50W RMS
Two Channel:	49W RMS	36W RMS

Input Sensitivity	
For Rated Output:	380mV 450mV
Frequency Response:	Flat from 20Hz to 28kHz
Full Power Bandwidth	
(pulse tested at hf):	3dB down at 95kHz
Noise:	<-100dBu
THD:	<0.05% at 1kHz
Damping Factor:	80
Input Impedance:	15kΩ
Slew Rate:	14V/μs (at 10kHz)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 67 XA67X, and instruction leaflet XU21X.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LW36O	50W Amp Kit	£21.260	£24.990
HO6BY	50W Hi-Fi PCB	£5.090	£5.990
XU21X	50W Amplifier Lit	£0.800	£0.800 NV

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## 150W Bipolar Power Amplifier 2



**NEW**

### Features

- ★ 175W RMS into 4Ω\*
- ★ 100W RMS into 8Ω\*
- ★ Classic Bipolar design throughout
- ★ Wide frequency response
- ★ Low distortion
- ★ Full output at 1V RMS input\*
- ★ Will operate down to ±25V
- (\* Quoted values measured using recommended PSU)

### Applications

- ★ PA Systems
- ★ Disco equipment
- ★ In Car Entertainment using PSU LP39N

A redesign of the popular 150W Power Amp LW32K featuring improved noise and distortion figures. The kit now includes a larger, pre-drilled heatsink and greaseless insulators avoiding the mess of heat transfer compound. Details of the recommended PSU can be found in the magazine article and instruction leaflet. Two modules are required for stereo.

### Specification

Operating voltage: ±25 to ±50V DC  
 Quiescent current: 70mA DC  
 Classification: Bipolar  
 Class B (Push-pull)  
 Frequency response: 15Hz to 37kHz (-3dB)  
 Total harmonic distortion:

less than 0.1% at 1kHz  
 PCB dimensions: 196 x 101mm  
 Height (max): 56mm (including bracket)

### Kit and special parts

A complete kit of parts is available. The PCB and heatsink bracket are available separately. Full construction details may be found in Maplin Magazine/Projects Book 107 XD07H, and instruction leaflet XZ37S.

Retail Unit Price each (inc. VAT).

Order Code	Type 18460	Price each exc. VAT	inc. VAT each
LP33L	2TA 150W Amp Kit	£29.770	£34.990
GL73Q	150W Power Amp PCB	£5.090	£5.990
BL97F	Pwr Amp H'Sink Brkt	£7.650	£8.990
XZ37S	150W Pwr Amp Lft	£0.500	£0.500 NV

## 150W MOSFET Amplifier 2



- ★ True 100W/150W rms power output
- ★ Drives 4Ω or 8Ω loudspeakers
- ★ High reliability and performance

The MOSFET amp has been revised from its debut in 1981 for guitar use in the Combo Amplifier!!! This best selling project is always in the Top Ten Kits list.

An incredible hi-fi amp that offers high reliability and performance like the best valve amps. It is suitable for use in audio applications where high power levels and excellent frequency response characteristics are required.

A power supply is not included with the kit.

### Specification

Power supply  
 Voltage: ±55V DC max (8Ω)  
 Current: 2.5A (8Ω), 5A (4Ω)  
 Output power rating at 1kHz continuous sine wave: 100W rms into 8Ω load (max)  
 150W rms into 4Ω load (max)  
 Frequency response: 20Hz to 40kHz  
 Slew rate: 20V/μs  
 Damping factor: Fd = 200 (8Ω load)  
 Input impedance: 47kΩ  
 Input sensitivity: 860mV rms (2-43V pk-pk) for rated output

### Optional Items

The following items, are not included in the kit, but may also be required.

Audio Toroidal 160V	1	(YZ23A)
J04	1	(BH46A)
W01	1	(QL38R)
4k7 1W Carbon Film	2	(C4K7)
10,000μF 63V Can	2	(FF32K)
2,200μF 63V Can	2	(FF22Y)
100nF HV	2	(FA21X)
100nF 35V Tantalum	2	(WW54J)
μA78M12UC	1	(QL29G)
μA79M12UC	1	(WQ89W)
Fuse A/S 3-15A	3	(RA11M)
Fuse A/S 630mA	2	(RA08J)
Heatsink 6W-1	1	(FL77J)

### Kit, Ready-Built Module and Special Parts

This project is available as a complete kit or as a ready-built module size 100 x 75 x 25mm. In addition the heatsink mounting bracket and the PCB (size 90 x 85mm) are available separately. Full construction details can be found in Maplin Magazine/Projects Book 41 XA41U, and instruction leaflet XK39N.

Retail Unit Price each (inc. VAT).

Order Code	Type 2748	Price each exc. VAT	inc. VAT each
LP56L	Mosfet Amp Kit	£18.710	£21.990
AM03D	150W MOSFET Amp Assm	£25.520	£29.990
GA28F	150W MOSFET PCB	£3.390	£3.990
GA29G	MOSFET Amp Mtg Bkt	£1.260	£1.490
XK39N	150W Mosfet Leaflet	£0.800	£0.800 NV

## High Quality Power Supply 2



- ★ Audio grade transformer and capacitors
- ★ Multifuse™ protection
- ★ Fast recovery rectifier diodes
- ★ Regulated ±12V auxiliary supply

This project uses high grade components to produce a symmetrical ±50V rms at 2A. A stable tonal balance over the audio bandwidth, keeps second and third harmonic distortion to a minimum. Fast switching rectifier diodes with fast recovery rates are used in conjunction with a high grade transformer to produce a better supply. Large 10000μF capacitors across the DC rails reduce the ripple to 350mV maximum. Protection for the circuit comes in the form of a re-usable fuse that has a high impedance when 'tripped'. The fuse protects the speakers from being overdriven and from large DC offsets due to failed components. A ±15V preamplifier supply and ±17V for a speaker protection device has been included in the circuit, in addition to the main supply. The low voltage winding of the transformer is capable of delivering 160mA

max. This project has been designed for the 150W MOSFET amp, but can be used for any amplifier requiring ±50V DC supply.

### Optional Items

The following items, not included in the kit, may also be required.

A4 Rotary Mains Switch DPST	1	(FH57M)
Fuse 20mm 2A A/S	1	(WR20W)
Fuse Holder 20mm	1	(RX96E)
Fuse Holder Insulating Boot	1	(FT35Q)
M3 Insulated Spacer 10mm	1	(FS36P)
Cable Min. Mains Black	1m	(XR01B)
Cable Three Core and Earth	1m	(XR53H)
SR Grommet 5R2	1	(LR48C)
Zip Cable	1m	(XR39N)

### Kit and Special Parts

A complete kit is available and the PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 42 XA42V, and instruction leaflet XK24B. PCB dimensions 152 x 121mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3480	Price each exc. VAT	inc. VAT each
LP15R	HQ PSU Kit	£85.090	£99.990
GE29G	HQ PSU PCB	£9.770	£11.490
XK24B	H.Q. PSU Leaflet	£0.800	£0.800 NV

## Bridging Module Makes 400W MOSFET Amp 2



- ★ Increases output to 400W
- ★ Anti-thump at switch-on
- ★ Loudspeaker protection
- ★ Accommodates wide range of input voltages

When used with two Maplin MOSFET Amps, this easy-to-add module will allow them to produce up to 400W RMS audio output!! By connecting the amplifiers to the input and to the speakers via this module many advantages are obtained in addition to the huge power gain. The module completely protects the loudspeakers and amplifiers through the on-board relay from short circuits, overloads, and high voltage offsets. In addition the module stops the audible thump at switch-on by connecting the speakers to the amps after a short delay. The massive power gain is achieved by making the input to one of the power amps out of phase with the input to the other amp and then bridging the speakers between the two amps. The very high output powers achieved will require that speaker connections are carefully chosen to ensure that the high currents can be handled. To achieve 400W a high power PSU will be needed, i.e. 8 to 10 amps at 55-0-55V and it must be well regulated. The MOSFET amps, however, thanks to the special characteristics of MOSFET transistors will give long and reliable service without strain even at this extremely high output.

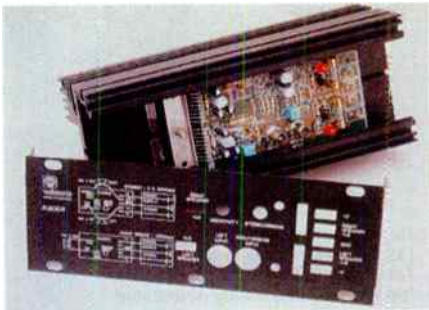
### Kit and Special Parts

This project is available as a complete kit or as a ready-made module. The pcb is also available separately. Full construction details may be found in instruction leaflet XK85G.

Retail Unit Price each (inc. VAT).

Order Code	Type 2756	Price each exc. VAT	inc. VAT each
LK03D	MOSFET Bridging Kit	£16.160	£18.990
GA17T	MOS-Amp Bridge PCB	£3.820	£4.490
XK85G	Bridge Mdle Leaflet	£0.500	£0.500 NV

**K4004 200W Mono/Stereo Amplifier Module** 2



**Features**

- ★ 2 x 50W into 4Ω, 2 x 40W into 8Ω
- ★ 100W/200W MUSIC POWER (BRIDGED MODE)
- ★ Overload and short circuit protection
- ★ Thermal protection
- ★ Selectable input level

This neat and compact amplifier module contains two TDA1514A, high quality power amplifier ICs which are compatible with a wide range of source material, including compact disc. A switch selects between stereo and bridged mono use. A ready-built Gold Line version of this amplifier is available which is known as the AMP100 (VF46A). If the amplifier is to be used as a free standing unit, it can be mounted in position by fitting M4 HEX head bolts in the side channel of the heatsink. Includes speaker 'pop' suppression at switch on and switch off, and protection against wrong polarisation by means of fuses.

**Specification**

RMS output power:	2 x 50W/4Ω; 2 x 40W/8Ω
RMS mono-bridged power:	100W/8Ω
Total music output:	200W
Harmonic distortion:	0.01% at 1 kHz
Signal-to-noise ratio:	102dB (A-weighted)
Stereo channel separation:	85dB
Damping factor (at 100Hz):	>1000 nominal
Input impedance:	22kΩ
Input sensitivity:	330mV, 550mV or 1V selectable
Short-circuit and overload protection:	10 minutes maximum
Thermal shut-down protection:	1 hour maximum
Supply voltage:	±28V DC maximum
Consumption 2 x 4Ω or bridged mono 8Ω:	4A maximum
Consumption 2 x 8Ω:	2.5A maximum
Dimensions:	210 x 84 x 64mm

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available. Full construction details may be found in Maplin Magazine/Projects Book 87 XA87U, and instruction leaflet XV34M.

Retail Unit Price each (inc. VAT).

Order Code	Type 2182	Price each exc. VAT	inc. VAT each
VF39N 2	Velleman Kit K4004	£43.390	£50.990
XV34M	200W Mono/Stereo Amp	£0.800	£0.800 NV

**K4010 300W Mono MOSFET Amplifier** 4



**Features**

- ★ High power
- ★ Low distortion
- ★ Highly efficient
- ★ Comprehensive protection circuitry

**Applications**

- ★ Hi-fi systems
- ★ Disco applications
- ★ Laboratories
- ★ Studio monitoring

Some audio applications demand high power levels, such as disco equipment, public address systems, laboratory experiments, and very large living rooms! This amplifier, an 'efficient' Class A design, will provide 300W music power into 4Ω. The amplifier gets around the inefficiency problem by a clever design which incorporates the use of a 'dynamic' (sometimes known as sliding) biasing technique. As a result, it has an efficiency of more than 70%, which is more in keeping with its Class B and AB cousins, but without the problem of crossover distortion.

This amplifier is the mono version of K4020 but without the casing. Ideally suited for use in disco sound installations, PAs and active speaker systems. Two of these amplifiers, can be combined, both physically and electrically, into a 300W per channel stereo amplifier, or a 600W mono bridge amplifier (Velleman Kit K4020 VF17T).

**Specification**

Music power:	300W into 4Ω, 200W into 8Ω
RMS power:	150W into 4Ω, 100W into 8Ω
Harmonic distortion:	0.008% at 1W 1kHz, 0.04% at 90W 1kHz
Damping factor:	>300
Input impedance:	47kΩ
Input sensitivity:	1V rms
Frequency response:	3Hz to 120kHz (-3dB)
Power bandwidth:	5Hz to 50kHz (-1dB)
Signal-to-noise ratio:	112dB (A-weighted at full power)
Protection:	Thermal, DC and short circuit
Speaker switch-on delay:	2 seconds
Speaker DC protection trip voltage:	>±1V
Thermal protection trip temperature:	90°C
Efficiency:	>70%
Power consumption:	220W maximum
Dimensions:	350 x 140 x 90mm (without transformer)

**Optional Items**

The following items, not included in the kit, may also be required.

Nylon Mains Plug 13A	1	(RW67X)
Fuse 5A	1	(HQ33L)
Insulating Boot for Fuseholder	1	(FT35Q)
Heatshrink Sleeving	As Req	
Heat Transfer Compound	1 Syringe	(FL79L)
Double Pole Mains Switch	As Req	
Panel Mounting Fuseholder	As Req	
AA Battery Box	1	(YR59P)
AA Zinc Carbon	1	(FK55K)
3-Core 6A Mains Cable	As Req	(XR03D)

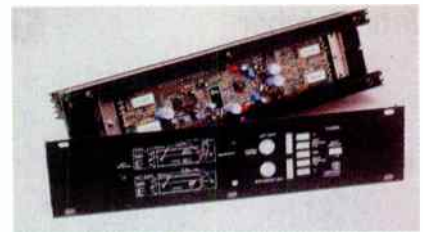
**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in instruction leaflet XU44X.

Retail Unit Price each (inc. VAT).

Order Code	Type 2184	Price each exc. VAT	inc. VAT each
VF19V 10	Velleman Kit K4010	£121.690	£142.990
XU44X	300W Power Amp Lft	£0.800	£0.800 NV

**K4005 400W Mono/Stereo Amplifier** 2



**Features**

- ★ 2 x 100W rms output power (into 4Ω load)
- ★ Three possible input sensitivities
- ★ Overload and short circuit protection
- ★ Speaker pop suppression
- ★ Thermal protection possible
- ★ Compact and robust design
- ★ Ready-built unit available

**Applications**

- ★ In-car amplifier module
- ★ Domestic use
- ★ PA systems

This superb amplifier is small and compact, and it certainly packs a punch! It is very versatile, being ideal for domestic use, car or caravan, and PA systems. The amplifier is housed in a robust stylish black case, which also doubles as its heatsink. Note that a ready-built Gold-line version of the amplifier is also available (VF45Y). If the amplifier is going to be used for portable applications (in the car/caravan, for example), then the K3508 In-Car PSU kit is required (VF38R). A ready built Gold-line version, the SPS200, is also available (VF47B). For domestic use, the choice of mains powered supply will depend upon the load requirements; the Gold-line APS204 (VF51F) is suitable for stereo mode (2 x 4Ω loads) and bridged mono mode with an 8Ω load. The APS208 (VF52G) is appropriate for stereo use with 2 x 8Ω loads. The Gold-line APS200 (VF49D) is a PSU module (not encased, and without a transformer) which is, primarily, designed to be integrated with the power amplifier into an enclosure of your choice. There are two choices of transformer available for the PSU; the choice is, again, dependent upon the load requirements. The 2 x 30V 225VA (DH72P) is suitable for use with 2 x 8Ω loads, and the 2 x 22V 300VA (DH74R) must be used with 2 x 4Ω loads, or an 8Ω load (bridged mono). Construction is quite easy, even though the component count is fairly high, as no elaborate test equipment is required for setting up the completed module. The amplifier has overload (the main IC even has its own in-built overload current protection!), short circuit protection and speaker 'pop' suppression at switch-on/off, to extend the life of your speakers.

**Specification**

RMS output power:	2 x 100W (4Ω load); 2 x 75W (8Ω load)
RMS mono-bridged power:	200W (8Ω load)
Total music output:	400W
Harmonic distortion:	0.003% at 1kHz
Signal-to-noise ratio:	96dB
Stereo channel separation:	76dB
Damping factor (at 100Hz):	>2000
Input impedance:	22kΩ
Input sensitivity:	150mV; 500mV; or 950mV switchable
Supply voltage	
8Ω load:	±40V to ±45V DC @ 2.5A
4Ω load or mono:	±30V to ±35V DC @ 5A
Dimensions:	350 x 62 x 85mm

**Optional Items**

K3508	In-Car PSU Kit	1	(VF38R)
SPS200	Ready-built In-Car PSU	1	(VF47B)
APS204	Domestic PSU (Mono/2 x 4Ω Stereo Load)	1	(VF51F)
APS208	Domestic PSU (2 x 8Ω Stereo Load)	1	(VF52G)
APS200	PSU Module (Not Encased/ Without Transformer)	1	(VF49D)
	Transformer for PSU Module (2 x 8Ω Load)	1	(DH72P)
	Transformer for PSU Module (2 x 4Ω Load)	1	(DH74R)

Retail Unit Price each (inc. VAT).

Order Code	Type 2184	Price each exc. VAT	inc. VAT each
VF40T 4	Velleman Kit K4005	£57.010	£66.990

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See front of catalogue for your nearest store

## Amplifier/Loudspeaker Protection

### Watt Watcher

1



When running a speaker system it is useful to have an idea of the approximate level of power being used. In particular it is important that the loud speaker manufacturer's specification is not exceeded as this could result in severe damage to the speaker. The Watt Watcher is a simple circuit that may be fitted into a speaker cabinet to provide an indication of the relative power level. It uses three LEDs: a green LED lights when the power is at a relatively low level indicating that the system is running; a second (orange) LED indicates an intermediate level of power and a third (red) indicates an overload condition. The level at which the orange and red LEDs light is set by fitting resistors of selected value, depending on the required power range. The Watt Watcher derives its power from the speaker line and hence requires no external power supply.

#### Kit and Special Parts

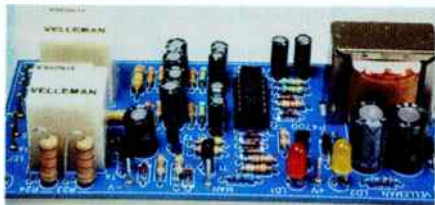
A complete kit of parts including the PCB is available. The PCB is also available separately. Full construction details may be found in instruction leaflet XU64U.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LM57M	Watt Watcher Kit	£7.650	£9.990
GD91Y	Watt Watcher PCB	£3.820	£4.490
XU64U	Watt Watcher Leaflet	£0.500	£0.500 NV

### K4700 Loudspeaker Protection

1



This dual-channel protection unit prevents power-on thumps from damaging your stereo speaker system and offers protection from DC components present on the output of any connected amplifier.

Switch-on delay: ±6 sec.  
DC protection: +1V/-1V  
Max. input voltage: 200V pk to pk (71V rms)  
Max. switching current: 10A  
LEDs for 'switch-on-delay' and 'Error'.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE24B	Velleman Kit K4700	£14.450	£16.990

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## Amplifier Monitor

2



- ★ Prevents switch-on/switch-off transients
- ★ Protects loudspeakers against amplifier and power supply faults
- ★ Self resetting or manual reset modes of operation
- ★ Suitable for mono or stereo amplifiers

This amplifier monitor provides loudspeaker protection against such 'nasties' as DC offsets. This can occur when amplifiers and their associated power supplies go faulty. Additionally, the monitor is intended to protect DC coupled loudspeakers – such as bass and mid-range units. At switch-on, the amplifier monitor provides a time delay during which the loudspeakers are 'disconnected' from the amplifier by means of relays. This allows the power supply to stabilise and the amplifier output capacitors, if fitted, to charge. At switch-off, the relays immediately 'drop-out'. Thus the amplifier monitor prevents those nasty 'bangs, pops and thuds' at switch-on and switch-off, which otherwise might damage your delicate and expensive loudspeakers. The amplifier monitor is suitable for use with amplifiers having symmetrical or asymmetrical power supplies up to ±50V or +100V. A facility for adding an external trigger circuit, e.g., a temperature monitor (LP71N), is also included, giving complete protection for both amplifier and loudspeakers. If the amplifier monitor is to be for PA use, then it may be found that the monitor may drop out when a 'miked-up' drum kit is struck. To overcome this problem, two 10µF capacitors (C1 and C101) are replaced by 33µF capacitors of the same type.

#### Specification

Mains power supply: 240V AC 50Hz  
Supply current: 34mA max  
Monitor input voltage: ±50V max  
Monitor trip voltage: ±3V min

Signal requirements to trip

input frequency,  
C1 and C101 = 10µF: <8Hz  
C1 and C101 = 33µF: <2.5Hz

Pulse width at 4Vpk,  
C1 and C101 = 10µF: >70ms  
C1 and C101 = 33µF: >200ms

Output current from -12V: 75mA max.

#### Optional Items

The following items, not included in the kit, may also be required.

M3 x 10mm Insulated Spacer 1 Pkt (FS36P)  
3-Way Minicom Plug 1 (BX96E)  
3-Way Minicom Housing 1 (BX97F)  
Min Mains Black As Req (XR01B)

#### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in instruction leaflet XK41U.

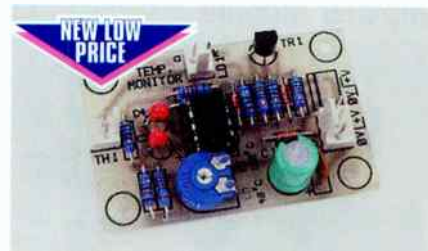
PCB dimension: 130.8 x 75.6mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP32K	Amplifier Monitor	£17.010	£19.990
GE59P	Amp Monitor PCB	£4.670	£5.490
XK41U	Amp Monitor Leaflet	£0.800	£0.800 NV

## Temperature Monitor

2



#### Features

- ★ +39°C to +98°C temperature range
- ★ Active high and low outputs
- ★ Trip temperature easily adjustable
- ★ In-built hysteresis
- ★ LED indicator

#### Applications

- ★ Amplifier protection
- ★ Power supply protection

This versatile Temperature Monitor is an optional 'add on' to the Amplifier Monitor LP32K, thus providing a complete monitoring system for amplifiers. The Temperature Monitor can be used with other protection circuits, providing that they have an external trigger input. Alternatively, the Temperature Monitor may be used in conjunction with the Zero Crossing Optoswitch LP55K, to turn a fan on at a preset temperature. The Temperature Monitor is based around a voltage comparator and a thermistor and the temperature range can easily be adjusted to be higher or lower by changing the value of the variable resistor and two fixed resistors.

#### Specification

Supply voltage: 12V nominal, 15V max. DC  
Quiescent current

① 12V: 3.6mA max.  
① 15V: 3.9mA max.

Operating current

① 12V 45.7mA max.  
① 15V 56.4mA max.

Temperature range:

Low temperature: Trip +39°C, reset +31°C  
High temperature: Trip +98°C, reset +86°C

#### Optional Items

The following optional items, not included in the kit, may also be required.

PCB Latch Plug 3-way 1 (BX96E)  
M3 Insulated Spacer 1 Pkt (FS36P)  
Double Bubble Sachet 1 (FL45Y)  
Minicon Latch Hsng 3-way 1 (BX97F)

#### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 48 XA48C, and instruction leaflet XK99H.

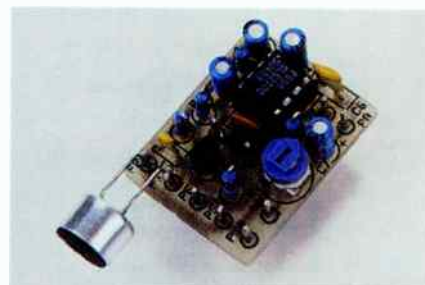
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP71N	Temp Monitor	£7.650	£9.990
GE90X	Temp Mon PCB	£2.970	£3.490
XK99H	Temp Mon Leaflet	£0.500	£0.500 NV

## Preamplifiers & Mixers

### SL6270 AGC Microphone Preamp

2



#### Features

- ★ Constant output signal
- ★ Fast attack
- ★ Lower power consumption
- ★ Single-ended or differential input

**Applications**

- ★ **Audio AGC system**
- ★ **Transmitter overmodulation protection**
- ★ **Tape recorders**

The SL6270 is a small 8-pin IC combining the functions of an audio amplifier and Voice Operated Gain Adjusting Device (VOGAD). It is designed to accept small signals from a microphone and to provide an essentially constant output signal from an input covering a range of 50dB. The dynamic range, attack and decay times are controlled by external components. The circuit can be used with either a dynamic or electret microphone. The device will operate over a wide range of power supply voltages between 4.9V to 10V and consumes only 9mA from a 9V battery. Typical applications might include: audio AGC systems, transmitter overmodulation protection, tape recorders and audio surveillance. Because the SL2670 may be used in many varied applications, some of the component values supplied in the basic kit will not be suitable, so alternative values must be calculated to determine the new working parameters.

**Note:** this is intended as a 'building block' project, and not eligible for our 'Get-You-Working' Service.

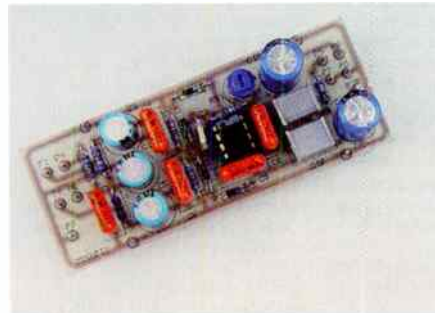
**Kit and Special Parts**

A complete kit of parts is available, including the PCB and instruction leaflet, but excluding PP3 battery and microphone. The PCB is available separately. Full construction details may be found in instruction leaflet XT26D. PCB dimensions: 33 x 25.4mm.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
LP98G	SL6270 AGC Mic Amp	£9.350	£10.990
GH00A	AGC Preamp PCB	£2.540	£2.990
XT26D	Comms Preamp Leaflet	£0.800	£0.800 NV

**SSM2017 Microphone Preamplifier**



**Features**

- ★ **Low noise**
- ★ **Low distortion**
- ★ **Can be configured for use with either balanced or unbalanced microphones**
- ★ **Wide bandwidth**
- ★ **High slew rate**
- ★ **Phantom powering for capacitor-type microphones**
- ★ **High gain (over 70dB) obtainable**

**Applications**

- ★ **Mixers**
- ★ **Tape recorders**
- ★ **Upgrading existing equipment**

The SSM2017 IC, at the heart of this project, is a latest-generation audio preamplifier which is particularly suitable for use as a balanced microphone amplifier. It features an ultra-low noise level (around 2nV/√Hz), wide bandwidth and high slew rate. It requires a dual rail supply of between ±6V and ±22V, and is available in an 8-pin DIL package. Whilst aimed at balanced applications, it can also be used with unbalanced microphones, as well as phantom powered microphones, e.g. electret microphones without an internal power supply.

**Specification**

THD: <0.01dB (gain = 40dB)  
 Noise: 2nV/√Hz (typ.)  
 Bandwidth: 1MHz (gain = 40dB)  
 Slew Rate: 17V/μS (typ.)  
 Power Supply: ±6V to ±22V DC @ 14mA (max) per rail; 48V DC for phantom supply

**Common-Mode Rejection**

Ratio (CMRR): 92dB (typ.)  
 Gain Adjustment: 14dB (x5-5) to 60dB (x1000)

**Optional Items**

The following items, not included in the kit, may also be required.

Twin-core Screened Cable (e.g., XS23A or XR08J)	As Req.	
Single-core Screened Cable (e.g., XR18U or XS14B)	As Req.	
Wire 7/0-2 10m Black	1	(BL00A)
Wire 7/0-2 10m Red	1	(BL07H)
Wire 7/0-2 10m Green	1	(BL03D)

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 69 XA69A, and instruction leaflet XU33L.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
LT31J	SSM 2017 Pre-Amp	£14.450	£16.990
GH52G	SSM 2017 PCB	£2.540	£2.990
XU33L	SSM2017 Preamp Lft	£0.800	£0.800 NV

**EQ2S Mono**



A tiny ready-built pcb suitable for use as a preamplifier for magnetic cartridges (RIAA), tape heads (NAB response) and low level microphones. Two will be required for stereo. Uses two silicon transistors.

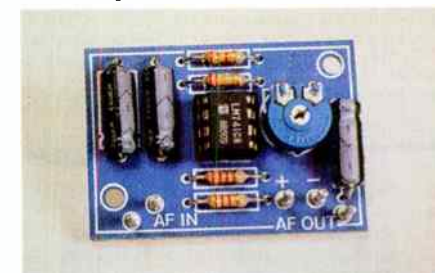
**Specification**

Gain (at 1kHz): Phono: 34dB (5mV input to 240mV output)  
 Response curve RIAA  
 Tape: 33dB (5mV input to 220mV output)  
 Response curve NAB (Microphones etc.) 38dB (3mV input to 230mV output)  
 Flat:  
 Max output: 2.5V (with 30mV input)  
 Input impedance: ±50kΩ (approx)  
 Output impedance: ±5kΩ (approx)  
 Power supply: 10V ±2V at 1mA (e.g. 9V battery PP3)  
 Supply range: 8 to 12V DC  
 Size: 60 x 35 x 20mm  
 Fixing centres: 50 x 25mm x 6BA clear.  
 Supplied with connecting instructions.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
LB97F	Pre-Amp EQ2S	£10.620	£12.490

**K1803 Universal Mono Preamplifier**



Ideally suited as: microphone amplifier – signal matching of tuner or tape outputs, etc.  
 Gain: typ. 40dB. Adjustable output level.

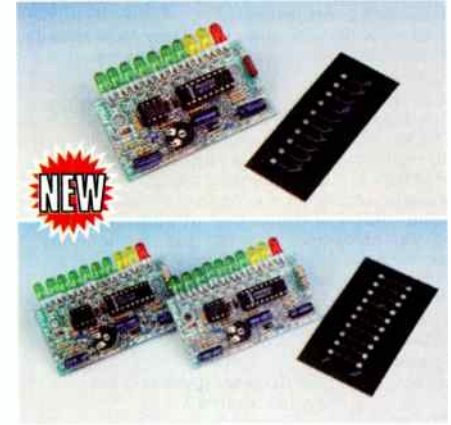
Frequency range: 20Hz to 20kHz (±3dB).  
 Max. input signal: 40mV.  
 Power supply: 10 to 30V DC, regulated.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
VE21X	Velleman Kit K1803	1+ £5.090	5+ £4.230
		10+ £4.030	1+ £5.990

**VU Meters**

**Mono & Stereo 10 LED VU Meters**



**Features**

- ★ **Choice of mono (1 x 10 LED) or stereo (2 x 10 LED) versions**
- ★ **Multi-coloured LED display**
- ★ **Dot or bar display mode**
- ★ **Compatible with line- or speaker-level signals**
- ★ **Supplied with attractive membrane panel**

**Applications**

- ★ **Mixers, amplifiers, cassette decks, CD players - on-stage, in the studio or at home**

These kits are an ideal and economic means of providing signal level VU monitoring in a wide variety of applications. There is a choice of mono 1 x 10 LED or stereo 2 x 10 LED versions. Both versions utilise identical components and PCBs. The stereo version is supplied with two identical sets of components and the membrane panel is laid out for stereo. The membrane panels are attractively designed and can be used horizontally or vertically to suit the application. Signal input is compatible with line-level and speaker-level signals (except high power car stereo systems). The units may be calibrated against a reference by means of an on-board preset potentiometer.

**Specifications**

LEDs: 7 green, 2 yellow, 1 red (per channel)  
 Display: Dot or bar  
 Indication range: -20dB, -10dB, -7dB, -5dB, -3dB, -1dB, +1dB, +2dB, +3dB (0dB = 775mV)  
 Frequency range: 20Hz to 30kHz  
 Input range for 0dB - 150mV to 6V rms (47kΩ)  
 Line: Speaker: 1.5V to 60V rms (470kΩ)  
 Supply voltage: +10 to +15V DC @ 110mA (per channel)  
 PCB dimensions: 68 x 37mm approx.

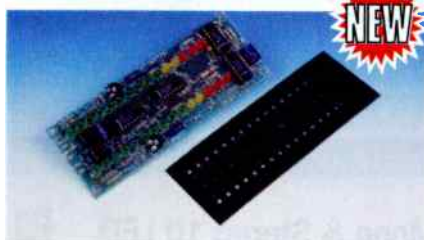
**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
VF90X	K4304 10 LED VU Kit	1+ £9.350	1+ £10.990
VF91Y	K4305 2x10LED VU Kit	1+ £15.310	1+ £17.990



## Stereo 2 x 15 LED VU Meter

2



### Features

- ★ Multi-coloured LED display
- ★ Dot or bar display mode
- ★ Compatible with line- or speaker-level signals
- ★ Supplied with attractive membrane panel

### Applications

- ★ Mixers, amplifiers, cassette decks, CD players - on-stage, in the studio or at home

This kit is an ideal means of providing signal level VU monitoring in a wide variety of applications, especially in more demanding applications where a greater resolution of signal levels is required. The membrane panel is attractively designed and can be used horizontally or vertically to suit the application. Signal input is compatible with line-level and speaker-level signals (except high power car stereo systems). The unit may be calibrated against a reference by means of on-board preset potentiometers.

### Specifications

LEDs:	10 green, 2 yellow, 3 red (per channel)
Display:	Dot or bar
Indication range:	-23 to +5dB 1dB/LED from -4dB to +5dB (0dB = 775mV)
Frequency range:	20Hz to 30kHz
Accuracy:	±0.5dB
Line:	Input range for 0dB - 150mV to 5V rms (47kΩ) Speaker: 1.5V to 50V rms (470kΩ)
Supply voltage:	+12 to +15V DC @ 300mA
PCB dimensions:	150 x 57mm approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF89W	K4306 2x15LED VU Kit	£25.520	£29.990

## Audio Processing

### SSM2120 Dynamic Range Processor

2



### Features

- ★ Low distortion
- ★ Large VCA dynamic range
- ★ Wide supply voltage range
- ★ Low external parts count

### Applications

- ★ Noise reduction systems
- ★ AGC circuits
- ★ Voltage-controlled filters
- ★ Compressors, expanders, limiters

The SSM2120 is a versatile IC designed for the purpose of expanding, compressing or limiting signals in various analogue systems including audio. Detailed instructions are included with the kit showing how the SSM2120 can be used as a companding noise reduction system, a dynamic noise filter with downward expander, or a dynamic noise filter. Other possible applications include AGC

circuits, voltage-controlled filters and stereo noise gates. Note that, because the module may be used in many different applications, some of the component values supplied in the kit have been assigned an arbitrary value. For this reason minor modifications may be necessary to adapt the circuit to individual purposes. The SSM2120 requires a split-rail supply and will operate over a wide range of voltages between ±3V and ±18V. However, the device can operate from a single rail supply of between 6V and 36V. For optimum performance a regulated power supply should be used. All application circuits with the kit are optimised for use with a ±15V power supply, or a single +30V rail.

Note: The Maplin 'Get-You-Working' Service is not available for this project.

### Kit and Special Parts

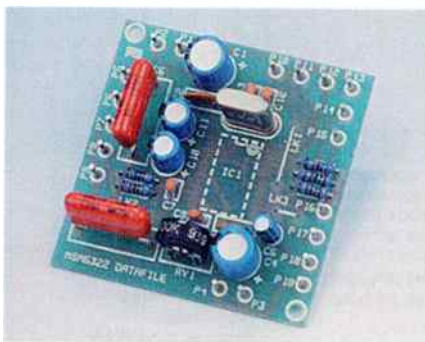
A complete kit of parts (including the PCB and instruction leaflet) is available. The PCB is also available separately. Full construction details may be found in instruction leaflet XT18U. PCB dimensions: 104.1 x 53.3mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP79L	SSM2120 DR Processor	£17.010	£19.990
GE94C	SSM2120 DR Proc PCB	£3.820	£4.490
XT18U	SSM2120 D.F. Leaflet	£1.000	£1.000 NV

## MSM6322 Speech Pitch Controller

2



### Features

- ★ Built-in microphone preamplifier
- ★ Built-in low-pass filters
- ★ Speech pitch alterable through 17 steps

### Applications

- ★ Voice disguising
- ★ Children's toys
- ★ Stage shows

The MSM6322 is a real time audio pitch controller designed for speech. The IC (only available in surface mount) contains a fourth order low-pass input filter, an 8-bit A to D, and 9-bit D to A converters with a third order low-pass filter output, as well as a microphone preamplifier. Make your voice sound like 'Mickey Mouse' or 'Darth Vader'. The device uses a 4MHz clock, and there is decoupling for both analogue and digital supplies. Gain of the microphone preamp is set to 42dB, whilst the line preamp varies from 0 to 40dB. A supply of 5V, capable of delivering 10mA is needed. Sounds can be created by using the up/down modes and distorting the input signal, producing stunning audio effects.

Note: this is intended as a 'building block' project, and not eligible for our 'Get-you-working' service.

### Kit and Special Parts

A complete kit is available and the PCB (size 51 x 51mm) is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 44 XA44X, and instruction leaflet XK43W. A ready assembled version is also available.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP58N	MSM6322 Kit	£17.010	£19.990
GE78K	MSM6322 PCB	£1.690	£1.990
AM21X	MSM6322 Assm	£20.410	£23.990
XK43W	MSM6322 D.F. Leaflet	£0.800	£0.800 NV

## Voice Vandal

2



### Features

- ★ Digital audio signal delay processor
- ★ 256K DRAM memory
- ★ Low current consumption
- ★ Easy to build and use
- ★ Versatile
- ★ Microphone and line input/output

### Applications

- ★ Sound effects for dramatics or film use
- ★ Echo generator
- ★ DJ/Public address systems
- ★ Party entertainment/general amusement
- ★ Sound effects for models and toys
- ★ Simple mixer

A project to enthral fans of film and TV 'characters' that appeared in series of Dr Who, Metal Mickey, Red Dwarf and others featuring demented, distorted voices. You too can now imitate the sounds of the Daleks, Chewbakka, and others, without undue strain on your vocal chords, by building the Voice Vandal!

The Voice Vandal takes the audio signal from a microphone and/or line input, and by means of digital sound processing, selective clipping and storage and feedback of 'sound bites', alters the original sound. The sound alteration can range from a subtle change in pitch to a barely recognisable, completely altered form. This will be a boon for anyone requiring a wide spectrum of special sound effects from one inexpensive, versatile unit, either for 'serious' use in productions, etc., or just for laughs.

With both microphone and line inputs/outputs, the unit also enables simple mixing of signals from more than one source, so that, for example, sound-tracks from films, music albums, etc., could be altered to suit your requirements. This provides scope for much amusement! The output signal of the unit, via microphone and line outputs, can be fed into a suitable audio amplifier for immediate listening, or into the input of a tape recorder, etc., to allow replaying of your audio creativity.

### Specification

Power supply: Single-rail supply via power socket, 8 to 18V DC, LED indication of supply

Supply current: 19mA typical

Functions: Echo, Delay, Distortion, Chopping level and speed adjustment

DRAM memory: 256K (262,144 x 1 bits)

PCB dimensions: 155 x 120mm

Case dimensions: 175 x 130 x 58mm

### Optional Items

The following items, not included in the kit, may also be required.

ABS Plastic Instrument Case	1	(KC61R)
Small Latchswitch Button, Black	4	(KU75S)
LED Clip 3mm	1	(YY39N)
Knob RN18, Blue	1	(FD65V)
Knob RN18, Green	1	(FD66W)
Knob RN18, Red	1	(FD67X)
Knob RN18, Yellow	1	(FD68Y)
Square Stick-on Feet	1 Pkt	(FD75S)
AC Adaptor Regulated	1	(YB23A)
Low-Cost Dynamic Microphone	1	(ZA31J)

### Kit and Special Parts

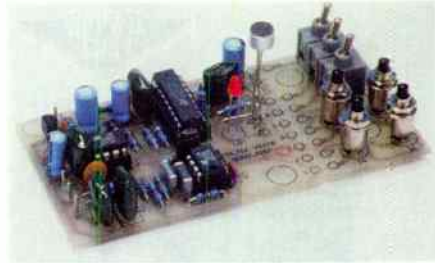
A complete kit of parts (including the PCB and the panel labels) is available (excluding optional items). The PCB and the panel labels are available separately. Full construction details may be found in Maplin Magazine/Projects Book 89 XA89W, and instruction leaflet XV29G.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT82D	Robot Voice Kit	£25.520	£29.990
GU9K	Robot Voice PCB	£5.520	£6.490
KP83E	Voice Vandal Label	£2.110	£2.490
XV29G	Voice Vandal Lft	£0.800	£0.800 NV

**Voice Modulator**

**1**



- Features**
- ★ Robotised and vibrato effect voice modulation
  - ★ Line and microphone input/output levels
  - ★ Wide operating voltage
  - ★ Low current consumption
  - ★ Peak input modulation LED
  - ★ Compact, snap-off PCB design

- Applications**
- ★ Toys, games and parties
  - ★ Sound effects for amateur dramatics productions, school plays, home videos, etc.
  - ★ PA systems
  - ★ General amusement

This superb, easy to build and use novelty project provides a variety of voice modulation effects, including pitch level shifting and vibrato, which convert your voice, sourced from either a microphone or line level input, into a robotised, metallic sounding output. It also has 'serious' uses, for example, livening up children's toys, games and parties, or for use in theatre productions, or home videos, etc.

The compact design is based around a purpose-made voice modulator chip, which contains sophisticated digital signal processing circuitry for realistic and consistent sound effects. The circuit is very versatile, in that the inputs and outputs may be at either line or microphone (mic) level, with options of either on- or off-board microphones. The project operates from a wide voltage range, with a low current consumption. There are a number of switches that tailor the output sound to your exact requirements.

**Specification**

Operating voltage:	5 to 12V DC
Operating current (quiescent):	4.1mA @ 5V, 4.5mA @ 12V
Operating current (activated):	6.5mA @ 5V, 6.8mA @ 12V (maximum)

Microphone level output impedance:	4k2Ω
Microphone level 0dBV input:	20mV rms
Line level output impedance:	100kΩ
Line level 0dBV input:	775mV rms
PCB dimensions:	98 x 51mm
Visual indicators:	Peak input modulation LED

**Kit and Special Parts**

A complete kit of parts is available, including the PCB. The PCB is also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 96 XA96E, and instruction leaflet XV73Q.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
LU02C	Voice Modulator Kit	£17.010	£19.990
GU34M	Hoftek Voice Mod PCB	£2.540	£2.990
XV73Q	Voice Modtr Lft	£0.600	£0.600 NV

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**Speech Storage**

**Memo Pad**

**3**



- Features**
- ★ 16 seconds record time
  - ★ Surface mount miniaturisation
  - ★ Uses new analogue recording technique
  - ★ On-board loudspeaker
  - ★ Single voltage supply
  - ★ Ten year voice retention
  - ★ Excellent record quality
  - ★ Message waiting indication
  - ★ Message overwrite protection

- Applications**
- ★ Personal memo pad
  - ★ Phone message pad
  - ★ Audible reminder

An extremely useful device for the home or office, for recording short voice messages, with instant playback. It can also be used to record tones, but only within the passband of the device. The circuit is relatively simple, and owes much to the ISD1016AG single chip voice record/playback device. Its revolutionary method of recording and storing does away with the need for digital memory, as the IC uses non-volatile EEPROM technology, and allows analogue data to be written directly into the cells without A-to-D or D-to-A conversion, modulators and battery back-up circuits. This means a lower chip count, and a storage density eight times greater than conventional digital memory. Another point is that if just a single cell fails in conventional digital EEPROM memory, this renders the whole memory IC unusable. In the ISD1016AG, a single cell failure during programming will only result in an imperceptible change in distortion, and in fact, many hundreds of random failures would have to occur before recording quality noticeably degrades.

**Specification**

Supply voltage	
maximum:	9.5V
minimum:	6.3V
Supply current	
standby:	194µA
average playback:	65mA
PCB size:	65 x 55mm
Box size:	107 x 60 x 25mm
Weight:	129g (with battery)

**Optional Items**

The following items, not included in the kit, may also be required.

- 9V PP3 Duracell Battery 1 (JY49D)

**Kit and Special Parts**

A complete kit of parts (including the PCB and front panel) is available (excluding optional items). The PCB and front panel are available separately. Full construction details may be found in Maplin Magazine/Projects Book 87 XA87U, and instruction leaflet XV24B.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
LT79L	Memo Pad Kit	£25.520	£29.990
GU08J	Memo Pad PCB	£2.110	£2.490
KP79L	Memo Pad Label	£2.110	£2.490
XV24B	Memo Pad Lft	£0.800	£0.800 NV

**K4400 Electronic Record/Playback Module**

**2**



- Features**
- ★ Excellent recording quality
  - ★ Ten year voice retention
  - ★ Loudspeaker output
  - ★ Non-volatile memory
  - ★ Single supply
  - ★ Modules are cascadable
  - ★ Fitting an optional rotary switch, up to five phrases or sounds can be stored

- Applications**
- ★ Answering machine
  - ★ Door bell
  - ★ Speech for toys
  - ★ Sound effects for models
  - ★ Voice annunciator for the blind or partially sighted

**Specification**

Supply:	9 to 12V AC or 6V DC (only 15µA on standby)
Dimensions:	125 x 70 x 25mm
Recording time:	16 seconds per module

In the Electronic Record/Playback Module an ISD1016A IC is used, which features non-volatile EEPROM technology, and allows analogue data to be written directly into the cells without A/D or D/A conversion. It means lower chip count, and the storage density is eight times greater than conventional digital memory. Another point is that if just a single cell fails in conventional digital EEPROM memory, this renders the whole memory IC unusable. In the ISD1016A, a single cell failure during programming, will only result in an imperceptible change in distortion. The device eliminates the need for complex digital conversion, compression or voice synthesis techniques, which often compromise voice quality and are more complicated to use. Signal conditioning circuits and control functions are included as well as a noise cancelling microphone preamplifier with AGC that can record both high and low volume sounds.

**Optional Items**

The following items, not included in the kit, may also be required.

- 2-Pole 6-Way Rotary Switch 1 (FF74R)

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 85 XA85G, and instruction leaflet XV18U.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
VF43W	Velleman Kit K4400	£29.770	£34.990
XV18U	Rec/PBck Module Lf	£0.800	£0.800 NV

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## Miscellaneous Audio

### Microsonic Audio Booster 2



- ★ Audio AGC system
- ★ Fast attack
- ★ Battery state indicator
- ★ Minimal wiring

There are several commercially made hearing boosters currently available, but the majority are only simple headphone amplifiers. Because of this the volume control has to be constantly adjusted to suit the audio environment. The Microsonic Audio Booster has a distinct advantage in that it incorporates a Voice Operated Gain Adjustment Device (VOGAD). It is designed to accept small signals from a microphone and provide an essentially constant output signal from an input covering a range of 50dB. In real terms this means that once set to a comfortable listening level, the volume control seldom requires re-adjusting. The Microsonic requires a PP3 battery to operate. The voltage condition of the battery is continuously monitored and displayed by a red LED indicator.

#### Specification

Power supply voltage: +4.5V to +9V DC  
 Power supply current: 100mA (+9V Supply, Max Volume)

Low battery indicator: +6V Threshold  
 Microphone: Electret  
 Preamp gain: 52dB  
 Output impedance: 16Ω (Minimum)  
 Output power: 200mW  
 Frequency bandwidth: 300Hz to 3kHz (-3dB)

#### Optional Items

The following items, not included in the kit, may also be required.

Alkaline Battery 1 (AQ48C)  
 Mini Phones 1 (ZB91Y)

#### Kit and Special Parts

A complete kit of parts (including the PCB, front panel and instruction leaflet) is available (excluding optional items). The PCB and front panel are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 55 XA55K, and instruction leaflet XT46A.

#### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP52G	Microsonic Pre-Amp	£17.010	£19.990
GH12N	Microsonic PCB	£2.970	£3.490
KP47B	Microsonic F-Panel	£1.260	£1.490
XT46A	Microsonic Leaflet	£0.800	£0.800 NV

### Ultrasonic Detector 3



Box and knobs not included in kit.

#### Features

- ★ Tunable ultrasonic receiver
- ★ High sensitivity
- ★ Low noise
- ★ Built-in loudspeaker
- ★ Outputs for headphones and tape recording
- ★ Internal battery or external power supply input
- ★ Compact and lightweight

#### Applications

- ★ Detection and location of ultrasonic sources
- ★ Detection and study of bats
- ★ Educational use, in schools and colleges

This super-sensitive listening device will allow you to snoop on the communications between bats and insects that emit high-pitch (ultrasonic) utterances. It can also be used to listen in on other ultrasound sources, enabling checks of alarm and remote control transducers, mechanical system bearings, and as a monitor of noisy equipment. In fact, the unit is so sensitive, that it enables you to hear the crystal vibrating within quartz timepieces! The kit also represents excellent value for money, compared to commercial equivalents, which can cost hundreds of pounds. This project detects and translates the sound of bats into a frequency range that is audible to humans and can convert ultrasonic frequencies across the generous range of 20kHz (beginning of the ultrasonic spectrum) up to 160kHz. This wide range caters for all known species of bat, resident both in Britain and across the globe.

#### Specification

Power supply (internal): 9V DC PP3 battery  
 Power supply (external): 8V to 11V DC  
 Supply current: 25mA (min) 86mA (max)

Frequency range: 20kHz to 160kHz  
 Loudspeaker amplifier: 382mW rms into 64Ω impedance 20mV rms

Tape output signal level: 20mV rms  
 Tape output load impedance: 10kΩ  
 Assembled PCB dimensions: 94 x 73.5 x 17mm  
 Boxed unit dimensions: 145 x 80 x 34mm  
 Boxed unit weight: 285g (including battery)

#### Optional Items

The following items, not included in the kit, may also be required.

M2.5 10mm Pozidrive Screw 1 Pkt (JC68Y)  
 M2.5 Steel Nut 1 Pkt (JD62S)  
 M2.5 Snakeproof Washer 1 Pkt (BF45Y)  
 M3 Spacer 0-125in. 1 Pkt (FG32K)  
 Alkaline PP3 Battery 1 (ZB52G)  
 Car Power Adaptor 1 (JY53H)  
 Plain Black Hand-held Box Type HH2 1 (ZB16S)  
 Matt Black Knob Type K14B 2 (FK39N)

#### Kit and Special Parts

A complete kit of parts (including the PCB, front and rear panels) is available (excluding optional items). The PCB and front and rear panels are available separately. Full construction details may be found in Maplin Magazine/Projects Book 90 XA90X, and instruction leaflet XV35Q.

#### Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
LT85G	U/Sonic Detector Kit	£34.090	£39.990
GH52A	U/Sonic Detector PCB	£3.820	£4.490
KP87U	U/Sonic Dectr Label	£2.110	£2.490
XV35Q	Bat Detector Lift	£1.000	£1.000 NV

### Envirosynth 2



Box and knobs not included in kit.

#### Features

- ★ Simulates a gentle breeze, or surf on the shore
- ★ Can provide pink and white noise outputs
- ★ Sounds can be tailored to users requirements

#### Applications

- ★ Sound effects for theatres, radio shows and video/film productions
- ★ May aid relaxation, insomnia and coping with stress

Do you suffer from insomnia caused by tinnitus, worry, or overtiredness? Or perhaps you need help coping with stress? Then the Envirosynth may be just what you need. The sound of breaking rollers on a pebble beach, or the gentle summer breeze rustling through the trees, are very therapeutic and can help overcome the problems mentioned. These sounds can also be very useful in doctors' or dentists' waiting rooms.

Even white noise has its uses. Sounding as it does like escaping steam, it is completely unvarying and featureless. The Envirosynth can be used to generate sound effects. By varying certain component values the effects can be altered and a range of very interesting sounds produced, i.e. a gale!

#### Optional Items

The following items, not included in the kit, may also be required.

6W Elliptical Speaker	1	(GL17T)
250mA Transformer 6V	1	(YN14Q)
31mm (1.25in.) Clickcatch F/H	1	(FA39N)
Fuse 31mm (1.25in.) A/S 100mA	1	(UK58N)
Dual Rocker Neon Red	1	(YR70M)
Min Mains Black Cbl.	2m	(XR01B)
SR Grommet 5R2	1	(LR48C)

Case and knobs

#### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 54 XA54J, and instruction leaflet XT63T.

PCB dimensions: 162.6 x 63.5mm.

#### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP67X	Enviro Synth	£17.010	£19.990
GH10L	Enviro Synth PCB	£4.240	£4.990
XT63T	Enviro Synth Leaflet	£0.800	£0.800 NV

## Car Projects

### In-Car Audio

### K3508 In-Car Amplifier Power Supply 2



- ★ Especially designed for use with K4005 and AMP200
- ★ Ground isolated output



- ★ **Attractive modern casing**
- ★ **300W power output**
- ★ **Switched by 12V DC remote control**
- ★ **Ready-built version available**

This module has been especially designed to complement the K4005 400W amplifier (VF40T), and the AMP200 (VF45Y), but it can be used for almost any in-car amplifier requiring a  $\pm 35V$  DC supply. The PSU makes extensive use of decoupling to provide a very 'clean' output, which guarantees that your amplifier will 'pump out' stunning high-quality sound.

There are two main advantages of having a separate amplifier and PSU: First, the PSU can be located near to the vehicle's battery and, therefore, the power leads can be kept as short as possible, reducing power losses to a minimum. The other advantage is that the amplifier can be placed near to the speakers; this helps to maintain an optimal level of damping, resulting in a better reproduction of bass sounds.

The PSU is housed in a sleek, black metal case, very similar to the K4005 400W amplifier, and a ready-built 'Gold Line' version of the PSU, the SPS200, is also available (VF47B).

Construction is quite straightforward as the component count is fairly low, and no elaborate test equipment is required for setting up the completed module.

**Note:** This module is suitable for negative earth vehicles only.

Specification	
Input voltage:	10V to 15V DC (30A maximum)
Output voltage:	$\pm 35V$ (unregulated)
Output power:	300W
Efficiency:	90% maximum
Dimensions:	210 x 84 x 50mm

**Optional Items**

The following items, not included in the kit, may also be required.

Black High Current Wire	As Req.	(XR57M)
Red High Current Wire	As Req.	(XR59P)
Car Audio Fuseholder	1	(BZ95D)
30A Fuse	1	(CK32K)
10A Toggle Switch SPST	1	(JK25C)
Red Car Power Cable	As Req.	(BZ92A)
Black Car Power Cable	As Req.	(BZ93B)
Red Power Connection Cable	As Req.	(XR36P)
Black Power Connection Cable	As Req.	(XR32K)
Green Power Connection Cable	As Req.	(XR35Q)

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 84 XA84F, and instruction leaflet XV21X.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF36R	Velleman Kit K3508	£58.710	£68.990
XV21X	Vell Amp PSU Lift	£0.800	£0.800 NV

**Switching PSU For In-Car Audio System**

5



- ★ **For powering high quality power amplifiers**
- ★ **Polarity protected**
- ★ **Thermal protection**
- ★ **Remote switch on control**

The increasing demand for a better quality in-car hi-fi system has led to several major advances in the field, to the point where superior equipment has been made on the test bench. The attention has turned towards high quality power supplies,

producing low ripple and improved efficiency. This car audio switching power supply unit is able to fulfil the requirements of today's hi-fi buff. No longer are you limited to power amplifiers operating from the only available 12V source.

Primarily designed to power the 50W power amplifier kit LW35Q (see elsewhere in this section), this project can also be used to increase the supply for high power 'booster' type amplifiers as well as other amplifiers requiring a supply voltage of  $\pm 30V$ . The power supply is able to operate under varied temperature conditions, with high temperature shut-down provided if the unit gets too hot. When the temperature drops to 20°C the unit automatically switches itself back on. Additional protection is supplied by fuses to the  $\pm 30V$  output and a fused input. This project requires a degree of expertise and patience to build, and is not recommended for absolute beginners. Construction details must be carefully followed.

**Specification**

Supply voltage:	11V to 15V DC (13.8V Nominal)
Current:	10.7A ( $V_G = 11.3V$ )
Output power:	120W continuous
Outputs	
Main:	$\pm 30V$
Auxiliary:	$\pm 12V$
Continuous output current at:	
$\pm 30V$	2 + 2A
$\pm 12V$	50mA + 50mA
Efficiency:	>90%
Shut-down temp:	80°C
Shut-down hysteresis:	20°C
Standby input:	Active low
Remote switch-on input:	Active high
Thermal shut-down output:	Active low
Input noise ( $P_O = 120W$ ):	140mV
Output Noise ( $P_O = 120W$ )	
Main:	60mV
Auxiliary:	40mV
Switching frequency:	25kHz
Converter mode:	Push-pull

**Optional Items**

The following items, not included in the kit, may also be required.

Car Fuse Holder	1	(RX51F)
15A 1 1/4in AS Fuse	1	(UK13P)
HC Wire Black	As Req	(XR57M)
HC Wire Red	As Req	(XR59P)
32/0.2 Wire Red	As Req	(XR36P)
32/0.2 Wire Black	As Req	(XR32K)
32/0.2 Wire Blue	As Req	(XR33L)
Zip Wire	As Req	(XR39N)
50W Power Amp	2	(LW35Q)
2E Heat Sink	2	(HQ70M)

**Kit and Special Parts**

A complete kit is available, and the pcb is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 46 XA46A, and instruction leaflet XK50E. PCB dimensions: 150 x 150mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP39N	Car Audio SMPS	£42.540	£49.990
LW35Q	50W Amp Kit	£21.260	£24.990
GE61R	Switching PSU PCB	£6.800	£7.990
XK50E	S.Mode PSU Leaflet	£1.000	£1.000 NV

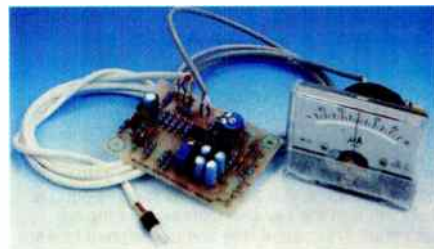
**MPS**  
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 Fax: 01702 554001  
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 Account Enquiries : 01702 554187  
 e-mail: Sales@maplin.co.uk

**Charging & Power Distribution**

**Car Battery Charge/Discharge/Idle Monitor**

2



**Features**

- ★ **Simple to build**
- ★ **Tri-colour visual indication**
- ★ **Optional centre zero meter**
- ★ **Easy to install**

**Applications**

- ★ **Avoiding a flat car battery**
- ★ **Detecting alternator faults**
- ★ **Balanced line driver**

Be forewarned of a drained car battery, and so avoid failure to start the engine on a cold and frosty morning, with this easy to build and install project that will indicate the charge/discharge state of the battery. The dashboard of the average family car typically has no more than an ignition warning light, which only illuminates when the alternator is not producing any output. The alternator primarily replaces the energy lost from the battery during starting, and supplies the ancillaries; ignition, lights, radio, etc. Its current output is chosen by the manufacturer to meet these needs, but can be exceeded by the addition of new accessories, or be depleted with wear or as the result of a fault such as a slipping fan belt.

This project gives a visual indication of whether the car battery is being drained or charged on a single tri-colour LED. Discharging is shown as red, while charging is green. A quiescent state, when the battery is neither charged or discharged is shown as yellow. An optional centre-zero meter movement can even be fitted if required. Installing the module is very simple, since there are only three wires to connect.

**Specification**

Operating voltage:	+12V to +25V DC
Current consumption:	15mA (max)
Visual indicators:	Tri-colour LED
	Optional centre zero meter

**Optional Items**

The following items, not included in the kit, may also be required.

Min Res 15k	1	(M15K)
Horizontal Enclosed Preset 22k	2	(UH04E)
Diode 1N4148	2	(QL80B)
Strip Board Type 1039	1	(JP46A)
Insulated Spacer M3 x 10mm	1 Pkt	(FS36P)
Pozi Screw M3 6mm	1 Pkt	(BF36P)
Self-Tapping Screw No.6 x 9.5mm (9/16in.)	1 Pkt	(LR67X)
Single-Ended PCB Pin 1mm	1 Pkt	(FL24B)
Panel Meter 100-0-100µA 50mm (2in.)	1	(RW98G)
Box with Base Type 2	1	(YN36P)
Min Single Core Lapped Screen	As Req	(XR15R)
Burglar Cable 4-wire	As Req	(XR89W)
In-Line Car Type Fuse Holder	1	(RX51F)
Fuse 100mA 31mm (1 1/4in.)	1	(WR08J)
LED Clip Convex 5mm	1	(UK14Q)
PVC Sealing Grommet 16mm	1	(JX77J)
Heat Shrink Sleeving 1.6mm	1	(BF86T)

**Kit and Special Parts**

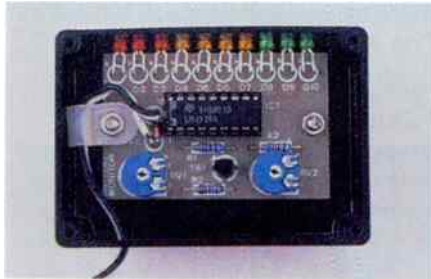
A complete kit of parts, including the PCB, is available (but excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 78 XA78K, and instruction leaflet XU68Y.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT56L	Batt. Charge Monitor	£8.500	£9.990
GH74R	Batt Charge Mon PCB	£2.540	£2.990
XU68Y	Batt Charge Mon Lift	£0.800	£0.800 NV

## Car Battery Monitor

2



Any number of things from a faulty alternator to left-on headlights can result in a flat car battery – and the first thing you are likely to know about it is when you turn the key one morning and the car won't start! This useful little unit is designed to warn you in advance by displaying the battery's state of charge with a row of ten LEDs. The Monitor costs very little to build, and since it consumes a miserly 20mA, can be left permanently connected to the battery. The Car Battery Monitor will even reveal a slipping fan-belt problem, which prevents the battery charging properly, yet leaves the dashboard battery warning light off, as well as indicate how the battery is handling the strenuous work of starting the car (it takes 20 minutes of running to put back what a five-second start takes out).

### Kit and Special Parts

A complete kit is available, and the pcb is also available separately. Full construction details may be found in the Maplin Magazine/Projects Book 37 XA37S, and instruction leaflet XK10L. PCB dimensions: 55 x 35mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3111	Price each exc. VAT	inc. VAT each
LK42V	Car Batt Monitor	£11.050	£12.990
GA19V	Batt Mon PCB	£1.990	£1.990
XK10L	Car Batt Monitor Ins	£0.500	£0.500 NV

### Specification

Supply voltage range:	+10V to +16V DC
Maximum auxiliary battery output current:	10A
Maximum refrigerator output current:	10A
Supply current control input:	100mA max
monitor circuit supply:	50mA max

### Optional Items

The following items, not included in the kit, may also be required.

M3 x 15mm Spacer	1 Pkt	(FS37R)
30A Wire Red	As Req.	(XR59P)
30A Wire Black	As Req.	(XR57M)
10A Wire Red	As Req.	(XR36P)
10A Black Wire	As Req.	(XR32K)
4-way Low Current Cable	As Req.	(XR89W)
6-way Low Current Cable	As Req.	(XS54J)
8-way Low Current Cable	As Req.	(CW70M)
4.3mm Solder Tag	1 Pkt	(JH71N)
Aluminium Box	1	(XB69A)
Grommet	1	(JX65V)
M4 x 10mm Bolt	1 Pkt	(JY14Q)
M4 Nut	1 Pkt	(JD80Q)
M4 Shakeproof Washer	1 Pkt	(BF43W)
5mm Red LED	2	(WL27E)
5mm Green LED	2	(WL28F)
5mm LED Clip	4	(UK14Q)
Fuse 20mm T100mA	1	(WR00A)
In-line Fuseholder	1	(RC71N)
20A Blade Fuse	1	(KU23A)
10A Blade Fuse	1	(KU21X)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 81 XA81C, and instruction leaflet XU77J.

Retail Unit Price each (inc. VAT).

Order Code	Type 3309	Price each exc. VAT	inc. VAT each
LT60Q	Intelligent Split Charge	£17.010	£19.990
GH82D	Split Charge PCB	£4.240	£4.990
XU77J	Intelligent Batt Cha	£0.800	£0.800 NV

## Intelligent Split Charge Unit

2



### Features

- ★ Charges auxiliary battery
- ★ Powers refrigerator
- ★ Alternator or ignition switch controlled
- ★ Status indicators
- ★ Easy-to-build
- ★ Easy-to-install
- ★ Can replace existing unit

### Applications

- ★ Cars
- ★ Vans
- ★ Motor-homes
- ★ Trailers
- ★ Caravans

A split-charge unit is employed in a car or other similar vehicle to charge an auxiliary (second) battery. An auxiliary battery is often used to power 12V electrical accessories in a caravan or trailer. The use of such a battery ensures that the towing vehicle's main battery is not discharged. The auxiliary battery can be located in the towing vehicle's boot or in the caravan itself. Modern caravans are often equipped with a multi-supply refrigerator which can be operated from 230V AC mains, 12V DC or liquefied petroleum gas (LPG). The dual split charge unit is able to simultaneously charge an auxiliary battery and supply power to a 12V DC operated refrigerator.

## Remote Power Switch

1

A useful project intended for use in cars, but finding many other applications where remote switching of up to 10A is required. The project is both easy to build and easy to use. Connection to the Remote Power Switch is via on-board screw terminals. An LED is provided to indicate operation. A protection diode suppresses relay coil back emf voltage, thus preventing possible damage to driver circuits. Applications include switching of fog/driving lights, alarms, horns, sirens and high power car amplifiers. The high quality, long life relay requires 45mA of drive current to operate.

### Kit and Special Parts

A complete kit is available and the PCB is also available separately. Full construction details may be found in instruction leaflet XU10L. A ready built version is available (AM26D). PCB dimensions: 36.8 x 45.7mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3159	Price each exc. VAT	inc. VAT each
LP07H	Power Switch Kit	£5.090	£5.990
AM26D	Relay Module	£5.940	£4.450 £4.150
GE25C	Power Switch PCB	£2.110	£2.490
XU10L	Rem Pwr Sw Leaflet	£0.400	£0.400 NV



This symbol beside an order code in the price block indicates

WHILE STOCKS LAST

## Engine/Ignition

### Car Digital Tacho

3



In these days of ever-higher motoring costs the unit described here will help the driver to change gear at the most advantageous point to save fuel and extend engine life. Anyone using a car to tow a trailer or caravan will also benefit by being able to make the best use of the torque available from the engine. Conventional tachometers give a display of engine speed on a milliammeter, usually with a scale of about 270° arc. Pulses produced by the action of the contact breakers are integrated and fed to the meter to give an analogue display of engine revolutions.

The disadvantages are that an average reading is displayed, which can easily lag behind rapid speed changes, and the meters tend to be somewhat fragile. This tachometer overcomes both of these disadvantages by counting pulses and displaying engine revolutions over a very short time, the digital display being continuously updated. Two digits display the number of revolutions x 100. The unit is designed for negative earth cars. The unit can only be used on cars with contact breakers. Construction is very straightforward, using two printed circuit boards which fit directly in the case without the need for mounting bolts, so the project can be tackled by any but the most inexperienced constructor.

### Kit and Special Parts

A kit is available but does not include the case. The pcbs are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 37 XA37S, and instruction leaflet XK03D. Main PCB: 52 x 83mm. Display PCB: 52 x 23mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3150	Price each exc. VAT	inc. VAT each
LK79L	Car Digit Tacho Kit	£25.520	£29.990
GA26D	Dig Tacho Main PCB	£2.110	£2.490
GA27E	Dig Tacho Disply PCB	£1.260	£1.490
XX03D	Car Dig Tacho Ins	£0.500	£0.500 NV

## Over Rev/Peak Power Indicator

2



### Features

- ★ Wide operating voltage
- ★ Low current consumption
- ★ LED and buzzer indication
- ★ Easy to build, install and calibrate
- ★ Configurable for 2- and 4-stroke engines

### Applications

- ★ Petrol-engined cars and vans
- ★ Race/rally cars

★ **Motorcycles**  
★ **Powered Go-karts**

A great accessory for any petrol-engined vehicle, this unit gives clear audible and visual indication to the driver when the engine reaches or exceeds a preset rpm. It can, therefore, be used to indicate when the engine is in danger of being over-revved, or is producing the maximum power or torque in a particular gear. This helps the driver to carry out gear changes at favourable points in the engine's rev range, for achieving higher levels of acceleration, pulling power or economy from the vehicle being driven.

**Specification**

Operating voltage: 9 to 16V (12V nominal)  
Quiescent current: 8.5mA @ 12V  
Activated current: 17mA @ 12V  
Engine speed range: 1,000 to 10,000 (4-stroke)  
2,000 to 20,000 (2-stroke)  
PCB dimensions: 66 x 56mm (main board)  
37 x 36mm (sensor board)

**Optional Items**

The following items, not included in the kit, may also be required.

Cyanoacrylate Adhesive 3g 1 (FL64A)

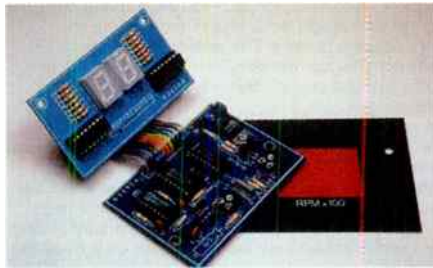
**Kit and Special Parts**

A complete kit of parts (including the PCB and front panel label) is available (excluding optional items). The PCB and Front Panel label are also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 102 XD02C, and instruction leaflet XV95D.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU22Y	Over Rev/Pk Pwr Ind	£21.260	£24.990
GJ55K	Over Rev/Pk Pwr PCB	£2.970	£3.490
KV13P	Over Rev/Pk Pwr Lbl	£2.110	£2.490
XV95D	Over Rev/Pk Pwr Lft	£0.800	£0.800 NV

**K2625 Digital Tachometer 3**



- ★ **2-digit LED display**
- ★ **Adjustable display brightness**
- ★ **Suitable for 2- and 4-stroke petrol engines**
- ★ **Configurable for engines of between 1 and 12 cylinders**
- ★ **Simple installation and calibration**
- ★ **Front panel included**
- ★ **Contact bounce suppression**

The majority of modern cars, and practically all 'high performance' models, are equipped with a tachometer, or rev counter, which gives an indication of the number of revolutions per minute (rpm) that the engine's crankshaft is turning at. This is a very useful instrument to have, since it enables the driver to maintain the engine turning at its most efficient rate for the maximum production of either power (BHP), or torque (the pulling force being exerted), factors which coincide with specific engine speeds (the values for which may be found in the vehicle handbook, or magazine road test reports). Hence, this can be used to give maximum acceleration, or optimum flexibility, particularly useful when climbing steep inclines or towing caravans, boats, etc. An additional use for a tachometer is as an aid to servicing, since it enables the engine idling speed to be set to the value specified by the manufacturer, in the event of it idling too fast or slow, as is often the case. However, many older, or 'base-spec' vehicles, are not equipped with a tachometer. This situation is easily rectified, by installing the digital version presented here, which is simple to fit, calibrate and use. Furthermore, by using a suitable sensor (i.e., one that simulates the switching action of the contact breaker), the unit allows rpm measurement, or the number of movements per minute, of any

rotating or moving mechanical part - it does not necessarily have to be an engine!

**Specification**

Supply voltage: 10 to 15V DC, un stabilised (built-in regulator)  
Supply current: 200mA (maximum)  
Display range: 100 to 9,900rpm  
Resolution: 100rpm  
Display type: 2 x 0.5in., 7-segment LED (static)  
Input sensitivity: 3V (minimum), 20V (maximum)  
Input impedance: 30kΩ (typical)

**Optional Items**

The following items, not included in the kit, may also be required.  
MB3 Black Plastic Box 1 (LH22Y)

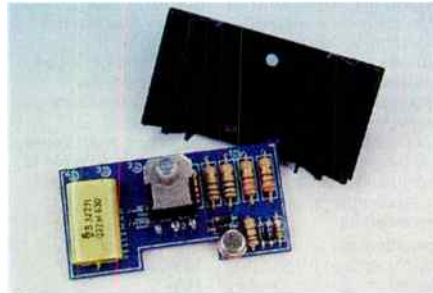
**Kit and Special Parts**

A complete kit of parts is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 90 XA90X, and instruction leaflet XV38R.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VED1B	Velleman Kit K2625	£22.970	£26.990
XV38R	Digital Tacho Lft	£0.400	£0.400 NV

**K2543 Ignition Amplifier 2**



**Features**

- ★ **Easy to fit, only four wires**
- ★ **Transistor assisted ignition method**
- ★ **Significantly reduces contact breaker wear**
- ★ **Original connections can be easily restored at any time**
- ★ **Improved coil performance returns easier starting and cleaner combustion**

**Applications**

- ★ **For any petrol burning motor vehicle**
- ★ **Suitable for engines of 2 to 8 cylinders**

There are two main types of electronic ignition currently available, the first being that which completely replaces the 'electromechanical' ignition (contact breaker points, condenser, etc.) and the type that can be fitted as an 'up-grade', producing what is commonly called 'transistor assisted ignition'. The latter type still makes use of the 'conventional' mechanical timing switch (the contact breaker points). However, it does provide a faster switching speed and more energy to the spark, so places less wear on the points because the arcing factor is removed, and so keeps the engine in tune for longer periods. Fixing this electronic ignition system will lead to improved starting and smoother running, particularly at very high and very low rpm. Other benefits include lower fuel consumption, less pollution and lower servicing costs.

**Specification**

Switching speed: 1µs  
Firing interval: 2ms minimum  
Coil switching current: 4A nominal  
Supply voltage: 12V to 14V DC  
Polarity: Negative earth only  
Supply current drain: 320mA approx.

**Optional Items**

The following items, not included in the kit, may also be required.

Box DCM5002 1 (LH70M)  
Flexible Rubber Sealant 1 (YJ91Y)  
Wire 3202 Red 2m (XR36P)  
Wire 3202 Black 2m (XR32K)  
Wire 3202 Blue 2m (XR33L)  
Wire 3202 Green 2m (XR35Q)  
Lucar Style Push-On Receptacle 1 Pkt (HF10L)  
Lucar Style Push-On Blade 1 Pkt (HF11M)  
Push-On Blade Covers 1 Pkt (FE66W)  
Push-On Receptacle Covers 1 Pkt (FE65V)

Screw M3 x 40mm 1 Pkt (JF28F)  
Tie Wraps 385 5 (FE00A)  
Heat Transfer Compound 1 (FL79L)

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 68 XA68Y.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VED0A	Velleman Kit K2543	£11.050	£12.990

**Lighting**

**Car Interior Light Controller 2**



**Features**

- ★ **Keeps interior light(s) on for 30 seconds after last door is closed**
- ★ **Automatically switches the interior light off if a door is left inadvertently open**
- ★ **Easy to build**
- ★ **Simple to fit**
- ★ **Low power consumption**

This improved version of the Car Interior Light Controller project, previously featured in Maplin Magazine Issue 82, incorporates several modifications that result in superior operation and also a more compact housing.

The unit is very beneficial to add to many older, and base model vehicles, most of which do not have the courtesy light option of the latest upmarket models. Fitting this easily installed project into your vehicle will allow its courtesy light(s) to remain illuminated for approximately 30 seconds after the vehicle's doors have been closed (unless the ignition is switched on, in which case the light will be extinguished immediately), providing sufficient interior lighting time to find the ignition switch and seatbelt buckle slot. The unit also has a few extra features which many top models do not have - in the event of a door being inadvertently left open, the courtesy light will automatically turn off after approximately 10 minutes, to avoid draining of the battery, and a quick open and shut of the door will also turn the light off. In addition, the unit may also be linked to the central locking and/or alarm system so that the courtesy lights are also controlled by the activation and deactivation of these systems!

**Specification**

Supply voltage: 9V to 15.5V DC  
Quiescent current: 2.5mA @ 12V DC  
Operating current: 30mA @ 12V DC  
Box dimensions: 105 x 72 x 32mm

**Optional Items**

The following items, not included in the kit, may also be required:

In-line fuseholder 1 (RX51F)  
1.25in. 100mA Fuse 1 (WR08J)  
Black Connection Wire As Req. (XR32K)  
White Connection Wire As Req. (XR37S)  
Red Connection Wire As Req. (XR36P)  
1N4148 As Req. (QL80B)

**Kit & Special Parts**

A complete kit of parts (including the PCB and label) is available (excluding optional items). The PCB and the Label are also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 100 XD00A, and instruction leaflet XV92A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP64U	Car Int Light Ctrl Kit	£12.750	£14.990
GJ47B	Car Int Light PCB	£3.390	£3.990
KV10L	Car Int Light Label	£2.110	£2.490
XV92A	Car Int Light Lft	£0.800	£0.800 NV

## Car Courtesy Light Extender

1

- ★ Requires no external power supply
- ★ Optional Ignition override
- ★ No setting up required
- ★ Low component count



This project keeps the interior light on after the car door is closed, allowing time to find keys, ignition switch or even your way out of the garage! The board has three fly leads, two are fitted across the existing door switch whilst the optional third wire is connected to the ignition switch to cancel the delay when the engine is started. The small PCB allows the unit to be concealed easily within the car. Supplied complete with miniature mounting box.

### Optional Items

The following items, not included in the kit, may also be required.

Hook-up wire 16/0-2 Black	1	(FA26D)
Hook-up wire 16/0-2 Red	1	(FA33L)

### Kit and Special Parts

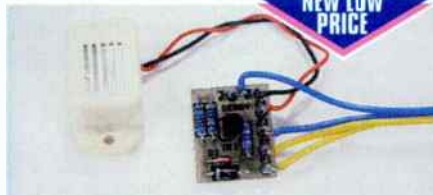
A complete kit of parts is available, and the pcb is also available separately. Full construction details can be found in Maplin Magazine/Projects Book 44 XA44X, and instruction leaflet XK96E.

Retail Unit Price each (inc. VAT).

Order Code	Type 3212	Price each exc. VAT	inc. VAT each
LP66W	Courtesy Light Extr	£4.240	£4.990
GE81C	Courtesy Light PCB	£1.260	£1.490
XK96E	Ctsy Light Leaflet	£0.500	£0.500 NV

## Car Lights-On Warning Indicator

1



- ★ Low cost and small size
- ★ Easily fitted to most negative earth cars
- ★ Buzzer sounds when lights left on

If your car is not fitted with some kind of 'lights-on warning', the chances are that you will leave your lights switched on. Murphy's law dictates that when you do so, your absence from the car will be of sufficient duration to ensure that the battery will be well and truly flat! This small and simple Lights-On Warning Indicator will emit a clearly audible buzzing sound when the car lights are left on, the ignition switch is turned off and the driver's door opened. In this manner the buzzer will only sound when the driver is genuinely about to leave the car. The circuit of the Indicator is very simple, just one transistor, some resistors, diodes and a buzzer.

### Optional Items

The following items, not included in the kit, may also be required.

16/0-2 Wire:	As Req.	(FA26D-FA36P)
Snap lock Cable Connector:	As Req.	(JR88V)
Terminal Block 5A:	As Req.	(HF01B)

### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 50 XA50E, and instruction leaflet XT11M.

Retail Unit Price each (inc. VAT).

Order Code	Type 3140	Price each exc. VAT	inc. VAT each
LP77J	Lights On Reminder	£5.940	£6.990
GE88V	Lights On PCB	£1.260	£1.490
XT11M	Light Rem Leaflet	£0.500	£0.500 NV

## Car Headlights Delay

1



### Features

- ★ Compact and easy to install
- ★ Adjustable delay period
- ★ Low current consumption
- ★ Uses automotive application-specific components
- ★ Active high and low inputs

### Applications

- ★ Cars, vans and trucks using 12V electrics
- ★ Suitable for negative and positive-earthed vehicles

This project is such a useful accessory that you will wonder how you ever managed without it! The purpose of the unit is to switch on your vehicle's headlamps for a preset time on exiting the vehicle, thereby illuminating the path to your house! With the ignition switched off, simply flashing the headlamps activates the unit, turning on the vehicles headlamps for between 15 and 60 seconds (pre-settable). If, during the delay period, the vehicles ignition is turned on, or the headlamps are flashed twice in succession, the circuit is immediately reset and the delay action deactivated. The project is compact, easy to build and simple to install, and uses components specifically designed for automotive applications, for maximum dependability.

### Specification

Supply voltage (nominal):	12V
Maximum operating voltage:	16V
Operating current:	30mA @ 12V
Quiescent current:	2.5mA @ 12V
Circuit protection:	10A and 100mA time-delay fuses, reverse-polarity protection

PCB dimensions:	69 x 52.5mm
Maximum board height:	24mm

### Optional Items

The following optional items, not included in the kit, may also be required.

Bulkhead Mounting Box and Base		
Type 2	1	(YN36P)
9.5mm PVC Grommet	1	(JX63T)
M3 x 10mm Steel Screws	1 Pkt	(JY22Y)
M3 Steel Nuts	1 Pkt	(JD61R)
M3 Steel Washers	1 Pkt	(JD76H)
M3 Shakeproof Washers	1 Pkt	(BF44X)
M3 x 1/8in. Spacers	1 Pkt	(FG32K)

### Kit and Special Parts

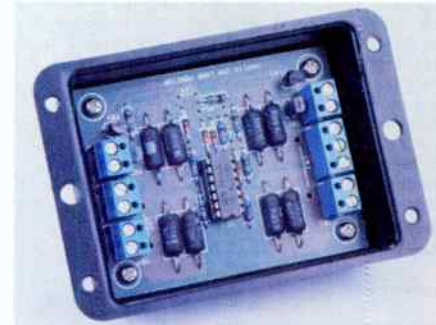
A complete kit of parts (including the PCB and Front Panel Label) is available (excluding optional items). The PCB and the Front Panel Label are also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 95 XA95D, and instruction leaflet XV80B.

Retail Unit Price each (inc. VAT).

Order Code	Type 11423	Price each exc. VAT	inc. VAT each
LU04E	Car Headlights Delay	£10.200	£11.990
GJ36P	Car Light Delay PCB	£2.110	£2.490
KP99H	Car Light Delay Labl	£2.110	£2.490
XV80B	Car Light Delay Lft	£0.800	£0.800 NV

## Car Lamp Monitor

2



### Features

- ★ Easy to build
- ★ Easy to install
- ★ Single or multiple indicators
- ★ Can be interfaced to logic
- ★ Self powered

It is surprising how few people take the trouble to check, on a regular basis, that their car's lights are fully functional. This can be a hazard to the driver of the vehicle itself and other road users. In today's tougher-than-ever driving conditions it is important that a car's lights are operating as they should. Faulty lights can and do contribute to accidents. What is needed is a method of indicating to the driver that a lamp has failed or has become intermittent at the time of the fault developing. The Car Lamp Monitor, will provide an indication of lamp failure and is based around a custom designed IC. The Car Lamp Monitor has been designed to be as flexible as possible, so as to cater for the inevitable differences in electrical wiring between makes and models of cars. However, two basic assumptions have been made: firstly, the car's electrical supply is negative earth; secondly, the car's lights are switched in the positive supply line to the lamp (i.e. one side of the lamp is connected to chassis). The vast majority of cars will satisfy both of these requirements.

A single Car Lamp Monitor module can be used to monitor up to four groups of lamps; a group can comprise a single lamp or a number of lamps connected in parallel. The monitor works by detecting the current drawn by working lamps, if a lamp fails the current drawn will drop (to zero for one lamp).

Fault indication can be in the form of a buzzer, an LED, a filament lamp or by interfacing the Car Lamp Monitor to more complex electronics, such refinements as digitised spoken warnings could be provided. To cover all of a car's lamps will require several modules to be built. The module may also be used to confirm operation of lights on a caravan or trailer.

### Kits and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 80 XA80B, and instruction leaflet XU81C.

Retail Unit Price each (inc. VAT).

Order Code	Type 3312	Price each exc. VAT	inc. VAT each
LT63T	Car Lamp Monitor Kit	£12.750	£14.990
GH85G	Car Lamp Mon PCB	£2.970	£3.490
XU81C	Auto Lamp Mon LFLT	£0.800	£0.800 NV

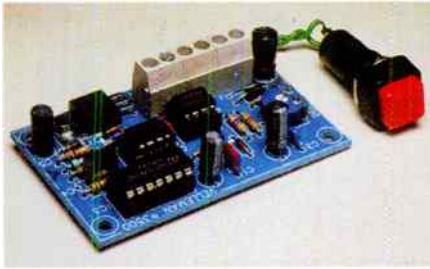
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## K3500 Multi-function Car Interior Illuminator 2



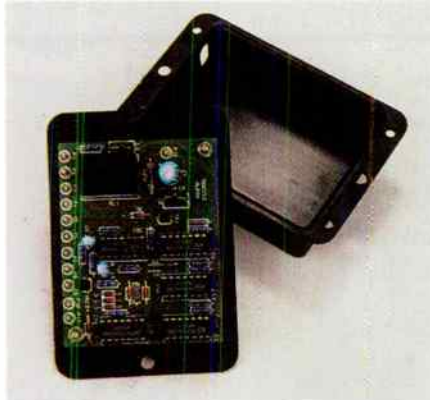
After getting in your car and closing the door, this circuit makes the interior light stay on for an adjustable time. Switch off delay adjustable between 0 and 60 seconds. Simple connection to most cars. Current consumption: 13mA min.

Retail Unit Price each (inc. VAT).

Order Code	Type 3192	Price each exc. VAT	inc. VAT each
VE06G	Velleman Kit K3500	£10.200	£11.990

## Security

## Vehicle Intruder Alarm 1



- ★ Entry/exit delay
- ★ Entry/exit sounder
- ★ Two trigger inputs
- ★ Compact design
- ★ Pulsed car horn with time out

There are many alarms available on the market, but none can offer complete protection against theft. Though no alarm will foil the professional thief, it will act as a deterrent to the small time thief or joyrider. This circuit, like most alarms, is triggered off by the door contacts for the courtesy light and will only work when fitted to a 12V negative earth car. The switch to the alarm is fitted on the inside of the car as opposed to the outside, thus ensuring that the switch is not tampered with. The idea is, when leaving the car the alarm switch is turned to the on position and the arm button is pressed. It is now safe to open the doors and get out of the car. After arming the system a timer circuit allows approximately 30 seconds to leave the car and shut the doors. The timing and sequence of events can be modified using the information in the leaflet supplied. If a door is then opened, the horn will sound after 15 seconds. The 15 second delay is sufficient time for the occupant to turn off the alarm, but not enough time for the thief to tamper with the system. The horn will pulse for 30 seconds at a rate of 1 pulse per second, before re-arming itself. If the door is left open the alarm will pulse for 30 seconds, stop for 15 seconds and will continue this cycle until reset. The alarm is capable of driving car horns of up to 10A (120W).

### Optional Items

The following items, not part of the kit, may also be required.

Min Key Switch	1	(FE44X)
Wire 3202 Black	1	(XR32K)
Wire 3202 Red	1	(XR36P)
16/0.2 Wire 10M Green	1	(FA29G)
16/0.2 Wire 10M Orange	1	(FA31J)
16/0.2 Wire 10M White	1	(FA35Q)

16/0.2 Wire 10M Yellow	1	(FA36P)
LED Clip Convex 5mm	1	(UK14Q)
Piezo Electronic Siren	1	(JK43W)
Stereo 3.5mm Ch Jk Skt	1	(FK03D)
Alarm Sticker	1	(JR91Y)
Self-Tap No. 8 x 12.7mm (1/2in.)	1 Pkt	(BF69A)
Isobolt M4 12mm	1 Pkt	(BF49D)
Isonut M4	1 Pkt	(BF57M)
Spring Washer M4	1 Pkt	(JD95D)

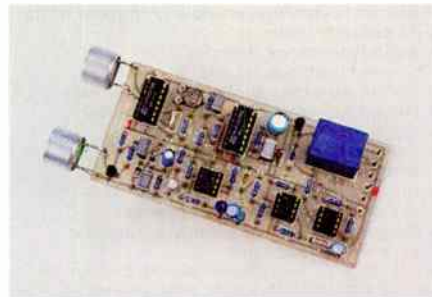
### Kit and Special Parts

A complete kit is available, and the pcb is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 46 XA46A, and instruction leaflet XK62S.

Retail Unit Price each (inc. VAT).

Order Code	Type 3139	Price each exc. VAT	inc. VAT each
LP65V	Vehicle Alarm	£12.750	£14.990
GE79L	Vehicle Alarm PCB	£2.970	£3.490
XK62S	Vehicle Alm Leaflet	£0.800	£0.800 NV

## Ultrasonic Car Alarm 2



This burglar alarm design is basically the same as the ultrasonic movement detector type that is often used to protect homes and other buildings. By detecting movement inside the car using the Doppler shift principle, any method of entry will trigger the alarm. The operating range is approximately 1m extending  $\pm 45^\circ$  from the sensors, which is suitable for the driver and front passenger seat area of most cars.

The circuit incorporates an Exit Delay Timer which prevents the unit from being activated until several seconds after it has been switched on, giving the user an opportunity to leave the car without triggering the alarm. This is an important feature as it enables the on/off switch to be positioned inside the car, rather than having to rely on a concealed switch somewhere on the outside of the car. A short duration Entry Delay is also included so that the user can enter the car and deactivate the alarm before it sounds. Once activated the alarm operates the car horn which is pulsed at approximately 1Hz creating an 'urgent' sound. This will last for approximately 10 minutes and then the unit will reset automatically.

### Kit and Special Parts

A complete kit of parts for this project and the PCB is also available separately. Full construction details may be found in instruction leaflet XK00A.

Retail Unit Price each (inc. VAT).

Order Code	Type 3197	Price each exc. VAT	inc. VAT each
UK75S	U/Sonic Car Alarm Kit	£21.260	£24.990
GB93B	U/Sonic Car Alarm PCB	£5.940	£6.990
XK00A	Ultrasonic Car Alarm Ins	£0.800	£0.800 NV

## Compuguard 3



- ★ Fully programmable
- ★ Low power consumption
- ★ Optional battery backup
- ★ Suitable for all negative earth vehicles
- ★ Microprocessor controlled
- ★ Controls central locking & electric windows and sunroof

In Britain a car is stolen every 30 seconds! Compuguard is a microprocessor controlled programmable semi-intelligent vehicle alarm that aims to make a thief's time as difficult as possible by constantly monitoring and modifying its outlook on the security of the vehicle! Compuguard comes in three kits:

### Compuguard Main Unit

This houses a microcontroller, optional battery backup, shock and voltage drop sensors, control relays and service keyswitch. The unit is impregnable to water and is to be mounted in the engine compartment.

### Optional Items

The following optional items are not included in the kit but may also be required.

Rechargeable Type AA Battery	6	(YG00A)
9V Battery Holder	1	(HQ01B)
PP3 Battery Clip	1	(HF28F)
Motor-Start Press	1	(FH91Y)
Additional Quick Snap Connectors	As Req.	(JR88V)
12V Siren		See Article
Power Connection Wire Black	As Req.	(XR32K)
Power Connection Wire Red	As Req.	(XR36P)
Self Tapper No.8 x 12.7mm (1/2in.)	1 pkt.	(BF69A)
Spirawrap 3-18mm (1/8in.)	As Req.	(BL57M)

### Kit and Special Parts

A complete kit of parts is available. The high quality fibre-glass PCB, an aluminium mounting bracket for attaching the Compuguard main unit to the car body, and a TMS77C82 microcontroller preprogrammed with the Compuguard car alarm software are also available separately. The leaflet supplied with the kit contains the complete installation details (which are not shown in the magazines). This leaflet is also available separately. Full construction details may be found in Maplin Magazine/Projects Books 40 and 41, XA40T and XA41U, and instruction leaflet XK53H.

PCB dimensions: 104 x 127mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3201	Price each exc. VAT	inc. VAT each
LP22Y	Compuguard Main Unit	£25.520	£29.990
GE46A	Compuguard Main PCB	£5.940	£6.990
JR77J	Compuguard Bracket	£3.620	£4.490
UL63T	TMS77C82 MSD1	£17.430	£20.490
XK53H	Compugd Main Leaflet	£1.000	£1.000 NV

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## Compuguard Infra-Red Receiver and Control Unit 3



This houses the infra-red receiver/decoder and control switches to select the activated sensors. The unit is to be mounted inside the passenger compartment.

### Optional Items

The following optional items are not included in the kit but may also be required.

Multi-Core 15-way	As Req.	(XR28F)
Multi-Core 4-way Screened	As Req.	(XR25C)
Potting Box Miniature	1	(LH56L)
Potting Compound 50g	1	(FT17T)
Quickstick Pads	1	(HB22Y)

### Kit and Special Parts

A complete kit of parts is available and the pcb and self-adhesive panel are also available separately. PCB dimensions: 88.9 x 69.2mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3005	Price each exc. VAT	inc. VAT each
LP23A †	Compuguard IR Rec/Sw	£10.200	£11.990
GE56L †	Compuguard IR Rx Bd	£2.970	£3.490
JR730 †	Compuguard IR Panel	£1.690	£1.990

## Compuguard Infra-Red Transmitter 3



This is a small hand-held transmitter that can easily be attached to a key-ring. A recessed tactile switch is provided which selects active, inactive, or 'panic' conditions.

### Optional Items

The following optional items are not included in the kit but may also be required.

12V Lighter Battery 23A	1	(ZB56L)
-------------------------	---	---------

### Kit and Special Parts

A complete kit of parts is available. The high quality fibreglass PCB, self-adhesive panel and a key-ring box for housing the infra-red transmitter unit are also available separately. PCB dimensions: 55.5 x 31mm.

Price each shown, but sold only in multiples of 1.

Order Code	Type 3007	Price each exc. VAT	inc. VAT each
LP24B †	Compuguard IR Tx	£11.050	£12.990
GE57M †	Compuguard IR Tx Bd	£1.290	£1.490
JR92A †	Remote Case Panel	£0.417	£0.490
JR90X †	Keyring Remote Case	£1.520	£1.790
XK350 †	Compgrd Rx/Tx Leaflet	£1.200	£1,200 NV

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## Remote Control Car Alarm 3

Velleman



- ★ Adjustable voltage drop detector (reaction to interior lighting)
- ★ Internal siren for on/off signal and alarm
- ★ Warning alarm trigger input (2 triggers within 15 seconds = alarm)
- ★ Adjustable shock detector
- ★ Contact switches for bonnet and boot
- ★ Output for external siren and pager (5A)
- ★ Output for hazard lights (2 x 6A max)
- ★ Output for central locking (100mA)
- ★ Selectable code for remote control transmitter and receiver (8,748 codes)
- ★ Automatically resets in the event of accidental switch off (60 seconds)
- ★ Diagnosis facility to identify a triggered sensor at a later time

A very versatile microprocessor controlled car alarm that can be used with a wide range of sensors. The remote control facility allows the door central locking and the alarm to operate together. The alarm has a multi-functional dashboard mounted LED and audio/visual on/off indicators. When triggered the alarm will automatically reset after 30 seconds. For added protection, the alarm has an ignition/diesel fuel interrupt (rated at 15A) and a starter motor interrupt relay (rated at 30A). In standby mode the alarm draws 50mA from a car battery.

Retail Unit Price each (inc. VAT).

Order Code	Type 1173	Price each exc. VAT	inc. VAT each
VF730 †	K3511 Radio Car Alarm	£86.800	£101.990
VF76H †	K3512 IR-Car Alarm	£86.800	£101.990

## K3504 Car Alarm 2



This alarm detects instantaneous voltage drops of the battery caused, for example, by the courtesy light or boot light being switched on. To show you that the alarm is working properly, the kit has the following two control indicators: Flashing LED to indicate that the adjustable exit delay time has expired and that the alarm is armed; Pre-alarm (built-in buzzer) to remind you that the alarm is armed, so that you don't forget to switch it off. The alarm can be switched on and off very easily, either automatically through the ignition lock or remotely controlled by our infra-red code lock K6708 (VF80B) and K6709 (VF81C) for example.

Retail Unit Price each (inc. VAT).

Order Code	Type 3174	Price each exc. VAT	inc. VAT each
VE02C	Velleman Kit K3504	£14.450	£11.880
		£11.220	£16.990

## Glass Break Sensor



- ★ High false alarm immunity
- ★ Adjustable sensitivity
- ★ High intensity flashing 'armed' LED
- ★ Trigger LED indicator
- ★ Window mounted decal/sensor indicates vehicle is protected by an alarm and is active
- ★ Active low trigger output compatible with many alarm systems

This vehicle alarm glass-break sensor uses audio discrimination to detect attacking and breaking of glass. It is packaged in the form of an attractive window mounted decal, which also incorporates a high intensity LED that shows when the vehicle's alarm system is armed.

### Specifications

Operating voltage:	+9 to +15V DC
Quiescent current:	8mA
Trigger output:	Active low

Retail Unit Price each (inc. VAT).

Order Code	Type 12481	Price each exc. VAT	inc. VAT each
CK45Y	Break Glass Sensor	1+ £25.520	10+ £24.250
		25+ £23.050	1+ £29.990

## AM972S/973 Metal Pin Switches



These switches have normally closed contacts and may be used to switch on lights when opening car doors, boot or bonnet. They are ideal to activate the alarm K3504. Available in two lengths AM972S (short) and AM973 (long, with adjustable mountings).

Retail Unit Price each (inc. VAT).

Order Code	Type 3172	Price each exc. VAT	inc. VAT each
VF30H	Velleman Mod AM972S	£0.842	£0.990
VF31J	Velleman Mod AM973	£1.260	£1.490



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## AM956 Shock Detector



A ready-made electronic shock detector that can be installed anywhere in the car. The unit provides protection if an attempt is made to force entry, to tow or jack the car etc. The detector has adjustable sensitivity, LED indication, is easy to install, and makes a valuable addition to suitable existing car alarms.

Retail Unit Price each (inc. VAT).

Order Code	Type 3180	Price each exc. VAT	inc. VAT each
VF28F	Velleman Mod AM956	£10.200	£11.990

Steel Nut M3	1 Pkt	(JD61R)
Isoshake M3	1 Pkt	(BF44X)
Spacer M3 6-35mm (1/4 in.)	1 Pkt	(FG33L)
Seal Grommet 16mm	1 Pkt	(JX77J)
Wire 6A Black	As Req	(XR32K)
Wire 6A Blue	As Req	(XR33L)
Wire 6A Red	As Req	(XR36P)
Wire 3A Black 10m	1 Pkt	(FA26D)
Wire 3A Blue 10m	1 Pkt	(FA27E)
Wire 3A Green 10m	1 Pkt	(FA29G)
Wire 3A Orange 10m	1 Pkt	(FA31J)
Wire 3A Red 10m	1 Pkt	(FA33L)
Wire 3A White 10m	1 Pkt	(FA35Q)

### Kit and Special Parts

A complete kit of parts, including the PCB, is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 74 XA74R, and instruction leaflet XU49D.

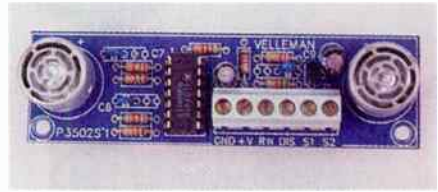
Retail Unit Price each (inc. VAT).

Order Code	Type 3307	Price each exc. VAT	inc. VAT each
LT46A	Auto Rear Window Wipe	£11.050	£12.990
GH66W	Auto Rear Wiper PCB	£2.970	£3.490
XU49D	Rear Win Wiper Lift	£0.800	£0.800 NV

## Miscellaneous Car

### K3502 Parking Radar

3



- ★ Audible warning of obstacles
- ★ Easy to install
- ★ Adjustable range

This Sonic Car Parking Radar System is designed to assist you or your partners parking skills by using ultrasonics to measure a distance. A sensor is mounted at the back of the car and gives an indication of the distance between your car, and the car parked behind you, or other obstacles (only at the same height as the sensor). When the preset minimum distance is crossed, an audible signal is generated.

**Specification**  
Measuring range: 5cm to 1.5m  
Transmission frequency: 40kHz  
Power supply: 10V to 15V DC 16mA max.

### Optional Items

The following items, not included in the kit, may also be required.

Plastic Box D-003	1	(ZB01B)
Plastic Box MB8	If Req	(KC90X)
M3 Insulated Spacers	1 Pkt	(FS38R)
6-Core Cable	As Req	(XS54J)
Zip Wire	If Req	(XR39N)
Wire Gauze	As Req	
Silicon Rubber Sealant	As Req	
In-line Fuse Holder	1	(RX51F)
100mA 31-75mm (1 1/4 in.) Fuse	1	(WR08J)

### Kits and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items).

Retail Unit Price each (inc. VAT).

Order Code	Type 3194	Price each exc. VAT	inc. VAT each
VE08J 1	Velleman Kit K3502	£28.070	£32.990

## Wiper Control

### Auto Rear Window Wiper Controller

3



- ★ Single shot and intermittent modes
- ★ Extends wiper blade life
- ★ Reduces the risk of scratches
- ★ Lessens wiper motor and gearbox wear
- ★ Enhanced operation
- ★ Multi-mode operation
- ★ Auto wipes when reversing

Most cars that have a rear wiper usually have the operating switch for it located in some awkward, almost unreachable position, whereas the conventional front screen wiper controls are close at hand. Consequently it is not easy to operate the rear wiper whilst concentrating on your driving, so that for example, should the window dry out and it is not a convenient moment to switch the wiper off, there is a risk of scratching the glass.

The Auto Rear Wiper Controller adds flexibility to the existing simple 'on or off' rear window wiper on the car, making its operation semi-automatic and relieving the driver of the task.

There are three essential modes of operation:

1. Single Shot Mode. The rear wiper will give a single sweep and then stop.
2. Intermittent Mode. The rear wiper will sweep and then wait for a preset time period; this cycle will repeat indefinitely until switched off. The time delay period can be preset according to the value chosen for the timing resistor. In the kit, two alternative values are supplied for 7 and 15 seconds, but other values can be substituted for delay times from 1 second to 1 minute.
3. Auto Wipe on Reverse Mode. The rear wiper is forced into Intermittent Mode whenever reverse gear is selected, regardless of the unit's toggle switch position.

In all cases, the rear wiper will only function while the front windscreen wipers are switched on, so that all wipers can easily be switched off with just one control, whilst the original rear wiper switch can still be used as normal, if required.

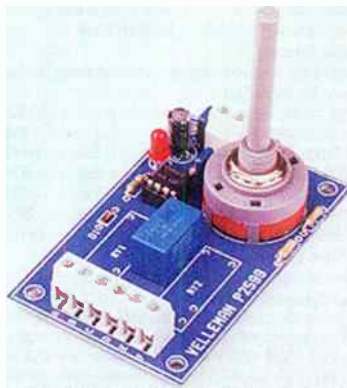
### Optional Items

The following items are not included in the kit, but may also be required.

ABS Box MB2	1	(LH21X)
Pozi Screw M3 16mm	1 Pkt	(JC70M)

## K2599 Intermittent Wiper Controller

2



- ★ Timer intervals 5, 10 & 15 seconds
- ★ Relay output: 2 x 5A single pole change over contacts
- ★ LED indicator

This project is ideal for updating the windscreen wiper control installed in older cars. An intermittent setting, featuring three different time intervals of 5, 10 and 15 seconds is provided for matching to weather conditions. The advantages of intermittent wiping are that it extends the working life of the wiper blades and reduces the mechanical wear of the wiper motor and gearbox.

### Specification

Power supply:	12V to 15V DC
Supply current	
output off:	25mA
output on:	100mA
Interval lengths:	5, 10, and 15 seconds
PCB dimensions:	82 x 52 x 40mm

### Optional Items

The following items, not included in the kit, may also be required.

Ribbon Cable 10-way	As Req	(XR06G)
---------------------	--------	---------

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 75 XA75S, and instruction leaflet XU74R.

Retail Unit Price each (inc. VAT).

Order Code	Type 3182	Price each exc. VAT	inc. VAT each
VE03D	Velleman Kit K2599	£11.900	£13.990
XU74R	Wiper Controller LF	£0.500	£0.500 NV



RS12750  
BS EN ISO 9002

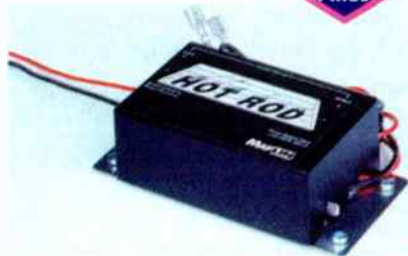
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## Rear Window Demister Aerial 2

NEW LOW PRICE



### Features

- ★ Turns Rear Window Demisters into radio aerials
- ★ Excellent FM and AM coverage
- ★ Compact, robust design
- ★ Simple to install

### Applications

- ★ Cherished cars and vans
- ★ Customised and classic vehicles

This project is a viable alternative to an automatic aerial when used for FM reception and the rear window aerial amplifier will be just as effective even if the heater element doesn't work. The unit may also be used to receive the Medium and Long Wave AM bands (depending on how well the electrical systems in the vehicle are suppressed). Ideal for discerning motorists who do not wish to damage their car bodywork by drilling a hole in it to fit a conventional extendable rod-type antenna, or those people who are fed up with vandals mangling or even snapping off the aerial when it is inadvertently left extended. There are additional benefits to be gained in not using a conventional aerial: elimination of a potential rust spot and the doing away with an unsightly mast sticking out of the car's body work. This makes the project perfect for painstakingly restored classic cars (which may not have had an aerial fitted originally, but whose owners wish to fit radio equipment), custom cars, or as a neat addition to any (negative-earthed) vehicle. The project is also suitable for vehicles with glassfibre body construction, or even Kevlar/carbon fibre.

### Specification

Supply voltage:	12V DC nominal
Current consumption:	17.4mA nominal 22.6mA @ 15V
Overall gain:	19dB
Spectral response:	All UK AM and FM radio waveband frequencies
Heater element current:	15A maximum, 50% duty cycle rated 8A continuous, 100% duty cycle rated

**Note: This project is suitable for negative-earthed vehicles only.**

### Kit and Special Parts

A complete kit of parts is available, including the PCB and the Front Panel Label.

The PCB and Front Panel Label are also available separately.

Full constructional details may be found in Maplin Magazine/Projects Book 96 XA96E, and instruction leaflet XV77J.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU08J	1 Windw Demstr Aerial	£17.010	£19.990
GJ30H	Rear Win Demistr PCB	£2.970	£3.490
KP96E	Demistr/Aerial Label	£2.110	£2.490
XV77J	Rear Win Demistr Lft	£0.800	£0.800 NV

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## Rear Window Demister Timer 1



It costs money to buy petrol to fuel the engine to power the alternator to produce the electricity to demist the rear window of a vehicle. When people switch the demister on they, more often than not, forget to turn it off. But don't despair! Equipping your vehicle with this simple to build and install demister timer will ensure that the demister will automatically switch off after a preset period, even if you forget all about it. This will be kinder on the vehicle's hard-suffering battery (and alternator) in cold weather, leaving more power in reserve for the lights, windscreen wipers, the heater blower and, perhaps, your all-important stereo system!

### Specification

Operating voltage:	12V DC nominal
Operating current:	66mA
Standby current:	1.4mA
PCB dimensions:	65 x 72 x 25mm
Box dimensions:	105 x 72 x 33mm
Over-current protection:	100mA fuse

### Optional Items

The following optional items, not included in the kit, may also be required.

Box and Base Type 2	1	(YN36P)
9.5mm Grommet	1	(JX63T)
M3 x 12mm Pozi-drive Screws	1 Pkt	(BF37S)
M3 Steel Nuts	1 Pkt	(JD61R)
M3 Steel Washers	1 Pkt	(JD76H)
M3 Shakeproof Washers	1 Pkt	(BF44X)
M3 x 1/8in. Spacers	1 Pkt	(FG32K)

**Note: This project is suitable for negative-earthed vehicles only.**

### Kit and Special Parts

A complete kit of parts is available, including the PCB, the Instruction Leaflet, and the Constructors' Guide. The PCB and front panel label are available separately. Full constructional details may be found in Maplin Magazine/Projects Book 98 XA98G, and instruction leaflet XV89W.

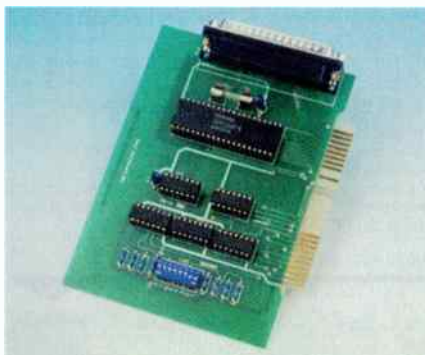
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP47B	Rear W/Dw Dmstr Tmr	£8.500	£9.990
GJ44X	Demister Timer PCB	£2.110	£2.490
KV05F	Demister Timer Label	£2.110	£2.490
XV89W	Demister Timer Lft	£0.800	£0.800 NV

## Computer Projects

## IBM PC Compatible

## Programmable PC I/O Card 2



- ★ For use with IBM PC, PC-XT, PC-AT and compatible clones
- ★ 24 programmable input/output lines
- ★ Fully programmable from BASIC

- ★ Base address selectable
- ★ Uses industry standard 8255 PPI IC

A 24-line digital I/O (Input/Output) card for use on many IBM PCs and clones. The card is based around the industry standard 8255 PPI (Programmable Peripheral Interface) IC. A 37-pin D-type connector is integral to the card and protrudes from the expansion board. The 8255 PPI IC provides the necessary control, latching, buffering and handshaking of data to and from the card. A number of TTL chips provide access to the 8255 from the host computer. Both CMOS and TTL logic can be read, but only TTL +5V can be written. Extensions to the card can enable the device to write to CMOS levels. This card is not able to handle large current devices directly, however, circuits supporting the card are shown in the magazine. A GW BASIC program is supplied in the article for testing the card, producing a square wave at all the ports. Full operating procedures using GW BASIC commands are also shown in the leaflet.

### Optional Items

The following items, not included in the kit, may also be required.

D-Connector Jack Post	1 Pr	(FP31J)
8255 Data Book	1	(XK97F)

### Kit and Special Parts

A complete kit is available and the pcb is also available separately, as well as the 8255 Data Book. Full construction details may be found in Maplin Magazine/Projects Book 43 XA43W, and instruction leaflet XK29G.

A ready assembled version is also available.

PCB dimensions: 286 x 40mm.

### Applications Information

Further applications information on using the Programmable PC I/O Card may be found in the following issues of *Electronics - The Maplin Magazine*:

- Using Temperature Modules* - Issue 71 (XA71N): Gives details of how to measure temperature. Requires Temperature Module Expansion Converter Kit (LM36P) and Temperature Module (FE33L) - article includes BASIC program listing.
- IBM PC Centronics Input Port* - Issue 77 (XA77J): Gives details of how to receive data from another computer's centronics parallel printer port - useful when transferring data from an old computer system where disc or file formats, etc., are incompatible - article includes BASIC program listing.
- Rugby Clock Receiver* - Issue 47 (XA47A): Gives details of how to receive and decode Rugby MSF Clock data. Requires Rugby Clock Receiver Kit (LP70M) - article includes BASIC program listing.
- Practical Robotics* - Issues 42 (XA42V), 43 (XA43W), 44 1991 (XA44X), 59 (XA59P): Gives details of how to build and control robots from a computer - Issue 59 gives specific information relating to the Programmable PC I/O Card which can be directly applied to the articles in Issues 42 to 44 - articles include BASIC program listings.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP12N	1+ IBM Expansion Kit	£23.820	£27.990
GE31J	1+ IBM Expansion PCB	£14.450	£16.990
XK97F	8255 Leaflet	£0.990	£0.990 NV
AM11M	1 Expansion Card Assm	£29.770	£34.990
XK29G	1 IBM Exp Leaflet	£1.000	£1.000 NV



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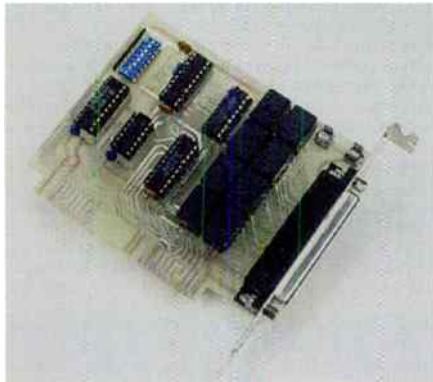
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**PC Relay Card**

**2**



**Features**

- ★ For use with IBM PC, PC-XT, PC-AT and compatible clones
- ★ Eight relay changeover contacts
- ★ Switches up to 24V DC/50V AC @ 2A resistive/1A inductive
- ★ Fused 5V output to power external circuits
- ★ Base address selectable
- ★ Multiple cards can be used
- ★ Fully programmable from BASIC

**Applications**

- ★ Robotics
- ★ Process control
- ★ Time control
- ★ Home automation
- ★ Controlling lamps, motors, solenoids

This project is a versatile relay card for use with the IBM PC, PC-XT, PC-AT and compatible clones. Each relay, of which there are eight on the card, has one set of change-over contacts. The relay contacts are able to switch 'moderate' loads, such as low voltage lamps, motors and solenoids. The card slots into any one of the vacant expansion slots provided on the host computer. Power, control, address and data signals are obtained from the computer's expansion bus. The relays' contacts are brought out, together with a fuse-protected +5V supply, on a 37-way female D-type connector. The D-type connector protrudes through the expansion card slot facilitating easy connection with the outside world.

The card is based around discrete logic, as opposed to a fully programmable input/output IC, this has the advantage that the card does not need to be configured or initialised before use. Data can simply be written to the appropriate address to set or reset the relevant relays. To simplify programming, it is possible to 'read back' from the card which relay outputs are set or reset, this avoids having to set or reset software flags to keep track of the current relay states. A further advantage is that a self-diagnostic routine could be written into the software to check the presence of the card at the correct input/output map location and whether the card is functioning correctly. Details are given in the kit on how to access the PC Relay Card using GW-BASIC.

**Kit and Special Parts**

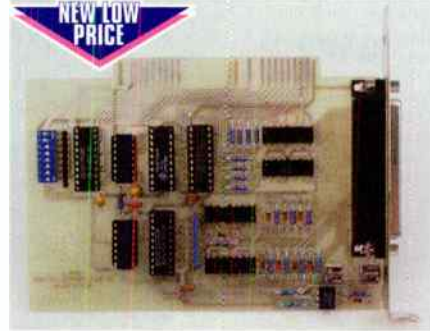
A complete kit of parts (including the PCB and instruction leaflet) is available. The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 65 XA65V, and instruction leaflet XT88V.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 3331	Price each exc. VAT 1+	inc. VAT each 1+
LT16S	PC Relay O/P Card	£25.520	£28.990
GH22Y	PC Relay O/P PCB	£8.500	£9.990
XT88V	PC Relay Card Lft	£0.800	£0.800 NV

**PC Opto-Isolator Card**

**2**



**Features**

- ★ For use with IBM PC, PC-XT, PC-AT and compatible clones
- ★ 100% galvanic isolation
- ★ Eight 'double buffered', opto-isolated inputs with strobe
- ★ Eight opto-isolated transistor switch outputs
- ★ High isolation voltage
- ★ Fused 5V output to power external circuits
- ★ Selectable base address

**Applications**

- ★ Isolated data links
- ★ Connection of switches, tachos, pulse devices and detectors
- ★ Robotics
- ★ Process control
- ★ Timer control
- ★ Home automation
- ★ Control of lamps, motors, solenoids

This project is a versatile interface card for use with the IBM PC, PC-XT, PC-AT and compatible clones, featuring electrical isolation of both inputs and outputs using opto-coupling techniques. There are separate, 8-bit parallel input and output connections on the card, with an additional strobe input being provided for the 8-bit parallel input. This strobe can be disabled if required, improving the flexibility of the card.

The card slots into any one of the vacant expansion slots provided on the host PC, and the power, control, address and data signals are obtained from the computer's expansion bus. The opto-isolated inputs and outputs are brought out to a rear panel mounted, 37-way, female D-range connector, together with a fuse-protected +5V supply, allowing easy connection with the outside world.

The card uses discrete logic, as opposed to a fully programmable input/output IC, and therefore has the advantage that it does not need to be configured or initialised before use. Data can simply be written and read to, and from, the appropriate address. A further advantage is that a simple self-diagnostic function could be included in the software to check the presence of the card at the correct input/output map location, and whether the card is functioning correctly.

**Kit and Special Parts**

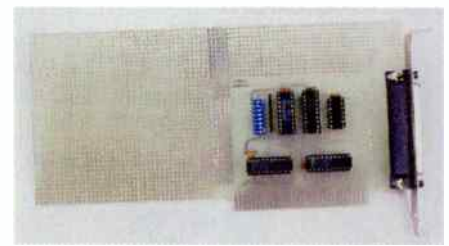
A complete kit of parts (including the PCB and instruction leaflet) is available. The PCB is available separately. Full construction details may be found in Maplin Magazine/Projects Book 66 XA66W, and instruction leaflet XT87U.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 3324	Price each exc. VAT 1+	inc. VAT each 1+
LT17T	PC Opto-Isol I/O Card	£28.070	£32.990
GH23A	Opto-Isolates I/O PCB	£10.200	£11.990
XT87U	PC Opto-Isol Card Lft	£1.000	£1.000 NV

**PC Prototyping Card**

**3**



**Features**

- ★ For use with IBM PC, PC-XT, PC-AT and compatible clones
- ★ Matrix of DIL IC spaced solder pads and power rails
- ★ Buffered address and data lines
- ★ On-board address decoder
- ★ Selectable base address

**Applications**

- ★ Prototype development of PC I/O cards
- ★ Constructing custom 'one-off' adaptor cards

This versatile project is an interface card for use with the IBM PC, PC-XT, PC-AT and compatible clones, specifically designed to allow the home constructor and experimenter to develop a custom-built expansion card for his or her PC, to perform a specific hardware interfacing task which is not catered for by any normally available cards. It will be particularly useful in the field of electronics where some special interface is needed, and equivalent industrial I/O cards are expensive. The card plugs into any one of the vacant expansion slots provided on the host PC's motherboard, and the power, control, address and data signals are made available from the computer's expansion bus. External connections can be brought out to a rear panel mounted, 37-way, female D-range connector. This connector is optional however, and other, more specific connectors can be used instead if the application demands.

Flexibility is also increased from the software point of view, by the provision of the MEMR and MEMW lines, allowing configuration of the card as memory (therefore addressed in the memory map), or alternatively the IOR and IOW lines are available, allowing the card to be configured as an I/O device of some sort, as are all the IRQ lines.

The remainder of open space over the rest of the component side of the card has matrices of plated through holes organised to a 2.54mm (0.1in.) grid. Those above the buffering circuitry have pads interconnected in favour of transistor circuits and resistor networks, while those occupying the front half are essentially configured for DIL ICs. Five bus bars are provided down the centre of the card carrying 0V, +5V, -5V, +12V and -12V supply rails. If the 37-way, rear panel connector is used, then all the connections (which are open-ended, i.e. not connected to anything) are brought to separate pads, contained in the rectangular legend marked 'SK1', with pin identification.

**Optional Items**

The following items, not included in the kit, may also be required.

RA Socket 37-Way D-Range	1	(JB38R)
PC Bracket 37-Way D-Type	1	(CR45Y)

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 67 XA67X, and instruction leaflet XU20W.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 3326	Price each exc. VAT 1+	inc. VAT each 1+
LT14Q	PC Proto Card Kit	£29.770	£34.990
GH39N	PC Prototyping PCB	£25.520	£29.990
XU20W	PC Proto Card Lft	£0.800	£0.800 NV



This symbol beside an order code in the price block indicates

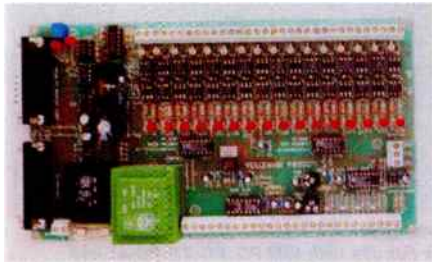
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## K8000 Computer Interface Board

3



- ★ Interface board for IBM compatible PCs
- ★ Simply connects to the printer port
- ★ Printer by-pass connector on board
- ★ 16 optoisolated input or outputs
- ★ 8 to 6-bit (64 step) analogue outputs
- ★ 1 to 8-bit (256 step) analogue output
- ★ 4 to 8-bit (256 step) analogue inputs
- ★ Full optoisolation to computer

To enable a computer to communicate with the outside world, it is usually fitted with a keyboard, a display and perhaps a mouse. If however, it is to be used in control applications, or certain control functions are to be carried out, then an interface is needed. This Computer Interface Board excels in its simplicity of use and installation.

The connection to the computer is optically isolated, so that damage to the computer is not possible. The interface is controlled using TURBO PASCAL™ procedures – these procedures are preprogrammed and are provided along with a number of tests and example programs on the diskette supplied.

To connect the interface board to the computer, the printer port is used (note that there is no need to install an extra printer port as the printer can be connected directly to the interface board). Although it must be noted that the printer has priority over the interface when connected.

The interface itself has 16 optically isolated digital connections, which can be freely chosen as either inputs or outputs (e.g., 6 inputs and 10 outputs) according to how they are set up by the user. In addition, there are eight analogue outputs with 6-bit resolution, one analogue output with 8-bit resolution, and four analogue inputs of 8-bit resolution. If more digital outputs are required, then the analogue outputs can be used by setting to minimum or maximum output voltage. If there are too few inputs, then the analogue inputs may be used. In this way it is very simple to track the state of a rotating switch by connecting in a different voltage for each switch index position.

Please note that these extra input and output channels are not optically isolated. If this capacity is still not sufficient for a particular application, then up to four interface boards can be connected together (one master and three slaves), such enormous potential exists.

The interface can be used with many other Velleman kits such as:

K6714	16-channel relay card (VF10L).
K6710 and K6711	15-channel remote control (VE72P), (VE73Q).
K2607	Thermometer adaptor (VE65V).
K6700 and K6701	2 wire communication (Max. 16 channels) (VE70M), (VE71N)
K2633	4-channel relay card (VF00A)
K2634	4-channel triac card (VE97F).

### Specification

#### Digital Outputs I/O1 to I/O16:

Optocoupler, open collector output:  
50mA 30V DC maximum  
Minimum conversion time to set 16 outputs: 800µs

#### Digital Inputs I/O1 to I/O16:

Optocoupler input: Min 5V/5mA, max 20V/40mA  
Minimum conversion time to read 16 inputs: 800µs

#### Analogue Outputs:

8 outputs, DAC1 to DAC8; resolution: 64 steps  
Minimum conversion time to set one output: 600µs  
Minimum conversion time to set 8 outputs together: 2ms

Maximum output current: 6mA  
Minimum output voltage (at 2mA): 0.1V  
Maximum output voltage (at 2mA): 11.5V (adjustable)

Resolution per step (from 0.1V to 11.5V): 160mV ±90mV

1 Precision output, DA1 resolution: 256 steps  
Conversion time to set output: 600µs

Maximum output current: 2mA  
Minimum output voltage: 0V

Maximum output voltage (at 500µA): 4.5V (adjustable)  
Resolution per step (from 0V to 4.5V): 17.5mV  
Deviation: 30mV max.

#### Analogue Inputs

4 analogue inputs, AD1 to AD4; resolution: 256 steps  
Minimum conversion time to read one input: 1ms  
Minimum conversion time to read 4 inputs: 1.6ms  
Minimum input voltage: 0V  
Maximum input voltage: 5V  
Input impedance: 50MΩ nominal  
Resolution: 19.5mV  
Deviation: 30mV max.  
Communication protocol: I<sup>2</sup>C bus  
Supply voltage: 220 to 240V AC  
PCB dimensions: 237 x 133mm

**NB:** Conversion speed is dependent on chosen computer.

#### Kit and Special Parts

A complete kit of parts (including the PCB) is available. Full construction details may be found in Maplin Magazine/Projects Book 88 XA88V, and instruction leaflet XV30H.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF54J 1	Velleman Kit K8000	£80.840	£94.990
XV30H	Computer I/Face Lift	£1.000	£1.000 NV

## K8001 Independent Programmable Control Module

2



This independent programmable control module can be used to replace a computer to control the K8000 computer interface card. The module is easily connected to the K8000 card, and once programmed it can be disconnected from the computer and the system can continue to work as a stand-alone system. Programming is done using its own purposely developed instruction set.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF57M 1	K8001 PLC Kit	£57.010	£66.990

## Video Digitiser

2



#### Features

- ★ Black and white (monochrome) or colour digitising
- ★ Simple to construct and operate

#### Applications

- ★ Home video storage and processing

### ★ Closed circuit TV (CCTV) security camera systems

#### ★ Presentations

This superb project is a real time Video Digitiser card intended for use with IBM compatible PCs fitted with a VGA or higher grade monitor. The system converts video signals into digital data that can be processed by the PC. Therefore you can view and store pictures sourced from either a video camera, composite black and white (monochrome) video, or a colour RGB signal, on a PC. This then allows you to use or modify the stored images as you require. Software is included in the kit, which operates under Windows 3.1 or higher operating systems. The software incorporates operating and construction details for the kit, in a choice of four languages – English, Dutch, French, and German, and in addition, conventional written instructions are provided. Pictures may be digitised in black and white or RGB colour from either TV, camera, or tape sources. The Video Digitiser card is capable of capturing frames from live composite video signals with 256 grey levels, and 24-bit full colour pictures from still image RGB signals. The output file is in the form of TIFF (Tagged Image File Format) files. The output files may be processed further by almost any graphics program that runs under MS-DOS™ or Windows™, the recommended graphics program being 'Paint Shop Pro', which is shareware. You can then print out a hardcopy onto paper if a suitable printer is connected to your PC. The project can have more serious uses, such as in security monitoring systems. The project will work with the Maplin range of charge-coupled device (CCD) subminiature video cameras. In the case of the monochrome version (AY16S/DN48C), images can be seen in the dark, thanks to the camera being infra-red sensitive and incorporating built-in infra-red illumination of the scene. Video Processor K4600 (VF74R) can be used to provide RGB signals for colour digitising.

**Specification**  
System requirements: IBM-compatible PC with 286 or higher processor  
VGA or higher video card  
Spare expansion slot  
Windows 3.1™ or higher

**Black and white images**  
Resolution: 512 x 512 pixels  
Grey levels: 256  
Sampling rate: 10MHz  
Input signal: Composite PAL video (15.625kHz line frequency)

Video input level: 1V pk-to-pk  
Output file format: TIFF (8-bit)

**Colour images**  
Resolution: 512 x 512 pixels  
Colour input signal: RGB (1V pk-to-pk)  
Number of colours: 16.7 million  
Output file format: TIFF (24-bit)

**Kit and Special Parts**  
A complete kit of parts is available, including the PCB. Full constructional details may be found in Maplin Magazine/Projects Book 96 XA96E, and instruction leaflet XV84F.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF71N 1	K8100 Video Dig Kit	£123.390	£144.990
VF74R 1	K4600 Vid/RGB Proc	£106.370	£124.990
XV84F	Vid Digitiser Lift	£0.800	£0.800 NV

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**General Computer**  
**RS232 Serial Line Tester** 3

- Features**
- ★ Easy to build
  - ★ Versatile, pocket-sized unit
  - ★ Multiple function
  - ★ Four different baud rates
  - ★ 8-bit PIC microcontroller-based
  - ★ Low current consumption



- Applications**
- ★ Terminals
  - ★ Printers
  - ★ Modems
  - ★ Multiplexers
  - ★ RS232 cabling

The RS232 Serial Line Tester is an extremely handy, pocket-sized device for rapidly testing serial terminals, printers and other communications equipment using RS232 data cabling. For example, where a multi-user computer system has a large number of terminals and printers distributed around one or more sites, they are often connected via simple asynchronous RS232 data cabling for a cost-effective and flexible installation. However, when a device fails to operate correctly, usually at the furthest point of the system (!), a way of testing the equipment quickly and independently of the host system can save a great deal of time in isolating the fault. This tester is a low-cost, portable, and easy to use instrument, based on the PIC16C84 Microcontroller and is capable of providing several useful test functions to enable rapid troubleshooting. It also provides a painless introduction to the world of PIC microcontroller-based projects, as no programming is required.

- Specification**
- DC Power Supply: 9V PP3 cell  
Supply current: 14mA  
Typical battery life: >30 hours  
Visual indicators: Two miniature LEDs provide power on/battery state and data flow indication
- Test facilities: 80- and 132-column test modes  
Choice of three test patterns  
1200, 2400, 4800, and 9600 BAUD rate  
7-bit Odd/Even/Mark/Space, 8-bit None data formats  
Visible confirmation of software flow control (X-on/X-off)  
Printer carriage mechanism tabbing test

- Optional Items**
- The following items, not included in the kit, may also be required.
- Alkaline PP3 Battery 1 (ZB52G)
  - 4prs 1in Velcro Sqrs 1 (FE45Y)
  - RS232 Mini Tester 1 (YP80B)
  - Null Modem RS232 1 (YP85G)
  - 25W M-M Gender Changer 1 (JM48C)
  - 25W F-F Gender Changer 1 (JM49D)
  - 25-way M-F Serial Cable 1 (JC13P)
  - 9-way F to 25-way M Adaptor 1 (JM08J)
  - Carrying Case B 1 (ZF04E)

**Kit and Special Parts**

A complete kit if parts (including the PCB and front panel label) is available (excluding optional items). The PCB, front panel label, and pre-programmed microcontroller are available separately. Full constructional details may be found in Maplin Magazine/Projects Book 100 XD00A, and instruction leaflet XV93B.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LL28F 1	RS232 Line Tester	£34.030	£39.990
GL54J	Serial Line Tstr PCB	£3.390	£3.990
KV12N	Serial Line Tstr Lbl	£2.110	£2.490
LF30H	PIC16C84 MS07	£11.480	£13.490
XV93B	Serial Line Tstr Lft	£1.000	£1.000 NV

**Parallel Interface Relay Card** 2



- ★ Robotics
- ★ Slide/tape recorder control
- ★ High power relay control
- ★ Programmable low voltage switching

This simple unit will allow up to eight independent relays to be controlled from any computer having a 'Centronics' parallel printer port. The device behaves as a printer, thus avoiding the necessity for special interfacing electronics or low-level software drivers. The relays are controlled simply by 'printing' an ASCII character, chosen to represent the required relay to be switched. The unit has on-board regulators but requires an external power supply. A 12V 800mA unregulated PSU (YM85G) is an ideal power source.

- Specification**
- Power supply: 15V DC regulated or 12V DC 800mA unregulated  
Maximum current: 500mA (all relays 'on')  
Relay contact ratings: 3A DC/AC resistive, 1.5A inductive, 24V DC  
Computer interface: Parallel printer port ('Centronics')

- Optional Items**
- The following items, not included in the kit, may also be required.
- AC Adaptor Unreg. 800mA 1 (YM85G)
  - IBM PC Printer Cable If Req. (JC11M)
  - Male-to-Male Printer Cable If Req. (JC14Q)
  - Male-to-Female Printer Cable If Req. (JC15R)

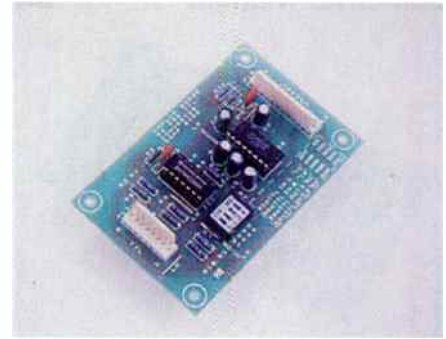
**Kit and Special Parts**

A complete kit of parts (including the PCB, Front Panel and instruction leaflet) is available (excluding optional items). The PCB and Front Panel are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 57 XA57M, and instruction leaflet XT82D. PCB dimensions: 160 x 109.2mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT08J 1	Centronics Rly Card	£34.030	£39.990
GH16S	Centronics Relay PCB	£5.940	£6.990
KP46A	F/P Cent Relay Card	£3.390	£3.990
XT82D	Centric Rly Leaflet	£0.800	£0.800 NV

**RS232/TTL Converter** 2



- ★ Operates from single +5V power supply
- ★ Meets all RS232C specifications
- ★ Normal or inverse logic
- ★ Two drivers and two receivers
- ★ Onboard voltage quadrupler
- ★ ±30V input level protection
- ★ ±9V output swing with +5V supply
- ★ Low power consumption

Not all home microcomputers or peripheral devices have serial data signals at RS232C logic levels. A method of converting +5V TTL signals to RS232C levels (and vice versa) is needed and the converter module does just this. The heart of the unit is the MAX232 IC which is a dual RS232 receiver/transmitter that meets all EIA RS232C specifications while only using a +5V power supply. This significantly simplifies the system design by removing the need for power supply voltages of other than +5V. The MAX232 has two onboard charge pump voltage converters which generate +10V and -10V power supplies from the single +5V power input. Output voltage swing is typically ±9V with the nominal 5kΩ input resistance of an RS232 receiver. Maximum data rate is 19,200 baud. An onboard DIP switch allows use of normal or inverse logic for transmitted/received data.

- Optional Items**
- The following items, not included in the kit, may also be required.
- Threaded spacer M3 1 Pkt (FG38R)
  - Isobolt M3 x 6mm 1 Pkt (BF51F)
  - Isoshake M3 1 Pkt (BF44X)

**Kit and Special Parts**

A complete kit is available and the pcb is also available separately. Full construction details may be found in Maplin Magazine Issue 31. A ready assembled version is also available.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LM75S	RS232/TTL Conv2 Kit	£13.600	£15.990
GD93B	RS232/TTL Conv 2 PCB	£3.390	£3.990
AM10L	RS232/TTL Conv Assm	£17.010	£19.990

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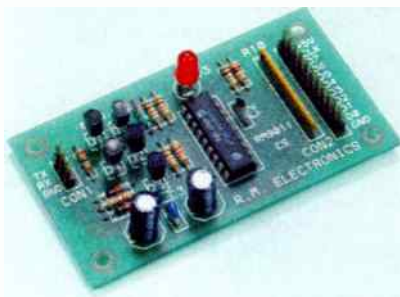
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## RS232 to 8-Bit Digital I/O Converter Module 1



### Features

- ★ Each I/O line individually configurable as input or output
- ★ Byte or bit read and write
- ★ Configuration can be altered on-line through the RS232 interface
- ★ Single 5V DC supply voltage
- ★ I/O lines are TTL and CMOS compatible
- ★ Auto baud rate selection
- ★ Auto format/parity selection
- ★ On-board CMOS microcontroller

### Applications

- ★ Digital I/O expansion of any computer with an RS232 interface
- ★ Computer-based process control and automation
- ★ Capture of digital signals, switches, detectors, etc.
- ★ Computer control of relays, indicators, motors, pumps, etc.

This single board, PIC microcontroller-based RS232 to 8-bit Input/Output Converter Module finds many applications where a parallel to serial conversion (and vice versa) of digital data is required, making it ideal for use in computer-controlled systems and peripherals, or for experimental and educational purposes. One useful application for the module is in a computer-controlled security system. Several passive infra-red sensors (PIRs), positioned about the premises, can be connected through the Converter Module to a host computer, allowing intruders' movements to be mapped throughout the building.

### Specification

Operating voltage:	5V DC
Maximum current consumption:	100mA
Maximum load per output:	10mA
Operating speed:	600/1,200 Baud
Visual indicator:	Red LED confirming serial data received

PCB dimensions:

80 x 44mm

### Kit and Special Parts

A complete kit of parts is available, including the PCB. The PCB and preprogrammed PIC16C54RC/PIC16C54MS11 Microcontroller are also available separately. A fully assembled kit is also available. Full constructional details may be found in Maplin Magazine/Projects Book 97 XA97F, and instruction leaflet XV85G.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT62S	RS232-Digital Conv Kit	£12.750	£14.990
GJ39N	RS232-Digital PCB	£2.540	£2.990
LP85G	RS232-Digital ConvAssm	£17.010	£19.990
DT02C	PIC16C54 MS11	£9.350	£10.990
XV85G	RS232-Digital Lft	£0.800	£0.800 NV

## Z80 Development System 3



### Features

- ★ IBM-compatible PC-based
- ★ Single RS-232 data link
- ★ Built-in power supply regulation
- ★ Neat and strong two-tier board construction

### Applications

- ★ Software development
- ★ Educational purposes
- ★ Control systems
- ★ Programmer for Z80 projects

Many electronics engineers and home constructors will have discovered the advantages that microcontrollers hold in modern design. For low-cost applications, and with a 64K-byte addressing space, I/O space, and a wide-ranging instruction set, the Z80 processor is still a first choice, and the Maplin Z80 card provides an excellent basis for Z80-based control projects. This project, which comprises of a serial interface board, RS-232 data link and associated WindowsTM-based software used in conjunction with the Z80 CPU Module, enables the programming of the ever-popular Z80 microprocessor by means of an IBM-compatible PC. The project is based around the existing Z80 CPU Module (LK67X), which previously, would have to be programmed using the Z80 Keypad (LT15R), in hexadecimal. Therefore, this project facilitates far speedier and more convenient programming of the Z80 in assembly language, in addition to straightforward debugging and compiling of the Z80 programs.

### Specification

Supply voltage:	12V DC regulated supply
Supply current (including Z80 CPU Module):	500mA
PCB dimensions (including snap-off section):	199 x 119mm
Height of completed assembly:	45mm (maximum)
Visual indicators:	Red and green LEDs indicating status of output port 12.

### Optional Items

The following optional items, not included in the kit, may also be required.

M3 x 10mm Insulated Spacers	1 Pkt	(FS36P)
12V Regulated Power Supply	1	(YZ21X)
9-way D-type Plug	1	(RK60Q)
25-way D-type Socket	1	(YQ49D)
Twin Core Lapped Screen Cable	1m	(XR20W)
Z80 CPU Module	1	(LK67X)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB, Z80 EPROM MS12 and the Z80 Development Disk are also available separately. The Z80 CPU Module Kit, although not in this kit, is also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 97 XA97F, and instruction leaflet XV69A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LX01B	Z80 Development System	£39.140	£45.990
GJ25C	Z80 Dev Sys PCB	£15.730	£18.490
DT03D	Z80 EPROM MS12	£11.480	£13.490
DT04E	Z80 Development Disk	£2.970	£3.490
XV69A	Z80 Dev Sys Lft	£0.800	£0.800 NV

## Z80A CPU Module 3

- ★ Accepts up to 8K of on-board memory
- ★ Has facilities for keyboard and displays
- ★ 4 decoded I/O select lines
- ★ Battery back-up available for CMOS RAMs



The Z80 microprocessor has been with us for many years and is still proving successful, with many new computer developments giving evidence of this fact. Practical applications of the CPU require a module with memory, input/output, clocks and facilities for further expansion.

The Maplin CPU Module can accept up to 8K of memory which is decoded in 2K (2048 bytes) blocks. The first block contains the operating system in ROM or EPROM and the second, third and fourth blocks can be either RAM or ROM. Static or CMOS 2K RAMs may be fitted (totalling 6K) and battery back-up is available, via switches, for CMOS data retention, if required. Both Z80 or Z80A processors can be fitted, and the system clock has facilities for different size crystals to suit, e.g., 1MHz crystal for Z80 or 2.4576MHz crystal for Z80A.

A keyboard/display decoding IC can be fitted allowing for small key or large (64-key) type keyboards (or sensors) for data input. This IC can also drive seven segment LED displays. This interface can scan up to 64 keys - expandable to 128 with suitable decoding - and sensors or strobed keys may be used. Two key lockout and 'N' key rollover can be programmed, and keyboard entries generate an interrupt (NMI) to the Z80. Either four or eight (programmable) 7 segment displays can be added with blanking facilities, and all connections are made via a 26-pin IDC socket. Four decoded I/O select lines are available and all data and address lines are buffered before being brought out to an expansion edge connector. All of the Z80 control lines are available, most of which are buffered, including a system CLOCK output, RESET output, SYSTEM RESET input and a switched NMI input. The NMI can be taken from either the KB/display interface or directly from the expansion connector.

### Optional Items

The following items, not included in the kit, may also be required.

26-Way IDC Header Plug	1	(FJ15R)
2 x 28-way PC Edge Conn	1	(FG23A0)
2.4576MHz Crystal	1	(FY81C)
8279 KB/Display I/Face	1	(YH51F)
2716 2K EPROM	1	(QQ07H)
6116 2K CMOS EPROM	3	(UF33L)
or 2716 2K CMOS EPROM	3	(QQ07H)

### Kit and Special Parts

A complete kit is available and the pcb is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 58 XA58N, and instruction leaflet XT51F. PCB dimensions: 152 x 119mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LK67X	Z80 CPU Module Kit	£34.030	£39.990
GB86T	Z80 CPU Module PCB	£21.260	£24.990
XT51F	Z80 Module Leaflet	£0.800	£0.800

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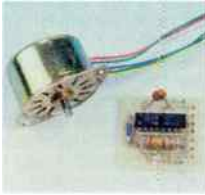
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## Stepper Motor Kit 1

A kit comprising the Stepper Motor FT73Q, SAA1027 stepper motor driver IC (QY76H, see Semiconductors) and all passive components required to make a working module, together with a PCB. The PCB is also available separately. Full construction details may be found in Best of Maplin Projects Book 5 XC05F, and instruction leaflet XK04E.



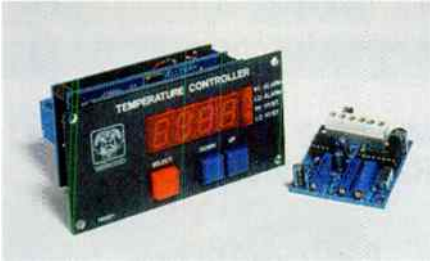
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LK76H	Stepper Mtr + Dvr Kit	£22.970	£26.990
GD14Q	Stepper Motor PCB	£1.260	£1.490
XK04E	Stepper Motor Ins	£0.400	£0.400 NV

### Controllers/Timers & Counters

### Controllers/Timers

## K6002 Microprocessor Temperature Controller 3



Unlike a normal thermostat this kit has two outputs, one for a 'high' alarm, e.g. to switch on the air conditioning, and one for a 'low' alarm, e.g. to switch on the central heating. Both 'alarms' are adjustable separately, each with its own hysteresis. Several temperature sensors (K6001) can be connected (1 x K6001 supplied with the kit). Separate opto-coupler sensor input (for K6001) is also provided.

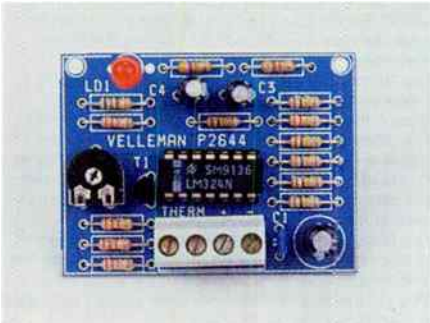
Relay outputs: 5A/220V AC changeover contact  
Accuracy:  $\pm 0.1^\circ\text{C}$   
Read out: from  $-40^\circ\text{C}$  to  $+150^\circ\text{C}$  (together with K6001)

24 hour clock (50Hz mains frequency accuracy)  
Alarm setting: from  $-50^\circ\text{C}$  to  $+154^\circ\text{C}$   
Power supply: 9V AC/300mA

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE69A	Velleman Kit K6002	£52.750	£61.990

## K6001 Temperature Sensor 1



This kit has been developed to be combined with K6002 for building a temperature regulating and control system. The advantage of a separate sensor is that the distance between the controller and the sensor is of no importance (tested up to 50m).  
Temperature range of the transmitter:  $-40^\circ\text{C}$  to  $+150^\circ\text{C}$

Linearity from  $-10^\circ\text{C}$  to  $+50^\circ\text{C}$ : better than 0.5%  
Supply voltage: 12V DC ( $\pm 2\text{V}$ ) unbalanced  
Current consumption: 20mA max.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE68Y	Velleman Kit K6001	£11.900	£13.990

## K2603C 1 Year Microprocessor Control Timer 4



This powerful timing device allows programming of 4 independent outputs from 1 second to 1 year. The memory can store 336 functions (on-off, sleep, enable-disable). The two independent sleep times are programmable from 1 second to 100 minutes. Extra protection of the memory is provided to avoid accidental erasing or overwriting by unauthorised persons. The kit includes housing, keyboard, 4 relays, full memory, and Ni-Cd back-up battery. Transformer to be built-in can be ordered separately (type TR2603).

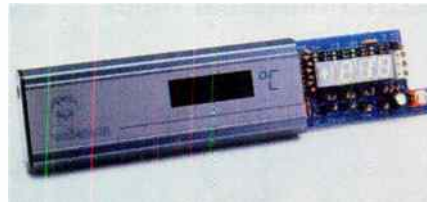
Time range: 1 second min. to 1 year max.  
Memory capacity: 336 steps switchable to 560 if no dates required.  
Memory back-up: Ni-Cd battery (incl.)  
Memory protection: clearing requires pressing of two keys simultaneously.

Writing can be disabled internally.  
Membrane keyboard with key beep and LED indication.  
Outputs: 4 relays 240V/3A.  
Power supply: 8V AC/1A or 12V DC/1A unbalanced.  
Dimensions: 242 x 116 x 59mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE79L	Velleman Kit K2603C	£130.200	£152.990
VF05F	Transformer Kit K2603	£19.560	£22.990

## K6003 Digital Thermometer Sensor with LED Display 4



Although this kit was especially designed to operate in conjunction with our controllers K6000, K6010 or K6002, it is also very well suited for use as a conventional thermometer. The digital display gives the following consecutive information:

- The current temperature
  - The minimum temperature
  - The maximum temperature
- When a 'res't key is pressed the highest and lowest temperatures measured are stored and, if necessary, adjusted.  
An aluminium case is supplied with the kit, to allow the thermometer/sensor to be mounted on a wall.  
Microprocessor technology  
Minimum and maximum temperature  
Temperature range of the sensor:  $-50^\circ\text{C}$  to  $+150^\circ\text{C}$   
Linearity from  $-10^\circ$  to  $+50^\circ$ : better than 0.5%

Full scale accuracy: better than 2%  
Adjustable to degrees Fahrenheit  
Display: 3 1/2 digits (0.1° display accuracy)  
Supply voltage: 12 to 15V DC/150mA  
Dimensions: 144 x 50 x 22mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF09K	Velleman Kit K6003	£48.500	£56.990

## Temperature Monitor



### Features

- ★  $+39^\circ\text{C}$  to  $+98^\circ\text{C}$  temperature range
- ★ Active high and low outputs
- ★ Trip temperature easily adjustable
- ★ In-built hysteresis
- ★ LED indicator

### Applications

- ★ Amplifier protection
- ★ Power supply protection

This versatile Temperature Monitor is an optional 'add on' to the Amplifier Monitor LP32K, thus providing a complete monitoring system for amplifiers. The Temperature Monitor can be used with other protection circuits, providing that they have an external trigger input. Alternatively, the Temperature Monitor may be used in conjunction with the Zero Crossing Optoswitch LP55K, to turn a fan on at a preset temperature. The Temperature Monitor is based around a voltage comparator and a thermistor and the temperature range can easily be adjusted to be higher or lower by changing the value of the variable resistor and two fixed resistors.

### Specification

Supply voltage: 12V nominal, 15V max. DC  
Quiescent current  
@ 12V: 3.6mA max.  
@ 15V: 3.9mA max.

Operating current  
@ 12V: 45.7mA max.  
@ 15V: 56.4mA max.

Temperature range:  $+39^\circ\text{C}$  to  $+98^\circ\text{C}$   
Low temperature: Trip  $+39^\circ\text{C}$ , reset  $+31^\circ\text{C}$   
High temperature: Trip  $+98^\circ\text{C}$ , reset  $+86^\circ\text{C}$

### Optional Items

The following optional items, not included in the kit, may also be required.

PCB Latch Plug 3-way	1	(BX96E)
M3 Insulated Spacer	1 Pkt	(FS36P)
Double Bubble Sachet	1	(FL45Y)
Minicon Latch Hsng 3-way	1	(BX97F)

### Kit and Special Parts

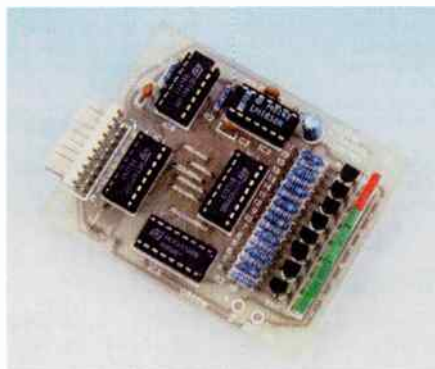
A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 48 XA48C, and instruction leaflet XK99H.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP71N	Temp Monitor	£7.650	£8.990
GE90X	Temp Mon PCB	£2.970	£3.490
XK99H	Temp Mon Leaflet	£0.500	£0.500 NV

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## 8 Channel Fluid Detector 1



Using the LM1830 fluid detector IC, this module will provide an indication of water level to eight demarcations over whatever range chosen, or water level in eight separate locations, or any combination of the two. Eight LED indicators form a visual display of fluid level, which can be made compatible with the location and meaning of the eight probes. Applications include monitoring level in water tanks, for the automatic switching of electric valves and pumps, car windscreen washer bottle 'low' warning, the watering of greenhouse plants; your imagination is the limit. Requires a 12V DC supply.

### Kit and Special Parts

Complete kit of all parts; pcb also available separately. Full construction details may be found in the Best of Maplin Projects Book 6 XC06G, and instruction leaflet XK71N. PCB dimensions: 79 x 63mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LK48C	8 Ch Fluid Dctr Kit	£17.010	£19.990
GB66W	8 Ch Fluid Dctr PCB	£4.240	£4.990
XK71N	Fluid Dctr Leaflet	£0.250	£0.250 NV

## K2639 Liquid Level Controller 2

Did you forget to turn off the tap? Is the washing machine leaking? Will the aquarium level go too low? Has the rainwater-but overflowed? Do you have water in the cellar? Just a minor mishap, or a disaster? You can avoid all this by installing the liquid level controller.

Power supply: 12 to 14V AC or 16 to 18V DC  
 Supply current: 100mA max.  
 Relay output: 50V/3A max.  
 Dimensions: PCB: 104 x 60 x 29mm  
 Sensors: 104 x 25 x 1.5mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF11M	Velleman Kit K2639	£11.900	£13.990

## 1/300 Timer Module 1



- ★ Adjustable operating period
- ★ Wide supply voltage range
- ★ Low current consumption
- ★ Switches up to 500mA
- ★ LED output state indicator
- ★ Triggerable on negative or positive pulses

Based on the TLC555 timer IC, this 1/300 timer provides a switched output for an adjustable period of between approximately 1 second to 5 minutes. Applications include short duration 'time out' or auto switch off for devices such as lights and sounders after a set period. It can switch currents up to a maximum of 500mA making it ideal for driving relays, sirens, etc. A light emitting diode provides an indication of the output state.

Please note that the 1/300 timer is not a precision device and the operating times stated may vary due to component tolerances.

If in some applications it is necessary to switch higher voltages or currents than are possible directly, the module can be used to switch a relay which is suitable for higher power switching, and the open collector output makes the circuit ideal for operating relays.

Power Supply Voltage: 3V to 15V  
 Power Supply Current with no external load: 12mA Max at 12V  
 Maximum Load current: 500mA  
 Switch-on Period: Adjustable 1s to 310s Approx.  
 Input Trigger Positive & Negative Edge: ± Supply Voltage  
 PCB Dimensions: 57mm x 54mm

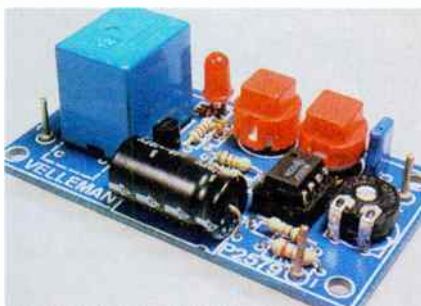
### Kit and Special Parts

A complete kit is available and the PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 38 XA38R, and instruction leaflet XU34M. PCB dimensions: 56 x 53.3mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP30H	1/300 Timer	£7.650	£8.990
GE28F	Adj Time Sw PCB	£2.280	£2.690
XU34M	1/300 Timer Leaflet	£0.500	£0.500 NV

## K2579 Universal Timer 1



### Features

- ★ Push button Start/Stop
- ★ Adjustable time-out period
- ★ Single pole changeover relay (50V AC/DC @ 2A maximum)

### Applications

- ★ Control timer for dedicated equipment
- ★ Safety control timer

Nowadays, there are still many items of electrical and electronic equipment in the home, such as radios, tape recorders and amplifiers that do not

have a built-in timer and yet would benefit from one. For example, some bedside clock radios have a sleep control, which after activation allows the radio to play for a predetermined time, and allows the person to drift off to sleep without worrying about switching the radio off. This project would allow the same facility to be applied to devices that do not have one built in.

There are other applications for the Universal Timer, such as switching on equipment that is required to be left unattended, and yet be automatically, and safely, switched off.

### Specification

Power supply: +12V DC  
 Quiescent current: 11mA  
 Operating current: 40 to 61mA  
 Timer interval: several seconds to 15 minutes

### Mains Warning:

Note that mains voltages should not be directly switched by the relay on the PCB. If it is desired to switch mains, then a suitably rated relay controlled by the relay on the PCB should be used.

### Kit and Special Parts

A complete kit of parts (including the PCB) is available. Full construction details may be found in Maplin Magazine/Projects Book 86 XA86T, and instruction leaflet XV22Y.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF06G	Velleman Kit K2579	£8.500	£9.990
XV22Y	Universal Timer Lft	£0.500	£0.500 NV

## Clocks

## Micron III Rugby MSF Radio Controlled Clock 3



- ★ Displays time and date
- ★ Time set by Rugby MSF transmission
- ★ Time/date can be manually set
- ★ Clock will free run
- ★ Microcontroller controlled
- ★ Software calculates leap years
- ★ Tricolour LED status indicators
- ★ Uses Maplin Rugby Clock Receiver modules

With all the clocks in the modern home, on the Hi-Fi, video recorder, microwave oven, etc., probably all displaying slightly different times, it would be useful to have an accurate time reference, that will automatically set the time itself. Micron III, a Rugby MSF radio controlled clock, based on the PIC16C84 microprocessor, will decode the Rugby time signals received by the LP63T Rugby time receiver kit, and display both time and date simultaneously, making it different from the ordinary 'run-of-the-mill' timepiece.

Two tricoloured LEDs are included in the display to indicate the MSF data input and time status, to show if the clock has locked onto the MSF signal. The clock will also 'free run' in the event that the signal is lost due to the transmitter being off the air for maintenance or poor reception conditions, and will calculate all time data including the number of days in the month and leap years.

The MSF signal is a single-frequency transmission of 60kHz, modulated by on/off keying to convey the time information. A description of the code was given in the Rugby Clock Receiver project published in Electronics, Issue 47.

### Specification

Supply voltage: 12V nominal  
 Supply current (including receiver): 130mA approx.  
 Crystal frequency: 3-27696MHz  
 Free running accuracy (crystal frequency set as above): Better than 1 sec. in 24 hours.

**24**  
 ORDER  
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**Optional Items**

The following items, not included in the kit, may also be required.

3-Way Miniature DIN Line Plug	1	(JX01B)
60kHz Rugby Receiver Kit	1	(LP70M)
12V Regulated Mains Adaptor	1	(BZ83E)
Quickstick Pads	1 Strip	(HB22Y)

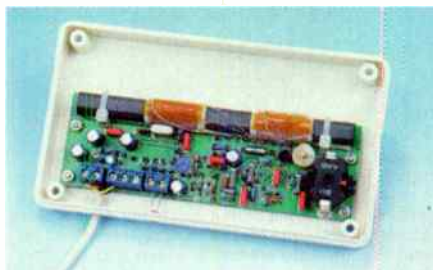
**Kit and Special Parts**

A complete kit of parts (including the PCB, Front and Rear Panel Labels) is available (excluding optional items). The PCB, Front and Rear Panel Labels are available separately. Full construction details may be found in Maplin Magazine/Projects Book 88 XA88V, and instruction leaflet XV27E.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 7901	Price each exc. VAT 1+	inc. VAT each 1+
LT03D	Micron III Kit	£42.540	£49.990
GJ04E	Micron III PCB	£6.800	£7.990
AS53H	PIC16C71 MS06	£7.220	£8.490
KP82D	Micron III F/P Label	£5.520	£6.490
KP84F	Micron III R/P Label	£1.690	£1.990
XV27E	Micron III Lft	£1.000	£1.000 NV

**Rugby Clock Superhet Receiver**



**Features**

- ★ Superior superhet design
- ★ Single PCB construction
- ★ Positive- or negative-going standard serial data output
- ★ Integral antenna

**Applications**

- ★ Provides Rugby MSF time signal for synchronizing clocks
- ★ Can be added to the Micron III or practically any application requiring the MSF signal

This receiver module uses superheterodyne (superhet for short) techniques to provide a simple, stable design for the Rugby MSF transmissions. It is constructed on a single small printed circuit board, using partly surface-mount devices, and no screening can is required to maintain stability. The module can be used with the Micron III and similar Rugby Clock kits to provide data for the display electronics, and is a superior alternative to traditional TRF type receivers. The improvements in signal reception mean that this receiver is capable of picking up the Rugby MSF time signal in noisy environments or areas of low signal strength. This enables the use of self-regulating and highly accurate Rugby MSF clocks in locations where they normally would not operate successfully.

**Specification**

Operating voltage:	12V DC regulated
Operating current:	13mA (average)
Output signal:	TTL level, 5V
Bandwidth:	40Hz (Slow Code)/ 120Hz (Fast Code)

Operating range from transmitter (Rugby):	>1,000 miles (Slow Code reception)
---	---------------------------------------

PCB dimensions:	126.5 x 41.5mm
Maximum height of completed board:	20mm

**Optional Items**

The following optional items, not included in the kit, may also be required.

ABS Box Type BM11	1	(CC81C)
Tie-wrap 100	1	(BF91Y)
M2.5 x 12mm Pozidrive Screw	1 Pkt	(BF40T)
M2.5 Steel Nut	1 Pkt	(JD62S)
M2.5 Spring Washer:	1 Pkt	(JD97F)
Miniature 3-pin DIN Line Plug	1	(JX01B)
4-Wire Burglar Alarm Cable	As Req.	(XR89W)
Micron III Clock Kit	1	(LT03D)
12V Regulated Mains Adaptor	1	(BZ83E)

**Kit and Special Parts**

A complete kit of parts is available, including the

PCB, the Instruction Leaflet, and the Constructors' Guide. The PCB is available separately. Full constructional details may be found in Maplin Magazine/Projects Book 99 XA99H, and instruction leaflet XV91Y.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 11806	Price each exc. VAT 1+	inc. VAT each 1+
LP63T	Rugby MSF Flwr Kit	£25.520	£29.990
GJ41U	Rugby Super Het PCB	£6.370	£7.490
DT18U	293mH RF Coil	£13.180	£15.490
XV91Y	Rugby Het Super Lft	£0.800	£0.800 NV

**'Rugby' MSF Receiver Modules**

**HKW-Electronic**

The following range of modules offers a number of clear benefits: Simple interface options to allow easy integration of accurate timekeeping into computers, test equipment, domestic goods, etc. A low cost solution using dedicated chips designed specifically to receive the Rugby MSF time signal. The advantage of modules over discrete solutions is that the modules include the necessary support electronics, tuned crystals, etc., and are preassembled, tested and in miniature form. Time is accurate to 1 second in 1,000,000. You can be confident that the time is always correct. Automatic correction for summer (BST)/winter (GMT) – no need for manual correction.

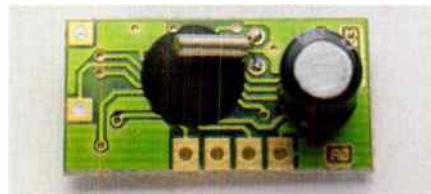
**Technical Data**

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

**EM2 MSF Receiver Module**

When combined with a suitable MSF Antenna (MK72P) the receiver module acts as a complete MSF time code receiver, providing a serial digital data output stream for external decoding. The receiver module EM2 contains a very sensitive 'straight through' receiver IC. The very tight bandwidth of about 10Hz, which is achieved by using a 60kHz crystal filter, guarantees good rejection of unwanted signals. The high impedance input of the module presents a very small load on the antenna thus maintaining its Q factor. The module has a low-power standby mode with maximum 1µA current consumption. In active mode the current consumption is less than 1mA, typically 500µA. Standby/active switching is under control of the active low PON input – this pin may be permanently tied to GND if continuous active operation is required. The module has a usable supply voltage range of +1.3V to +3.5V DC, typically +3V DC. Supply pins are +UB and GND. To maximise rejection of supply borne noise and minimise 60kHz pick-up, the positive supply to the module should be series connected through a 1kΩ resistor and decoupled with a 10µF electrolytic or tantalum capacitor immediately adjacent to the module. The MSF data output is connected internally with an active low open collector npn transistor – maximum sink current is 15µA, maximum collector voltage is +5.25V. An external 330kΩ pull-up resistor is suitable for use at +3V and 470kΩ at +5V. Full data available.



**EM2 MSF Receiver Module General Specification**

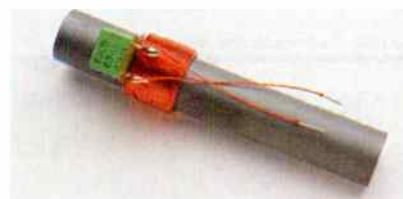
Dimensions:	25mm x 13mm x 12mm approx
Carrier frequency:	60kHz
Nominal operating voltage:	+3V DC
Operating voltage range:	+1.3V to +3.5V DC
Current consumption at	
+3V, active:	<1mA
standby:	<1µA
Operating temperature range:	0°C to +50°C
Settling time:	<3s
Sensitivity:	<1µV

Field strength required with given antenna:

Output:	>30µV.m <sup>-1</sup> Open collector npn transistor, active low
Maximum sink current:	15µA
Maximum collector voltage:	+5.25V
Pulse duration,	
0:	80ms to 135ms
1:	180ms to 235ms

**MSF Antenna**

This prealigned LC tuned ferrite antenna is specifically designed for use with the EM2 MSF Receiver Module (MK68Y). At a distance of 500km from the transmitter, the field strength is likely to be approximately 1mV.m<sup>-1</sup>, giving an output voltage of approx 80µV. The receiver requires only 1µV for good signal demodulation. From this it can be seen that the sensitivity of the antenna-receiver combination depends almost completely on the signal-to-noise ratio at the reception site, not the absolute output voltage from the antenna. Specifically, close proximity to 'radiating' digital equipment, such as desktop PCs, etc., should be avoided as this will degrade the signal-to-noise ratio. Full data available.



**MSF Antenna General Specification**

Dimensions:	60mm x 13mm (max)/10.5mm
Nominal operating frequency:	60kHz
Resonant frequency:	60kHz ± 300Hz
Bandwidth (-3dB):	<700Hz
Sensitivity:	>8µV output voltage with 100µV.m <sup>-1</sup> field strength

**MCM-RS232 Microcontroller Decoder Module**

When combined with the EM2 MSF Receiver Module (MK68Y) and the MSF Antenna (MK72P), this module provides time information in standard RS232 data format via a serial interface. External buffering to full RS232 levels is required and can be achieved using a proprietary RS232 level shifter IC and a handful of discrete devices. The advantage of the module compared to direct host decoding of the receiver output is the presence of exact decoded time information all of the time and no processing overhead. The module also features a switch output. Switch on and off times can be set by the host computer. If the switch output is connected to a suitable mains switch (e.g., Mains Power Switch, LU10L), ancillary equipment can be controlled. The host computer could turn even itself on and off by setting the appropriate switch on and switch off times. Full data available.



**MCM-RS232 General Specification**

Dimensions:	22mm x 13mm x 5mm approx
Nominal operating voltage:	+3V DC
Operating voltage range:	+2.4V DC to +3.6V DC
Current consumption at	
+3V, active:	<1mA
standby:	<50µA
Operating temperature range:	-20°C to +80°C
Inputs:	MSF data input (from EM2), Serial data input (from host PC)
Outputs:	Power control output (for EM2), Switching output (for external time control), Serial data output (to host PC)

**Retail Unit Price each (inc. VAT).**

Order Code	Type 11830	Price each exc. VAT 1+	5+	10+	inc. VAT each 1+
MK72P	MSF Antenna	£4.240	£3.730	£3.500	£4.990
MK68Y	EM2 MSF Flwr Module	£14.450	£12.270	£11.330	£16.990
MK73Q	MCM-RS232 Module	£17.010	£15.080	£14.190	£19.990

## Small Clock Module FM-882

A compact digital clock module that uses a quartz crystal to provide an accuracy of  $\pm 15$  seconds per month. Four digits show hours and minutes for a 12 hour period with AM and PM indicators. Operates from one GE-13 silver oxide button cell (FM28F) and draws a maximum of 5.5 $\mu$ A, which results in a battery life of approximately one year. The clock has an integral flanged bezel and can be snapped into a panel. Makes an ideal small, low-cost and accurate digital clock suitable for a wide range of applications.



### Specification

Digit height:	10mm
Oscillator frequency:	32.768kHz
Accuracy:	15s/month
Operating voltage range:	1.2V to 1.8V
Battery life:	1 year approx.
Dimensions	
panel cut-out (body):	45 x 25mm
depth:	15mm
bezel:	49 x 29mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU49D	Clock Module	£3.990	£4.690

## Wireless Clock Module



A compact analogue clock movement that incorporates a miniature radio receiver to decode the Rugby MSF time-code transmissions. Once locked to the transmission, the module is extremely accurate. Supplied with hour, minute and second hands. Finished in black. Requires one 'AA' battery (not supplied). Dimensions of module (not including hands) 55 x 55 x 17.5mm.

### Overall length of hands

hour:	77mm
minutes:	120mm
seconds:	120mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU89W	Wireless Clock Module	£21.260	£24.990

## Quartz Clock Movement



A standard basic quartz clock movement as described above. The movement is supplied without hands but uses the separate hands shown on the

next page. Time is set with a knob on the back. Movement is attached to face with a threaded brass boss having a shouldered brass collar nut.

### Specification

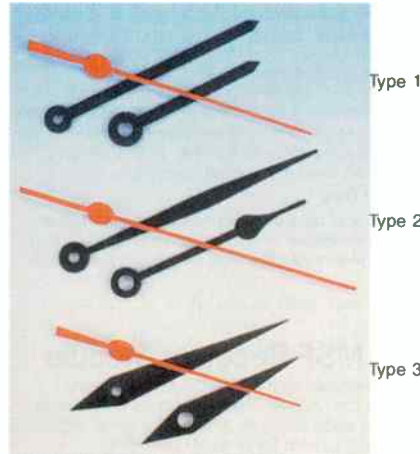
Crystal freq:	32.768kHz
Accuracy @ 22°C:	$\pm 0.45 \pm 0.55$ s/day
Operating voltage:	1.3 - 1.65V DC
Operating temperature:	-10°C to +60°C
Average current:	<150 $\mu$ A @ 1.5V
Battery life:	$\approx 1$ year
Dimensions:	55 x 55 x 17mm

Mounting boss:	8mm dia. clear
Hole dia. for collar:	10mm dia. clear

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU49D	Clock Module	£3.990	£4.690

## Analogue Clock Hand Sets



Three sets of plastic hands of different designs which can be used with both the standard quartz movement and the chimes movement overleaf. The hours and minutes hands are black, the second hand is red for each set.

Length from centre pivot (mm):

	Hour	Minute	Second
Type 1	53.75	80.0	80.0
Type 2	70.0	94.0	94.0
Type 3	45.0	66.0	66.0

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU74R	Clock Hands Type 1	£0.255	£0.300
YU75S	Clock Hands Type 2	£0.255	£0.300
YU76H	Clock Hands Type 3	£0.255	£0.300

## Table Alarm Clock Movement



As standard quartz movement above but including an alarm function, and a special set of four hands, one of which is a set alarm time indicator. The alarm sounds where the hour hand aligns with the alarm set hand. Separate set time and set alarm knobs are provided on the back with an alarm on/off switch. The separate hands below will not fit this movement as the mounting pivots are of different diameter. Also unlike standard movement, alarm version has no central mounting boss and instead is provided with two mounting holes through the case; fixing centres 49mm x 8BA/M2 clear.

### Specification

As those for standard movement except -	
Operating voltage:	1.3 to 1.7V DC
Operating current:	<85 $\mu$ A @ 1.5V
Alarm current:	<8mA @ 1.5V
Alarm volume:	>80dB @ 10cm
Alarm duration:	35 min. $\pm$ 20 min.
Alarm time accuracy:	$\pm 5$ min.
Operating temperature:	-10°C to +50°C
Dimensions:	52 x 55 x 23mm

Lengths and colours of hands, measured from centre pivot:

Hour (black with a luminous stripe):	19mm
Minute (black with a luminous stripe):	26mm
Second (red):	26mm
Alarm set (yellow):	20mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU67X	Alarm Clock Module	£4.240	£4.990

## Counters

### Counter Module



An electronic Counter Module with 5-digit LCD display. The display increases by 1 every time a positive-going edge is applied to pin 3. A reset is available, and a tone output which can drive a piezo sounder directly and bleeps on every count and on reset. Square wave outputs at 512Hz and 32768Hz are also provided.

### Specification

Working voltage:	1.5V DC
Current:	2 $\mu$ A standby 8 $\mu$ A average when counting
Count range:	00000 to 99999 (resets to 00000 after count 99999)
Max. input frequency:	7Hz
Input voltage range:	1V to 1.5V
Min. duration pulse:	<100 $\mu$ s
Overall size:	68 x 35 x 24mm

A plastic bezel (FE35Q) is available for use with this module, size 68 x 35mm and increases the overall depth of the module to 27mm. The module requires a 1.5V AA cell (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FS13P	Counter Module	£8.500	£9.990

## Development

### Infra-Red Switch



### Features

- ★ Low cost
- ★ High sensitivity
- ★ High immunity to spurious triggering
- ★ Changeover relay output
- ★ Flexible power supply requirement

### Applications

- ★ Alarm systems
- ★ Production lines
- ★ Home automation

Have you ever wondered how the hot-air hand driers in public conveniences work? You place your wet hands under the drier and it starts up - withdraw them and it stops. It's magic - or is it? In



fact, what you are experiencing is yet another application of infra-red energy. Radiation from an infra-red source (generally an LED) is reflected off your wet hands and is picked up by a sensor, which subsequently operates the drier.

Infra-red switches are often found in hot-air hand driers but they can equally be used for operating light switches (with the aid of LP55K opto-switch), or solenoid water valves in scrub rooms, turning on a shower when you step into it, an automatic doorbell, part of a production run counter on assembly lines, or even a reverse-parking radar. The number of applications is endless. The Maplin infra-red switch has three possible modes of operation – toggle, momentary, and only when infra-red energy is being detected. The basic operation of an infra-red proximity switch is quite simple. The energy produced by an infra-red source is reflected, by the object to be detected, to a sensor. The output from the sensor is amplified, filtered and used to drive an external circuit. Many natural and everyday objects emit infra-red radiation, and if the detector circuit was a 'straight' one, spurious triggering from these sources would result. However, this problem is overcome by relying on a 5kHz stream of infra-red pulses (thankfully rare in nature!), rather than the continuous presence of radiation. The 5kHz pulse train is generated by a LM567 tone decoder (a form of phase-locked loop, PLL for short), and is used to drive the infra-red LED. The 5kHz infra-red pulse train, when reflected by an incident object, is received by an infra-red photodiode, and is then amplified and filtered. The processed pulse train is then fed back into the tone decoder, which senses that they are of the same frequency as those it is generating, and flags an output to that effect. This output is used, with additional circuitry, to switch a relay.

**Specification**

Quiescent current: 12mA  
Operating current: 46mA  
Supply voltage: 12V DC, 9V AC or 9V-0-9V AC  
PCB size: 65mm x 50mm

**Optional Items**

The following items, not included in the kit, may also be required.

ABS Box type MB1	1	(LH20W)
35mm Flush Metal Wall Box	1	(ZB75S)
40mm Surface Pattress	1	(ZB40T)
Blanking Plate	1	(HL86T)
M3 x 10mm Insulated Spacer	2	(FS36P)
Miniature Screened Cable	As Req.	(XR15R)
2.4mm Heat Shrink Sleeve	As Req.	(BF87U)
6.4mm Heat Shrink Sleeve	As Req.	(BF90X)
Epoxy Resin Sachet	1	(FL45Y)
9V 250mA Transformer	1	(YN15R)
20mm Fuseholder	1	(KU33L)
20mm Fuseholder	1	(RX96E)
Fuseholder Insulating Boot	1	(FT35Q)
T50mA Fuse	1	(UJ90X)
Unregulated 300mA AC/DC PSU	1	(XX09K)
2.5mm Panel Power Socket	1	(JK10L)

**Kit and Special Parts**

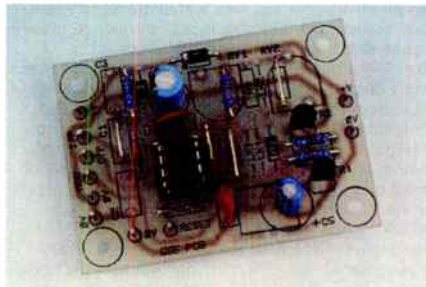
A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details can be found in Maplin Magazine/Projects Book 71 XA71N, and instruction leaflet XU39N.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
LT38R	I/R Proximity Switch	£14.450	£16.990
GH56L	I/R Prox Switch PCB	£2.970	£3.490
XU39N	I/R Prox Sw Leaflet	£0.800	£0.900 NV

**Multi-Purpose 555 Timer Card**

**2**



**Features**

- ★ Up to 11 configurations
- ★ Monostable or astable operation
- ★ Single PCB construction
- ★ Uses the popular 555 IC (NE555 supplied)

**Applications**

- ★ Timer circuits
- ★ Pulse width modulation
- ★ Square-wave generation
- ★ Reset pulse generation and watchdog circuits for microprocessors
- ★ Experimentation and circuit development
- ★ Education

The 555 timer IC has been around since the early 1970s, and can be found in many circuits. Configurable as a monostable or an astable multivibrator, it can be used in many applications – for example, precision timing, pulse generation, sequential timing, time delay generation, pulse width modulation, pulse position modulation, missing pulse detection and oscillators. 'Real world' uses for the 555 therefore include logic pulsers, DC-DC converters, alarm systems, servo controllers and remote control systems. This general-purpose 'building block' project allows such circuits to be built up around this versatile 8-pin IC. The PCB is designed to incorporate all of these possible variations, by simply fitting components or wire links where required for a particular configuration.

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available. The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 69 XA69A, and instruction leaflet XU23A.

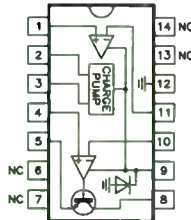
**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
LT34M	555 Proto Card	£5.800	£7.990
GH54J	555 Proto PCB	£2.110	£2.490
XU23A	555 Timer D/F Lft	£0.800	£0.800 NV

**LM2917N Frequency to Voltage Converter**

**National Semiconductor**

This 14-pin DIL IC is extremely easy to use since  $V_{OUT} = F_{IN} \times V_{CC} \times VR1 \times C2$  where VR1 is the resistance between pin 3 and ground and C2 is the capacitor (in Farads) between pin 2 and ground. Features include ground referenced tachometer whose input interfaces directly with magnetic



variable reluctance pick-ups; 2917 op-amp comparator with floating relays, solenoids, meters or LEDs etc; frequency doubling with low ripple; tachometer with built-in hysteresis for either differential or ground referenced input; built-in zener for accurate and stable frequency to current conversion and linearity typically  $\pm 0.3\%$ . Applications include over/under speed sensing, tachometers, speedometers, breaker point dwell meters, hand-held tachometers, speed governors, cruise control, touch or sound switches etc.

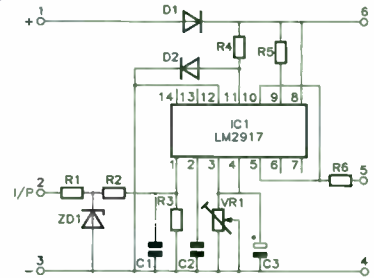
**Parts List**

R1,2	Min Res 4k7	(M4K7)
R3	Min Res 22k	(M22K)
R4	Min Res 10k	(M10K)
R5	Min Res 470Ω	(M470R)

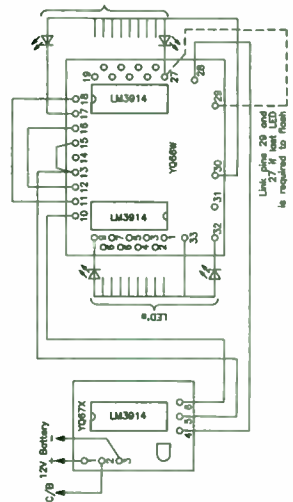
R6	Min Res 1k	(M1K)
C1	Poly Layer 0.022µF	(WW33L)
C2	Poly Layer 0.01µF	(WW29G)
C3	PC Elect 2.2µF 100V	(FF02C)
VR1	Hor S-Min Preset 100k	(UH06G)
D1	1N4001	(QL73Q)
D2	1N4148	(QL80B)
ZD1	BZY88C12	(QH16S)
IC1	LM2917	(WQ38R)
1	LM2917 PCB	(YQ67X)
6	Pins 2145	(FL24B)

**Application Circuits**

**Frequency to Voltage Converter 20-LED Display Rev Counter**



A printed circuit board is available to make a frequency to voltage converter building block using the LM2917. A particular application is shown for a 20 LED display rev counter where this pcb is connected to the LM3914 pcb.



**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
YQ67X	LM2917 PCB	£1.250	£1.490

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WQ38R	LM2917N	25+ £1.990 100+ £1.590	1+ £4.770

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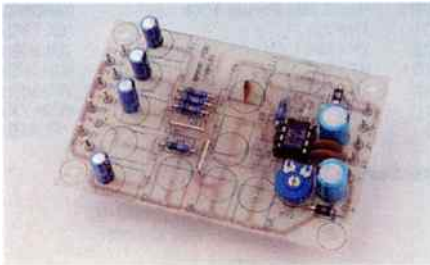
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## Multi-Purpose 741 Op-Amp Card

2



### Features

- ★ Up to 16 op amp configurations
- ★ All the basic op amp functions plus sine and square wave generators
- ★ Single PCB construction
- ★ Uses the popular 741 IC

### Applications

- ★ Any AC or DC analogue processing
- ★ Control signal processing
- ★ Audio applications
- ★ Signal generation
- ★ Adding, summing, integration, etc.

This general-purpose building block project allows for a number of different op-amp configurations, and uses the industry standard 741 device. The accompanying PCB is designed to incorporate all these possible variations, by simply fitting components or wire links where required for a particular configuration. The various configurations which can be achieved with this module are: Buffer, Half Supply Generator, Non-Inverting DC Coupled Amplifier, Non-Inverting AC Coupled Amplifier, Inverting DC Coupled Amplifier, Inverting AC Coupled Amplifier, Inverting Summing Amplifier, Non-Inverting Summing Amplifier, Differential Amplifier, A basic integrator, The differentiator, Sine Wave Wien-bridge Oscillator Basic Schmitt Trigger, Square Wave Schmitt Trigger Oscillator. There is the option to add bandwidth limiting to the inverting and non-inverting amplifiers.

### Kit and Special Parts

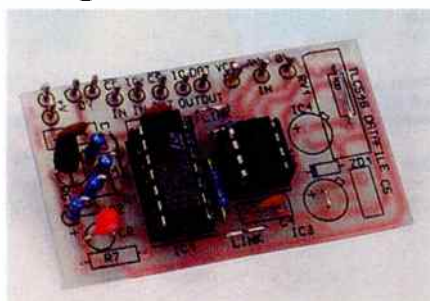
A complete kit of parts (including the PCB) is available. The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 68 XA68Y, and instruction leaflet XU22Y.

Retail Unit Price each (inc. VAT).

Order Code	Type 3355	Price each exc. VAT	inc. VAT each
LT33L	Op Amp Proto Card	£8.500	£9.990
GH51F	741 Op Amp Proto PCB	£2.970	£3.490
XU22Y	Op Amp DIF Lft	£0.800	£0.800 NV

## TLC548 8-Bit Analogue-To-Digital Converter

2



### Features

- ★ Cost effective with high performance
- ★ Low power consumption
- ★ Conversion time 17µs (max)
- ★ Differential reference input voltages

### Applications

- ★ Interface sensors to the PC Weather Station
- ★ 8-bit resolution Analogue-to-Digital converter
- ★ Serial interface with tri-state data output

The TLC548 is a very powerful IC, suitable for a multitude of tasks, and is based on an 8-bit, successive approximation sample-and-hold, Analogue-to-Digital (A-to-D) converter, which makes

8-bit A-D conversion easy, cost effective and usable. The device is capable of up to 45,500 conversions per second, and needs only one external control signal. The specially designed PCB can be tailored for any task within the IC's specification, but the module was developed mainly for use with the PC Weather Station project. The IC is a complete data acquisition system on a single chip, designed for serial interfacing with a microprocessor or computer via a tri-state, TTL compatible data output port and an analogue input port. It includes versatile control logic and on-chip sample-and-hold that can operate automatically or under microprocessor control. Voltage requirements for the IC are between +3V and +6V DC with, typically, a low power consumption of 6mW.

The differential high impedance reference inputs provide circuit isolation from logic and supply noise. The analogue input can be any voltage within the range of 0 to 5V DC; the corresponding digital output is a value between 0 and 255, proportional to the input voltage. The kit instructions include details of applications for a light sensor, temperature sensors and potentiometer position sensor. Details for an external clock oscillator circuit, which is required if the module is not used with the PC Weather Station project, is also given. In addition, modules can be cascaded using a 'master/slave' system (the 'master' board has the clock and power supply connected). Up to eight modules can be used in this way, but you will need suitable multi-way inputs, such as the 24-Line I/O Expansion kit (Order Code LP12N). An ABS box type MB1 (Order Code LH20W) can be used to house up to three TLC548I boards.

### Optional Items

300mA Unregulated AC Adaptor	1 (XX09K)
ABS Box MB1	1 (LH20W)

### Kit and Special Parts

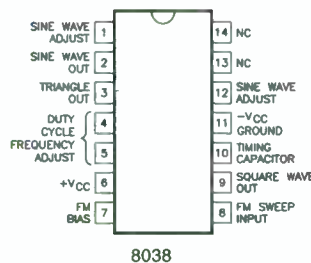
A complete kit of parts, including the PCB, is available (but excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 75 XA75S, and instruction leaflet XU56L. The Maplin 'Get-You-Working' Service is not available for this project.

Retail Unit Price each (inc. VAT).

Order Code	Type 3313	Price each exc. VAT	inc. VAT each
LT51F	TLC548 A/D Conv Kit	£10.200	£11.990
GH68Y	TLC548I A-to-D PCB	£2.970	£3.490
XU56L	TLC548I A-to-D Lft	£0.800	£0.800 NV

## ICL8038CCPD Waveform Generator

Harris



A 14-pin DIL IC capable of producing sine, square, triangular, sawtooth and pulse waveforms of high accuracy and stability. The frequency may be selected to be from 0.001Hz to 1MHz, Frequency modulation and sweeping can be accomplished with an external voltage and the frequency can be programmed digitally by resistors or capacitors. Sweep range can be up to 40:1 or 1000:1 with a little less quality.

The circuit shows a sine, triangle and square wave generator. SW1 is the range switch, SW2 sets the waveshape, VR4 sets the output level and VR3 is the frequency control. VR1 and VR2 should be adjusted to give minimum distortion of sine wave.

### Specification

Supply voltage:	5-0.5V to 10-0.10V (e.g. 2 x PP3 batteries)
Output impedance:	600Ω
Output levels max peak-to-peak:	( $V_S = 7.5-0.7-5V$ )
sinewave:	3V
triangle:	5V
square:	12V

### Distortion sinewave

<10kHz:	<1%
10kHz to 100kHz:	<4%
100kHz to 200kHz:	<7%

### Linearity triangle

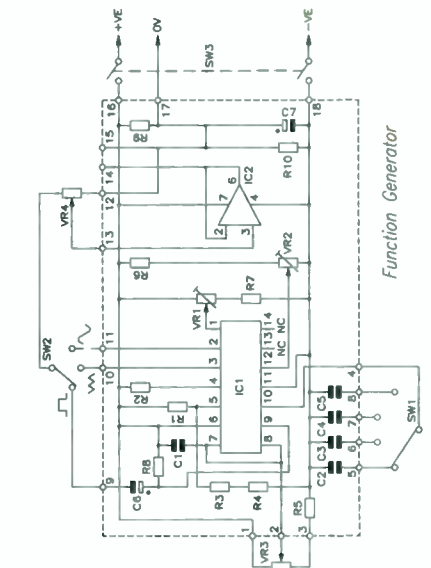
<40kHz:	<0.1%
40kHz to 100kHz:	<1%
100kHz to 200kHz:	<8%

### Square Wave

	Rise time	Fall time
<100kHz	2µs	2µs
100kHz to 200kHz	1µs	1µs

### Frequency range

Range 1:	10Hz to 400Hz
Range 2:	100Hz to 4kHz
Range 3:	1kHz to 40kHz
Range 4:	6.25kHz to 200kHz



### Parts List

R1,2,9,10	Min Res 2k2	(M2K2)
R3	Min Res 10M	(M10M)
R4	Min Res 4M7	(M4M7)
R5	Min Res 22k	(M22K)
R6,7	Min Res 10k	(M10K)
R8	Min Res 2k7	(M2K7)
C1	Poly Layer 1µF	(WW53H)
C2	Polyester 0.22µF	(BX78K)
C3	Polyester 0.022µF	(BX72P)
C4	Polystyrene 2200pF	(BX37S)
C5	Polystyrene 220pF	(BX30H)
C6	PC Elect 47µF 25V	(FF08J)
C7	PC Elect 100µF 25V	(FF11M)
VR1,2	Hor Sub-Min Preset 100k	(UH06G)
VR3,4	Pot Lin 10k	(FW02C)
IC1	8038CCPD	(YH38R)
IC2	LF351	(WQ30H)
SW1	Rotary SW4B	(FF75S)
SW2	Rotary SW3B	(FF76H)
SW3	Sub-Min Toggle E	(FH04E)
1	8038 PCB	(YQ65V)
1	DIL Socket 8-pin	(BL17T)
1	DIL Socket 14-pin	(BL18U)
18	Pins 2141	(FL21X)

A pcb is available for the circuit shown.

Retail Unit Price each (inc. VAT).

Order Code	Type 2099	Price each exc. VAT	inc. VAT each
YQ65V	8038 PCB	£1.260	£1.490

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2099	Price each exc. VAT	inc. VAT each
YH38R	ICL8038CCPD	£3.140	£3.250

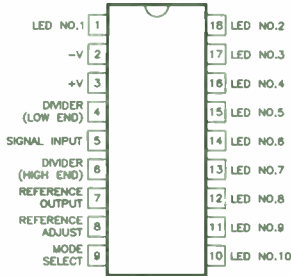
## LM3914/5/6N Bargraph

See Stock Code Index For More Price Breaks

## Displays

### National Semiconductor

An LED driver that will sequentially light ten LEDs when a gradually increasing voltage is applied to pin 5, (dot mode) or in bar mode all LEDs indicating voltages below input are lit. In dot mode there is a slight overlap so that at no point are all LEDs extinguished. A brightness control will set LED current between 2mA and 30mA. The drivers are stackable and displays with 100 or more LEDs are possible. Supply voltage 3V to 18V. The driver that sets the indication points can be referenced to a wide range of voltages.



Three different chips are available:

- LM3914: linear steps
- LM3915: 3dB steps (logarithmic scale)
- LM3916: VU scale (e.g. -10dB, -7dB, -5dB, -3dB, -1dB, 0dB, 1dB, 2dB, 3dB)

A pcb is available for use with these ICs and information on how to construct and set up this pcb along with circuits and applications can be found in the Maplin Best of Projects Book 6 (XC06G) See end of Projects and Modules section for details.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YQ66W	LM3914 PCB	£1.250	£1.490

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WC41U	LM3914N	25+ £2.600 100+ £1.990	1+ £4.970
YY96E	LM3915N	£2.570	£3.190
YY97F	LM3916N	£2.400	£3.190

## PIC Project Board Software Pack



- ★ Contains software for five different projects
- ★ Software and flowcharts included
- ★ Possible software modifications explained

The software projects in this pack are intended to be used with the Project Board to assist in the learning process. Each project comprises of a flowchart and ready written software (provided on 3.5in. HD disk only, for PC-AT compatibles and PIC assembler programs). Projects provided are: a timer counting in one second intervals, an A/D converter displaying in binary on LEDs, a two channel A/D based temperature sensor, a signal generator and electronic dice with sound effects. Please note that

the components and PCB shown are not included (See Project Board).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GT03D	PIC Software Pack	£12.720	£14.950

## PIC Starter Kit 54/55

### Bluebird Electronics



- ★ Contains a ready made PCB
- ★ Includes components to get PIC's running
- ★ Kit 54 Works with 16C54/56/58/61/71/84
- ★ Kit 55 Works with 16C55/57

The hardware starter kit is intended to get PIC based projects up and running in a fraction of the time it takes to build a circuit from scratch. Once the board construction is completed, software development can begin in the sure knowledge that the hardware core is functional. A suitable programmer for use with this board is the PICSTART 16B1 (order as DM 79L) and the user will need some reprogrammable version of the chosen PIC for development purposes

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GT01B	PIC Hardware Kit 54	£19.560	£22.990
GT02C	PIC Hardware Kit 55	£21.260	£24.990

## PIC Project Board and Software

### Bluebird Electronics



### Project Board

- ★ Contains circuit diagrams, PCB layout, etc.
- ★ Ready made PCB includes battery holder
- ★ Includes all project components (except PIC)
- ★ PIC programming and pinout date included
- ★ Works with 16C54/56/71/84 Software
- ★ Contains five different projects
- ★ Software and flowcharts included
- ★ Wiring instructions on disk supplied
- ★ Possible software modifications explained

The PIC Project Board is intended to show how the PIC Microcontroller works and how to interface it with the outside world. The board is supplied in a pack containing approximately 50 components including LEDs and a miniature sounder to monitor outputs as well as switch and potentiometer input components. A suitable programmer for use with

this board is the PICSTART 16B1 (order as DM79L). The user will need some reprogrammable versions of the chosen PIC for development purposes.

The software pack supports the Project Board and details five possible applications, which will help to understand PICs. Projects include a timer counting in one second intervals; an A/D converter displaying in binary on LEDs; a two channel A/D based temperature sensor; a signal generator and electronic dice with sound effects. The five projects provide a flowchart, ready written software (provided on 3.5in. HD disk only, for PCs with PIC assembler programs) and wiring information. Please note the Software Pack is not supplied with the Project Board.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GT03D	PIC Software Pack	£12.720	£14.950
GT04E	PIC Project Board	£19.560	£22.990

## PIC 16C84 Programmer



### Features

- ★ Low cost
- ★ Provision for optional ZIF socket
- ★ Visual indicators for power and programming state to PIC chip

### Applications

- ★ Experimenters and hobbyists
- ★ Development of PIC-based projects and circuits
- ★ Educational establishments

This PIC 16C84 Programmer is designed to provide a very low cost introduction to DIY programming of the versatile range of PIC 16C84 microcontrollers (see Semiconductors section for full range), opening up enormous possibilities for the development of PIC-based projects, as well as being highly educational. The programmer uses a standard TTL connection to an available 'Centronics' printer port on the computer, and is supplied complete with programming software on a 3.5in. floppy disk. Further software supporting this design is freely available on the Internet.

### Specification

Operating voltage:	15 to 25V DC unregulated
Average current consumption:	25mA (during programming)
PCB dimensions:	119 x 57mm
Box dimensions:	130 x 68 x 46mm
Minimum host computer specification:	286 IBM-compatible PC

### Optional Items

The following items, not included in the kit, may also be required.

32-pin Turned Pin Socket	1	(KW69A)
Universal ZIF Socket	1	(JK75S)
D25P/D25P Lead	1	(JC12N)
AC Adaptor 300mA	1	(XX09K)
IC Lead Straightening Tool	1	(KU42V)
IC Extraction Tool	1	(FD54J)
IC Insertion Tool	1	(FR25C)
ESD Wrist Strap	1	(FE29G)

### Kit and Special Parts

A complete kit of parts (including the PCB and panel) is available (excluding optional items). The PCB and panel are also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 105 XD05F, and instruction leaflet XZ25C.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LL29G	PIC 16C84 Programmer	£17.010	£19.990
GJ74R	PIC 16C84 Progrmr PCB	£7.650	£8.990
KV22Y	PIC 16C84 Progrmr Lbl	£2.110	£2.490
JP13P	PIC Programmer Disk	£2.540	£2.990
XZ25C	PIC Programmer Ltr	£0.800	£0.800 NV

## Ultrasonic Ranging System

**Polaroid**

An ultrasonic ranging system which uses a unique electrostatic transducer to generate a short burst of high-frequency sound. The sound travels out from the transducer in a narrow cone and reflects back to it from objects in its path. The same transducer is then used to receive this reflected sound energy and convert it into an electrical signal. Separate PCB modules, three various transducers and a 'designer kit' are available separately.

### System and Module



The ranging module contains all the necessary components to generate the drive signal for the transducer, control timing functions, receive, amplify and filter the returned echo, and then process this signal to provide a step function (pulse) output at the time of the received echo. Knowing the speed of sound in air, and the time interval between the transmit signal and the received echo as provided by the ranging module, then the distance between the transducer and the target can be computed with additional circuitry. The system automatically increases the receiving amplifier gain and decreases the bandwidth with time to compensate for signal losses over the distance range of 0.26m to 10.7m (0.9ft. to 35ft.). To minimise the system's susceptibility to noise pick-up, a signal integration scheme is employed before the system locks onto an echo. Once the threshold level is reached, a signal is generated to indicate a received echo. The logic levels for both the transmit signal and the received echo can be used to perform control functions or to calculate distance to the object with a minimum of additional circuitry. Inventors and design engineers are finding that the system provides a flexible, cost-effective addition to a growing list of detection and distance measuring applications. These include level measurement in grain silos and liquid tanks, vehicular proximity detectors for lorries, cars and agricultural machinery, security systems, robotics, industrial controls, electronic 'tape measure', machine safety shut-off if operator comes too close to moving parts, and automatic light switching for energy conservation and aids for the disabled.

**Note:** The module is not supplied with a transducer; this must be purchased separately.

#### Specification

(Instrument grade transducer used)

Distance range: 0.26 to 10.7m (0.9ft. to 25ft.)  
Resolution entire range: ±1% over ±3mm to 3m (±0.12ft. to 10ft.)

Beam angle typical @ 3dB down: 12°

Transducer drive signal, Gated sinewave: 50kHz  
Duration: 1-1ms

Power supply requirements, Voltage: 6V DC (4.8 to 6.8V)  
Current: 150mA quiescent, 2.5A for 1ms max.

Manufacturer's Code: PID 615077

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AV60Q	PID 615077	£33.190	£39.000

## Designer Kit

To help you explore the fascinating potential of this unique system, an Ultrasonic Ranging System Designer's Kit has been developed. It contains everything you need to start experimenting on your own: a technical manual, application notes, one instrument grade transducer, an ultrasonic ranging circuit board (module), an experimental demonstration board with LED display, two Polaroid 'Polapulse' 6V planar battery packs, wires and connectors.

Manufacturer's Code PID 603972

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AV59P	PID 603972	£126.800	£149.000

## Electrostatic Transducers Instrument Grade Transducer



This electrostatic transducer is specifically intended for operation in air at ultrasonic frequencies. The assembly comes complete with perforated protective cover.

#### Specification

Usable transmitting frequency range: 50 to 65kHz  
Usable receiving frequency range: 55 to 65kHz  
Minimum transmitting sensitivity @ 50kHz: 110dB (300V AC pk-pk, 150V DC bias)

Minimum receiving sensitivity @ 50kHz: -42dB (150V DC bias)

Recommended bias voltage: 150V DC

Recommended AC driving voltage: 150V peak

Maximum combined voltage: 400V  
Capacitance at 1kHz: 330pF to 410pF (150V DC bias)

Operating conditions Temperature: -30°C to 70°C (-20°F to 160°F)

Relative humidity: 5% to 95%

Standard finish: Gold

Foil: Flat black cold rolled steel

Housing: 8-2g

Weight: 43 dia. x 12mm deep

Manufacturer's Code: PID 604142

## Environmental Grade Transducer



This environmental grade ultrasonic transducer is specifically intended for open air use. The assembly comes complete with an integral protective cover.

#### Specification

Usable transmitting frequency range: 50 to 63kHz  
Usable receiving

frequency range: 55 to 65kHz  
Minimum transmitting sensitivity @ 50kHz: 110dB (300V AC pk-pk, 150V DC bias)

Minimum receiving sensitivity @ 50kHz: -42dB (150V DC bias)

Recommended bias voltage: 150V

Recommended AC driving voltage: 150V peak

Maximum combined voltage: 400V

Capacitance at 1kHz: 400pF (150V DC bias)

Operating conditions Temperature: -30°C to 70°C (-20°F to 160°F)

Relative humidity: 5% to 95%

Standard finish: 24k gold on kapton film

Foil: 304 stainless steel

Housing: 8-2g

Weight: 43 dia. x 12mm deep

Manufacturer's Code: PID 607281

## E7000 Series Transducer



The 7000 electrostatic transducer is specifically intended for operation in air at ultrasonic frequencies. The assembly comes complete with a perforated protective cover.

#### Specification

Usable transmitting frequency range: 45 to 70kHz  
Usable receiving frequency range: 50 to 65kHz  
Minimum transmitting sensitivity @ 50kHz: 106.9dB (300V AC pk-pk, 150V DC bias)

Minimum receiving sensitivity @ 50kHz: -43.4dB

Recommended bias voltage: 150V

Recommended AC driving voltage: 150V peak

Maximum combined voltage: 400V

Capacitance at 1kHz: 410pF (150V DC bias)

Operating conditions Temperature: 0°C to 60°C (32°F to 140°F)

Relative humidity: 5% to 95%

Standard finish: Gold on kapton film

Foil: Flat black plastic

Housing: 4.6g

Weight: 29 dia. x 11mm deep

Dimensions: PID 612366

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AV61R	PID 604142	£12.740	£14.980
AV62S	PID 607281	£12.740	£14.980
AV63T	PID 612366	£12.740	£14.980

We endeavour to hold stocks at all

Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

**GPS Development System 2**



**Features**

- ★ Simple construction
- ★ Robust design
- ★ Inexpensive GPS system
- ★ Direct connection to personal computers and portables
- ★ Simple 12V power requirement for cars and boats
- ★ Direct command and control from BASIC and programs

**Applications**

- ★ Development platform for all mobile GPS
- ★ Car, boat and hand-held applications
- ★ 'One-off' development

**Introduction to GPS**

Since the first GPS satellite was launched in the 1970s, the system is now fully in place. As a result most of the Earth's surface is adequately covered by a 'web' of satellites. This provides accurate positioning by anyone using the right receiving hardware. GPS uses both the hyperbolic time-delay system of ranging, similar to LORAN, combined with the doppler shift system of Transit to give an accurate position based on the range from the satellites to the user. Tracking three satellites gives an accurate two-dimensional position, but when four satellites are in view, an accurate user height can be determined and the fix can be refined to give a few centimetres.

**The Motorola GPS Receiver**

An ideal system for either a hobbyist or a professional developer who wants to use GPS in their own system (hand-held, mobile, etc.) would be a complete receiver and decoder in a small and relatively inexpensive package. Well, Motorola have done all of the hard work and produced a complete GPS receiver on a single-board! Not only that, they have also produced an antenna to complement the system, with mounts for vehicle, boat or fixed use.

**VP Oncore**

The latest offering from the Motorola GPS range is the VP Oncore receiver. It is small (50 x 82 x 12mm), lightweight (51g) and has excellent performance characteristics. The module is ready-built and fully tested. In addition to its superior tracking capability (8 simultaneous satellites) it has superb acquisition and reacquisition capabilities that make it ideal for use in typical mobile and hand-held environments.

**Antenna**

The Active Antenna Module supplied by Motorola is a microstrip patch design and its hemispherical coverage ensures excellent full sky coverage above the horizon whilst alleviating ground-reflected multipath effects.

**GPS Development Kit**

The aim of the Development kit is to provide a protective housing for the VP Oncore receiver board, and to provide a standard power and RS232 serial interface, so that anyone with an interest can link a personal computer to the receiver and develop their own applications – or even just use it as a standalone navigational aid with a laptop computer.

**Specification**

**Electrical characteristics**

(Receiver (Rx) only)

Power supply: 5V ±0.25V DC @ 50mV ripple max.

Power consumption: 1.1W @ 5V

NVR backup power – 15µA typ., 60µA max.

3V on-board battery: 2.5V to 5.25V DC,

External: 15µA typ. 60µA max.

**Physical characteristics**

Dimensions, Rx module: 50.8 x 82.6 x 16.3mm

Active antenna module: 102(dia.) x 22.6mm

Weight, Rx module: 51g

Active antenna module: 136.2g

**Connectors**

Data/Power: 10-pin unshrouded header (on 0.1in. centres)

RF: Right Angle OSX (subminiature snap-on)

Rx to antenna connection: Single coax (for active antenna: 6dB max. loss at L1; 1575-42MHz)

Environmental characteristics

Operating temperature: -30C to +85C

Humidity: 95% non-condensing (+30C to +60C)

Altitude: 60,000ft. (18km) max. or >60,000ft. (18km) for velocities <1000 knots

**General characteristics**

Rx. Architecture: 8-channel

L1: 1575-42MHz

C/A code: 1-023MHz (chip rate), Carrier aided tracking (Code plus carrier Tracking)

Tracking capability: 8 simultaneous satellite vehicles

**Performance characteristics**

Dynamics –

Velocity: 1000kts (515m/s) (>1000 kts @ <60,000ft.)

Acceleration: 4g

Jerk: 5m/s<sup>3</sup>

Acquisition time (TTFF): 20 seconds typical (with current almanac, position, time & ephemeris) 45 seconds typical (with current almanac, position and time) 2.5 seconds typical reacquire

Positioning accuracy: <25m (without SA\*) <100m (SA on\*)

DGPS Accuracy: 1 to 5m typical

Timing Accuracy: 130ns observed (1 sigma) with SA on. In position hold mode: <50ns observed (1 sigma) with SA on.

Antenna: Active Microstrip Patch Antenna Module, powered via coax cable from Rx (5V @ 25mA)

Passive antenna options: 49 standard; 2 user defined.

Datums, default: WGS-84

Serial communication input control and output messages: Latitude, longitude, height, velocity, heading, time, satellite tracking status (Motorola binary protocol).

Selected NMEA-0183 Version 2.00 format outputs available.

S/W selectable output rates (continuous or polled).

Extensive command & control messages.

TTL Interface.

**GPS Development Kit** (with Rx and Active Antenna Module fitted)

Power supply voltage: 8 to 16V DC

Power supply current: 240mA (max.) with active antenna 220mA (max.) without active antenna

Power Connector: 2.1mm power socket

Serial Interface: RS232 9,600 baud (max.)

Serial connector: 9-way D-type (DCE) (baud rate depends on operating mode selected, but power up default using Motorola Binary Format is 9600bd)

1PPS timing signal: +VE DC pulse; measured at leading edge

Timing connector: 3-pin mini-DIN

**Optional Items**

The following optional items, not included in the kit, may also be required.

Motorola Oncore GPS Module (Real Time Clock and Back-up Battery) 1 (DT05F)

GPS Antenna Module 1 (DT06G)

Antenna Vehicle Magnetic Mount Kit 1 (DT07H)

or Antenna Vehicle Fixed Mount Kit 1 (DT08J)

or Antenna Non-Mobile Post Mount Kit 1 (DT09K)

or Antenna Marine Mast Mount Kit 1 (DT10L)

Rubber Feet 1 Pkt (XR93B)

Serial Cable 1 (DD48C)

12V DC Mains Adaptor PSU 1 (YB23A)

GPS Oncore User's Guide 1 (DT11M)


GPS Oncore Software Command Manual 1 (DT12N)

**Kit and Special Parts**


A complete kit of parts (including the PCB and the Front Panel Label) is available (excluding optional items). The PCB and Front Panel Label are also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 97 XA97F, and instruction leaflet XV71N.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
LT99H	1 GPS Development Kit	£29.770	£34.990
GJ35Q	GPS Dev System PCB	£3.820	£4.490
DT01B	GPSTRAK Software	£9.350	£10.990
DT05F	1 Oncore GPS Rcvr Mod	£199.990	£234.990
DT06G	GPS Active Antenna	£63.820	£74.990
DT07H	GPS Antenna Mag Mnt	£8.070	£9.490
DT08J	GPS Antenna Fixd Mnt	£8.070	£9.490
DT09K	GPS Antenna Pole Mnt	£8.070	£9.490
DT10L	GPS AntennaMarineMnt	£8.070	£9.490
DT11M	GPS Users Guide	£5.990	£5.990 NV
DT12N	GPS Software Manual	£10.990	£10.990 NV
DT13P	GPS Antenna Cable	£23.390	£27.490
KV01B	GPS Dev Sys F/Panel	£3.390	£3.990
XV71N	GPS Dev Sys Lft	£1.000	£1.000 NV



**RS12750**  
**BS EN ISO 9002**  
Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System



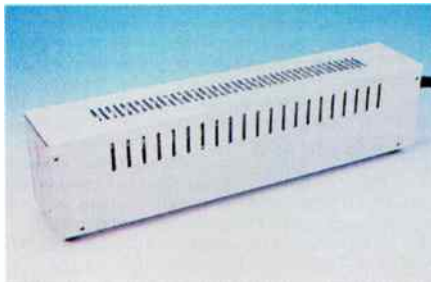
**Stockist of Assessed Capability**  
**YOUR GUARANTEE OF QUALITY & SERVICE**

## Disco & Stage Lighting

### Lasers

#### Laser Tube and PSU 3

KTE



- ★ Helium-neon laser tube with 2mW output power
- ★ 1.8kV power supply with high ignition voltage
- ★ Protective aluminium case for tube and PSU
- ★ 240V AC operation

Lasers are capable of producing holograms where a recorded pattern of interference fringes produces a three dimensional image. Laser light is also used in discos and displays as well as finding educational and scientific applications in schools and laboratories. The helium-neon laser emits a randomly polarised, 632.8nm wavelength red light, at a low 2mW power output level which makes it completely safe provided the light beam is not directed into the eye. Staring directly into the beam may well result in damage to the retina and must be avoided at all costs. However, the laser is incapable of cutting or drilling and will not burn when directed at the skin. The glass envelope is protected by an aluminium tube and all electrodes are terminated with high voltage insulated cables and plugs. The power supply uses high voltage rated components, transformer and PCB to generate both the ignition strike voltage of 8kV and the continuous running voltage of 1.8kV at 5mA. It is recommended that the PSU be powered up only when fitted with the laser tube and assembled into the metal case provided, otherwise voltages in excess of 10kV may be generated and these are liable to arc over.

#### Kit and Special Parts

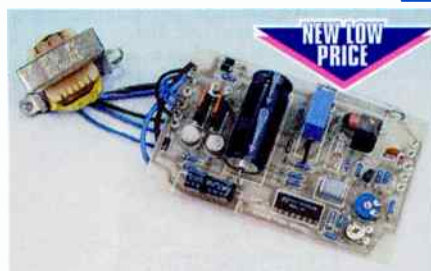
A complete kit and the ready-built version are available. Full construction details may be found in Maplin Magazine/Projects Book 29 XA29G.

Retail Unit Price each (inc. VAT).

Order Code	Type 3548	Price each exc. VAT	inc. VAT each
LM72P 4	Laser & PSU Kit	£110.620	£129.990
XM140 4	Laser & PSU Assmbld	£170.200	£199.990

### Stroboscopes

#### Xenon Flash Tube Driver 2



A driver module using the Xenon flash tube described in the Opto-Electrical section of this catalogue. The trigger transformer is energised by the capacitive discharge method, while power for the tube is derived from a variable frequency inverter developing EHT up to 1kV. Applications are varied, including slave flash for photography, warning beacon, strobe and special lighting effects. Trigger source may be either from an on-board clock for strobe, or external switching. A neon indicator lights when the module is ready for the next flash.

#### Kit and Special Parts

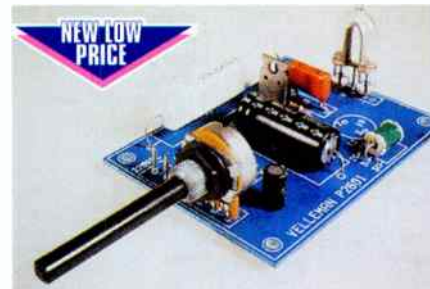
A complete kit is available and the PCB is also

available separately. Full construction details may be found in the Best of Maplin Projects Book 6 XC06G, and instruction leaflet XK70M. PCB dimensions: 106 x 68mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3548	Price each exc. VAT	inc. VAT each
LK46A 1	Xenon Tube Drive Kit	£13.600	£15.990
GB61R	Xenon Tube Dr PCB	£2.970	£3.490
XK70M	Xenon Driver Leaflet	£0.500	£0.500 NV

#### K2601 - Stroboscope Module 3



#### Features

- ★ Single PCB module
- ★ Simple construction
- ★ Uses high-speed flash tube

#### Applications

- ★ Discotheque style lighting effects
- ★ Photographic special effects
- ★ The study of fast moving objects
- ★ Lighting effects for theatrical productions

This stroboscope has an adjustable flash rate from 2 to 20Hz. On the practical side this strobe has many fascinating possibilities. With the aid of a strobe light, a falling drop of water becomes 'visible'. This is because it appears to be stationary every time the strobe flashes. The strobe can also be used to imitate the bright flashes of lightning, which would be useful for theatrical productions. For the car enthusiast it could be pressed into service for checking the ignition timing. It would need to be powered from a suitable HT inverter and provided with the necessary input triggering.

#### Specification

Power supply: 220 to 250V AC  
Average current consumption: 60mA at 20Hz, 370mA peak  
Flash frequency: 2 to 20Hz

#### Optional Items

The following items, not included in the kit, may also be required.

Pin 2145	1 Pkt	(FL24B)
Clear Waterproof Box	1	(YM93B)
Insulated Spacer M3 x 25mm	1 Pkt	(FS39N)
Knob K7B	1	(YX02C)
Heat Shrink Sleeving CP32	1	(BF88V)
Fuseholder 32mm (1 1/4 in.)	1	(FA39N)
Fuse 100mA 32mm (1 1/4 in.)	1	(WR08J)
Fuse Holder Insulation Boot	1	(FT35Q)
Grommet F31	1	(LR47B)
Twin Mains DS Cable	As Req	(XR47B)
Conformal Coating	1	(YT50E)
PCB Cleaner	1	(YJ45Y)
Grommet 6-4mm	1	(JX65V)

#### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 68 XA68Y.

Retail Unit Price each (inc. VAT).

Order Code	Type 3618	Price each exc. VAT	inc. VAT each
VE52G	Velleman Kit K2601	£12.750	£14.990

PHONE/FAX for next day delivery by 5pm  
PHONE: 01702 554000  
FAX: 01702 554001

#### Multi-Strobe Sequencer 3



#### Features

- ★ 100 preprogrammed strobe patterns
- ★ 8 channels
- ★ Digital display of pattern selected
- ★ LED display of pattern sequence
- ★ 8-bit TTL level input and output
- ★ 25-way D-type I/O connector
- ★ Built-in microphone
- ★ External microphone input
- ★ Line level input

#### Applications

- ★ Entertainment, discos, etc.
- ★ Parties
- ★ Promotional events

This project is designed to complement the Multi-Strobe project (LT90X). The Multi-Strobe Sequencer contains 100 preset pattern programs, and is able to control one or more groups of up to eight Multi-Strobes simultaneously; as many strobes as you wish may be connected to and controlled by the unit. The system enables the easy creation of captivating and spectacular lighting effects to really liven up discos, parties and other fun events!

The unit allows differing configurations of strobes to be controlled; 2 strobes connected allow 10 patterns, 4 strobes allow 20 patterns, 6 strobes allow 30 patterns, while 8 strobes allows 40 patterns. You're also not limited to 8 strobes - the sequencer will accept as many groups of 8 strobes as you wish!

#### Specification

Operating voltage:	230V AC 50Hz Mains
Power consumption:	4W Maximum
Flash rate:	0.5 to 20Hz
Microphone input:	5mV rms
Line level input:	250mV rms
VOGAD output level:	80mV rms
Variable gain audio amplifier output:	1V rms
Low pass audio filter output:	1V rms
Low pass audio filter frequency:	-3dB @ 125Hz
Low pass audio filter type:	4 pole Chebyshev
Audio trigger output:	TTL
Run input:	TTL
Stop input:	TTL
8-bit data input:	TTL
8-bit data output:	TTL
Serial clock/data output:	RS-232
Serial clock/data test loop input:	RS-232
Overload protection:	50mA Fuse
PCB dimensions (before separation):	357 x 193mm
Case dimensions:	435.5 x 40 x 236mm (19in. Rack Case)
Front panel dimensions:	482 x 43.5 (standard 1U dimensions)

NOTE. Electrical statistics above are valid with the 'AUDIO LEVEL' control set to maximum.

#### Optional Items

The following optional items, not included in the kit, may also be required.

Multi-Strobe Kit	As Req. (LT90X)
Strobe Connecting Cable	As Req. (DY56L)

#### Kit and Special Parts

A complete kit of parts is available (excluding the optional items), including the PCB, the Instruction Leaflet, and the Constructors' Guide. The PCB and other item are available separately as listed below. Full construction details may be found in Maplin Magazine/Projects 100 XD00A, and instruction leaflet XV47B.

Retail Unit Price each (inc. VAT).

Order Code	Type 11723	Price each exc. VAT	inc. VAT each
LT92A 1	Multi Strobe-Sequencer	£127.650	£149.990
GJ18U 1	Multi Strb/Seq PCB	£43.390	£50.990
KV04E	Strobe Seq Membrane	£12.330	£14.490
DT20W	MultiStrb EPROM MS13	£9.770	£11.490
KP91Y 1	Strobe Seq Case	£30.620	£35.990
DY47B	Multi-Strb IDC Cable	£3.390	£3.990
XV47B	The Strobe Pr 2 Litt	£1.400	£1.400 NV

### Multistrobe Kit

3



- ★ Bright light output
- ★ On-board variable speed controller
- ★ External control direct and via RS232 line
- ★ Several strobes can be 'daisy-chained' together
- ★ Group control for selected strobes in a chain
- ★ Metal housing with pan and tilt fixing

This is a complete, self-contained mains powered strobe lamp project, which includes a custom designed metal housing. The housing includes reflector, perspex front window and a universal bracket mounting, allowing the unit to be mounted at any angle, and with all necessary holes pre-punched. Designed primarily for entertainment, discotheques, lighting and special effects, photographic flash, scientific and educational uses, machine diagnostics and industrial applications. The basic module includes the familiar type of variable-rate flasher timer, with controls mounted on the rear panel. In addition, the strobe can be remotely controlled by either a simple active-low voltage input or ground switch (such as from an independently powered timer), or from a more sophisticated type of controller such as a computer or our 'Multi-Strobe Sequencer' LT92A, via an RS232 compatible serial data port. A second port allows further strobes to be connected together in a 'daisy-chain', with the data buffered in each strobe so that, in theory, the total number of strobes connectable is limitless!

**Kit and Special Parts** (excluding optional items)  
A complete kit is available. The PCB and case are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 92 XA92A, and instruction leaflet XV44X.

**Specification**  
Mains supply: 220 to 240V AC  
Maximum current at maximum flash rate: 85mA  
Flash rate: 0.5Hz to 20Hz  
Energy per flash: 0.4W  
Max. power consumption: 20W

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT90X 1	Multi Strobe-Strobe	£42.540	£49.990
GJ17T	Multi Strobe PCB	£5.520	£6.490
BF97F	Strobe Box	£18.710	£21.990
XV44X	Multi-Strobe Lift	£1.000	£1.000 NV

### Multi-Strobe Interface

3



- Features**
- ★ Constant current trigger output
  - ★ Eight channels
  - ★ Overload protected
- Applications**
- ★ Disco and party lighting
  - ★ Advertising
  - ★ Lighting and special effects
  - ★ Scientific and educational uses

There are many differing makes and models of

strobe lights on the market that have an external trigger input facility, but prior to the development of this project, they could not be used with the Multi-Strobe Sequencer (LT92A), due to different system protocols used. However, using the Sequencer in conjunction with this interface unit allows these previously incompatible variants of strobe lamps to be driven to full effect!

**Specification**

Supply voltage: 230V AC 50Hz  
Power consumption: 2.5W  
Output load: 5A (1,150W) maximum  
Trigger output current: 100mA @ 12V maximum  
Unit dimensions: 125 x 155 x 58mm (WDH)

**Optional Items**

The following optional items, not included in the kit, may also be required.

Multi-Strobe Sequencer	1	(LT92A)
Strobe Connector Lead	1	(DY56L)
Coiled Mono Jack Lead	1	(RW34M)
Plastic Jack Plug	2	(HF85G)
Screened Cable Black	1m	(XR12N)

**Kit and Special Parts**

A complete kit of parts (including the PCB, labels, and pre-punched front and back panels) is available (excluding optional items). The PCB, labels and pre-punched panels are available separately. Full constructional details may be found in Maplin Magazine/Projects Book 104 XD04E, and instruction leaflet XZ19V.

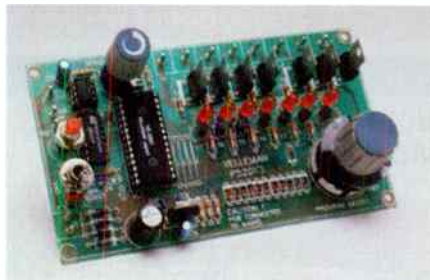
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT74R 1	Multi-Strobe Interface	£30.620	£35.990
GJ60Q	M/Strobe I/Face PCB	£5.520	£6.490
AV82D	Strobe I/Face F/Pnl	£1.430	£1.690
AV83E	Strobe I/Face R/Pnl	£1.690	£1.990
KV18U	M/Strobe I/Face Lbl	£2.110	£2.490
XZ19V	M/Strobe I/Face Lift	£0.800	£0.800 NV

### Sound to Light Sequencers

#### K5201 Light Computer

3



With 16 different programs and seven outputs, this light computer provides a unique visual experience, and is ideal for party lights, discotheques, advertising displays, signalling etc. Each output has its own LED, allowing easy visual checking of the programmes. Controls and the LED displays can be easily mounted on a front panel display. It is possible to make more spectacular displays by using an unlimited number of circuits, and a programme is included that allows two light computers to be cascaded.

**Specification**

Outputs: 7 via triacs rated at 1.5A max (300W at 220V)  
Board power requirements: 7.5V to 9V AC at 250mA  
Supply voltage for lamps: 24V to 240V AC  
Programs: 16 stored in ROM  
Speed: adjustable between 1Hz and 15Hz  
PCB dimensions: 134 x 79mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF55K	K4001 7W Amp Kit	£7.650	£8.990

FOR TECHNICAL ADVICE  
ON ALL PRODUCTS

01702 556001

e-mail: Technical@maplin.co.uk

### K5200 4-Channel Multi-function Running Light

3



This circuit does more than an ordinary running light. Apart from running in both directions, it also flashes with two groups of lamps alternately (flip-flop), or with all the lamps at the same time. The four light effects follow each other automatically.

**Multi-function:** running to the right, running to the left, flip-flop, or with all the lamps flashing at the same time.

**Four triac outputs:** max. 2A each (400W at 240V)

**Running speed:** adjustable in asynchronous mode; constant speed in synchronous mode.

Radio noise is suppressed in synchronous mode. Can be synchronised by mains or can work synchronously. Power supply and transformer supplied with the kit.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE55K	Velleman Kit K5200	£16.160	£18.990

### Partylite

3

The idea of a three channel sound-to-light modulator is obviously not a new one, there being a multitude of units of this type already available, ranging from professional products to the types available at supermarkets for domestic use.

Nevertheless, the Partylite is a worthy addition to the range because of its simplicity. It is fully automatic - no knobs to re-adjust every time the level or tonal content of your music alters. The Partylite also has its own built in microphone eliminating the need for an audio connecting lead, making a completely free-standing unit and also avoiding the possibility of damage to your hi-fi or power amp. The Partylite employs zero voltage triggering of the thyristors. Consequently no interference is generated to produce those annoying clicks through the speakers, so common with cheaper sound-to-light units. It will work effectively on all three levels or in a disco environment. This is achieved by having independent automatic level control circuits for treble, middle and bass frequencies. Please note that a case, lamp fittings and lamps are not supplied. Also caution should be exercised as 240V Mains is present on the PCB.

**Kit and Special Parts**

A complete kit, excluding case, lamp fittings and lamps, is available. The PCB is also available separately. Full construction details are supplied with the kit.

PCB dimensions: 120 x 75mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LW5GB	Partylite Kit	£12.750	£14.990
GA42V	Partylite PCB	£2.970	£3.490

## Disco Partylite

3



- ★ No direct connection to your sound system required
- ★ Automatic level adjustment
- ★ 3-channel operation
- ★ Zero voltage triggering
- ★ Electret condenser microphone insert

The Disco Partylite expands on the original Partylite design, which proved to be one of the best selling Maplin kits, by offering the following enhancements; improved electrical safety, cooler running circuitry, high quality microphone insert, improved ALC circuitry, better tone filters and triac mains switching. The Disco Partylite has a built-in microphone eliminating the need for direct audio connection, removing the possibility of damage to your hi-fi or power amp and making the unit completely free standing. Automatic Level Control (ALC) circuitry follows the volume of the music over a wide range, obviating the need for a manual level control while zero voltage triggering of the triacs minimises any interference generated by the unit.

### Specification

Supply Voltage: 240V AC 50Hz  
 Supply Current: 5A Maximum  
 Power Handling: 300W per channel maximum  
 Number of Channels: 3 - Bass, Middle, Treble  
 Frequency Response: 10Hz to 20kHz  
 Case Dimensions: Width 150mm, Length 220mm, Height 64mm

### Optional Items

The following items, not included in the kit, may also be required.

Switch Dual Rocker Neon Red	1	(YR70M)
Safuseholder 20mm	1	(RX96E)
Fuse 5A 20mm Anti-Surge	1	(RA12N)
3-core 6A Mains Cable	3m	(XR03D)
Push-on Receptacle	1 Pkt	(HF10L)
Push-on Receptacle Covers	1 Pkt	(FE65V)
Euro-Facility Outlet	3	(HL42V)
13 A Plug Nylon	1	(RW67X)
Plug Fuse 5A	1	(HQ33L)
SR Grommet 6W-1	1	(LR49D)
Mains Warning Label	1	(WH48C)
ABS Box MB6	1	(YN39N)
Isobolt M3 x 12mm	1 Pkt	(BF52G)
Isoshake M3	2 Pkts	(BF44X)
Isonut M3	2 Pkts	(BF58N)
Isowasher M3	1 Pkt	(BF62S)
Stick-on Feet Square	1 Pkt	(FD75S)
Euro-Facility Plug	3	(HL43W)
Square Cloth 0-71m	1/4 Mtr	(XS10L)

### Kit and Special Parts

A complete kit, excluding lamp fittings or lamps, is available. The two PCBs are also available separately. Full construction details may be found in instruction leaflet XT36P.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LM41U	Disco Partylite Kit	£25.520	£29.990
GD72P	DiParty Contrlr PCB	£5.520	£6.490
GD73Q	DiParty Triac PCB	£4.670	£5.490
XT36P	Partylite Leaflet	£0.800	£0.800 NV

## Inspect Before You Buy

There are even more Maplin catalogue stores Nationwide. See it before you buy it.

## K5202 3 Channel Sound to Light

3



- ★ Interference filter can be added to the PCB
- ★ Control circuit and outputs are optically isolated
- ★ Only suitable for incandescent lamps

This Sound to Light unit contains 3 outputs, that can be separately controlled. Each output reacts to different parts of the music spectrum i.e. bass, medium and treble. A combined control adjusts the overall sensitivity. One big advantage of this unit is a built-in microphone, so no electrical connection to a music source is required (although a line input is provided). The kit comes complete with housing, knobs and connectors.

Triac outputs: 2A (440W at 220V AC or 220W at 100V AC)  
 Supply voltage: Mains  
 Dimensions: 167 x 42 x 140mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF60Q	K5202 SndtoLight Kit	£34.880	£40.990

## Educational

## Videos

## Ucando Electronics Training Video Cassettes

VCR Educational Products



A range of training video cassettes designed to provide instruction on electronics theory. Each video cassette gives a sound introduction and grounding in a specialised area of the subject. The tapes make learning both easier and more enjoyable than pure textbook or magazine study. They have proved particularly useful in schools, colleges, training departments in industry and electronics clubs as well as to general hobbyists and those following distance learning courses etc.

Each video cassette uses a mixture of animated current flow in circuits plus text, plus cartoon instruction, etc., and a very full commentary to get the points across. The tapes originate the USA, however all videos are UK PAL standard on VHS tapes.

## Video Cassette Recorder Repair and Maintenance

Introduction to VCR Repair  
 VT102 (NV16S)

Through the use of block diagrams this video will take you through the various circuits found in the NTSC VHS system. You will follow the signals from the input to the audio/video heads then from the heads back to the output. This tape is not suitable for beginners. Whilst this tape describes the NTSC VHS system (as used in the USA), many of the principles described on this tape apply equally to the PAL VHS system (as used in the UK) and SECAM VHS systems (as used in France), although there are some fundamental differences in the composition/timing of the video signals and associated signals/waveforms.

Approximate running Time: 84 minutes.

VCR Maintenance  
 VT103 (NV17T)

A step-by-step easy to follow procedure for professionally cleaning the tape path and replacing many of the belts used in most VHS VCRs. The viewer will also become familiar with the various parts found in the tape path.

Approximate running Time: 32 minutes.

## Basic Electronics

Video cassettes VT201 to VT206 are a basic electronics course and are designed to be used as a complete series, if required.

Basic Electronics Part One: D.C. Circuits  
 VT201 (NV18U)

This video is an absolute must for the beginner. Series circuits, parallel circuits, Ohm's law, how to use the digital multimeter and much more.

Approximate running Time: 54 minutes.

Basic Electronics Part Two: A.C. Circuits  
 VT202 (NV19V)

This is your next step in understanding the basics of electronics. You will learn about how coils, transformers, capacitors, etc., are used in common circuits.

Approximate running Time: 62 minutes.

Basic Electronics Part Three: Semiconductors  
 VT203 (NV20W)

Gives you an exciting look into the world of semiconductors. With basic semiconductor theory, plus 15 different semiconductor devices explained.

Approximate running Time: 57 minutes.

Basic Electronics Part Four: Power Supplies  
 VT204 (NV21X)

Guides you step-by-step through different sections of a power supply.

Approximate running Time: 56 minutes.

Basic Electronics Part Five: Amplifiers  
 VT205 (NV22Y)

Shows you how amplifiers work as you have never seen them before. Class A, class B, class C, op-amps, etc.

Approximate running Time: 57 minutes.

Basic Electronics Part Six: Oscillators  
 VT206 (NV23A)

Oscillators are found in both linear and digital circuits. Gives a good basic background in oscillator circuits.

Approximate running Time: 54 minutes.

## Digital Electronics

Video cassettes VT301 to VT306 are designed to provide a good grounding in digital and computer technology.

Digital Electronics Part One: Gates  
 VT301 (NV24B)

Begins with the basics as you learn about seven of the most common gates which are used in almost every digital circuit, plus binary notation.

Approximate running Time: 54 minutes.

Digital Electronics Part Two: Flip Flops  
 VT302 (NV25C)

Will further enhance your knowledge of digital electronics. You will learn about octal and hexadecimal notation, flip-flops, counters, etc.

Approximate running Time: 55 minutes.

Digital Electronics Part Three: Registers & Displays  
 VT303 (NV26D)

This is your next step in obtaining a solid understanding of the circuits found in today's digital designs. Describes multiplexers, registers, display devices, etc.

Approximate running Time: 54 minutes.



**Digital Electronics Part Four: DAC & ADC  
VT304 (NV27E)**

Shows you how a computer is able to communicate with the real world. You will learn about digital-to-analogue and analogue-to-digital converter circuits. *Approximate running Time: 59 minutes.*

**Digital Electronics Part Five: Memory Devices  
VT305 (NV28F)**

Introduces you to the technology used in many of today's memory devices. You will learn all about ROM devices and then proceed onto PROM, EPROM, EEPROM, SRAM, DRAM, and MBM devices.

*Approximate running Time: 56 minutes.*

**Digital Electronics Part Six: The CPU  
VT306 (NV29G)**

Gives you a thorough understanding in the basics of the central processing unit and the input/output circuits used to make the system work.

*Approximate running Time: 56 minutes.*

**Radio Theory**

**AM Radio Theory**

**VT401 (NV30H)**

Probably the most complete video ever produced on AM radio! Begins with the basics of AM transmission and proceeds to the five major stages of AM reception. Learn how the signal is detected, converted and reproduced. Also covers the Motorola C-QUAM AM stereo system.

*Approximate running Time: 61 minutes.*

**FM Radio Theory Part One**

**VT402 (NV31J)**

Covers FM basics including the functional blocks of a receiver, plus RF amplifier, mixer oscillator, IF amplifier, limiter and FM decoder stages of a typical FM receiver.

*Approximate running Time: 58 minutes.*

**FM Radio Theory Part Two**

**VT403 (NV32K)**

A continuation of FM technology from Part One. Begins with the detector stage output, proceeds to the 19kHz amplifier, frequency doubler, stereo demultiplexer and audio amplifier stages. Also covers RDS digital data encoding and decoding.

*Approximate running Time: 58 minutes.*

**Fibre Optics**

**Fibre Optics**

**VT501 (NV33L)**

From the fundamentals of fibre optic technology through cable manufacture to connectors, transmitters and receivers.

*Approximate running Time: 58 minutes.*

**Laser Technology**

**Laser Technology**

**VT502 (NV34M)**

A basic introduction covering some of the common uses of laser devices, plus the operation of the Ruby Rod laser, HeNe laser, CO<sub>2</sub> gas laser and semiconductor laser devices. Also covers the basics of compact disc and bar code scanning.

*Approximate running Time: 57 minutes.*

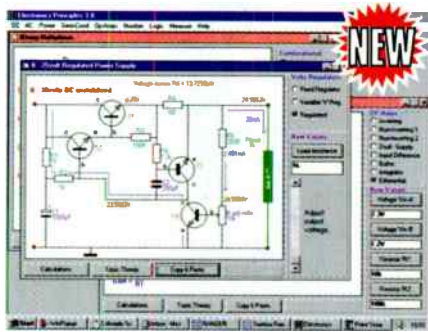
*Retail Unit Price each (inc. VAT).*

Order Code	Type 18485	Price each exc. VAT			inc. VAT each
		1+	2+	3+	
NV16S	Ucando Video VT102	£29.740	£27.660	£25.720	£34.950
NV17T	Ucando Video VT103	£29.740	£27.660	£25.720	£34.950
NV18U	Ucando Video VT201	£29.740	£27.660	£25.720	£34.950
NV19V	Ucando Video VT202	£29.740	£27.660	£25.720	£34.950
NV20W	Ucando Video VT203	£29.740	£27.660	£25.720	£34.950
NV21X	Ucando Video VT204	£29.740	£27.660	£25.720	£34.950
NV22Y	Ucando Video VT205	£29.740	£27.660	£25.720	£34.950
NV23A	Ucando Video VT206	£29.740	£27.660	£25.720	£34.950
NV24B	Ucando Video VT301	£29.740	£27.660	£25.720	£34.950
NV25C	Ucando Video VT302	£29.740	£27.660	£25.720	£34.950
NV26D	Ucando Video VT303	£29.740	£27.660	£25.720	£34.950
NV27E	Ucando Video VT304	£29.740	£27.660	£25.720	£34.950
NV28F	Ucando Video VT305	£29.740	£27.660	£25.720	£34.950
NV29G	Ucando Video VT306	£29.740	£27.660	£25.720	£34.950
NV30H	Ucando Video VT401	£29.740	£27.660	£25.720	£34.950
NV31J	Ucando Video VT402	£29.740	£27.660	£25.720	£34.950
NV32K	Ucando Video VT403	£29.740	£27.660	£25.720	£34.950
NV33L	Ucando Video VT501	£29.740	£27.660	£25.720	£34.950
NV34M	Ucando Video VT502	£29.740	£27.660	£25.720	£34.950

**Software**

**Electronics Principles 3.0**

*EPT Educational Software*



If you are looking for an easy and enjoyable way of studying or improving your knowledge of electronics, then this is the software for you!

Electronics Principles contains around fifty eight windows, which you can open and switch between. Thereby accessing an extended range of nearly 300 fully interactive analogue and digital electronics topics in full colour.

The software is completely self contained, including explanatory text, graphics and calculations. You can see the effect of changing component values one at a time in any given circuit configuration. Colour graphics redraw to scale and are presented along with the calculations, exactly as in a textbook, only this time using the user-input component values.

Screens can be cut and pasted, via the copy to clipboard feature, allowing graphics, text and calculations to be pasted into other Windows applications for print-out or incorporation into teaching or student notes.

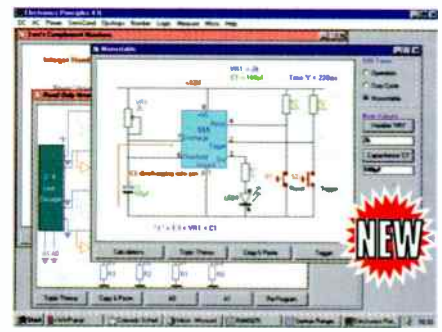
Electronics Principles 3.0 has a comprehensive range of fully interactive analogue and digital topics. From current flow and DC circuits, through switching and transistor operation, to passive and active filters. Logic begins with simple gates, through binary, hex and octal number conversion, addition and subtraction, to Boolean algebra. Currently used in hundreds of UK and overseas schools and colleges to support GCSE, A-level, BTEC, City & Guilds and university foundation courses. Also NVQ's and GNVQ's where students are required to have an understanding of electronics principles. Software runs under Windows™ 3.1, 3.11, '95 and NT and is supplied on 3 1/2in. floppy disks.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 18476	Price each exc. VAT	inc. VAT each
NV13P	Elec Principles 3.0	£49.950	£58.700

**Electronics Principles 4.0**

*EPT Educational Software*



If you are looking for an easy and enjoyable way of studying or improving your knowledge of electronics, then this is the software for you!

Electronics Principles contains around seventy five windows, which you can open and switch between. Thereby accessing an extended range of more than 300 fully interactive analogue and digital electronics topics in full colour, plus microprocessor hardware, instruction and addressing modes all in one easy to use package.

The software is completely self contained, including explanatory text, graphics and calculations. You can see the effect of changing component values one at a time in any given circuit configuration. Colour graphics redraw to scale and are presented along with the calculations, exactly as in a textbook, only this time using the user-input component values.

Screens can be cut and pasted, via the copy to clipboard feature, allowing graphics, text and calculations to be pasted into other Windows applications for print-out or incorporation into teaching or student notes.

Electronics Principles 4.0 now has an even more comprehensive range of fully interactive analogue and digital topics. From current flow and DC circuits, through switching and transistor operation, to passive and active filters. Logic begins with simple gates, through binary, hex and octal number conversion, addition and subtraction, to Boolean algebra. Plus microprocessor and microcomputer operation, registers, arithmetic and logic unit, ROM, RAM. Addressing modes and a full instruction set which can be simulated on the screen. All version 3.0 topics are covered within this program. Currently used in hundreds of UK and overseas schools and colleges to support GCSE, A-level, BTEC, City & Guilds and university foundation courses. Also NVQ's and GNVQ's where students are required to have an understanding of electronics principles. Software runs under Windows™ 3.1, 3.11, '95 and NT and is supplied on 3 1/2in. floppy disks.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 18474	Price each exc. VAT	inc. VAT each
NV14Q	Elec Principles 4.0	£99.950	£117.450

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- ★ Ideal for beginners to computer programming
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- ★ Teaches the fundamentals of assembly language programming
- ★ Non-theoretical learning through doing approach
- ★ Ideal for colleges, industrial training, private study

A beginner's introduction to assembly language programming, simple circuit design and interfacing to a PC. Written for absolute beginners but also ideal for experienced programmers. The book takes you through 50 experiments which gradually teach the reader how to program in assembly language, how to design simple electronic circuits and how to interface these to a PC. Starting with simple on/off switching of an LED under computer control, the concepts and practical exercises progress through flashing an LED to building a digital-to-analogue converter. To this a comparator is added, this forms an analogue-to-digital converter and the basis of a simple oscilloscope. The reader then experiments with changing curves, producing temperature graphs and digitising audio waveforms.

If you are a beginner wanting to learn how to program, or an experienced programmer wanting ideas about analogue-to-digital converters, oscilloscope software, successive approximation techniques, dynamic temperature measurement, audio digitising and audio analysis, then this is for you.

A kit of parts can be purchased to go with the book which contains a special solderless plugboard for building the circuits, a set of components for the 50 experiments, parts to make three lead assemblies (one for temperature experiments, one for audio experiments and one for a multimeter), and an assembler program that is ideal for beginners (not shareware). The kit is 'unmade' where the plugboard assembly and the leads need to be assembled and soldered. The kit does not include the book which must be purchased separately. The experiments can be run on any IBM compatible PC. Eight experiments require a VGA or SVGA monitor, but can be skipped if an 'old' PC is used. 1996. 300 pages. 240 x 170mm wirebound. British book.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV68Y	Experiment PCs Book	£24.420	£24.000NV
NV67X 1	Experiment PCs Kit	£34.030	£39.990

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### Watch As You Build Video with Radio Receiver Kit 1



A beginner's starter project which includes a step-by-step construction guide on a VHS video tape. The whole kit is supplied neatly packed into a standard VHS video cassette, together with an accompanying leaflet. By following the instructions on video you will be introduced to the basic techniques of project building, and by the end of the video a simple AM radio receiver circuit will have been constructed, ready to use. Some troubleshooting advice is given at the end. It is recommended that the absolute beginner also purchases a starter tool kit (see tools section) to ensure that they have the correct tools at the outset. Additional kits of parts are also available without the video tape, so that several students can work from one video tape. However, these extra kits cannot be used unless you have at least one video tape.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
SK00A	Start Radio & Video	£17.010	£19.990
SK04E	Start Radio No Video	£11.050	£12.990

### Hobbyists Starter Tool Kit



An easily affordable tool kit for the new electronics hobbyist, packaged to suit the typical needs of the beginner and offering considerable savings over buying the items separately. Presented in a cloth toolroll, the pack contains: side cutters; pair of long-nosed pliers with wire cutter; light-duty flat blade screwdriver 75mm long; No. 1 crosspoint screwdriver 75mm long; desoldering tool; and an Antex soldering kit with a CS iron, stand and 5m pack of 18swg multicore solder. Start as you mean to go on, with the right tools.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
SK01B 1	Starter Tool Kit	£25.160	£29.570

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### Funtronics 1



A set of projects ideal for the absolute beginner, requiring no soldering and the minimum of tools to construct. A small screwdriver, pliers and wire cutters are normally all that is needed. The components and connecting wire are held in place by self-tapping screws which fit into holes in the plastic 'peg-board' supplied. A component guide-sheet is supplied with each kit and this is cut-out and stuck to the plastic board. The kits include all the parts necessary except the battery and tools.

#### Optional Items

The following items, not included in the kits, may also be required.

PP3 Battery	As Req.	(JY60Q)
PP3 Alkaline	As Req.	(FK67X)
Snip Cutter	1	(JH20W)
Pliers	1	(FV55K)
Screwdriver	1	(JG98G)

There are 10 projects in the range:

#### 1. Bulb & Fuse Tester

This is a very simple project indeed, it is intended to allow testing of bulbs, fuses, switches etc. If the device under test is good, then an LED lights up. See Maplin Magazine Issue 48.

#### 2. Transistor Tester

As well as showing you how a transistor works, this handy kit allows you to test diodes or any small or medium NPN or PNP power transistors you may use in your own projects.

See Maplin Magazine Issue 49.

#### 3. Water Indicator

This little project is ideal for detecting water in the soil of house plants and will give a visible indication, an LED will light, when the soil is dry.

See Maplin Magazine Issue 50.

#### 4. Light-Dark Indicator

This project simply switches on an LED if it detects the absence of light. With a simple change to the circuit, this project will do the opposite, i.e. it will operate the LED indicator if the light level is above a certain amount. A useful purpose for a project of this type is a photographic darkroom indicator.

See Maplin Magazine Issue 51.

#### 5. The Flasher

This is an astable circuit that switches on and off two LEDs alternately. The LEDs flash every two or three seconds. Such a project will be of great use to model makers, for example. In its present form, the Flasher is ideal for flashing warning lights on a model level crossing.

See Maplin Magazine Issue 52.

#### 6. Electronic Siren

This little unit is ideal for use with model cars and similar applications. It provides a sound that varies in pitch; you can control this pitch, enabling a useful range of siren sounds to be produced.

See Maplin Magazine Issue 53.

## 7. Pet Communicator

This project uses an astable multivibrator loaded by a small loudspeaker. At low-light levels the frequency is very low, but in daylight the frequency is very high and will probably not be heard by most humans – but will be heard by your pets. A simple modification will allow this project to operate as an alarm. See Maplin Magazine Issue 54.

## 8. Decision Maker

Simple multivibrator circuit that is started by holding two prods together. Two LEDs will flash very fast so that they appear to be on all the time. When the prods are disconnected, a simple 'memory' action holds on one of the LEDs which can be labelled 'yes/no', 'in/out', 'heads/tails' or whatever. See Maplin Magazine Issue 55.

## 9. Morse Code Communicator

An astable multivibrator circuit that operates at several hundred pulses per second and produces an audio tone and lights an LED when the 'key' is pressed. This project will help you to learn Morse Code and communicate with others using this special 'language', the circuit is not any form of radio transmitter. See Maplin Magazine Issue 56..

## 10. Music Maker

A simple electronic organ that plays 10 notes, enough to play a range of simple tunes. The unit is 'monophonic'; this means it can only play one note at a time. It uses a stylus type 'keyboard'; in other words, you hold a stylus (prod) and play notes by touching it on to the 'keys', which are actually just screw terminals. The circuit is an astable multivibrator that can oscillate at several different frequencies, so as to provide a reasonable range of notes. See Maplin Magazine issue 57.

Retail Unit Price each (inc. VAT).

Order Code	Type 2092	Price each exc. VAT 1+	inc. VAT each 1+
LP82D	Continuity Tester	£3.390	£3.990
LP86T	Transistor Tester	£3.390	£3.990
LP90X	Water Level Indicatr	£3.390	£3.990
LP93B	L/D Indicator	£4.240	£4.990
LP96E	Flasher	£3.390	£3.990
LP97F	Electronic Siren	£4.240	£4.990
LT01B	Pet Communicator	£5.090	£5.990
LT04E	Decision Maker	£3.390	£3.990
LT07H	Morse Communicator	£5.090	£5.990
LT09K	Music Maker	£4.240	£4.990

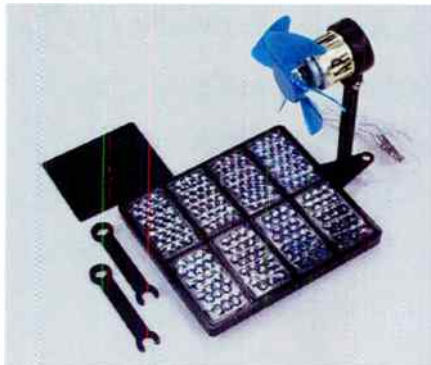
## Solar Cell Educational Kits

### Basic Kit



An educational kit to help you explore solar energy power. The kit includes a solar panel (0.45V 400mA), a small DC motor, connecting wire, plastic fan spinner and turntables, coloured spinner disks, coloured paper models, screws and nuts. An interesting kit for children to enjoy. A very informative booklet is included describing solar power in detail.

### Advanced Kit



A more advanced kit that includes eight solar panels that produce 0.4V at 100mA each, and can be configured to produce 0.4V at 800mA or 3.2V at 100mA by connecting the cells in parallel or series, or a combination of both. It is possible to power small appliances, i.e. radios, personal cassettes, calculators, from sunlight. A detailed booklet is included in the kit that explains how to connect up the cells. A small electric fan along with connecting straps and wire are included in the kit to demonstrate the use of solar power.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2092	Price each exc. VAT 10+	25+	100+	1+	inc. VAT each 1+
BZ48C	Basic Solar Kit	£4.480	£3.480	£2.900	£8.420	
BZ52G	Advanced Solar Kit	£8.320	£5.990	£4.990	£14.980	

### Applications

- ★ Guitar practice sessions
- ★ Concerts and gigs

Simple, low cost 'passive' volume controls are readily available, but they have drawbacks. One obvious disadvantage is that, being mechanical, they soon wear out and become 'noisy'. To avoid the wear and tear of a mechanical potentiometer and its eventual but inevitable demise, this project uses an optical system for the control. This ensures longevity, as there is nothing to wear out, and a rugged specifically designed pedal casing complements the design.

Another advantage of an 'active' volume control is that it acts as a buffer with zero (unity) gain, high input and low output impedances. Most electric guitars do not contain any active electronic circuitry within them. The delicate pickup signal is unbuffered, and the guitar will have a relatively high output impedance. The cable to the amplifier will then have a marked influence on the sound quality, which is not ideal. By using a shorter cable to a buffer circuit such as this unit incorporates, this situation can be alleviated. Because a buffer has a low output impedance, a much longer cable to the amplifier can be 'driven' with less influence on the sound.

### Specification

Power supply:	2 x 9V PP3 cells or external 9.5-18V DC regulated PSU
Operating current:	15mA @ 9.5V, 20mA @ 18V
Input level:	1.4V rms
Output level:	1.4V rms
Overall gain:	1 (approximately)
PCB dimensions:	77 x 74mm
Boxed unit dimensions:	238 x 101 x 104mm maximum

### Optional Items

The following optional items, not included in the kit, may also be required.


Alkaline PP3 Battery	1	(JY49D)
AC Adaptor Unregulated 300mA	1	(XX09K)
1/4in. Plastic Mono Jack Plug	1	(HF85G)

### Kit and Special Parts

A complete kit of parts is available (excluding the optional items), including the PCB, the Instruction Leaflet, and the Constructors' Guide. The PCB, beam breaker blade, and panel labels are available separately. Full constructional details may be found in Maplin Magazine/Projects Book 99 XA99H, and instruction leaflet XV83E.


Retail Unit Price each (inc. VAT).

Order Code	Type 11805	Price each exc. VAT 1+	inc. VAT each 1+
LT94C	Electronic Vol Pedal	£25.520	£29.990
GJ37S	Elect Vol Pedal PCB	£6.370	£7.490
KV00A	Elect Vol Pedal Labl	£2.110	£2.490
DT15R	Beam Breaker Blade	£0.417	£0.490
XV83E	Volume Pedal Lift	£0.800	£0.800 NV



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**Electro-Music**

**Effects**

**Electronic Volume Pedal** 2

**NEW LOW PRICE**



**Features**

- ★ Opto-electric pedal position sensor
- ★ Noise-free, reliable operation
- ★ High impedance Input for electric guitars, etc.
- ★ Doubles as a buffer for long cable runs
- ★ Operates from internal batteries or external 12V supply

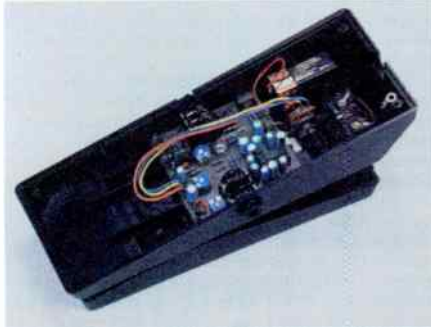



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**BS EN ISO 9002**  
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Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

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## Psychedelic Wah Wah Pedal 2



### Features

- ★ Powered from 9V PP3 battery or regulated power supply
- ★ Regulated reference to prevent low battery voltage drift
- ★ Built in compander to minimise noise
- ★ Traditional Wah Wah sound (without the crackle)
- ★ Rich warm harmonic content
- ★ Minimal adjustment
- ★ IC design, no laborious coils to wind
- ★ Adjustable resonance and range
- ★ Economically priced with unbelievable performance

### Applications

- ★ Ideal for both Guitars, Bass and other instruments

This sophisticated Wah Wah pedal uses the LM13700 transconductance op amp. Unlike other designs, the Psychedelic Wah Wah has a number of advantages which include adjustable resonance, which determines the subtlety of the effect and adjustable range, used for both guitar and bass guitar, in fact, on any electric music instruments such as keyboards and electric violins. The circuit also features a compander that reduces noise in the circuit and improves the harmonic content of the output which makes for a very warm rich sound. The Wah Wah acts as a kind of tone boost control, and moving the pedal adjusts the frequency point at which the boost occurs. Rhythm or lead guitar usually play through the device. When playing rhythm, the pedal is moved in time with the 'strum', and when playing lead, extra expressive abilities become available enabling almost 'infinite sustain' without screaming feedback.

### Specification

Power supply:	+9V DC
Current consumption:	14.7mA
Maximum boost @ 1kHz:	20dB
Minimum frequency:	90Hz
Maximum frequency:	20kHz

### Kit and Special Parts

A complete kit of parts (including the PCB) is available. The PCB and front panel is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 82 XA82D, and instruction leaflet XU89W.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT43W 3	Wah-Wah Pedal Kit	£34.030	£39.990
GH88V	Wah Wah Pedal PCB	£2.970	£3.490
KP70M	Wah Wah Pedal Front Panel	£2.110	£2.490
XU89W	Wah-Wah Pedal Lift	£0.800	£0.800 NV

## Auto-Waa Effects Unit 3



A Waa-Waa Unit for guitars where the filter frequency is automatically controlled by the input signal amplitude, as opposed to a foot operated pedal, for example. Very easy to use whilst giving a

good range of various effects. The filter frequency is adjustable, and a sweep depth control is also included. Positive feedback is used to give a peak in the response just above the cut-off frequency to obtain the best 'waa' effect, or alternatively operate as a 12dB/octave lowpass filter for more subtle effects.

### Kit and Special Parts

A kit is available (excluding case, battery, feet and fixings) and the PCB (included in the kit) is also available separately. Full construction details may be found in the Best of Maplin Projects Book 6 XC06G.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LK36P	Auto-Waa Kit	£18.710	£21.990
GB54J	Auto-Waa PCB	£2.970	£3.490

## Noise Gate 2



This useful project has the following features: Provides automatic shutdown of unwanted noise during 'pause' conditions. Compander technique eliminates 'signal snapping'. User adjustable characteristics for high or low level network insertion. Allows the use of otherwise 'too noisy to use' effects units. Can effectively cancel crosstalk in multi-microphone set-ups. Can be used in multi-instrument layouts for instant unit shutdown on changeovers. Will eliminate 'beehiving' in older type 'spaghetti' wired organs. No circuit trimming required or tight specification devices used. Can be used in its own right as an effect to create soft attack bowing characteristic. Uses only two low-cost and readily available ICs. Self contained, jack-in jack-out unit allows instant in-line connection.

### Kit and Special Parts

Complete kit of all parts excluding the case and front panel. Full construction details may be found in Maplin Magazine/Projects Book 40 XA40T, and instruction leaflet XK52G. PCB dimensions: 59 x 70mm.

Retail Unit Price each (inc. VAT).

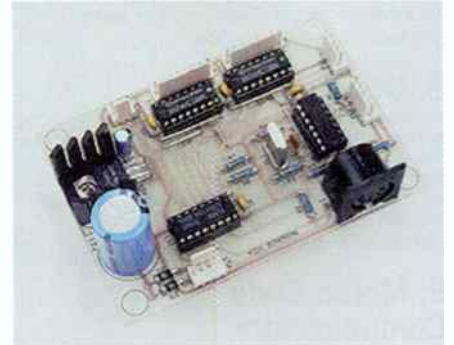
Order Code	Type	Price each exc. VAT	inc. VAT each
LK43W	Noise Gate Kit	£12.750	£14.990
GA43W	Noise Gate PCB	£2.110	£2.490
JR87U	Noise Gate Panel	£2.540	£2.990
XK52G	Noise Gate Leaflet	£0.800	£0.800 NV

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## MIDI 2

### E510 MIDI Keyboard Scanning Module



### Features

- ★ Scans up to 128 keys
- ★ Velocity (touch) sensitive
- ★ Transmit channel selectable
- ★ On-board regulator
- ★ AC or DC supply
- ★ Compact
- ★ Versatile

### Applications

- ★ MIDI keyboard
- ★ MIDI pedal-board
- ★ Basis of a MIDI master keyboard
- ★ MIDI retrofit for non-MIDI keyboards

The Musical Instrument Digital Interface (MIDI) has been adopted as a worldwide serial interface standard by manufacturers of electronic musical instruments and ancillary equipment; providing unparalleled possibilities for control and communication. MIDI allows a diverse range of devices to be interconnected; almost regardless of manufacturer or type. MIDI devices include; synthesizers, MIDI guitars, MIDI 'wind' instruments, drum machines, effects processors, mixers, computers and lighting equipment. Commonly, MIDI is used by keyboard players to interconnect synthesizers, allowing a range of 'instruments' to be played and controlled from one master keyboard. Conventionally, generation of serial MIDI data requires a microprocessor-based scanning system, comprising CPU, ROM, RAM, and both serial and parallel I/O. The use of such a system is costly and is a 'sledgehammer to crack a nut' solution. This module is a compact and versatile building block, around which a MIDI keyboard, pedal-board or master keyboard can be constructed. The module utilises a dedicated IC to perform scanning. For maximum versatility, an on-board supply regulator is provided, along with various inputs and outputs routed to strategically grouped connectors. The module only requires the addition of an AC or DC supply, some address decoding and a keyboard with changeover contacts to operate. It must be realised that the module does not produce any sound of its own, just MIDI data. A MIDI sound module or synthesizer is required to interpret the MIDI codes and generate the required sounds.

### Ideas and Expansion

The module has been designed with flexibility in mind, to this end, all signals have been brought out to connectors. The module is ideally suited to a wide variety of keyboard and pedal-board applications, such as: Portable guitar-style 'performance' keyboards; Bass pedal-board for guitar and keyboard soloists. With the addition of a processor board, a wide variety of master keyboard functions can be added; keyboard split, pitch bend and modulation wheels, patch change, data entry sliders, foot pedals, transposition, arpeggiator, etc.

### Specification

Module dimensions:	101 x 35 x 69mm (WHD)
Power requirements:	6-0-6V to 15-0-15V AC
AC:	+7 to +25V DC
or DC:	20mA quiescent
Current:	TTL/HC compatible
Logic connections:	MIDI standard 5mA current loop
Serial data output:	MIDI format TTL compatible
Auxiliary output:	128 notes
Scanning range:	128 steps/256µs
Velocity resolution:	

### Kit and Special Parts

A complete kit of parts (including the PCB) is available. The PCB is also available separately. Full

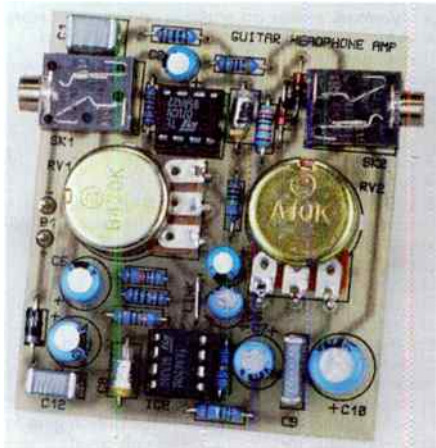
construction details may be found in Maplin Magazine/Project Book 69 XA69A, and instruction leaflet XU25C.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT35Q	MIDI Kbd Scanner	£34.030	£39.990
GH35Q	Midi Scanning PCB	£3.620	£4.490
XU25C	E510 Midi Scan Lift	£0.800	£0.800 NV

**Miscellaneous Electro-Music**

**Guitar Headphone Amplifier 2**



- ★ Low-cost
- ★ Separate volume and distortion controls
- ★ Practise in privacy
- ★ Authentic rockin' sounds

An electric guitar produces very little sound if not plugged into an amplifier. One advantage of this is that it is possible to practise without annoying the family or neighbours! The disadvantage, of course, is that it just doesn't sound the same. Especially when aiming for those screaming lead solos! This low-cost, compact, battery-operated amplifier will drive a pair of headphones and offer a realistic distortion effect. It conveniently fits into a clip-on box with battery compartment (KC95D), has the minimum of components and a low current consumption to prolong battery life.

**Specification**

Supply voltage:	9V nominal
Quiescent current drain:	9mA
Maximum current drain:	67mA
Input sensitivity:	<5mV to give full output
Maximum voltage gain:	55dB
Output power:	600mW
Output load:	8Ω or higher
PCB dimensions:	63 x 55mm
Dimensions of finished unit:	103 x 69 x 39mm (inc. knobs)

- Optional Items**
- The following items, not included in the kit, may also be required.
- |                                       |    |         |
|---------------------------------------|----|---------|
| Metal 6-35mm (1/4in.) Jack Plug       | 1  | (HF87U) |
| Metal 3-5mm Jack Plug                 | 1  | (HF81C) |
| Single Microphone Cable               | 1m | (XR16S) |
| PP3 Battery                           | 1  | (JY49D) |
| 3-5mm to 6-35mm (1/4in.) Jack Adaptor | 1  | (RW02C) |

**Kit and Special Parts**  
A complete kit of parts (including the PCB and front panel) is available (excluding optional items). The PCB and front panel are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 86 XA86T, and instruction leaflet XV14Q.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT80B	Guitar Headphone Amp	£14.450	£16.990
GJ03D	Guitar HPhones PCB	£2.110	£2.490
KP76H	Guitar HPhone Label	£2.110	£2.490
XV14Q	Guit Head Amp Lift	£0.800	£0.800 NV

See Stock Code Index For More Price Breaks

**Phantom Guitar Power Supply**

2



- Features**
- ★ Enables 'active' guitars to be powered via the signal cable
  - ★ Turns a non-active guitar into an active guitar
  - ★ Buffers the signal enabling long cable runs to be made with low signal loss
  - ★ Provides a regulated 9V DC output to power active circuitry in the guitar
  - ★ Short circuit protected
  - ★ Guitar PCB is only the size of a PP3 battery
  - ★ Optional 'Power' LED can be fitted into guitar

**Application**  
★ Gigging bands or solo musicians  
Guitars with factory fitted active pickups generally have a battery compartment, easily accessible from the outside the guitar. However, many guitars are bought with only 'passive' pickups and, at a later date, 'active' pickups are often retrofitted. The majority of retrofits involve milling out the guitar woodwork under the scratchplate to allow for the active electronics and battery. However, whenever you want to replace the battery, the scratchplate must be removed (which may also involve de-stringing, re-stringing and re-tuning the guitar) – an extremely laborious process!

This project comprises of a PP3 battery sized module that fits in place of the 9V battery and negates the need to ever remove the scratchplate again! For guitars fitted with active pickups, the project acts as a battery eliminator. However, if your guitar is not fitted with 'active' pickups, then this project will buffer the output signals from your passive pickups, effectively turning them into 'semi-active' pickups. Connections from the Guitar Module to the Interface Box and from the Interface Box to the amplifier are made using standard 1/4in. mono jack leads.

**Kit and Special Parts**  
A complete kit including a pre-punched case, front and rear panel labels, and the PCB is available. Note that the PCB has provision for up to four Guitar Modules to be constructed however, the kit only includes enough components to make one Guitar Module. Full construction details may be found in Maplin Magazine/Projects Book 104 XD04E, and instruction leaflet XZ18U.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
LP78K	Guitar Phantom PSU	£34.030	£39.990
GJ62S	Guit Phantom PSU PCB	£6.370	£7.490
AV80B	Guitar PSU F/Panel	£1.260	£1.490
AV81C	Guitar PSU R/Panel	£1.260	£1.490
KV16S	Guit Phantom PSU Lbl	£2.110	£2.490
XZ18U	Guit Phantom PSU Lift	£0.800	£0.800 NV

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**Earth Lift Box**

1



- Features**
- ★ Removes annoying 'hum' from PA set-ups
  - ★ Enables two 'Earthed' audio products to be connected
  - ★ Compact, rugged casing
  - ★ Easy to build and use
  - ★ Configurable for stereo/multi-channel systems

**Applications**

- ★ Electronic musical instrument and amplifier setups
- ★ Stage PA and recording
- ★ Safe eradication of earth hum loops

The almost standard way of avoiding earth loop 'hums' is to disconnect the earth from the offending item (usually a power amplifier). This is a very dangerous practice to adopt as it leaves the equipment user with little or no protection against electric shock or 'fault' hazards!

Many pieces of rack equipment are designed for use without an earth conductor and many of those that do have an earth lead have a built-in ground lift, but there will always be one that gives you a problem. The solution is to break the DC path through the signal 0V lead, by either a 'ground lift' resistor of about 180Ω or, in more extreme cases, total disconnection of the signal 0V.

The Earth Lift Box has been designed as an invaluable addition to any musicians/PA engineers kit box. It is fitted with a three-position switch: 'Direct' hardwires the earth of the input to the earth of the output, 'Float' totally disconnects the earth of the input from the output through a low value resistor and AC 'bypass' capacitor. In addition to the 'Earth lift' output, a 'Link' output is provided, allowing the unit to be inserted in-line with existing cabling. Boxed unit size: 120 x 65 x 40mm

**Kit and Special Parts**  
A complete kit of parts including PCB, stick-on label and pre-punched box is available. The PCB, panel and box are available separately. Full construction details may be found in Maplin Magazine/Projects Book 102 XD02C, and instruction leaflet XZ17T.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU24B	Earth Lift Box Kit	£14.450	£16.990
GJ49D	Earth Lift Box PCB	£2.110	£2.490
KV19V	Earth Lift Box Label	£3.390	£3.990
DT23A	Earth Lift Enclosure	£10.200	£11.990
XZ17T	Earth Lift Box Lift	£0.500	£0.500 NV

## Passive DI Box

1



### Features

- ★ Does not require a power source
- ★ Allows line-level signals to be fed into microphone-level inputs
- ★ Earth-lift facility
- ★ Link output for easy connection
- ★ 1/4in. Jack Input and XLR output
- ★ Rugged construction

### Applications

- ★ Stage PA and recording
- ★ Eliminating hum loops safely
- ★ Direct injecting keyboards and other electro-music equipment

To the uninitiated, a direct inject box is simply an impedance/level matching unit that is designed to allow unbalanced line level signals to be fed into a low level balanced microphone input on a mixing desk.

Many mixers intended for 'on the road' PA use are provided with balanced-line microphone inputs only, often this is because more microphone inputs are required than line inputs. However, microphone inputs are highly unsuitable for anything other than microphone level signals, and feeding an electronic keyboard into such is likely to result in severe distortion.

This DI box serves to translate the unbalanced line level signal into a balanced microphone level signal. Its input is relatively high impedance – suitable for connecting to the output of a keyboard or other line level output, and its output is low impedance and suitable for connecting to a microphone input.

### Specification

Input signal:	+18dBu maximum
Distortion:	<0.05% @ 1kHz
Frequency response:	10Hz to 20kHz ±0.5dB
Input impedance:	20kΩ
Output impedance:	600Ω
Case dimensions:	120 x 65 x 40mm
Input connectors:	1/4in. mono jack socket
Link output:	1/4in. mono jack socket
Balanced output:	3-pin XLR plug

### Kit and Special Parts

A complete kit of parts including PCB, stick-on label and pre-punched box is available. The PCB, panel and box are available separately. Full constructional details may be found in Maplin Magazine/Projects Book 102 XD02C, and instruction leaflet XZ13P.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU23A	Passive DI Box Kit	£21.260	£24.990
GJ53H	Passive DI Box PCB	£2.540	£2.990
KV09K	Passive DI Box Label	£3.390	£3.990
DT22Y	DI Enclosure	£10.200	£11.990
XZ13P	Passive DI Box Lft	£0.500	£0.500 NV

## Active Transformer DI Box

1



### Features

- ★ Active design
- ★ Battery or PSU operation
- ★ Low battery and power on indicators
- ★ 6.35mm (1/4in) Jack Inputs and XLR output
- ★ Pre-punched silk-screened front and rear panels
- ★ Sturdy and compact
- ★ Power-on and low battery indicator LEDs
- ★ Automatic power switch-on when input lead is inserted

### Applications

- ★ Matches unbalanced lines into balanced inputs
- ★ Break earth loops
- ★ Impedance matching

This DI (direct injection) box is intended to match unbalanced line level signals into low level balanced inputs such as the microphone inputs found on mixing desks and amps. The unit can be effectively used to eliminate hum produced by earth loops in audio systems by providing a break in the ground path.

This active DI box has a much higher input impedance than passive types. It is therefore suited for use with instruments that have high impedance pickups, which would otherwise suffer from attenuation of treble if used with low impedance inputs. A buffered link output is provided so that on-stage amplification may be driven. Earth carry-through and earth-lift inputs provided. True transformer-based balanced output (some other designs use lower cost 'electronically balanced' outputs).

The unit is powered by an internal alkaline PP3 battery (not included) or by an optional regulated mains PSU (YB23A).

Kit includes box and pre-punched & silk-screened panels (please note: photo shows non-screened panels).

### Specification

Supply voltage:	+7V to +15V DC (+9V nominal)
Supply current:	8.5mA @9V DC
Input impedance:	500kΩ
Output impedance - Link:	200Ω
Balanced:	150Ω (suits 600Ω microphone inputs)

Dimensions (approx.): 109 x 52 x 93mm

### Kit and special parts

A complete kit of parts is available. The PCB and pre-punched & screened panels are also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 106 XD06G, and instruction leaflet XV98G.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU32K 1	Active Trans DI Box	£25.520	£29.990
GJ58N	Act Trans DI Box PCB	£3.390	£3.990
KV03D	Act Tx DI Bx F-Panel	£2.540	£2.990
KV25C	Act Tx DI Bx R/P Scr	£1.690	£1.990
XV98G	Act Trans DI Box Lft	£0.500	£0.500 NV

## Simple 4-to-1 Audio Mixer

1



### Features

- ★ Overload, power on and low battery indicators
- ★ Pre-punched, silk screen printed front and rear panels
- ★ Battery or external PSU operation
- ★ Compact and rugged construction

### Applications

- ★ Gigging bands
- ★ PA systems
- ★ Karaoke systems

This Simple 4-to-1 Audio Mixer is a functionally basic yet extremely useful unit that can accept up to four (mono) audio inputs and mixes them into one output for feeding into an audio amplifier, tape recorder or PA system, etc.

The mixer is ideal for gigging musicians, who wish to easily link the outputs from four instruments so that the resulting combined signal can be fed into, for example, single channel on a mixing desk. The mixer also has uses in PA systems, allowing music to be combined with speech, or even for use at karaoke sessions, enabling wannabe pop singers to sing along to a backing track. The unit could additionally be used for sound recording, allowing up to four tracks/samples to be combined into one.

### Specification

Supply voltage:	7 to 15V DC (9V nominal)
Current consumption:	8mA @ 9V
Input impedance:	100kΩ approx.
Output impedance:	200Ω approx.
Bandwidth:	20Hz to 130kHz
Distortion:	<0.01% within audio bandwidth

PCB dimensions:	101 x 82mm
Boxed unit dimensions:	108 x 50 x 93mm

### Optional Items

The following items are not included in the kit, but may also be required.

PP3 Battery	1	(JY49D)
9V Regulated PSU	1	(BZ84F)

### Kit and Special Parts

A complete kit of parts (including the PCB and pre-punched & printed front and rear panels) is available (excluding optional items). The PCB and panels are available separately. Full constructional details may be found in Maplin Magazine/Projects Book 105 XD05F, and instruction leaflet XZ26D.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU34M	4-To-1 Audio Mixer	£21.260	£24.990
GJ63T	Simple 4 IP Mix PCB	£2.970	£3.490
KV17T	Simple 4 IP Mix Lbl	£2.540	£2.990
KV26D	Simple 4 IP R/P Scr	£1.690	£1.990
XZ26D	Simple 4-1 Mix Lft	£0.800	£0.800 NV

## Audio Balanced Line Transmitter

2



- ★ Wide frequency range
- ★ Operates from mains adaptor or internal batteries

Balanced line systems were originally developed to



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overcome the hum and noise pickup problems that inevitably crop up with unbalanced (single-ended) cables over long runs. The situation does not exist when using a balanced line because any external introduced noise component will be equally induced on both the in-phase and out-of-phase signal lines keeping the signal difference voltage the same, which effectively cancels any common-mode noise. In addition, this project may be used to 'bridge' two mono amplifiers together. Further details on the construction and use of the balanced line TX can be found in Maplin Magazine Issue 49.

**Specification**

Supply voltage:	9V min. 35V max.
	Quiescent current
	@ 9V: 8.2mA
	@ 35V: 9.5mA
Maximum input signal	
	@ 9V: 1.4V rms
	@ 35V: 10V rms
Frequency response	
	@ -3dB: 1.5Hz to 100kHz

**Optional Items**

The following, not included in the kit, may also be required.

22µF 16V Tantalum	4	(WW72P)
Box CCN80	1	(YN50E)
Gasket CCN80	1	(FE41U)
Pozi Screw M2.5 x 10mm	1 Pkt	(JC68Y)
Steel Nut M2.5	1 Pkt	(JD62S)
Isoshake M2.5	1 Pkt	(BF45Y)
Battery Alkaline 9V	2	(ZB52G)
AC Adaptor Unreg. 300mA	1	(XX09C)
Quickstick Pads	1	(HB22Y)
Rubber Foot	1	(XR93B)

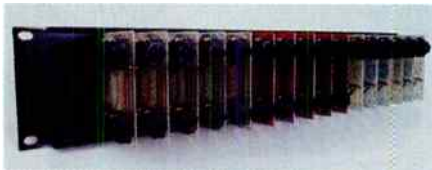
**Kit and Special Parts**

A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in instruction leaflet XT29G.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
LP49D	Balanced Line Tx	£21.260	£24.990
GE99H	Direct Inject PCB	£2.970	£3.490
XT29G	Bal Line Leaflet	£0.800	£0.800 NV

**16-Way Audio Patchbay**



**Features**

- ★ **Balanced, unbalanced or 'insert point' versions**
- ★ **Normalised or non-normalised operation**
- ★ **One PCB for all options**
- ★ **Low loss signal path**

**Applications**

- ★ **Recording studios**
- ★ **Theatres**
- ★ **Home recording**
- ★ **P.A. systems**

Used extensively in radio, TV and recording studios, the most commonly used inputs and outputs are taken to a patchbay where they can be simply connected together using short cables. This patchbay is configured as two rows of sockets, one above the other. It is conventional to designate the lower sockets as signal inputs to a device, while the sockets above will often be the output from the same device. Often a patchbay is 'normalised', which means the top socket is normally wired to the bottom socket and the path is broken when a jack is inserted. In this case the top socket will be the output from one piece of equipment that is normally fed to the input of another, e.g. the output from a tape deck fed to the input of a mixer. The ability to easily break this feed allows the use of an additional piece of equipment to be inserted in the path, i.e. noise reduction equipment. A PCB is available allowing a single channel patchbay module to be constructed. By fitting a combination of stereo and mono 6.35mm (1/4in.) jack sockets, balanced, unbalanced or insert point versions can

be constructed on the same PCB. There is NO kit of parts for this project, but the Maplin 'Get-You-Working' Service is available.

**Parts List**

<b>Unbalanced Module:</b>			
Mono PCB 6.35mm (1/4in.) J/Skt	4	(FJ00A)	
Patchbay PCB	1	(GH09K)	
<b>Balanced Module:</b>			
Stereo PCB 6.35mm (1/4in.) J/Skt	4	(FJ05F)	
Patchbay PCB	1	(GH09K)	
<b>Insert Module:</b>			
Mono PCB 6.35mm (1/4in.) J/Skt	2	(FJ00A)	
Stereo PCB 6.35mm (1/4in.) J/Skt	1	(FJ05A)	
Links	2	Fitted	
Patchbay PCB	1	(GH09K)	
<b>Optional</b>			
Patch Lead Set		As Req.(YZ32K)	
Rack Jackfield	1	(KW61R)	
PCB dimensions: 61 x 78.7mm			

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
GH09K	Patch Bay PCB	£3.390 1+ £2.300 4+ £2.040 8+	£3.990 1+

**Home & Office**

## Door Chime

**Features**

- ★ **Dual tone bell sound**
- ★ **Adjustable pitch**
- ★ **Ni-Cd charge and back up facility**
- ★ **Compact and attractive design**
- ★ **Can be powered from AC bell transformer, or batteries**

**Applications**

- ★ **Homes, shops and offices**
- ★ **Theatre productions**
- ★ **Shop door announcer**

Construct this simple-to-build, compact and pleasant sounding two-tone door chime.

The two-tone chime, which is adjustable in pitch, is triggered from your existing bell push, or by another suitable switch of your choice. The circuit can be operated from either batteries (which will last a long time, due to the low power consumption), or from an AC mains transformer, or even both if you wish, since built-in charging circuitry is incorporated to accommodate nickel-cadmium back-up cells, so that your door chime will still operate during power cuts.

**Specification**

Maximum AC current consumption:	130mA
Standby AC current consumption:	8mA
Maximum DC current consumption:	95mA
Standby DC current consumption:	1µA
AC voltage range:	8 to 16V
DC voltage range:	3 to 25V
Battery requirement:	4 x 'AA' 1.2V Ni-Cd or 1.5V dry cells
PCB dimensions:	50 x 50mm

**Optional Items**

The following optional items, not included in the kit, may also be required.

8Ω 0.3W Miniature Loudspeaker		
Type 668	1	(WB13P)
Bell Push	1	(FS17T)
'AA' 500mAh Ni-Cd Battery	4	(AG13P)
'AA' Alkaline Battery	4	(ZB47B)
4 x 'AA' Battery Box	1	(HF29G)

PP3 Battery Clip	1	(HF28F)
White ABS Box Type BM11	1	(CC81C)
Bell Transformer	1	(FL37S)
4 Pairs of 1in. Velcro Squares	1 Pkt	(FE45Y)
M2.5 x 10mm Pozi-drive Screw	1 Pkt	(JC68Y)
M2.5 Steel Nut	1 Pkt	(JD62S)
Zip Wire	1m	(XR39N)
Bell Push	1	(FS17T)

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 95 XA95D, and instruction leaflet XV68Y.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
LU16S	Door Chime Kit	£8.500	£9.990
GJ27E	Door Bell PCB	£1.690	£1.990
XV68Y	Door Bell Lift	£0.800	£0.800 NV

**Multi-Tone Chime**



A versatile multi-tone chime unit for use in door bells, toys and annunciators. One, two or three tones triggered by 3 different push buttons. This unit also features adjustable tone, volume, an output power of 0.3W and a standby current of only 10µA. Operation is possible from either 6 to 9V AC at 0.2A or from a 4.5V (3 x 1.5V) power source. Supplied with full operating, construction and installation instructions.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
VF61R	K6600 Chime Kit	£13.600	£15.990

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## Telephone Bell Repeater 2



### Features

- ★ Easy to build and install
- ★ No direct connections to telephone
- ★ LED and sound annunciators
- ★ Can be used with 418MHz Encoded Radio Tx/Rx (LT87U and LT88V)

### Applications

- ★ Telephone repeater
- ★ Whistle switch

Quite often, the telephone cannot be heard in other parts of the house, or in the garden, shed or garage. This is where this simple Phone Repeater is very useful, to those people with only a single phone socket (or even a hard-wired phone). The Telephone Bell Repeater 'sits' beside the telephone, and a piezo buzzer is remotely wired from the Telephone Bell Repeater (using zip wire) to the required 'repeat' position. When the telephone rings, the LED illuminates and the buzzer beeps in time with the ringing pattern. A purely audible connection is all that is required since direct connection of non-approved apparatus to the public telephone network is strictly prohibited.

The applications are not limited to this sole purpose, as it can be used equally well as a whistle switch, or possibly a baby alarm.

The Telephone Bell Repeater requires a stabilised supply (preferably regulated), a 12V battery pack will not suffice, as a change in supply voltage will cause variations in the oscillator frequency.

### Specification

Power supply voltage:	12 to 24V DC
Current consumption	
Quiescent current @ 12V:	10.5mA
Operating current @ 12V:	19.4mA
Operating current @ 24V:	39mA
Input nominal frequency measured at 12V:	240Hz to 1400Hz

### Optional Items

The following items, not included in the kit, may also be required.

ABS Box Type MB1	1	(LH20W)
9.5mm Standard Grommet	1	(JX63T)
M3 Insulated Spacer	1	(FS36P)
Chassis Phono Socket	1	(YW06G)
Phono Plug Black Screw Cap	1	(HQ54J)
2.5mm Panel Mount Power Socket	1	(JK10L)
Regulated AC Adaptor	1	(YB23A)
Zip Wire	As Req	(XR39N)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 83 XA83E, and instruction leaflet XU91Y.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT67X	Telephone Bell Repeater	£11.050	£12.990
GH83B	Tel Bell Repeater PCB	£2.970	£3.490
XU91Y	Phone Bell Rptr Lft	£0.800	£0.800 NV

## Mains Power Conditioner 2



- ★ High-grade filtering in both directions
- ★ Passive operation, no power required by circuit
- ★ Up to 1.44kW continuous load
- ★ Direct in-line connection to equipment
- ★ Includes over-voltage spike suppressors

Safeguard your sensitive mains powered electronic equipment, enhance their operating performance, and lengthen their life span, by using this project to filter out all the noise and voltage fluctuations that may be present on the domestic mains supply. This can arise as a result of inconsiderate neighbours using electric power tools, triac-switched devices and the like. This filter is particularly effective for use with computers, Hi-Fi, and TV/satellite sets – every home should have one (or several)!

### Specification

Operating voltage range:	230 to 250V AC domestic mains
Continuous load:	6A @ 240V AC max.
Continuous power:	1.44kW @ 240V AC
Visual indicators:	'Power on' neon lamp
Overcurrent protection:	T6-3A time-delay fuse
Insulation classification:	7A/10A mains plug fuse Class 1, earth to equipment, plastic casing
PCB dimensions:	189 x 101mm
Case dimensions:	197 x 110 x 56mm

### Kit and Special Parts

A complete kit of parts (including the PCB) is available. The stick-on front panel and PCB are available separately. Full construction details may be found in Maplin Magazine/Projects Book 91 XA91Y, and instruction leaflet XV28F.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT81C	Mains Power Condtr	£31.480	£36.990
GJ19V	Mains Pwr Cond.PCB	£5.520	£6.490
KP89W	Mains Cond Label	£2.110	£2.490
XV28F	Mains Pwr Cond Lf	£0.800	£0.800 NV

## Mains Failure Alarm 2



### Features

- ★ Easy to build and use
- ★ Compact, self-contained unit within wall plug-type casing
- ★ Visual and audible indication of mains failure
- ★ Built-in Ni-Cd battery backup and charging circuitry

### Applications

- ★ Kitchens and catering areas
- ★ Computer rooms
- ★ Factories, warehouses, offices

A corruption in the normally dependable mains power supply can cause disruption, nuisance and expensive damage to equipment used within the home and at work. Using this project gives an immediate warning of failures in the supply of mains electricity. The unit gives both an audible alarm, and visual indication, by means of a flashing LED, of a

mains supply failure. When the mains supply is re-established, the sounder will be muted, whilst the 'Fail' LED remains flashing to alert you to the fact that there was a power cut. Reset the tripped alarm by unplugging the unit, then replugging the unit back into the 13A outlet socket. Battery back-up, comprising of an internal Ni-Cd rechargeable battery, and maintained by a built-in charging circuit, powers the circuitry during the mains supply failure. The alarm is built into a self-contained, compact housing, which incorporates a 3-pin wall plug, allowing direct connection to the mains via any convenient wall socket. A second LED (non-flashing) indicates that mains power is being supplied during the standby state, confirming that the unit is ready and waiting for a mains supply failure.

### Specification

Power supply:	UK domestic mains 230V, 50Hz AC, and 7.2V Ni-Cd PP3 back-up cell
(standby; mains power):	5.5mA
(activated; battery power):	10mA Battery trickle charge current:
Case dimensions:	68 x 85.5 x 61.5mm
PCB dimensions:	143 x 49mm
Mains failure indicators:	Flashing LED and piezo-ceramic sounder

### Kit and Special Parts

A complete kit of parts is available, including the PCB and the front panel label. The PCB and front panel Labelare also available separately. Full construction details may be found in Maplin Magazine/Projects Book 95 XA95D, and instruction leaflet XV70M.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU00A	Mains Failure Alarm	£14.450	£16.990
GJ29G	Mains Fail Alarm PCB	£2.970	£3.490
KP95D	Mains Fail Alm Label	£1.690	£1.990
XV70M	Mains Fail Alm Lft	£0.800	£0.800 NV

## Meteorology

### Weather Satellite Reception

## Mapsat 2 Weather Satellite Receiver



A superb VHF weather satellite receiver, covering the 137 to 138MHz band. This fully synthesised receiver has many features including 24 memories, scanning, LCD display showing frequency, signal strength, AFC lock, and 'mode'. With a suitable antenna (LM00A), the unit will receive transmissions directly from the polar orbiting weather satellites, such as the Russian Meteor series or the American NOAA series. In addition, it will receive transmissions from the geostationary weather satellites (Meteosat for the UK & Europe) via a suitable down-converter and antenna. This ready built mains powered unit has connections on the rear for two antenna, and each antenna socket also has +12V DC to power pre-amps such as LT73Q (as featured in Electronics – The Maplin Magazine issue 81) and/or a down converter. An output is provided for a monitor loudspeaker, and an audio output, via phono connector, for a suitable interface to a PC (AQ50E). A review of this receiver will be found in issue 85.

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AQ49D	Mapsats 2	£340.410	£399.990

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## Weather Satellite Receiver PC Interface

NEW LOW PRICE



This PC interface and software for the Weather Satellite Receiver (AQ49D) will decode and produce images on a suitable PC that can be saved and printed. Easy-to-use, the menu driven software requires an IBM AT or compatible (286 12MHz processor minimum), with at least a VGA monitor and a minimum of 1Mb of free space on a hard drive. In addition, space will be required for stored images which can be up to 1Mb each in the highest resolution mode. The interface is designed to convert weather satellite transmissions from APT format into a high resolution PC display (a SVGA display will be required for the full 256 colour display). The interface accepts the Audio WEFAX (APT format) standard and provides RS232 data via a standard 25-way D-type connector. A suitable lead for connecting to a computer is supplied. The software will allow 'auto-capture' (scheduled by time) or 'free capture' (all images that are transmitted). The received black and white pictures can be saved and 'coloured', and then converted to a standard format (TIF, GIF), displayed and even printed.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AQ50E 1	Mapsat 2 PC Interface	£85.090	£99.990

## Satellite/VHF Aerial

3



A very important part of any radio communication system is the aerial and, although there are many different types, the easiest to use for weather satellite work on the VHF band is a crossed dipole aerial. Since such an aerial has a horizontally polarised omnidirectional polar pattern it means that, once in place, it is not necessary to align the aerial to the satellites passing overhead. A highly recommended accessory to boost the received signal, is the VHF/UHF preamp as covered in Electronics Issue 81. The VHF/UHF preamp is easily fitted, and of course can be used with the MAPSAT2 Receiver, or any other type of receiver that covers the VHF/UHF spectrum. The preamp should be mounted on the mast itself. All the parts required for the construction of the aerial are provided in the kit, with the exception of a wooden broom handle for the support pole. This item should be available from most hardware stores. The broom handle, if not already varnished or painted, should receive such treatment before the construction of the aerial begins.

### Optional Items

The following items, not included in the kit, may also be required.

Wooden Pole 25.4mm dia.	1
Wood Screw	1

### Kit and Special Parts

A complete kit of parts is available (excluding optional items). The aerial rods (four required) are

available separately. Full construction details may be found in Maplin Magazine/Projects Book 85 XA85G, and instruction leaflet XT94C.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LM00A 3	Sat Aerial Kit	£21.260	£24.990
YM58N	Aerial Rod	£2.110	£2.490
XT94C	Sat Aerial Leaflet	£0.500	£0.500 NV

## Weather Monitoring

### Weather Monitoring System

3



Be your own Bill Giles with this superb meteorological monitoring system. This project is in two halves, an outside unit which gathers data on wind speed and wind direction and an indoor unit which displays the data gathered. An analogue meter shows the wind speed in mph and knots, and a 16 point LED compass display shows the wind direction. Wind speed meter can be set to 22 knots (25 mph) or 87 knots (100 mph) full scale reading. Wind direction may be electronically damped (4 settings) to counter effects of turbulence. Additionally an optional digital temperature module gives a readout of inside and outside temperatures. Note: hardware (i.e. mechanics) and electronics are ordered separately.

## Display Unit Kit

### Optional Items

The following items are not included in the display unit kit, but may also be required.

Contact adhesive	1 off	(FL44X)
Temp/clock module	1 off	(FE33L)
Ext probe for temp/clock module	1 off	(FE34M)
Min/max temp module	1 off	(FP64U)
Ext low temp min/max probe	1 off	(FP65V)
Ext high temp min/max probe	1 off	(FP66W)
Bezel for temp module	1 off	(FE35Q)
Case ABS Console 2803	1 off	(YN31J)
Metal top panel	1 off	(JL95D)
Acrylic front panel	1 off	(JL96E)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is available separately. Full construction details may be found in Maplin Magazine/Projects Book 33 XA33L.

PCB dimensions: 130 x 80mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LM96E 2	Mapmet Kit	£40.840	£47.990
GD99G	Mapmet Main PCB	£8.920	£10.490
JL95D	Mapmet FP Metal	£3.820	£4.490
JL96E	Mapmet FP Acrylic	£7.650	£8.990
JL89W	W/S Scale	£1.260	£1.490

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## Wind Direction Indicator Kit

2



### Optional Items

The following items are not included in the LM88V kit, but may also be required.

Red LED	4 off	(WL27E)
Min Res 680R	4 off	(M680R)
Multicore 6-way cable	As Req	(XR26D)

### Kit

A complete kit of parts (electronics), excluding optional, for the exterior wind direction indicator. The PCB and coded disc are available separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LM88V	Wind Direction Kit	£21.260	£24.990
GD96E	Mapmet Wind PCB	£3.390	£3.990
GD97F	Mapmet Code Disk	£2.970	£3.490

## Wind Speed Indicator Kit

2



### Optional Items

The following items are not included in the LM87U kit, but may also be required.

Red LED	1 off	(WL27E)
Min Res 680R	1 off	(M680R)
Multicore 6-way cable	As Req	(XR26D)
Min Res 22k	1 off	(M22K)
Min Res 47k	1 off	(M47K)
BC557	1 off	(QQ16S)

### Kit

A complete kit of parts (electronics), excluding optional, for the exterior wind speed indicator. The PCB and coded disc are available separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LM87U	Wind Speed Kit	£10.200	£11.990
GD96E	Mapmet Wind PCB	£3.390	£3.990
GD97F	Mapmet Code Disk	£2.970	£3.490

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## Wind Speed and Direction Indicators Hardware Kit 2



**Kit and Special Parts**  
A complete kit is available.  
PCB dimensions: 112 x 58mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 12369	Price each exc. VAT	inc. VAT each
LM90X 3	Wind Hardware Kit	£35.730	£41.990
GK14Q 1	W/S Plastic Parts	£9.350	£10.990
YT69A	W/S Pointer Shaft	£1.260	£1.490
YT70M	W/S Mounting Bar	£3.390	£3.990
JL77J	W/S Shaft	£2.280	£2.690
JL78K	W/S Ball Race	£5.090	£5.990
JL83E	W/S Pointer	£2.970	£3.490
JL84F	W/S Tail Fin	£1.430	£1.690
JL85G †	W/S Point Shaft Mnt	£0.417	£0.490
JL86T †	W/S Point Shaft Pile	£0.417	£0.490
JL87U	W/S Mast Clamp	£2.110	£2.490
JL88V	W/S End Cap	£0.161	£0.190
JL80B †	W/S Coupler Plate	£0.417	£0.490

## PC Weather Station 2



25

- ★ Intended for use with the Wind Speed and Direction Sensor outdoor units ('Electronics' Issue 31)
- ★ Easy to build and set up
- ★ Can be used on any PC or compatible – minimum requirements: 8086, 512k RAM, mono text, single floppy drive.
- ★ Upgrading the existing Weather Station project (Electronics Issue 33) – both systems can be run from the outdoor units.
- ★ Expandable – up to 8 extra sensors may be added (add-on board LT51F, using an inexpensive analogue-to-digital converter (ADC) chip)
- ★ Accessible via easy-to-write BASIC routines (listings supplied)
- ★ All signal inputs/outputs via optoisolators for minimum risk of ESD damage to the host computer

Using the existing Wind Speed (LM87U) and Direction Sensor (LM88V) kits ('Electronics' issue 31), the PC Weather Station Card has been designed to either complement the Weather Station indoor unit (LM96E), which was covered in 'Electronics' Issue 33, or to present a computer-based alternative capable of monitoring, displaying and recording the wind speed and direction. The addition of the vast level of computing power that modern PCs provide allows data logging to be easily achieved with suitable software, enabling the information to be processed (e.g., trends in wind speed to be followed over a 24-hour period). The power of the PC will also be useful when other devices are connected and options on the PCB allow for this expansion. In addition, control systems can be implemented which could be used to operate, for example, a gale alarm.

### Optional Items

The following items, not included in the kit, may also be required.

R2,R9	1k	8	(M1K)
R11,R12	560Ω	2	(M560R)
RN2	10k	1	(RA30H)

C6	100nF 16V Minidisc	4	(YR75S)
C7	10µF 16V Tantalum	3	(WW68Y)
IC8	74HC4051	1	(UF06G)
IC9	4094BE	1	(QW54J)
OP1,2	ILQ74 Quad Optoisolator	2	(YY63T)
FS1	Fuse 20mm 1A	1	(WR19V)
FS2	Fuse 20mm 250mA	1	(RA06G)
	20mm Fuseholder with Cover	2	(KU29G)
	6-Core Screened Cable	As req.	(XR26D)
	37-Way 'D' Plug	1	(FV71N)
	37-Way 'D' Hood	1	(JB66W)
	16-Pin DIL Socket	4	(BL19V)
	PC Weatherstation s/w	1	(LW11M)

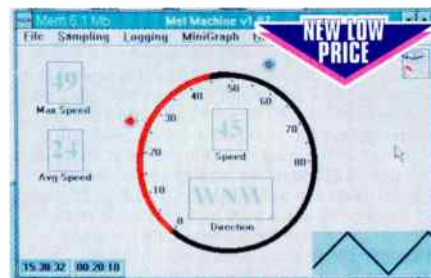
### Kit and Special Parts

A complete kit of parts (including the PCB and software) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 70 XA70M, and instruction leaflet XU31J.

Retail Unit Price each (inc. VAT).

Order Code	Type 3404	Price each exc. VAT	inc. VAT each
LT28F	PC Weather Station	£32.330	£37.990
GH53H	PC Weather Stn PCB	£14.030	£16.490
LW11M	Weather Station	£4.240	£4.990
XU31J	PC WEATHER STU LFLT	£1.000	£1.000 NV

## PC Weather Station Software



### Features

- ★ Analogue and digital display
- ★ Selectable graphical display
- ★ Adjustable logging rate
- ★ Average and maximum wind speed display
- ★ Real-time clock and elapsed logging time displays

### Applications

- ★ PC Weather Station
- ★ PC Weather Station emulation software

This software was developed specifically for use with the PC Weather Station project (LT28F), as featured in Maplin Magazine Issue 70, and will run on any IBM compatible PC operating under Windows™ 3.x or Windows™ 95. Easy to use, the software enables the simultaneous analogue and digital displaying of wind speed and direction, within an attractive window on your PC's monitor. Additionally, the software computes and displays a real-time clock, elapsed monitoring time, average and maximum wind speeds, and both instantaneous and selectable graphical representation of the variables being measured by the PC Weather Station hardware, with features including adjustable monitoring (logging) rate. Supplied on a 3.5in. floppy disk.

### Optional Items

The following items may also be required.

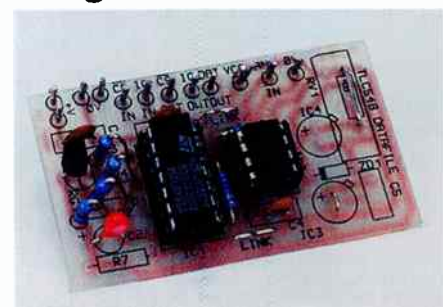
PC Weather Station Card	1	(LT28F)
Wind Direction Kit	1	(LM88V)
Wind Speed Kit	1	(LM87U)
Wind Hardware Kit	1	(LM90X)

Retail Unit Price each (inc. VAT).

Order Code	Type 12369	Price each exc. VAT	inc. VAT each
LW11M	Weather Station	£4.240	£4.990



## TLC548 8-Bit Analogue-To-Digital Converter 2



### Features

- ★ Cost effective with high performance
- ★ Low power consumption
- ★ Conversion time 17µs (max)
- ★ Differential reference input voltages

### Applications

- ★ Interface sensors to the PC Weather Station
- ★ 8-bit resolution Analogue-to-Digital converter
- ★ Serial interface with tri-state data output

The TLC548 is a very powerful IC, suitable for a multitude of tasks, and is based on an 8-bit, successive approximation sample-and-hold, Analogue-to-Digital (A-to-D) converter, which makes 8-bit A-D conversion easy, cost effective and usable. The device is capable of up to 45,500 conversions per second, and needs only one external control signal. The specially designed PCB can be tailored for any task within the IC's specification, but the module was developed mainly for use with the PC Weather Station project. The IC is a complete data acquisition system on a single chip, designed for serial interfacing with a microprocessor or computer via a tri-state, TTL compatible data output port and an analogue input port. It includes versatile control logic and on-chip sample-and-hold that can operate automatically or under microprocessor control. Voltage requirements for the IC are between -3V and +6V DC with, typically, a low power consumption of 6mW. The differential high impedance reference inputs provide circuit isolation from logic and supply noise. The analogue input can be any voltage within the range of 0 to 5V DC; the corresponding digital output is a value between 0 and 255, proportional to the input voltage. The kit instructions include details of applications for a light sensor, temperature sensors and potentiometer position sensor. Details for an external clock oscillator circuit, which is required if the module is not used with the PC Weather Station project, is also given. In addition, modules can be cascaded using a 'master/slave' system (the 'master' board has the clock and power supply connected). Up to eight modules can be used in this way, but you will need suitable multi-way inputs, such as the 24-Line I/O Expansion Kit (Order Code LP12N). An ABS box type MB1 (Order Code LH20W) can be used to house up to three TLC548 boards.

### Optional Items

300mA Unregulated AC Adaptor	1	(XX09K)
ABS Box MB1	1	(LH20W)

### Kit and Special Parts

A complete kit of parts, including the PCB, is available (but excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 75 XA75S, and instruction leaflet XU56L. The Maplin 'Get-You-Working' Service is not available for this project.

Retail Unit Price each (inc. VAT).

Order Code	Type 5313	Price each exc. VAT	inc. VAT each
LT51F	TLC548 A/D Conv Kit	£10.200	£11.990
GH68Y	TLC548 A-to-D PCB	£2.970	£3.490
XU56L	TLC548 A-to-D Lft	£0.800	£0.800 NV

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## Model Railways

### Train Controllers

#### Digital Multi-Train Controller 4



- ★ 14 locomotives individually controlled on the same track
- ★ Any 4 locos controlled simultaneously
- ★ Automatic short circuit protection
- ★ Supply always present for carriage lighting, etc.
- ★ Remote control and computer interfacing
- ★ Low-cost, two wire system
- ★ Receiver has modern microprocessor technology

Railway enthusiasts have for many years appreciated the need for a control system that enables trains to be driven as if the operator were in the driving cab of the locomotive. This not only means the control of speed and direction of the locomotive, but also the ability to move anywhere on the layout without the need for track isolation or switching, thus making the wiring of the layout much simpler.

This system fulfils all these needs by producing a constant 18V DC on the track with digital information superimposed on it, to which only a selected train or trains will respond. The permanent track voltage also means that locomotives' headlights, carriage lighting and many accessories may be used unaffected by the speed of the trains. This system can control up to 14 locomotives all on the same track, and any four of these may be driven independently at one time. Provision is also made for any or all of the four control units to be operated by a 7-bit digital input, thus enabling remote control either from hand-held units (using wire or radio) or from a home computer, giving full control of direction and speed.

The completely redesigned receiver module uses the very latest PIC16C54 IC which replaces most of the components used in the original design.

Other advantages are a smaller PCB that has a 'breakable' power section, allowing the controller to be fitted in restricted spaces such as, such as Scalectrix, trams etc.

The common/PSU kit includes all the parts to build the common board and PSU. A suitable punched and painted aluminium case with sloping front is also available.

#### Kits and Special Parts

A complete kit of parts for the common board and PSU (including the PCB, PSU, and front panel, but not the case) is available. Additionally, a kit of parts for one train controller (up to four will fit in the case) is available. The common board, controller and receiver PCBs are all available separately.

Full construction details may be found in Maplin Magazine/Projects Book 71 XA71N, and instruction leaflets XK83E and XU40T.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
	1+	1+	1+
LW61R 3	Train Common/PSU Kit	£42.540	£49.990
LW62S	Train Control Kit	£11.050	£12.990
LT29G	Train Fx Kit	£15.310	£17.990
XG09K 1	Train Control Case	£25.520	£29.990
XX47B	Train Ctrl Front Pln	£6.370	£7.490
GA72P	Train Common PCB	£3.820	£4.490
GA73Q	Train Control PCB	£2.970	£3.490
GH41U	Dig Train Rx PCB	£2.540	£2.990
DM59P	PIC16C54RC-MS02	£5.520	£6.490
XK83E	Train Ctrl Leaflet	£0.800	£0.800 NV
XU40T	Dig Train Rx Lift	£0.800	£0.800 NV

## Control-A-Train

1



- ★ Pulse width modulated for excellent low speed performance
- ★ Inertia control of momentum and braking
- ★ Box or panel mounted
- ★ Easy to build
- ★ Low cost

Things have moved on from the days when model train controllers were little more than a rectifier and a high power potentiometer (called a 'rheostat'), and using modern electronic devices it is possible to produce a simple controller that has quite advanced facilities. This design is based on just two operational amplifiers but it has a pulsed output for good starting and low speed performance, plus simulated inertia, momentum and braking. It also has output current limiting which protects the circuit when the inevitable overloads and short circuits occur. The unit is designed to operate from the 15V AC output from a train transformer or from the 15V AC auxiliary output of a train controller, or it could easily be built as a self-contained unit having its own built-in mains transformer if desired although details are not given for this. It should also operate from the 12V DC output of a train controller or transformer unit.

This controller uses the method of pulse control; the idea is to provide a series of output pulses that drive the motor at full power. The average output voltage (and thus the speed of the train) is varied by altering the mark-space ratio of the output signal. A must for all serious model train enthusiasts looking for a lifelike, hands-on-throttle feel for their models.

#### Kit and Special Parts

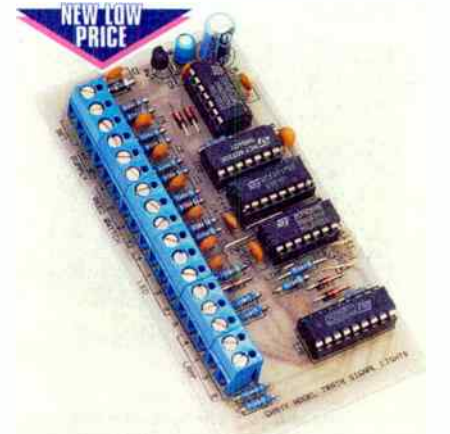
A complete kit, excluding case and 4mm wander plugs is available. The PCB, printed stick-on front panel and heatsink bracket are also available separately. Full construction details may be found in the Best of Maplin Projects Book 6 XC06G, and instruction leaflet XT50E  
PCB dimensions: 112 x 51mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
	1+	1+	1+
LK64U	Control-A-Train Kit	£17.010	£19.990
GB87U	Control-A-Trn PCB	£2.110	£2.490
FT40T	Ctrl-A-Train Fr Pan	£2.970	£3.490
FT53H	Ctrl-A-Trn Heatsink	£0.842	£0.990
XT50E	Ctrl-A-Train Leaflet	£0.800	£0.800 NV

## Signalling

### Model Train Signal Lights 2



In response to customer requests for more model train projects, we have developed a simple 2, 3 or 4-aspect signal light system for single direction or dual track systems. Different signal aspects may be required for different applications and situations, so built in is the ability to select aspects with a single PCB link.

In normal operation, sensors, which are embedded in the track, will be triggered by the train travelling over them. If reed switches are used, a small magnet may be required to activate each switch. This can be achieved by fixing the magnet to the underside of the train or carriages. As long as the distance between the magnet and the reed switch is small enough to allow correct switching, the control unit takes care of the rest. In some cases the reed switches operate normally due to the close proximity of the magnets in the train's electric motor.

#### Optional Items

The following items, not included in the kit, may also be required.

ABS Box PX4	1	(YU55K)
10-way Ribbon Cable	As Req	(XR06G)
Magnet Small	1	(FX71N)
Magnet Large	1	(FX72P)

#### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 86 XA86T, and instruction leaflet XV13P.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
	1+	1+	1+
LT66W	Train Signal Lights	£11.050	£12.990
GH91Y	Train Sig Lights PCB	£3.820	£4.490
XV13P	Train Light Lift	£0.800	£0.800 NV

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## Sound Effects

### Model Train Chuffer

2



- ★ Realistic chuff and hiss of steam
- ★ Chuffer automatically changes with speed
- ★ Hiss of escaping steam when train stationary
- ★ Adjustable chuff rate
- ★ Adjustable tonal quality

One effect that is normally missing from a model steam train set so making it less realistic, is the sound of a chuffing engine. The Chuffer project produces a realistic 'chuff' whilst the train is in motion, and also produces a hissing sound which emulates escaping steam whilst the train is at a standstill. An external amplifier and a power supply of up to +36V DC (absolute maximum) are required for use with the Chuffer. Adjustment of the 'chuff' rate can be made to match the train speed. Once in operation the changes in track voltage will be picked up and the Chuffer rate will alter automatically and lend realism to the model steam train set-up.

#### Specification

Supply voltage DC:	+15.5 to 36V DC
Supply current	
quiescent:	15.3mA
operating:	17.1mA
Output signal level (nominal):	1V rms
Track control voltage range:	16V maximum

#### Optional Items

The following items, not included in the kit, may also be required.

Multi-purpose ABS Box Type MB3	1	(LH22Y)
Chassis Phono Socket	1	(YW06G)
2.5mm Power Socket	1	(JK10L)
Red Terminal Posts Small	2	(FD72P)
M3 x 10mm Insulated Plastic Spacer	2	(FS36P)
2A Hookup Wire Black	10m	(BL00A)

#### Kit and Special Parts

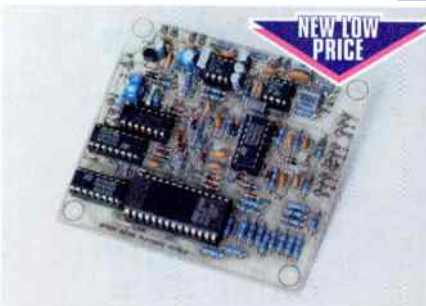
A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 79 XA79L, and instruction leaflet XU71N.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT39N	Train Chuffer Kit	£11.050	£12.990
GH80B	Train Chuffer PCB	£3.390	£3.990
XU71N	Train Chuffer Lift	£0.800	£0.800 NV

### Model Train Horn/Whistle

2



#### Features

- ★ Two digital sound samples
- ★ Three trigger inputs
- ★ Two trigger modes
- ★ Power on reset

- ★ Playback LED
- ★ Variable playback speed
- ★ Signal mixing for linked module playback operation
- ★ High level and low impedance output
- ★ Superior sound quality

#### Applications

- ★ Model train sound effects
- ★ Novelty doorbell
- ★ Alarm siren

What train layout would be complete without a realistic train horn/whistle generator? This project uses actual recordings of a two-tone train horn and steam train whistle, digitally sampled and stored on an EPROM. Playback of each sound can be triggered from push switches or even reed switches embedded in the track. In addition, an audio mixer is provided on the PCB, allowing the signal outputs of additional playback modules or the Model Train Chuffer kit (LT39N) to be combined.

#### Specification

Supply voltage:	+8V to +15V DC
Supply current at 12V	
quiescent:	6mA
operating:	19mA
Regulated output voltage:	+5V DC
+5V DC output current:	50mA maximum
Output signal level:	1V rms (nominal)
Output impedance load:	1k
Mixer input level:	1V rms (nominal)
Mixer input impedance:	100k
D/A sampling rate:	6kHz
Playback cut-off frequency:	3kHz
Clock frequency range:	4kHz to 10kHz
Trigger input 1:	Two-tone diesel horn (2-73s)
Trigger input 2:	Steam whistle (2-73s)
Trigger input 3:	Diesel horn and steam whistle (5-46s)

Trigger modes:	One-shot or repeat
External reset input:	+5V DC to reset system
Playback status output:	+5V DC low during playback
Assembled module dimensions:	94 x 85 x 15mm

If you only require a small low power amplifier, the TDA7052 1W Amplifier kit (LP16S) is well suited for this purpose. However, it will require a small modification to make it compatible with the rest of the system; this involves increasing the value of its input attenuator resistor R1 from 1kΩ to 100kΩ.

#### Optional Items

The following items, not included in the kit, may also be required.

Reed Switch	As Req.	(FX70M)
Small Magnet	As Req.	(FX71N)
Large Magnet	As Req.	(FX72P)
Push Switch	As Req.	(FH59P)
Sub-Miniature Push Switch	As Req.	(JM47B)
Sub-Miniature Toggle A Switch	As Req.	(FH00A)
Sub-Miniature Toggle B Switch	As Req.	(FH01B)
AC Adaptor Regulated	1	(YB23A)
Model Train Chuffer Kit	1	(LT39N)
TDA7052 Kit	1	(LP16S)
100k Miniature Resistor	1	(M100K)
1.5W Low Cost Speaker	1	(YT25C)
127mm (5in.) Plastic Horn	1	(XQ73Q)
Single-Core Lapped Screen Cable	As Req.	(XR13P)

#### Kit and Special Parts

A complete kit of parts (including the PCB and programmed EPROM) is available (excluding optional items). The PCB and programmed EPROM are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 83 XA83E, and instruction leaflet XU79L.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT61R	Train Horn/Whistle Kit	£12.750	£14.990
GH80X	EPROM Sound Mod PCB	£3.820	£4.490
ZC06G	MS04	£4.240	£4.990
XU79L	Two-Tone Horn Leaflet	£0.800	£0.800 NV

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## Train Effects Generator Kit



This module uses a single HT82113 chip, which is directly bonded and linked to the PCB and protected in a resin seal. The IC can synthesise four different train sounds: 3 whistles, chuffing, level crossing bell and crossing a bridge. Each of the four sounds are selected by one of four active-low, edge triggered inputs. The IC also generates up to three active-low trigger pulses for cascading other modules. Circuit standby current is 100µA, including automatic power-down to 1µA. Speaker and output driver transistor are provided in the kit.

Retail Unit Price each (inc. VAT).

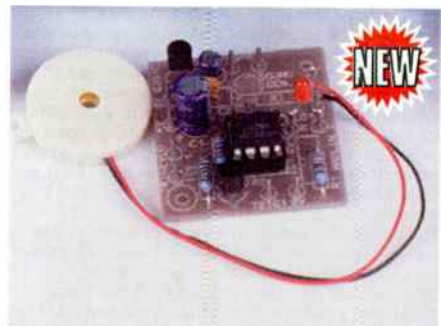
Order Code	Type	Price each exc. VAT	inc. VAT each
WEB4U	Train Sounds Kit	£5.940	£8.990

## Novelty & Seasonal

## Sirens & Sound Effects

### Siren Sound Generators

1



#### Features

- ★ Simple construction - ideal for beginners
- ★ Three different sounds available
- ★ Many novel and amusing uses
- ★ Flexible PCB allows simple option selection
- ★ Automatic power off to prolong battery life

#### Applications

- ★ Add sound to models and toys
- ★ Audible warning devices
- ★ Amusing gifts

These kits provide a choice of three different siren sounds and are ideal for novelty, toy and alarm applications. LU85G produces a car alarm siren sound, LU88V produces a USA police car siren sound and LU89W produces a wailing police car siren sound. Various options are offered, the simplest using only two components and a piezo sounder which are all provided. An optional speaker can be used for louder sounds. For simple applications, power can be provided by 2 x 1.5V cells. To cater for a wide range of applications, a regulator IC is supplied with each kit so that, when fitted to the PCB, allows supply voltages up to 24V DC to be used. Triggering can be realised using touch pads, TTL/CMOS logic or standard switches.

#### Specifications

Operating voltage	2.4V to 24V DC
Stand by current	1µA at 3V DC

#### Optional Items

Loudspeaker 8Ω Type 388	WB04E
Plastic 5in. Horn Speaker	XQ73Q
Triangular Touch Pad	HY01B

#### Kit and special parts

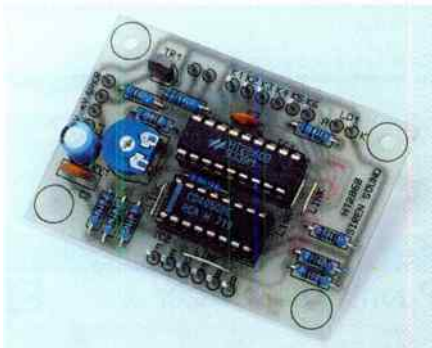
A complete kit of parts is available. A PCB, which is the same for all 3 kits is available separately. Full constructional details may be found in Maplin Magazine/Projects Book 112 XD12N, and instruction leaflet XZ42V.

Retail Unit Price each (inc. VAT).

Order Code	Type 10443	Price each exc. VAT	inc. VAT each
LU85G	Car Alarm Siren Kit	£5.940	£6.990
LU88V	USA Police Siren Kit	£5.940	£6.990
LU89W	Wail Police Siren Kit	£5.940	£6.990
GJ81C	Holtek 2810 Snd PCB	£2.110	£2.490
XZ42V	Holtek 2810 Snd Lft	£0.500	£0.500 NV

## HT2860 Siren Sound Generator

1



### Features

- ★ Single Power Supply 2.4V to 4.5V
- ★ Low stand-by current (1µA typically at 3V)
- ★ Auto power-off
- ★ Six different sounds
- ★ Variable pitch control
- ★ Speaker or piezo sounder outputs
- ★ Current limited LED output

### Applications

- ★ Source sounds for security devices
- ★ For use in model toys
- ★ For use in local alarm systems

The HT2860 is a CMOS LSI IC capable of six different alarm sounds and is specially designed for sound effect applications. Each of the six sounds can be either played independently by triggering one of the key inputs, or can be cascaded, according to the key priorities, by triggering more than one key simultaneously. The device can directly drive a piezo transducer, or a loudspeaker driven through a driver transistor. Additionally, the IC can source enough current to drive an LED via a suitable series resistor. The information given in the article that appeared in issue 90 of Electronics – The Maplin Magazine should be enough to allow you to tailor the specially designed PCB for any task within the device's specification. The applications for the HT2860, as described, are mainly in the context of providing source sounds for security devices or model projects.

### Optional Items

The following items, not included in the kit, may also be required.

Loudspeaker	1	(WB04E)
Piezo Sounder	1	(FM59P)
AA Cells	1 Pkt	(YU65V)
AA Battery Box	1	(YR60Q)
Battery Clip	1	(HF28F)

### Kit and Special Parts

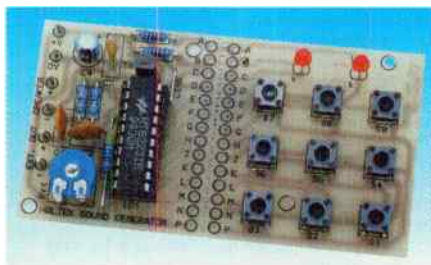
A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is available separately. Full construction details may be found in Maplin Magazine/Projects Book 90 XA90X, and instruction leaflet XV51F.

Retail Unit Price each (inc. VAT).

Order Code	Type 0751	Price each exc. VAT	inc. VAT each
LT91Y	Siren Sound Kit	£7.650	£8.990
GJ16S	Holtek Siren PCB	£2.110	£2.490
XV51F	HT2860 Sound Gen Lf	£0.500	£0.500 NV

## HT82231 Sound Generator

1



- ★ 12 different animal sounds
- ★ Compact, snap-off PCB design
- ★ On-board amplifier
- ★ Low operating voltage
- ★ Very low standby current
- ★ Alternately flashing LEDs

This easy-to-build project captures the realistic sounds of an elephant, and eleven different farm animals, in one handy unit! Use it to add another dimension to toys and games or theatre productions, films, etc., or simply for fun whenever the mood takes you! Alternatively, the unit could be adapted for use as a novel doorbell or door announcer – great for pet shops, farm produce stores and such like! Sounds include an elephant, dog, bird, duck, hen, frog, pig, sheep, cow, cat, cock and a horse.

### Specification

DC power supply:	2.4 to 5.3V (3V nominal)
DC standby current:	30mA
DC maximum current:	200mA
Output impedance:	8Ω
Battery requirement:	2 x 1.5V ('AA' cells)
PCB dimensions:	45 x 75mm

### Optional Items

The following items, not included in the kit, may also be required.

8Ω Min Loudspeaker Type 578	1	(WB09K)
Sub-min PCB Switch Type 105B	1	(KR90X)
2/3 'AA' size Battery Box	1	(YR60Q)
PP3 Battery Clip	1	(HF28F)
Duracell 'AA' Alkaline Batteries	1	(JY48C)
Ribbon Cable	1	(XR07H)

### Kit and Special Parts

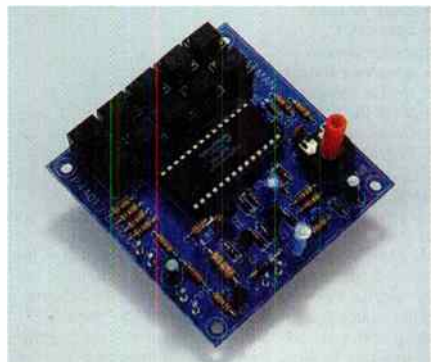
A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is available separately. Full constructional details may be found in Maplin Magazine/Projects Book 93 XA93B, and instruction leaflet XV48C.

Retail Unit Price each (inc. VAT).

Order Code	Type 10542	Price each exc. VAT	inc. VAT each
LT96E	Sound Generator Kit	£6.800	£7.990
GJ22Y	HT82231 Sound PCB	£2.110	£2.490
XV48C	HT82231 Sound Gen Lf	£0.500	£0.500 NV

## K4401 Sounds Generator

1



### Features

- ★ 10 different sounds
- ★ Drives 8Ω loudspeakers
- ★ Adjustable pitch/speed
- ★ Reverse polarity protection

### Applications

- ★ Sound effects

- ★ Disco jingles
- ★ Games and toys
- ★ Alarms

This pre-programmed sound generator is ideal for use in sound effects production, disco jingles, games and toys. The sounds that the completed unit generate are:

1. Tune: 'Wild Charge Tune'.
2. Mortar shot and explosion.
3. Explosion.
4. Car tyre screech.
5. Tune: 'Snake Charmers Tune'.
6. Car engine (up/down rpm).
7. Phasor gun.
8. European siren.
9. Machine-gun and bullet impact.
10. USA siren.

The tempo of each effect is adjustable, so increasing the unit's versatility. The sounds are created using a peripheral interface controller (PIC), microprocessor-based IC, and the finished unit has provision for direct connection to an 8Ω loudspeaker. Additionally, a line level output is provided for connection to a mixer or amplifier.

### Specification

Power requirements:	8V to 10V DC
Standby current:	11mA
Maximum current:	100mA
Output	
Loudspeaker:	1W into 8Ω
Line:	1V rms

### Optional Items

The following items, not included in the kit, may also be required.

Sub-Min Toggle Switch (Type A)	1	(FH00A)
Hook-up Wire	As Req	(BL00A)
Single-core Screened Cable	As Req	(XR12N)
Low-cost Loudspeaker	1	(YW53H)
300mA Unreg DC Power Supply	1	(XX09K)
or PP3 Alkaline Battery	1	(JY49D)

### Kits and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 57 XA57M.

Retail Unit Price each (inc. VAT).

Order Code	Type 3595	Price each exc. VAT	inc. VAT each
VE11M	Velleman Kit K4401	£16.710	£21.990

## K2604 Kojak Siren

1

25



Enter the world of amazing electronic sounds and noises. Create or imitate sirens of all kinds by adjusting three presets. Power sound with extra 2W on-board amplifier. Requires 8 to 14V DC, 1A.

Retail Unit Price each (inc. VAT).

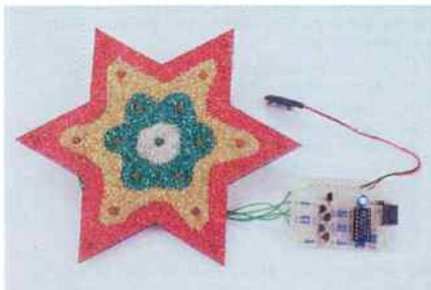
Order Code	Type 3602	Price each exc. VAT	inc. VAT each
VE87U	Velleman Kit K2604	£8.500	£9.990

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## Christmas

### Christmas Star

1



- ★ 4 different LED colours
- ★ Easy to build
- ★ 9V cell or DC supply option

A novelty project brings life to the top of your Christmas tree. This unit is built around the CMOS 4060 IC, a 14 stage ripple counter and oscillator. Synchronised flashing is provided by a bank of LEDs, which can be mounted on to a glittered star. The project can be run from a 9V PP6 cell or a 9V voltage regulator.

Current consumption of 70mA occurs when all LEDs are on, making the life of a PP6 cell approx. 20 hours. A DC mains adaptor able to deliver 300mA, is recommended for prolonged use.

The star itself is not supplied, but this project can be used for other applications.

#### Optional Item

The following item, not included in the kit, may also be required.

PP7 Battery 1 (FM04E)

#### Kit and Special Parts

A complete kit is available and the PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 41 XA41U, and instruction leaflet XK37S. PCB dimensions: 67 x 43mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3537	Price each exc. VAT	inc. VAT each
LP54J	LED Xmas Star	£9.350	£10.990
GE72P	LED Controller PCB	£1.690	£1.990
XK37S	LED Star Leaflet	£0.500	£0.500 NV

### Christmas Tree

1



- ★ 21 LEDs in 3 different LED colours
- ★ Easy to build
- ★ 9V battery or DC supply option

An easy to build festive project, decorated with 21 low-current LEDs in three different colours, which light in random patterns. The LEDs can be made to light at different rates/patterns which change slowly, quickly or twinkle. The tree can be powered from a battery or a mains adaptor in the range of +9V to +15V. If an unregulated mains adaptor is used, e.g.

XX09K, it should be set to 7.5V or 9V. The nominal current consumption at 9V is only 12mA with all LEDs illuminated, while at 15V it is 36mA.

Supplied with the kit is a full size template of the tree which can be cut out and stuck on a piece of thick card, plywood, hardboard, aluminium laminate or perspex. The holes for the LEDs can then be drilled, cut or punched out, and the tree finally cut out.

#### Optional Items

The following items, not included in the kit, may also be required.

Battery PP3 Alkaline	1	(JY49D)
Power Pack PP7 9V	1	(FM04E)
AC Adaptor Unrg: 300mA	1	(XX09K)
Aluminium Laminate Small	1	(XY19V)

#### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 48 XA48C, and instruction leaflet XT25C. PCB dimensions: 51 x 41mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3540	Price each exc. VAT	inc. VAT each
LP83E	LED Xmas Tree	£13.600	£15.990
GE95D	LED Xmas Tree PCB	£2.110	£2.490
XT25C	LED Xmas Tree	£0.800	£0.800 NV

### Christmas Lantern And Flickering Candle

1



#### Features

- ★ Realistic flicker effect
- ★ Easy to build
- ★ Low cost

#### Applications

- ★ Amateur theatrics
- ★ Home video productions
- ★ Nativity scenes
- ★ Carol singing
- ★ Christmas tree light(s) with a difference!

A Christmas project with a difference! Using modern technology, this lantern has several advantages over the traditional wax candle. Not only doesn't it melt away, but you won't burn yourself or set anything alight because a tiny bulb replaces the flame. Neither, of course, will it be extinguished by the slightest breeze! Details are provided with the kit for building a lantern housing for the 'candle', using stiff, painted card. Such materials can safely be used as there is no risk of fire from this particular candle! Materials for constructing the candle and lantern are not included in the kit. The circuit could be used to drive more powerful light bulbs for greater effect; handy for Christmas tree lights or the large nativity scenes that adorn your local church at Christmas time. For greater realism arrays of lights should really be driven from several 'flickering candle' PCBs. Up to 250W of

lighting can be driven when used in conjunction with the Mains Opto Switching kit (LP55K).

Supply Voltage:	9V DC
Peak Operating Current:	166mA
Logic Supply Current:	1.6mA
Size of PCB:	49 x 43mm

#### Optional Items

The following items, not included in the kit, may also be required.

Power Socket 2.5mm	1	(JK10L)
Unregulated AC/DC Adaptor 300mA	1	(XX09K)
Battery Box 3 x AA	2	(YR61R)
PP3 Clip	1	(HF28F)
Duracell PP3 Battery	1	(JY49D)
Duracell AA Cell	6	(JY48C)
Epoxy Resin Sachet	1	(FL45Y)
Card (for constructing candle and lantern)		

#### Kit and Special Parts

A complete kit of parts, excluding optional items, is available. The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 72 XA72P, and instruction leaflet XU41U.

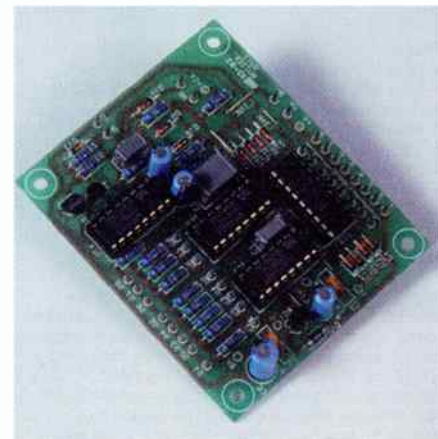
Retail Unit Price each (inc. VAT).

Order Code	Type 3313	Price each exc. VAT	inc. VAT each
LT40T	Twinkling Xmas Candle	£8.500	£9.990
GH47B	Xmas Candle PCB	£2.280	£2.690
XU41U	Xmas Candle Leaflet	£0.800	£0.800 NV

## Electronic Games

### Priority Quiz Buzzer

3



#### Features

- ★ Easy to build
- ★ Low cost
- ★ Caters for eight contestants
- ★ Versatile and expandable
- ★ Can drive relays, buzzers, lamps or opto-isolated triacs

#### Applications

- ★ Family fun nights
- ★ Pub quiz nights
- ★ Charity trivia competitions
- ★ Team games
- ★ Reaction testing

Fed up with the incessant arguments over who was the first to answer a question during a quiz? Then this project is for you. Up to eight players can use the Priority Quiz Buzzer, expandable to 16 or 24 contestants if chained to a second or third PCB. Each contestant is equipped with a push-button and accompanying lamp. This is switched on at the moment the button is pressed, while a buzzer attracts the attention of the quizmaster. The circuit uses high-speed latches to record the closure of any one of the eight switches, at which point a self-resetting monostable will lock-out all other buttons. The speed of the system makes it virtually impossible for two buttons to be simultaneously pressed and recorded. The identifying lamp is lit for the duration of the time-out period. Up to eight lamps are driven by open-collector buffers, each able to switch up to 500mA. For higher currents relays can be used (protection diodes are provided). An on-board 5V regulator is included for the circuit logic; the optimum supply for the module is 12V DC to suit most 12V lamps, relays and buzzers.

#### Optional Items

The following items, not included in the kit, may also be required.

MES Batten Holder	8	(RX86T)
MES Lampholder	8	(JX87U)
LES Lampholder	8	(UJ72P)
Domed LES Lampholder Blue	8	(RX76H)
Domed LES Lampholder Yellow	8	(RX80B)
Fluted LES Lampholder Red	8	(RX69A)
LES Lamp Cover Amber	8	(YY00A)
LES Lamp Cover Yellow	8	(YY06G)
Lilliput LES Lamp 12V	8	(BU14Q)
Tubular LES Lamp 12V	8	(WL75S)
Tubular MES Lamp 12V 100mA	8	(BU20W)
Tubular MES Lamp 12V 183mA	8	(BU21X)
2-pin DIN Plug	8	(HH24B)
2-pin DIN Socket	8	(HH31J)
4-pin DIN Plug	8	(HH26D)
4-pin DIN Socket	8	(HH33L)
Chassis Phono Socket	8	(YW06G)
Phono Plug Black	8	(HQ54J)
Phono Socket 8-way	8	(JK17T)
ABS box MB3 (for PCB)	1	(LH22Y)
Small Narrow Box (for switch)	8	(FT31J)
Push Switch	9	(FH59P)
Large Red Push Switch	9	(FH91Y)
Silver Push Switch	9	(FG45Y)
Black Square Push Switch	9	(FF96E)
Twin Zip Wire	As Req	(XR39N)
Phone Cable 4-way	As Req	(XR66W)
AC Adaptor Unregulated 300mA	1	(XX09K)
Insulated Spacer M3 x 10mm	1 Pkt	(FS36P)

**Kit and Special Parts**

A complete kit of parts, excluding optional items, is available. The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 72 XA72P, and instruction leaflet XU42V.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT41U	Priority Quiz Buzzer	£12.750	£14.990
GH49D	Quiz Buzzer PCB	£3.390	£3.990
XU42V	Quiz Buzzer Leaflet	£0.800	£0.800 NV

**Simple Dice Kit**



**Features**

- ★ Ideal for beginners
- ★ Low power consumption - long battery life
- ★ Beeps as dice roll
- ★ Cascadable to replace two or more dice

**Applications**

- ★ Replaces dice in dice based games
- ★ Excellent for travelling games
- ★ Replaces lost dice!

This compact board uses a handful of components to simulate the rolling of dice before showing the 'result' on an attractive led display. The display is arranged in an 'H' to mimic the layout of a typical dice. A dice roll can be started by touch pads supplied in the kit and will generate a random result. Triggering can also be by CMOS/TTL logic or mechanical switch. Automatic power down occurs after a few seconds to extend battery life. Quiescent current is only 1µA at 3.3V DC. Unit requires two 1.5V batteries to operate (not included).

**Optional items**

AA battery box	YR60Q
PP3 Battery Clip	HF28F
Duracell AA x 2	JY48C
Box PB1 Black	LH14Q

**Kit and special parts**

A complete kit of parts is available. The PCB is available separately. Full construction details may be found in Maplin Magazine/Projects Book 112 XD12N, and instruction leaflet XZ43W.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU78K	Simple Dice Kit	£5.940	£6.990
GJ82D	Simple Dice Kit PCB	£2.970	£3.490
XZ43W	Simple Dice Kit Lft	£0.500	£0.500 NV

**Electronic Digidice**



Most games incorporate a degree of chance in the rules; this random element can take a variety of forms but in many cases it is obtained using dice. With ordinary dice, as long as they are manufactured properly there are unlikely to be any problems with obtaining a random result, however with an electronic version of the die, producing a truly random result can be a problem. The DigiDice uses a high frequency temperature controlled oscillator, a binary counter and a D-type latch to produce a pseudo-random result that should be for all practical purposes comparable with that obtained from a real die. The result is displayed by seven large (8mm) LEDs which are arranged in the traditional dice pattern.

**Optional Items**

The following items, not included in the kit, may also be required.

ABS box	1 off	(LH21X)
Insulated spacer M3 x 25mm	1 Pkt	(FS39N)
Stick-on feet large	1 Pkt	(FW38R)

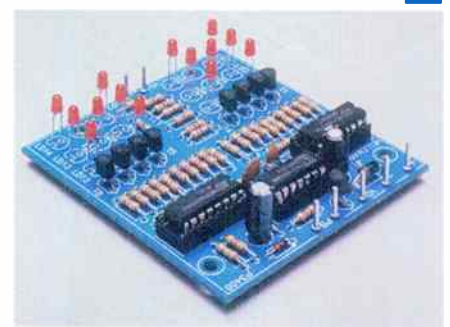
**Kit and Special Parts**

A complete kit is available. The adhesive front panel is not included in the kit and must be ordered separately. The PCB is also available separately. Full construction details may be found in instruction leaflet XV07H. PCB dimensions 67 x 77mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LM89H	Elec Die Kit	£12.750	£14.990
GE12N	Elec Die PCB	£2.970	£3.490
JP39N	Elec Die Stick-On FP	£3.990	£4.690
XV07H	Digi-Dice Leaflet	£0.500	£0.500 NV

**K3400 Dual Electronic Dice**



**Features**

- ★ Two independent dice; may be used in 'single die' mode if required
- ★ Displays are switched off after approx. 30 seconds to conserve battery power
- ★ Bright LED display
- ★ Powered by a PP3 battery

**Applications**

- ★ Ideal for playing dice-based games in limited spaces, or on the move!

Board games can be fun, but real dice can be a problem, they fall off the table, allow cheating, and sometimes a player may not see the result. There can be no doubt at all about the result on the display of this electronic dice, and cheating is out of the question! With this modern equivalent, a button is simply pressed and then released, the result being indicated by a pattern of 3mm red LEDs mimicking the standard die's number patterns. Using two fully independent dice, you can choose to play with one or both. Displays are switched off automatically after 30 seconds to conserve battery life. Requires 8V to 12V DC.

**Optional Items**

The following items, not included in the kit, may also be required.

Centre-Off DPDT Toggle	1	(FH05F)
Push-to-Make Switch	1	(FH59P)
Alkaline PP3	1	(AQ48C)
PP3 Battery Clip	1	(HF28F)

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 61 XA61R.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE07H	Velleman Kit K3400	£10.200	£11.990



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## Super Electronic Roulette 2



This Super Electronic Roulette is an electronic version of the well known game played in such places as Las Vegas! The traditional roulette wheel is essentially a random number generator where a ball is thrown over the spinning wheel, which eventually comes to rest at a number. The chances of landing on any one number is approx.  $\frac{1}{37}$  to  $\frac{1}{38}$ . In this version, the wheel is produced by a ring of LEDs which flash in succession producing a spinning effect; this rate eventually slows down and stops. Although the real game is played for very high stakes, this project is intended to be used purely for the fun of playing the game. The kit comes complete in every detail including a plastic front panel and printed circuit board.

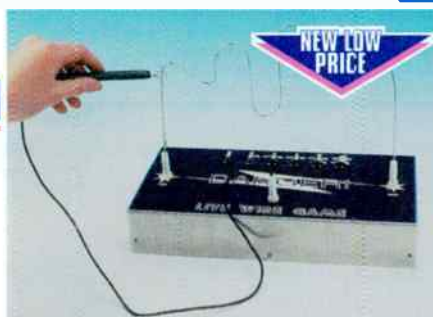
### Kit and Special Parts

A complete kit of all parts is available. Full construction details may be found in the Maplin Magazine/Projects Book 29 XA29G.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LM67X	Roulette Kit	£14.450	£16.990

## Live Wire Game 2



### Features

- ★ 'Lives' indicator
- ★ Low voltage operation
- ★ Easy to build

### Applications

- ★ Fund-raising events
- ★ Family fun
- ★ Reducing stress
- ★ Improving hand/eye co-ordination

The traditional 'live-wire' game often suffers from a few shortcomings. Firstly, there is often no clear indication when the loop has just made momentary contact. Secondly, because the contact between loop and wire usually carries the bell current directly, if there is any appreciable contact resistance the bell may not sound properly. Thirdly, differing abilities can mean that it is difficult to provide an interesting game for a wide range of contestants. This project will stop the controversy over whether the 'live' wire was actually touched or not. The design includes a monostable that will positively sound the buzzer for a short period, and a 'lives' counter that permits the contestant a set number of attempts to reach the end before they are all consumed. Once all 'lives' have been lost, an indicator illuminates and a buzzer sounds continuously. The design allows the number of lives to be set (with links during construction) between one and five, and the output can drive LEDs or filament lamps.

The finished unit can be powered from any supply between 9 and 16V DC, and a car battery for outdoor events is ideal. Maximum current consumption at 12V is only 50mA. Alternatively, internal batteries may be added.

### Optional Items

The following items, which are not included in the kit, may also be required.

Battery Box 8 x AA	1	(RK44X)
PP3 Clip	1	(HF28F)
Alkaline AA Cell	8	(FK64U)
Power Plug 2.5mm	1	(HH62S)
Unregulated AC Adaptor 300mA	1	(XX09K)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB and labels are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 78 XA78K, and instruction leaflet XU69A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT57M	Live Wire Game Kit	£21.260	£24.990
GH75S	Live Wire Game PCB	£2.970	£3.490
KP65V	Live Wire Top Panel	£1.690	£1.990
KP66W	Live Wire R/Panel	£1.260	£1.490
XU69A	Live Wire Game Lit	£0.800	£0.800 NV

## Opto Electronic Laser Pointer Kit 2



A simple and cost effective kit that forms a handy Class IIIa laser pointer for teachers, lecturers and demonstrators. The kit comprises a moulded plastic box, press button, laser diode, battery connections and two 'AAA' type cells. Simple assembly is involved, the most difficult part being the soldering of the battery contacts. Includes full operating instructions. Also available is a line generating lens (WC98G) for providing a single line of intense light as opposed to a single spot.

CAUTION: Do not stare directly or indirectly into the laser output aperture or retinal damage may occur.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC97F	Laser Pointer Kit	£29.770	£34.990
WC98G	Line Generating Lens	£2.540	£2.990

## 12V Fluorescent Tube Driver Module 2



For 12V fluorescent lamps used in caravans, boats, for camping etc, this driver module is of a higher quality than the usual 'starter' circuit normally supplied with such lamps. Although intended to drive one 12V 8W fluorescent tube, it will operate two such tubes with negligible reduction in light output. Final light output strength can be chosen

during construction, and is adjustable to a degree. Nominally consumes about 12W of power, and can be run for up to fifteen hours continuous use from the average car battery. Details of a suitable fluorescent tube can be found in the Opto Electrical section of this Catalogue.

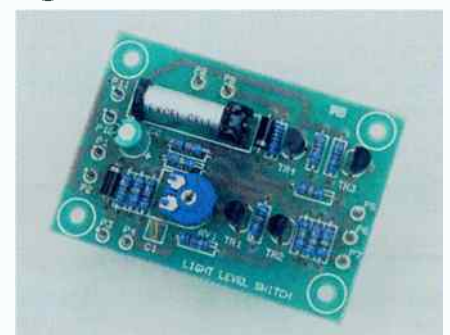
### Kit and Special Parts

A complete kit is available. Full construction details may be found in the Best of Maplin Projects Book 6 XC06G, and instruction leaflet XK66W. PCB dimensions: 56 x 33mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LK35Q	Fluor Tube Drvr Kit	£12.750	£14.990
GB62G	Tube Driver PCB	£2.280	£2.690
XK66W	Tube Driver Leaflet	£0.500	£0.500 NV

## Light Level Switch 1



- ★ Adjustable trigger threshold
- ★ Wide supply voltage
- ★ Selectable output state
- ★ Switches currents up to 500mA

The light level switch is a simple light operated switching circuit which operates a relay when the ambient light level rises above or falls below a preset threshold. The module uses an on-board reed relay which is capable of switching currents up to 500mA. For current levels exceeding this the reed can be used to switch an external relay suitable for higher power applications. The reed itself must not be used to switch voltages exceeding 50V or power levels exceeding 10VA. A sensitivity control allows different switching thresholds to be set to allow for a diverse range of lighting conditions. The module can run from a supply of 9 to 12V DC, with a maximum current drain of 19mA max. at 12V. The circuit uses a Schmitt trigger to change state, and the reed relay switching stage can be hard wired or switched to be either normally off, or, with the help of an inverter stage, normally on. In this way the response to light level can also be either way around where either dark or light is a 'normal' condition.

### Kit and Special Parts

A complete kit of parts is available. The PCB measures 44 x 63mm and is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 37 XA37S. PCB dimensions: 63.5 x 44.5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP14Q	Light Level Sw Kit	£6.800	£7.990
GE34M	Light Level PCB	£2.110	£2.490

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**Panel Meters/Modules**

**Temperature & Humidity Measurement**

**Small Temperature Module FM-880LPEX**



- ★ 11mm High Digital Temperature Display
- ★ 0.1°C Temperature Resolution
- ★ Low Current Consumption
- ★ Buzzer Output
- ★ External Temperature Sensor Probe

A compact and highly accurate temperature module ideal for use in applications where external/remote temperature sensing is required. The module covers temperatures in the range -40°C to +50°C in 0.1°C steps, sampling period is 15 seconds. The external probe is supplied pre-connected to the module, cable length is 3 metres. Provision is made for either internal (silver oxide watch type battery, provided) or external power supply (nominally 1.5V), current consumption is 10µA. Connections are provided for display/setting enabling maximum and minimum temperature points, which are used to trigger a buzzer output. Connections may be made to the module using a 7-way minicon housing (female) and terminals (not supplied).

**Specification**

Temperature measuring range: -40 to +50°C  
 Resolution: 0.1°C  
 Supply current: 10µA (average)  
 Sample period: 15 seconds  
 Operating voltage: Min. 1.25V  
 Nom. 1.5V  
 Max. 1.65V  
 Accuracy: -40 to +25°C, ±1%  
 +25 to +50°C, ±2%  
 External probe length: 3m  
 Battery type: SG13  
 Battery life: 1 year  
 Storage temperature: -20 to +60°C  
 Dimensions: 49 x 29 x 15.2mm

**Pin Functions**

- Pin 1 - +V (1.5V)
- Pin 2 - 0V
- Pin 3 - Buzzer output
- Pin 4 - Display lower temperature limit
- Pin 5 - Lower/higher limit set/reset
- Pin 6 - Advance lower/higher limit
- Pin 7 - Display higher temperature limit

Retail Unit Price each (inc. VAT).

Order Code	Type 3258	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YU07H	Small Temp Mod Ext	£9.350	£7.090	£6.380	£10.990

**Temperature Module**

A very versatile digital thermometer module with the LCD display and circuitry on a small pcb with a 16-way solder edge connection.



The pcb is fixed to a small plastic bracket that houses the battery. The module has an on-board temperature sensor or an external probe or probes may be fitted. By making the appropriate connections to the module the following functions are available:

- ★ Temperature display in °C or °F.
- ★ 12-hour clock display.
- ★ Set minutes and hours of clock.
- ★ Temperature sampling rate once per second or once per 10 seconds.
- ★ Set high and/or low temperature detector.
- ★ Output goes high when high temperature set point exceeded.

- ★ Separate output goes high when below low temperature set point.
- ★ Pulse output when either set point reached.
- ★ 4kHz alarm output for 6 seconds after either set point reached.

The module also has a serial data output and a 13-bit code is sent at every sample-time containing the current temperature in BCD format. A further output transmits the data clock. A comprehensive operations manual is supplied with the module.



It shows how to connect relays to the temperature set point outputs, how to connect a buzzer to the alarm output, and how to connect external probes to the module. Details are also given on the serial data output and how to read it.

**Specification**

Range: -19.9°C to 69.8°C  
 0°F to 159.8°F  
 Resolution: 0.1°C, 0.1°F  
 Accuracy: -10°C to +40°C  
 ±1°C at 1.5V  
 -20°C to -10°C  
 ±2°C at 1.5V  
 +40°C to +70°C  
 ±2°C at 1.5V  
 1° steps  
 Temperature set points: 3 1/2-digit 12.7mm high LCD display  
 Display: 12-hour clock  
 Clock: ±0.5s/day  
 Clock accuracy: 1.5V (1.25V to 1.65V)  
 Working voltage: 15µA approx.  
 Average current: >1 year  
 Battery life: 68 x 35 x 23mm deep  
 Overall size: A plastic bezel is also available for use with the module, size 68 x 35mm and increases overall depth of module to 27mm.  
 External probes are also available:  
 Probe length: 40mm  
 Probe diameter: 7mm at base, 4mm at tip.

The probe is supplied connected to 3m approx, of miniature 2 core cable 2mm diameter with open end. Note that the accuracy of the meter decreases by ±2.5°C per 3m of cable and may be unstable with long wires or cable different from that supplied with probe.

The meter itself will only operate in the temperature range -5°C to +50°C mainly because of the LCD display so for temperatures outside this range, the external probe will be required. Shortening the cable will improve the accuracy. The module requires a 1.5V AA cell (not supplied).

**Applications Information**

Further applications information on using this module may be found in issue 71 of *Electronics - The Maplin Magazine* (XA71N). The article *Using Temperature Modules* gives details of how to interface this module to a PC to measure temperature. Requires Temperature Module Expansion Converter Kit (LM36P) and Programmable PC I/O Card (LP12N) - article includes BASIC program listing. Also, details of how to control relays and a buzzer are included. Requires Temperature Module Relay Card Kit (LM37S).

Retail Unit Price each (inc. VAT).

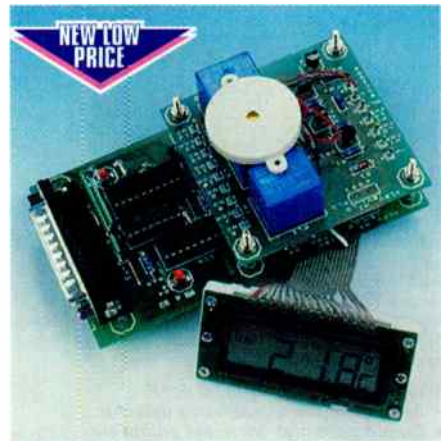
Order Code	Type 3261	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE33L	Temperature Module	£8.500	£6.380	£5.710	£9.990
FE35Q	Bezel Fr Temp Module	£0.255	£0.173	£0.143	£0.300
FE34M	Probe Fr Temp Module	£2.590	£1.990	£1.730	£3.050

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**Temperature Module Expansion**

3



- ★ Serial to Parallel Conversion of Temperature Data
- ★ Hi-Lo Set Point, Switched Relay Outputs and Alarm Sounder
- ★ 1.3V DC Output Eliminates Battery
- ★ Requires 9 to 12V DC Supply

Two versatile temperature modules are currently available from Maplin, known as 'Temperature Module' (FE33L) and 'Min-Max Temperature Module' (FP64U). Both of these modules although similar in appearance have very different specifications. For example, the Min-Max Temperature version has a recall function which stores the highest and lowest temperatures recorded. The Temperature Module is different by having a real time clock and serial data output of the temperature scale. This expansion system comprises two projects, a relay switching card, which may be used with both modules and a serial to parallel converter which can only be used with the Temperature Module. Relay contacts on the switching module are rated at 3A 24V DC and could be used for controlling alarms, bells and buzzers or perhaps be interfaced to a computer. The converter has been designed with tri-state outputs for use with computers with a 1 or 2 byte I/O availability. Either integer or full decimal values of temperature are available along with a few extra items of data. All is explained in the construction notes.

**Optional Items**

The following items not included in the kits may also be required.

AA Battery	1	(AG13P)
Temperature Module	1	(FE33L)
25-Way D Range Socket	1	(YQ49D)
25-Way D Range Socket IDC	1	(FV82D)
Bezel	1	(FE35Q)
External Probe	1	(FE34M)
Min-Max Temperature Module	1	(FP64U)
Low Temp. Probe	1	(FP65V)
High Temp. Probe	1	(FP66W)

**Kit and Special Parts**

Complete kits of parts for both modules excluding the optional items are available. The pcbs are also available separately. Full construction details may be found in the Maplin Projects Book 25.

**Applications Information**

Further applications information on using these modules may be found in issue 71 of *Electronics - The Maplin Magazine* (XA71N). The article *Using Temperature Modules* gives details of how to interface the Converter Kit to a PC to measure temperature. Requires Temperature Module (FE33L) and Programmable PC I/O Card (LP12N). Article includes BASIC program listing. Also, details on using Relay Card Kit are included. Depending on application, requires Temperature Module (FE33L), Min/Max Temperature Module (FP64U), Wide Range Temperature Module (YT99H) or Min/Max Dual Display Temperature Module (YU00A).

Retail Unit Price each (inc. VAT).

Order Code	Type 3264	Price each exc. VAT		inc. VAT each
		1+	1+	1+
LM36P	Converter Kit	£17.010		£19.990
LM37S	Relay Card Kit	£12.750		£14.990
GD69A	Temp Mod Ser/Par Bd	£10.620		£12.490
GD68Y	Temp Mod Relay Bd	£4.670		£5.490

## Min/Max Temperature Module



NEW LOW PRICE

A maximum/minimum digital thermometer module with the LCD display and circuitry on a small pcb with a 16-way solder edge connection. The pcb is fixed to a small plastic bracket that houses the battery. The module has an onboard temperature sensor or an external probe or probes may be fitted. By making the appropriate connections to the module the following functions are available:

- ★ Temperature display in °C or °F.
- ★ Set high or low temperature detector.
- ★ Output goes high when set points are exceeded.
- ★ Display high or low temperature settings.
- ★ Set sample rate to once every second or once per 15 seconds.
- ★ Pulse output when either set point is reached.
- ★ 2kHz alarm output for approximately 1 minute when high or low temperature point is reached.
- ★ Recall the lowest or highest temperature reached since last reset.



A comprehensive manual is supplied with the module, it shows how to connect relays to the temperature set point outputs, how to connect a buzzer to the alarm output, and how to connect external probes to the module.

### Specification

Internal Probe:	-5°C to +50°C 23°F to 122°F
Resolution:	0.1°C (0.1°F)
Accuracy:	-5°C to 30°C ±1°C at 1.5V +31°C to +50°C ±2°C at 1.5V
External Probe, White (low range):	-40°C to +50°C -40°F to 122°F
Accuracy	
3 metre cable:	-40°C to -21°C ±2°C at 1.5V -20°C to +25°C ±1°C at 1.5V +26°C to +50°C ±2°C at 1.5V
External Probe, Grey (high range):	+20°C to +110°C 68°F to 230°F
Accuracy	
3 metre cable:	+20°C to +34°C ±2°C at 1.5V +35°C to +75°C ±1°C at 1.5V +76°C to +110°C ±2°C at 1.5V
Sampling Rate:	1 second or 15 seconds
Working Voltage:	1.5V (1.25V to 1.65V)
Average Current:	10µA approx. (at 15 second sample rate)
Battery Life:	>1 year
Overall Size:	68 x 35 x 23mm deep

A plastic bezel (FE35Q) is available for use with the module, size 68 x 35mm and increases the overall depth of the module to 27mm.

External probes are also available:

Probe Length: 40mm.

Probe Diameter: 7mm at base, 4mm at tip.

The probes are supplied connected to approximately 3 metres of miniature 2 core cable 2mm diameter with open end. Note that the accuracy of the meter decreases by ±2.5°C per 3m of cable and may be unstable with long wires or cable different from that supplied with the probes. The meter itself will only operate in the range -5°C to 50°C mainly because of the LCD display so for temperatures outside this range, the external probes will be required. Shortening the cable will improve the accuracy. The module requires a 1.5V AA cell (not supplied).

### Applications Information

Further applications information on using this module may be found in issue 71 of *Electronics - The Maplin Magazine* (XA71N). The article *Using Temperature Modules* gives details of how to control relays and a buzzer. Requires Temperature Module Relay Card Kit (LM37S).

Retail Unit Price each (inc. VAT).

Order Code	Type 3357	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FP64U	Min/Max Temp Module	£10.200	£6.990	£6.220	£11.990
FP65V	Low Temp Probe	£2.540	£1.990	£1.730	£2.990
FP66V	High Temp Probe	£2.540	£2.300	£1.990	£2.990

## Wide Range Min/Max Temperature Module



A very versatile minimum/maximum temperature module with the LCD display and circuitry on one small PCB mounted on a battery holder, with a 17-way edge connection. The module uses an external probe to display temperatures in the range -10°C to +110°C with a resolution of one tenth of a degree, in centigrade or fahrenheit. The module records both the highest and lowest temperatures (maximum and minimum) measured by the probe, which are stored and updated in memory, and the max./min. values in memory can be displayed showing the highest lowest temperature reached since the memory was last cleared. The maximum/minimum threshold values are fully programmable. Also included is a 12 hour digital clock, a 4kHz max./min. alarm output, separate outputs for relay drivers or similar which go high for 1 minute if the relevant programmed temperature threshold is reached, and a further output which pulses at 4kHz for 1 minute if either threshold is reached and then remains high until reset. There is a separate connection for a complete system reset. The external probe is included.

### Specification

Range:	-10°C to +110°C
Resolution:	0.2°C, 0.2°F
Accuracy:	-10°C - 0°C ±1.5°C @ 1.5V 0°C - 60°C ±1°C @ 1.5V 60°C - 110°C ±1.5°C @ 1.5V
Sampling rate:	1 or 10 seconds switchable
Alarm output:	4kHz for 1 minute
Temperature set points:	1° steps
Display measuring range:	°C or °F
Clock accuracy:	±0.5s/day
Working voltage:	1.5V DC (1.25V to 1.8V)
Average current:	10µA approx. @ 10s sample rate
Battery life:	>1 year
Overall size:	68 x 35 x 23mm

A comprehensive manual is supplied with the module showing how to connect a buzzer circuit to the alarm output and relay drivers to the high/low threshold outputs, and connections for the various functions and programming modes. The plastic bezel (FE35Q) can be fitted and increases the overall depth of the module to 27mm. Note that the meter itself and mainly the LCD display will only operate in the range of -5°C to +50°C. The module requires a 1.5V AA cell (not supplied).

### Applications Information

Further applications information on using this module may be found in issue 71 of *Electronics - The Maplin Magazine* (XA71N). The article *Using Temperature Modules* gives details of how to control a buzzer and an LED. Requires Temperature Module Relay Card Kit (LM37S).

Retail Unit Price each (inc. VAT).

Order Code	Type 3271	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YT99H	Temp Mod Wide Range	£11.900	£9.130	£7.400	£13.990

## Min/Max Dual Display Temperature Module



NEW LOW PRICE

A minimum/maximum digital thermometer module with the LCD display and circuitry complete on a small pcb with an 11-way solder edge connection and integral battery holder. In operation the module records both the highest and lowest of external temperatures as measured by the module's own external probe. Maximum and minimum temperatures are stored and updated internally until reset. A max./min. temperature alarm function can be set to output a 2kHz tone upon either threshold being reached for external measurements. Especially useful is the module's ability to display both internal and external temperatures at once, ideal for example for providing at a glance a comparison between indoors and outdoors temperature differences. Temperatures displayed in degrees centigrade. The external probe is included.

### Specification

Internal sensor range:	-5°C to +50°C
External probe range:	-40°C to +50°C
Resolution:	0.1°C
Accuracy:	-20°C - +30°C ±1°C @ 1.5V -40°C - -20°C ±2°C @ 1.5V +30°C - +50°C ±2°C @ 1.5V
Sampling rate:	15 seconds
Alarm output:	2kHz for 1 minute
Temp. set points:	1° steps
Working voltage:	1.5V (1.25V to 1.65V)
Average current:	20µA approx.
Battery life:	>1 year
Overall size:	68 x 35 x 23mm deep

A comprehensive manual is supplied with the module showing how to connect a buzzer circuit to the alarm output and switches for the various functions and programming modes. The plastic bezel (FE35Q) can be fitted and increases the overall depth of the module to 27mm. Operating environment temperature range of module -5°C to +50°C.

The module requires a 1.5V AA cell (not supplied).

### Applications Information

Further applications information on using this module may be found in issue 71 of *Electronics - The Maplin Magazine* (XA71N). The article *Using Temperature Modules* gives details of how to control a buzzer. Requires Temperature Module Relay Card Kit (LM37S) to control a buzzer.

Retail Unit Price each (inc. VAT).

Order Code	Type 3274	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YU00A	Dual Disp T Module	£11.900	£9.440	£7.750	£13.990

## Min/Max Humidity Module



A small module in the same style as our temperature modules and specifically designed to measure the relative humidity of air and record the minimum and maximum levels reached at any time since last reset. The module covers the range of 25%RH to 95%RH in 1% steps with a sampling rate of 1 second, and can be placed in a fixed location to monitor humidity, but must only be used indoors. The sensor is internal and no external probe is required. The display normally shows the current humidity value continuously, but will show the minimum and maximum values stored through the use of two momentary action push buttons (not supplied), which are identified by the word 'MIN' or 'MAX' in the display. Both memories can be cleared by holding both buttons down. The display also shows

the words, 'DRY' or 'WET' depending on the humidity. 'DRY' is approximately <53% and 'WET', >67%. There are a total of 11 connections to the module, four of which enable the module to output the currently measured value of either of the two stored values in the form of 4-bit parallel, packed BCD (Binary Coded Decimal). Each line of the 4-bit data packet begins with a pair of sync pulses, followed by its part of a bit pattern that informs the destination device whether the data is the current real-time, min. or max. reading, followed by two bits of binary data making up the two digits (most significant first), interleaved with sync pulses. The remaining data trains are specialised manufacturers codes and can be ignored. Similarly the specialised 'K' terminals can be ignored for most normal applications.

**Specification**  
Measuring range: 25%RH to 95%RH  
Operating range of module: 32%RH to 90%RH, 0°C to 50°C  
Resolution: 1%RH  
Supply current: 20µA (average)  
Sample rate: 1 second

Operating voltage: Min. 1.25V  
Nom. 1.5V  
Max. 1.65V  
Accuracy: ±5%RH between 40 to 80%RH @ 25°C  
±7%RH below 40% or above 80%RH @ 25°C  
Battery type: Single AA cell (not supplied)  
Battery life: >1 year  
Dimensions: 67 x 34 x 26mm

**Pin Functions**  
Pin 1 – display upper humidity limit  
Pin 2 – display lower humidity limit  
Pin 3 – +V (1.5V)  
Pin 4 – BCD output bit 0  
Pin 5 – BCD output bit 1  
Pin 6 – BCD output bit 2  
Pin 7 – BCD output bit 3  
Pin 8 – K1 Not used  
Pin 9 – K2 Not used  
Pin 10 – K3 Not used  
Pin 11 – 0V

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
ZA38R	Humidity Module	£13.010	£15.290

## Event Counter Counter Module



An electronic Counter Module with 5-digit LCD display. The display increases by 1 every time a positive-going edge is applied to pin 3. A reset is available, and a tone output which can drive a piezo sounder directly and bleeps on every count and on reset. Square wave outputs at 512Hz and 32768Hz are also provided.

**Specification**  
Working voltage: 1.5V DC  
Current: 2µA standby  
8µA average when counting  
Count range: 00000 to 99999 (resets to 00000 after count 99999)

Max. input frequency: 7Hz  
Input voltage range: 1V to 1.5V  
Min. duration pulse: <100µs  
Overall size: 68 x 35 x 24mm  
A plastic bezel (FE35Q) is available for use with this module, size 68 x 35mm and increases the overall depth of the module to 27mm. The module requires a 1.5V AA cell (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FS13P	Counter Module	£8.500	£10.220

## Digital Panel Meters

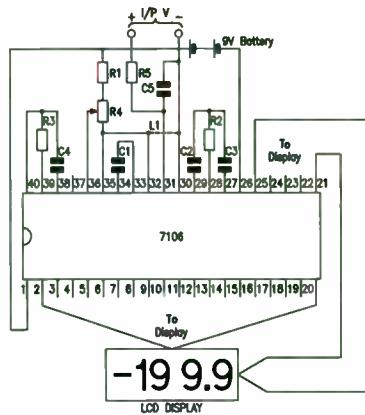
### ICL7106CPL, ICL7107CPL Analogue to Digital Converter/Display Drivers

Harris

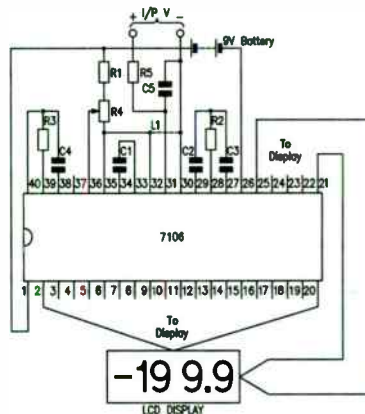
These two ICs are high performance, low power 3 1/2 digit A/D converters. The input requires about 1pA typically. Other features are guaranteed zero reading for 0 volts input on all scales; true polarity at zero for precise null detection; true differential input and reference; low-noise; on chip clock and reference; low supply current 0.8mA typical. The output of the 7106 will drive LCD displays directly and a +9V supply is required at pin 1 and ground at pin 26. This IC is ideally suited for battery operation since it requires only 0.8mA supply current. The output of the 7107 will drive LED displays directly and a +5V supply is required at pin 1, -5V at pin 26 and ground at pin 21. Accuracy ±1 count in ±2000 counts guaranteed.

#### Display Driver and Thermometer PCB

A printed circuit board is available for use with the 7106 or 7107. The same printed circuit may be used to produce a ±1.999V (2V) voltmeter, a ±0.1999



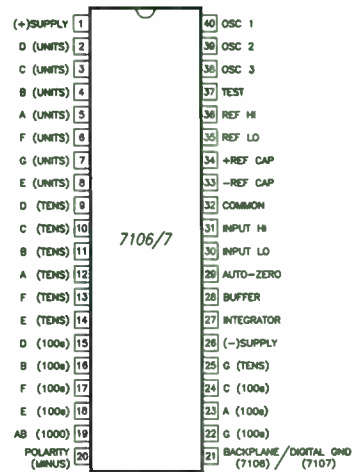
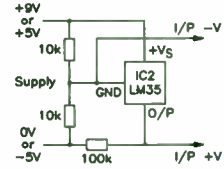
**LCD Digital Panel Meter**  
200mV/2V Full Scale Deflection  
(200mV) voltmeter or a thermometer using the LM35CZ or LM35DZ ICs shown on page XXX, with either an LED or LCD. A leaflet is supplied with every PCB, which shows how to build and calibrate all four projects.



**LED Digital Panel Meter**  
200mV/2V Full Scale Deflection

	7106 2V LCD	7106 200mV LCD	7107 2V LED	7107 200mV LED
R1 Min Res	15k	22k	15k	22k
R2 Min Res	470k	47k	470k	47k
R3 Min Res	100k	100k	100k	100k
R4 18-turn Cermet	10k	1k	10k	1k
R5 Min Res	1M	1M	1M	1M
R6 Min Res	-	-	150Ω	150Ω
C1 Poly Layer	0.1µF	0.1µF	0.1µF	0.1µF
C2 Poly Layer	0.047µF	0.47µF	0.047µF	0.47µF
C3 Poly Layer	0.22µF	0.22µF	0.22µF	0.22µF
C4 Ceramic	100pF	100pF	100pF	100pF
C5 Poly Layer	0.01µF	0.01µF	0.01µF	0.01µF
IC1	7106	7106	7107	7107

Link L1	Yes	Yes	Yes	Yes
DIL Socket 40-pin	1	1	1	1
PCB (BY76H)	1	1	1	1
Display - 1 needed	FY89W	FY89W	BY66W	BY66W
Display - 1 needed	-	-	BY67X	BY67X



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BY76H	7106/7 PCB	£2.110	£2.490

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QW94C	ICL7106CPL	£2.890	£3.390
QW95D	ICL7107CPL	£3.120	£3.590

## K7201 Double Digital Panel Meter



This DPM was designed for use with our 30V 5A power supply K7202, but can easily be used in other applications. 3-digit LED (light emitting diode) readouts.

Readout one from 0 to 99.9 (0.1 resolution) (e.g. for voltage). 0 to 9.99 (0.01 resolution) (e.g. for current). Input sensitivity for full scale: 99.9mV  
Automatic zero adjust  
Input impedance: 1010 Ohm  
Overload indication for current readout  
Power supply 125 or 240 V AC  
Dimensions: 170 x 70mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF15R 1	Velleman Kit K7201	£37.430	£43.990

## Digital LCD Panel Meter



A compact, low cost digital panel meter which consists of a PCB based module for mounting in existing equipment, behind a front panel or for making a dedicated voltmeter type instrument.

The LCD is 3 1/2 digits with a digit height of 13mm.

The input is up to 200mV with a full scale at  $\pm 199.9\text{mV}$  with an accuracy of  $\pm 0.1\% + 1$  digit.

The module is capable of performing both digital voltmeter and ammeter functions, depending on how the input is configured with extra resistor chains (examples are shown in the instructions supplied).

Applications can include custom power supply monitoring and other specialised voltmeter and ammeter uses. Input power is in the range of 9 to 12V DC and can be from battery or power supply. The panel meter OV rail must not be the same OV rail as the voltage being measured.

The panel meter uses 7106 IC which is a high performance, low power CMOS device and specifically designed as a 3 1/2-digit analogue to digital converter. Input impedance is extremely high, making it very easy to calculate resistor chain values without any danger of neglected input impedance introducing errors. An on-board preset can be used to precisely calibrate the circuit against incoming voltage levels.

### Specification

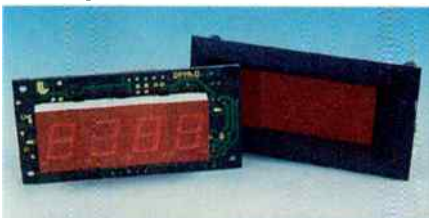
Input impedance:	1.000M $\Omega$
Accuracy:	$\pm 0.1\% + 1$ digit
Measurement range:	$\pm 199.9\text{mV}$
Resolution:	100 $\mu\text{V}$
Indication method:	LCD
Power supply:	9 to 12V DC
Current drain:	1mA typical
Operating temperature range:	0°C to 60°C

The module measures just 70 x 50 x 15mm high and has four M3 fixing holes at the corners on 58 x 39mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5845	Price each exc. VAT	inc. VAT each
GW01B	DVM Meter Module	£11.050	£12.959

## LED Type



A compact low-cost LED Digital Panel Meter having a high brightness display. The meter is fitted with high efficiency 11mm LEDs and is supplied with a circularly polarised red filter and bezel giving a high contrast display. Auto-zero, auto-polarity, programmable decimal points and 200mV fsd are standard features and the meter may be easily programmed by the user to read volts, current etc. May be used in single-ended or differential mode, or to measure floating inputs.

### Specification

Accuracy ( $\pm 1$ count):	0-05% typical (0-1% max.)
Linearity:	$\pm 1$ count
Sample rate:	3 per second
Temp. stability:	150ppm/°C
Temp. range:	0°C to 50°C
Supply voltage:	5V (5-5V max.)
Supply current:	100mA (200mA max.)
Max. DC input voltage:	$\pm 20\text{V}$
Input impedance:	100M $\Omega$

Overall dimensions: 72 x 36 x 27mm deep  
Panel cut-out: 68 x 33mm  
Supplied with connectors, bezel, mounting hardware and full instruction sheet.

Retail Unit Price each (inc. VAT).

Order Code	Type 5846	Price each exc. VAT	inc. VAT each
FM85G1	LED Panel Meter	£30.370	£35.690

## 10mm LCD Type



A uniquely compact LCD DPM with pins designed to plug directly into a 28-pin DIL socket. The meter may be panel mounted using the separate snap-in bezel (supplied). The low profile bezel incorporates a flat reverse-printed window giving a superb appearance. The meter features auto-zero, auto-polarity, 200mV FSD, 10mm digit height and programmable decimal points. On board solder pads for essential interconnections make selection of operating mode quick and easy with the minimum of external wiring. Very low current consumption allows long battery life. A whole range of useful annunciators are available on separate pins.

### Specification:

Accuracy ( $\pm 1$ count):	0-05% (0-1% max)
Linearity:	$\pm 1$ count
Sample rate:	3 per second
Temperature stability:	100ppm/°C
Temperature range:	0°C to 50°C
Supply voltage:	7-5V to 15V (9V nom.)
Supply current:	150 $\mu\text{A}$
Max DC input voltage:	$\pm 20\text{V}$
Input leakage current:	1pA (10pA max.) ( $V_{in} = 0\text{V}$ )
Low battery threshold:	7-5V
Overall dimensions:	40 x 20 x 7mm thick
Pin length:	4mm
Display area:	33 x 13mm
Bezel dimensions:	48 x 24mm
Panel cut-out:	45 x 22-2mm

Supplied with detailed instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type 5847	Price each exc. VAT	inc. VAT each
FD89W	10mm LCD DPM	£23.390	£27.490

## 12.5mm LCD Type



A uniquely compact LCD DPM designed to plug directly into a 40-pin DIL socket. The unit is pin-compatible with the 7106/26/36 range of ICs and can be used to directly replace the separate parts otherwise required. The meter may be panel mounted using the separate snap-in bezel supplied. The low profile bezel incorporates a flat reverse-printed window giving a superb appearance. The meter features auto-zero, auto-polarity, 200mV FSD, 12.5mm digit height and programmable decimal points. On-board solder pads for essential interconnections make selection of operating mode quick and easy with the minimum of external wiring. Very low current consumption allows long battery life. A whole range of useful annunciators are available on separate pins.

Electrical specification as 10mm type left except:  
Overall dimensions: 52 x 25 x 7mm thick  
Pin length: 4mm

Display area: 45 x 16mm  
Bezel dimensions: 60 x 30mm  
Panel cut-out: 57 x 27mm  
Supplied with detailed instructions.

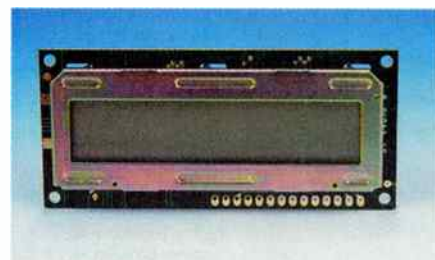
Retail Unit Price each (inc. VAT).

Order Code	Type 6829	Price each exc. VAT	inc. VAT each
FD88V	12.5mm LCD DPM	£23.390	£27.490

## Alpha-Numeric Displays

### LCD Character Display Modules

Htachi



A range of dot matrix LCD modules that contain a HD44780 LSI controller for character display. The modules can be interfaced to 4-bit or 8-bit MPU directly, and can display 192 standard characters plus 8 user programmable symbols. Character generator RAM is also built-in (80 x 8 bits, 80 characters maximum), which can be read from the MPU. The modules feature low power consumption, and are powered from a single +5V supply. Their light weight and compactness make them ideal for a wide range of applications including telephone, typewriters, portable computers, industrial equipment etc. The displays are either of the 'twisted nematic' or 'supertwist' type. Type LM09XMLN features LED backlighting which is also 5V powered.

### Optical

Specification	'Twisted Nematic'	'Supertwist'
Viewing angle:	20°	40°
Contrast ratio:	2	3
Typical response time (rise):	250ms	400ms
Typical response time (fall):	250ms	450ms

## LM020L 16 Character x 1 Line

### Specification

Type:	Twisted nematic
Module size:	80 x 36 x 12mm
Effective display area:	64.5 x 13.8mm
Character size (5 x 7 dots):	3.07 x 5.73mm
Character pitch:	3.77mm
Dot size:	0.55 x 0.75mm
Weight:	25g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 2182	Price each exc. VAT	inc. VAT each
DK65V	16x1 Char Disp Modul	£10.620	£12.490

## LM016L 16 Characters x 2 Lines

### Specification

Type:	Twisted nematic
Module size:	84 x 44 x 12mm
Effective display area:	61 x 15.8mm
Character size (5 x 7 dots):	2.96 x 4.86mm
Character pitch:	3.55mm
Dot size:	0.56 x 0.66mm
Weight:	35g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 2184	Price each exc. VAT	inc. VAT each
DK63T	16x2 Char Disp Modul	£11.480	£13.490

## LM018L 40 Characters x 2 Lines

### Specification

Type:	Twisted nematic
Module size:	182 x 35.5 x 13mm
Effective display area:	154 x 15.3mm
Character size (5 x 7 dots):	3.2 x 4.85mm
Character pitch:	3.7mm
Dot size:	0.6 x 0.65mm
Weight:	65g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 2145	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DK64U	40x2 Char Disp Modul	£21.260	£19.140	£17.220	£24.990

## LM032XMBL 20 Characters x 2 Lines

### Specification

Type:	Supertwist
Module size:	116 x 39 x 10.05mm
Effective display area:	83 x 18.6mm
Character size (5 x 7 dots):	3.2 x 4.85mm
Character pitch:	3.7mm
Dot size:	0.6 x 0.65mm
Weight:	50g approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 2187	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DK66W	20x2 Char Disp Modul	£17.010	£15.310	£14.540	£19.990

## LM092XMLN 40 Characters x 2 Lines with LED Backlight

### Specification

Type:	Supertwist
Module size:	192 x 35.5 x 15.3mm
Effective display area:	154 x 15.3mm
Character size (5 x 7 dots):	3.2 x 4.85mm
Character pitch:	3.7mm
Dot size:	0.6 x 0.65mm
Dot pitch:	0.65 x 0.7mm
LED supply current:	250mA maximum

Retail Unit Price each (inc. VAT).

Order Code	Type 2189	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DK67X	40X2 Char Disp +LED	£41.260	£35.900	£31.230	£48.490

## Photography

### Slave Flash Trigger



### Features

- ★ Remote triggering of secondary flash guns
- ★ Compact PCB
- ★ Suitable for use with modern flash guns
- ★ Dramatic improvement to photographic lighting

An essential project for 'serious' photographers, this circuit enables additional slave camera flash units to be triggered without direct electrical connection to the camera outfit itself, but merely by being within 'sight' of the light from the main flash unit - which can be several metres away, even in a brightly lit room. A phototransistor is used as the sensor, which

is very sensitive to sudden changes of light, despite being 'detuned' in this application, to prevent spurious triggering from unintentional light level changes - caused for example, by shadows from someone moving around in the vicinity.

### Specification

Supply voltage:	6 to 15V DC (12V nominal, from 12V battery, type GP23A)
Operating current (quiescent @ 12V):	690µA to 3.2mA, dependent on light level
Operating current (activated @ 12V):	15mA maximum
PCB dimensions:	32 x 56mm

### Optional Items

The following items, not included in the kit, may be required.

GP23A 12V Photographic Battery	1	(ZB56L)
3.5mm Mono Jack Plug	1	(HF80B)

### Kit and Special Parts

A complete kit of parts (excluding optional items) including the front panel label is available. The PCB and front panel Label are also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 98 XA98G, and instruction leaflet XV86T.

Retail Unit Price each (inc. VAT).

Order Code	Type 11398	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
LP57M	Slave Flash Trigger	£10.200			£11.990
GJ40T	Slave Flash Trig PCB	£2.110			£2.490
KV02C	Slave Fsh Trig Label	£1.690			£1.990
XV86T	Slave Fsh Trig Lft	£0.500			£0.500 NV

## Sound Activated Flash Trigger



### ★ Easy to build

### ★ Easy to use

Have you ever wondered how it is possible to take photographs of bullets passing through light bulbs, or darts through balloons? One method is to use a high-speed film camera costing many hundreds of pounds. A cheaper method is to use a standard single frame camera in conjunction with a sound-activated flash trigger.

In this design, the microphone is directly coupled, so that it can be used in the 'pressure mode'. This is where the sensitivity of the microphone is such, that it can be used to register pressure waves not normally heard; for example those caused by a door opening or closing. This project need not be limited to using it with a flash gun. Other uses, such as in security applications, where a trigger is required to activate the alarm recording equipment.

### Specification

Supply voltage range:	+5 to 18V
Quiescent current	
5V:	1.7mA
9V:	2.1mA
18V:	2.1mA
Operating current	
5V:	5.3mA
9V:	9.8mA
18V:	23.2mA

### Optional Items

The following items, not included in the kit, may also be required.

Alkaline PP3	1	(ZB52G)
Cable Single Black	As Req.	(XR12N)

### Kit and Special Parts

A complete kit of parts (including the PCB and front panel) is available (excluding optional items). The PCB and front panel are available separately.

Full construction details may be found in Maplin Magazine/Projects Book 88 XA88V, and instruction leaflet XV36P.

Retail Unit Price each (inc. VAT).

Order Code	Type 7984	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
LT86T	Sound Activd Trigr	£15.310			£17.990
GJ10L	Sound Trigger PCB	£2.110			£2.490
KP85G	Sound Trigger Label	£1.690			£1.990
XV36P	Sound Trigger Lft	£0.800			£0.800 NV

## Power & Lighting Controllers

### 1.2kW Power Controller



### ★ Lighting

### ★ Power tools

### ★ Soldering iron temperature

This versatile power controller is suitable for use as a lamp dimmer, power tool speed controller (not for use with 'electronic control' power tools) or for varying the temperature of a mains powered soldering iron.

It can handle loads of up to 1.2kW which is more than sufficient for most normal domestic applications. The controller is easy and convenient to use, simply plug the appliance into the controller, plug the controller into a mains socket, switch on and set the required power level.

Full constructional details may be found in Maplin Magazine Issue 40.

### Specification

Input Voltage:	240V AC
Maximum Output Current:	5A
Maximum Output Power:	1.2kW

### Optional Items

The following optional items, not included in the kit, may also be required.

Rubber 13A Plug	1	(HL58N)
Plug Fuse 5A	1	(HQ33L)

### Kit and Special Parts

A complete kit of parts is available.

The PCB and front panel are also available separately.

Full construction details may be found in Maplin Magazine 40.

PCB dimensions: 74 x 57mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3280	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
LP41U	1.2KW Power Cntrlr	£26.370			£30.990
GE82S	1.2KW Pwr Cntrlr PCB	£3.390			£3.990
JU35Q	1.2KW Cntrlr Panel	£1.260			£1.490
XZ09K	1.2KW Power Cont Lft	£0.500			£0.500 NV

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## ZAX27 Isolated Mains Power Controller

Abbey Electronic Controls

### Features

- ★ Accurate and precise mains control
- ★ Choice of Phase Angle or Burst Fire control modes
- ★ Full electrical isolation of 5kV between low voltage input and the mains
- ★ High output power of 600W
- ★ Can drive external triac for increased output power capability
- ★ Can be parallel controlled for 3-phase applications
- ★ Provision for output overload protection
- ★ Control input of 0V to +1V or 0V to +5V for 0% to 100% power control
- ★ Adjustable time-base in burst fire control mode
- ★ Input inhibit function
- ★ Soft-start for reliable power-up
- ★ Uncommitted comparator/op-amp
- ★ 4.0V to 6.0V DC supply
- ★ Hermetically sealed for operation in harsh environments
- ★ Very small size and footprint of 28mm x 28mm x 21mm
- ★ Plugable pin-out construction for ease of replacement
- ★ Backward compatibility with ZAX15 and ZAX16

### Applications

- ★ Lamp dimming
- ★ Motor speed control
- ★ Heater temperature control
- ★ Regulated ac and dc power supplies
- ★ Industrial power control
- ★ Domestic power control

The ZAX27 is a fully isolated and elegant device for accurate control of ac voltage of up to 300V rms – it achieves this through a dc control voltage.

The device can be operated in two modes: Phase Angle or Burst Fire control mode; depending on the application. Selection of modes is achieved by means of a logic level on the MODE pin. The mode is 'hot selectable', that is, the mode may be changed at any time during operation under control of the logic level applied to the MODE pin.

The ZAX27 embodies all of the functions of its predecessors, the ZAX15 (Phase) and ZAX16 (Burst), plus many enhancements. The ZAX27 is backward compatible in applications using the ZAX15 or ZAX16.

An ingenious scheme allows certain pins to perform more than one function, simply by applying different voltage levels to the appropriate pin. This has allowed the extra functionality of the ZAX27 without adding extra pins.

An EMI Mains Inlet Filter ZFM23/2k5 (CK24B) has been specifically designed for use with the ZAX27.

### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

### Specifications

#### General

Isolation voltage: 5kV  
 Operating Temperature: -10°C to +70°C  
 Overheat shutdown: 90°C  
 Overheat reset: 60°C  
 Dimensions: 28mm x 28mm x 21mm

#### Low voltage side

Supply voltage (V<sub>S</sub>): +5V DC ±1V  
 Supply current: 30mA  
 Control input range: 0V to +1V or 0V to +5V  
 High level logic input: >+4.0V  
 Low level logic input: <+3.0V  
 Supply voltage rejection: ≤0.5%/V  
 Temperature coefficient: ≤0.25%/°C  
 Maximum input (all pins): ≤2 x V<sub>S</sub>

#### Error amplifier

Input offset voltage: ±5mV  
 Bias current: 250nA  
 Input offset current: ±50nA  
 Common mode input range: 0 to 5V  
 Output range: 0 to 4.5V @ 5mA  
 Gain: ≥2.5 x 10<sup>4</sup>

#### High Voltage Side



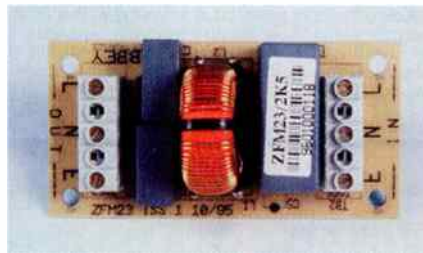
Mains supply range: 100V to 300V AC rms  
 Mains supply frequency: 50Hz  
 Maximum load current: 3A  
 Non-repetitive surge: 30A for 10ms  
 Maximum load: 600W  
 Minimum load: 10W

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CK23A	ZAX27 Module	£25.520	£24.250	£23.000	£29.990

## ZFM23/2k5 EMI Mains Inlet Filter

Abbey Electronic Controls



This compact filter has been specifically designed for use with the ZAX27 (CK23A) as an EMI filter; it will however, prove useful in other applications with similar requirements. Such a filter is often required to reduce emissions from equipment for compliance with EMC standards.

Connection to the filter is by means of PCB-mounted screw-terminals, allowing quick installation. Input and output terminals are clearly marked. In use, the incoming Live, Neutral and Earth are connected to the corresponding terminals on the 'IN' side. The Live, Neutral and Earth terminals on the 'OUT' side are then taken to the appliance to be filtered/protected.

Mechanical fixing is via 4 x 4mm corner fixing holes on a pitch rectangle of 70mm x 30mm.

### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

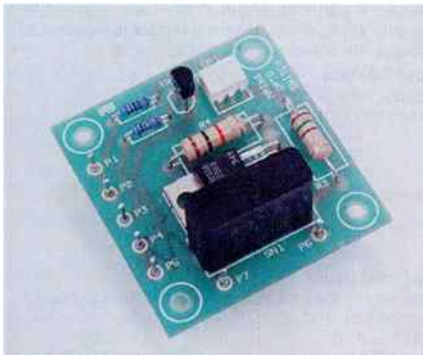
### Specifications

Corner frequency: 2.5kHz  
 Rate of attenuation: 20dB/decade  
 Attenuation at 150kHz: 38dB  
 Current rating: 2.5A  
 Operating voltage: 100V to 300V AC rms  
 Overall dimensions: 80mm x 40mm x 35mm  
 Fixing holes: 4 x 4mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CK24B	ZFM23/2K5 Module	£10.200	£9.680	£9.200	£11.990

## Zero Crossing Opto Switch 3



- ★ Switches 240W resistive load
- ★ Limits switching surges

Primarily designed for the Christmas Star project, this module can also be used in other applications

which require a noise free, zero crossing opto-isolator switch, able to handle a 250W load (resistive). The unit avoids inherent interference problems associated with switching the 240V mains supply across a load, while part way through a mains voltage cycle. A snubber network suppresses any unwanted noise generated by the unit. This project is not recommended for absolute beginners as it involves working with mains circuitry directly. The output switch is isolated from the input by an opto-coupler.

### Specification

Max control voltage: 12V DC  
 Max mains voltage: 240V DC  
 Max power rating: 250W Resistive

### Optional Items

The following items are not included in the kit but may also be required.

ABS Box MB2	1	(LH21X)
Europlug	1	(FT64U)
Eurosocket	1	(FT63T)
Terminal Block 2A	1	(FE78K)
Safuseholder 20	1	(RX96E)
Fuse A/S 1A	1	(WR19V)
SR Grommet SR2	1	(LR48C)
Min. Mains Black	3 Mtr	(XR01B)
Isobolt M3 20mm	1 Pkt	(JD17T)
Isonut M3	1 Pkt	(BF58N)
Isoshake M3	1 Pkt	(BF44X)
M3 Insulated Spacer 10	1 Pkt	(FS36P)

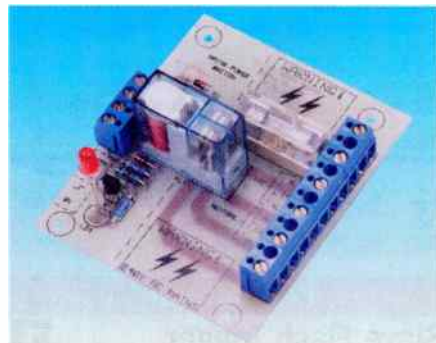
### Kit and Special Parts

A complete kit is available and the pcb is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 48 XA48C, and instruction leaflet XK38R.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	1+
LP55K	Mains Opto Switch	£8.500		£9.990
GE73Q	Mains Opto Sw PCB	£2.110		£2.490
XK38R	Mains Op Sw Leaflet	£0.500		£0.500 NV

## Mains Power Switch 2



### Features

- ★ Switched ground and switched supply inputs
- ★ Zero standby current
- ★ Low trigger current
- ★ Reverse supply protection
- ★ Fuse protected output
- ★ Switching of DC and AC resistive loads
- ★ LED relay activated indicator
- ★ Compact, versatile design

### Applications

- ★ Add-on unit for existing low-voltage projects
- ★ Radio/remote control receiver outputs
- ★ Security floodlight controller – alarm or PIR sensor input
- ★ Safety switching of mains via low voltage switch

This project has been designed in response to the demand for a general-purpose unit that is capable of switching high current resistive loads at mains supply potential (or lower voltage DC), and which can be easily added to other low-voltage controller circuits, to provide convenient switching of resistive output loads.

### Specification

Operating voltage range: 9 to 15V DC  
 Current consumption at

9V: 40mA  
 12V: 58mA (nominal)  
 15V: 70mA

Trigger current: 1.3mA  
 Relay operating time: 15ms (release time, 7ms)

Maximum switching loads: 230V AC mains, 5A (resistive)  
120V AC, 5A max. (inductive)  
30V DC, 5A max. (resistive)  
Visual indicators: LED to show relay activation

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU10L	Mains Relay Switch	£7.650	£9.990
GJ20W	Mains Pwr Sw.PCB	£2.970	£3.490

## PWM DC Motor Speed Controller

2



### Features

- ★ High-current power rating
- ★ Short-term overload proof
- ★ Optional foot pedal control

### Applications

- ★ Hobby drills
- ★ Model train sets
- ★ Remote-controlled model cars/boats

Many of us who own mini drills for making PCBs and drilling project-boxes, only have a general-purpose low-current variable-voltage bench PSU to power it up. More often than not, the PSU voltage collapses when asked for more than an amp or two. The drill PSU project presented here, is short-term overload proof (3 seconds maximum) and provides 100W of power for even the most current-hungry drills. The PWM (pulse width modulated) PSU even has an on-board 'current limit' LED indicator. The drill speed is variable from zero to the maximum RPM of the drill. The project even has the option of a foot speed controller, allowing for fine control of the speed and for hands-free operation.

The PWM drill speed controller can be used (when suitably modified) for controlling the speed of model trains or even remote-controlled model cars or boats.

### Specification

Power supply voltage: 12 to 18V AC or DC, 15V (nominal)  
Supply current max: 15A 8-5A (nominal)  
Maximum rated power: 125W

### Optional Items

The following items not included in the kit may also be required.

1/4in. Stereo PCB Socket	1	(FJ05F)
Metal Box Type AB15	1	(XB71N)
120VA 15V Toroidal	1	(DH63T)
K01 Bridge Rectifier	1	(BH47B)
5mm Convex LED Clip	1	(UK14Q)
10A 250V AC Dual Rocker Neon Switch Red	1	(YR70M)
Fused Mains Euro Chassis Plug	1	(FT37S)
Insulation Cover For Fused Mains Plug	1	(JK67X)
Red Terminal Post Small	1	(FD72P)
Black Terminal Post Small	1	(FD69A)
Push-on Receptacle Covers	1Pkt	(FE65V)
Knob Type K7B	1	(YX02C)
1A Antisurge Fuse	1	(WR19V)
13A Plug & Cable Black	1	(CY32K)
3A Two-core Mains Cable Black	1m	(XR47B)
Power Connection Wire Green/Yellow	1m	(XR38R)
High Current Wire Black	1m	(XR57M)
High Current Wire Red	1m	(XR59P)
Extra-Flexible Wire Black	1m	(XR40T)
Extra-Flexible Wire Red	1m	(XR44X)
M3 x 20mm Insulated Spacer	1Pkt	(FS38R)
M3 Solder Tag	1Pkt	(LR64U)
M3 Steel Nut	1Pkt	(JD61R)
M3 Shakeproof Washer	1Pkt	(BF44X)
M3 x 6mm Steel Bolt		
Countersunk Pozi	1Pkt	(BF36P)
M4 Steel Nut	1Pkt	(JD60Q)
M4 Shakeproof Washer	1Pkt	(BF43W)
M4 x 16mm Steel Bolt Pozi	1Pkt	(JY16S)

Stick-on Feet Square 1Pkt (FD75S)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 81 XA81C, and instruction leaflet XU80B.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT64U	PWM DC Drill Cntrlr	£14.450	£16.990
GH86T	PWM Drill Cntrlr PCB	£3.990	£3.990
DE78K	PWM Motor Cntrlr F/P	£2.280	£2.690
XU80B	PWM Motor Cntrlr Lft	£0.800	£0.800 NV

## DC to Pulse Width Modulator

3

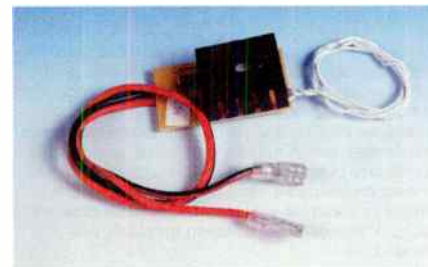


This compact project can be used to convert a DC voltage into a Pulse Width Modulated signal. Ideal for controlling heaters, lighting and other non-inductive loads. Very little power is dissipated from the control circuitry as the load is either switched full on or full off. A simple to assemble kit containing all the parts required to make the control circuit excluding the enclosure.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF59P	K8004 DC to PWM Kit	£13.600	£15.990

## Voltage Regulation Units



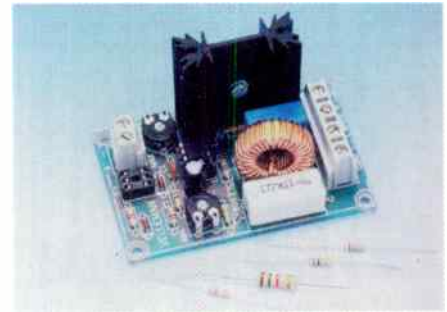
A range of voltage regulator units for use with electric motors and accessories. Available in a number of voltages, compatible with most modern model equipment. Each of the input power leads is terminated in a spade connector, allowing easy connection with rechargeable batteries.

Output Voltage (V): 1.50 3.00 4.50 4.12  
Input Voltage (V): 6-15 6-15 6-15 6-15  
Output Current (A): 1.50 1.50 1.50 3.00  
Order Code: WC73Q WC74R WC75S WC76H

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC73Q	1.5V 1.5A Reg Module	£5.200	£6.110
WC74R	3V 1.5A Reg Module	£5.200	£6.110
WC75S	4.5V 1.5A Reg Module	£5.520	£6.490
WC76H	4-12V Var Reg Module	£9.770	£11.490

## K8003 Voltage Controlled Dimmer



This small but handy switch is ideal for replacing an existing dimmer or switch, so as to be able to control a light, set of lights or motor via an adjustable control voltage. One obvious application is to control it from the computer interface card K8000, since it uses an optically isolated input.

### Specification

Mains supply: 110V, or 220-240V, 50 or 60Hz.  
Max load current: 3-5A  
Infinitely variable control: Control voltage from 0 to 10V DC  
Dimensions: 50 x 75mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF58N	K8003 Dimmer Kit	£13.600	£15.990

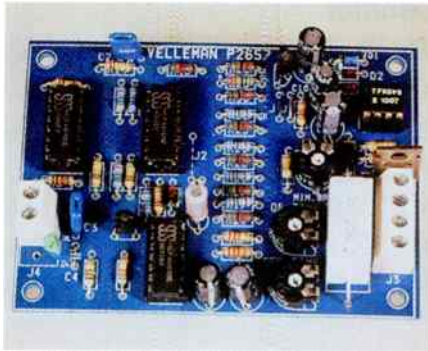


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Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

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## Slow On/Slow Off Dimmer 3



### Features

- ★ Ideal for children's bedrooms, etc.
- ★ Two working modes, slow dimmer, timer/dimmer
- ★ 110 to 125V and 220 to 240V mains voltage compatible
- ★ Can also operate with 24V AC
- ★ Power supply included
- ★ Drives loads up to 400W

The Slow On/Off Dimmer provides dimming of lamps, or the power up of lamps, by means of a timer rather than by manual control. Ideal for use in children's bedroom as the light intensity can be automatically reduced gradually as your child falls asleep. Dimming times are adjustable within a wide range while the number of possible applications is increased by the following two working modes:

A. Dimming slowly. The lamp goes on or off slowly, in response to a simple switch or relay contact. Both on and off times are independently adjustable from 2 seconds to 1 hour. Useful for bedrooms, slide/film shows, aquariums, etc.

B. Timer/Dimmer mode. In this case a push-button can be operated to switch the lamp on at full brightness immediately. After staying on for a while, it will fade away slowly. Both the on-time and the dimming duration are adjustable independently by 1 second to 30 minutes. This is suitable for use in garages, on stairways, passages, and as a 'slumber switch', etc.

The device can also run at either 24V, 110V or 240V, depending on the value of certain resistor values which will also determine operating mode.

### Specification

#### Times

Slow dimmer mode: 2 seconds up to 1 hour, adjustable  
 Timer/dimmer mode: 1 second up to 30 minutes, independently adjustable

Mains voltage: 110 to 125V 60Hz 220 to 240V 50Hz

Low tension voltage: 24V AC 50 or 60Hz

Maximum load: 2A resistive, or 400W at 220V  
 200W at 110V

Dimensions of unit: 95 x 70 x 30mm

### Optional Items

The following items, not included in the kit, may also be required.

Push-Button Switch	1	(FH59P)
Miniature Toggle Switch	1	(FH00A)
Rotary Mains Switch	1	(FH57M)
Knob K14 B	1	(FK39N)
M3 Insulated Spacers	1 Pkt	(FS36P)
ABS Box Type MB3	1	(LH22Y)
Patress Blanking Plate	1	(HL86T)

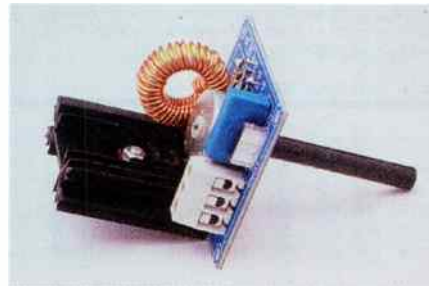
### Kit and Special Parts

A complete kit of parts (including the PCB) is available. Full construction details may be found in Maplin Magazine/Projects Book 87 XA87U, and instruction leaflet XV26D.

Retail Unit Price each (inc. VAT).

Order Code	Type 334	Price each exc. VAT	inc. VAT each
VE51F	Velleman Kit K2657	£14.450	£16.990
XV26D	Slow On/Off Dim Lft	£0.800	£0.800 NV

## K5001 Suppressed 3·5A Dimmer 2



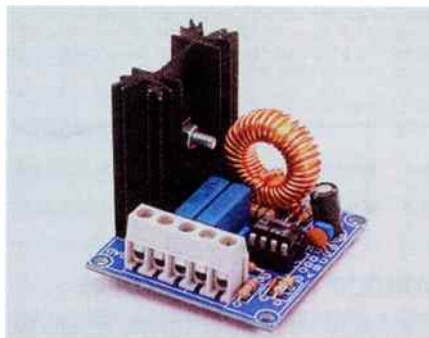
Owing to its small size this compact dimmer can replace an existing switch (but check depth of pattern), allowing you to vary the brightness of a light or group of lights. The dimmer may also be used to adjust the speed of a motor, vacuum cleaner, portable electric drill, or any other motor with carbon brushes.

A mains suppressor is provided, eliminating undesirable radio interference. The dimmer is not suitable for halogen lighting. Isolated triac. Dimensions of PCB: 45 x 47mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 334	Price each exc. VAT	inc. VAT each
VF41U	3.5A Dimmer Suprsd	£10.200	£11.990

## K5002 Halogen Lamp Dimmer 3



This small circuit may be used to vary the brightness of lights, or as a dimmer for induction current, such as transformer voltage for halogen lighting, motor power, etc. The dimmer can easily replace an existing switch, without additional wiring. The dimmer switch may be controlled by means of an ordinary push-button. It is also acceptable to connect an unlimited number of push-buttons in parallel to control the dimmer switch from different places. Three different dimming functions are provided:

### A: Same direction dimmer function.

- short repeated pressure: start/stop
- long pressure: dims light
- repeated long pressure: dimming in same direction

### B: Memory function.

- short repeated pressure: continues in previous dimmer state
- long pressure: dims light
- repeated long pressure: backward dimming

### C: Identical to A but dims backwards with repeated long pressure.

### Specification

Mains voltage: 110 or 220/240V AC 50Hz to 60Hz

Maximum power: 750W at 250V or 380W at 110V

Dimming duration: 3-5 seconds

Dimensions: 48 x 45mm

Retail Unit Price each (inc. VAT).

Order Code	Type 364	Price each exc. VAT	inc. VAT each
VF37S	Halogen Lamp Dimmer	£15.310	£17.990

## Power Supplies & Battery Chargers

### Battery Chargers

## Intelligent Ni-Cad Battery Charger 3



### Features

- ★ 1hr or 12hr charge time with subsequent trickle charge
- ★ Battery temperature and contact monitoring
- ★ Charging interrupt for overvoltage or excessive temperature
- ★ Automatic pre-discharge cycle
- ★ Constant current charge and discharge
- ★ Charge pulse width modulation for battery capacity matching
- ★ LED status for output mode indication
- ★ Timer clock via internal oscillator

### Applications

- ★ Charging/Discharging Ni-Cad cells
- ★ Reviving damaged or misused cells

The use of this charger can improve the performance of cell or cells with 'reduced capacity' by providing constant current discharge to a flat condition first before the constant current charging cycle commences. Once the charge cycle is completed (giving 95% charge), the battery is then (by pulse width modulation) 'trickle charged' for 100ms every 16-8s, which equates to a 'form factor' of 0.6%. This 'intelligent' Ni-Cad battery charger is based around the U2400B IC which has been specifically designed to handle the needs of Ni-Cad batteries. The IC itself contains much of the electronics required, which include a processor unit, battery voltage and temperature monitoring comparators, PWM comparator, open collector charge and discharge outputs, LED status output, an oscillator, voltage reference and mains synchronisation. To enable different voltage and lower capacity batteries than 2Ah to match the charger, two rotary switches are provided. The voltage select switch divides the battery potential terminal voltage to provide the correct level for the voltage comparators, while the battery capacity switch alters the pulse width modulation of the charge circuit, thus preventing overcharging.

### Specification

Power supply:	230V AC 50Hz
Power consumption:	45W maximum
Overall dimensions:	205 x 106 x 197mm (WHD)
Battery voltages:	Any combination of 1 to 12 cells
Battery capacity:	100, 200, 300, 400, 500, 600, 800mAh, 1, 1-2, 1-5, 1-7, 2Ah
Charge time:	1 or 12-hour
Charge current:	2A, pulse width modulated
Discharge current:	500mA

### Kit and Special Parts

A complete kit of parts (including the PCB, case and front panel) is available.

The PCB and front panel are also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 100 XD00A, and instruction leaflet XV76H.

Retail Unit Price each (inc. VAT).

Order Code	Type 1205	Price each exc. VAT	inc. VAT each
LU07H	5 Intelligent Batt Charger	£59.560	£69.990
GL45Y	NiCad Chgrg MKII PCB	£3.390	£3.990
KV11M	NiCad Chgrg MK11 Lbl	£2.110	£2.490
XV76H	NiCad Chgrg MK11	£1.000	£1.000 NV



## Sealed Lead-Acid Battery Chargers

2



- ★ 2 kits available for 6V or 12V
- ★ Charge current up to 500mA
- ★ Current foldback
- ★ Charge indicator
- ★ Power on indicator

These mains-powered chargers are ideally suited for charging batteries from the wide range of sealed lead acid batteries, that are rated at between 1Ah and 8Ah. The kits are based on either the 6V charger module (JY65V) or the 12V module (JY64U), and are very easy to build. The chargers feature a regulated output and current foldback, and may be used for cyclic or trickle charging. The Chargers have mains and output fuses, 'power on' and 'charge' indicators, and the kits include a suitable mains step-down transformer.

### Specification

	6V Charger	12V Charger
Supply voltage:	Mains (240V AC rms)	
Output current max:	700mA	525mA
DC max. continuous load current:	525mA	375mA
Charge LED cut-off current:	245mA	175mA
Suitable battery range:	1Ah to 8Ah	
Dimensions:	71(max 78) x 45 x 25mm	

### Optional Items

The following items, not included in the kit, may also be required.

16/0-2 Wire 10m Red	1 Pkt	(FA33L)
16/0-2 Wire 10m Black	1 Pkt	(FA26D)
4mm Croc Clip Black	1	(H-F23A)
4mm Croc Clip Red	1	(HF24B)
Charger Clip	2	(HF26D)
Large Battery Clip Red	1	(FS86T)
Large Battery Clip Black	1	(FS87U)
13A Nylon Plug	1	(RW67X)
2A Fuse Plug	1	(HQ31J)

### Kit and Special Parts

A complete kit to build either a 6V or 12V charger is available, including the mains transformer and box, but excluding optional items. Full construction details may be found in Maplin Magazine/Projects Book 53 XA53H, and instruction leaflet XT73Q.

### Retail Unit Price each (inc. VAT).

Order Code	Type 1575	Price each exc. VAT 1+	inc. VAT each 1+
LP91Y	4+ 6V Lead Acid Chgr	£25.520	£29.990
LP73Q	4+ 12V Lead Acid Chgr	£25.520	£29.990
XT73Q	6V/12V Chgr Leaflet	£0.400	£0.400 NV

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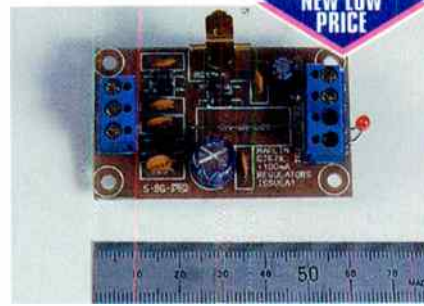
Approved business account holders are not charged carriage for any order but still pay guaranteed next day delivery.

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## Power Supplies

### 100mA Fixed Voltage Regulators

1



A range of 100mA, fixed voltage regulator kits available in +15V, +12V, +5V, -5V, -12V, and -15V variants. All kits are supplied complete with on-board rectification and smoothing, and only require the addition of a suitable transformer and mains fuse.

### Optional Items

The following items, not included in the kit, may also be required.

<b>LU42V 100mA +15V Regulator</b>		
250mA Tr 12V	1	(YN16S)
T50mA Fuse	1	(CZ85G)
<b>LU41U 100mA +12V Regulator</b>		
250mA Tr 9V	1	(YN15R)
T50mA Fuse	1	(CZ85G)
<b>LU39N 100mA +5V Regulator</b>		
250mA Tr 6V	1	(YN14Q)
T50mA Fuse	1	(CZ85G)
<b>LU38R 100mA -5V Regulator</b>		
250mA Tr 6V	1	(YN14Q)
T50mA Fuse	1	(CZ85G)
<b>LU37S 100mA -12V Regulator</b>		
250mA Tr 9V	1	(YN15R)
T50mA Fuse	1	(CZ85G)
<b>LU36P 100mA -15V Regulator</b>		
250mA Tr 12V	1	(YN16S)
T50mA Fuse	1	(CZ85G)

### Kit and Special Parts

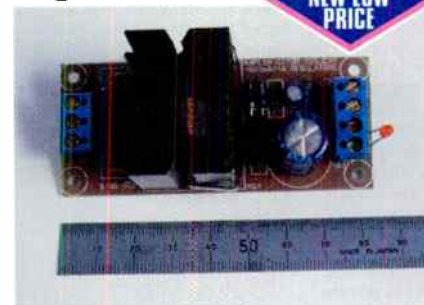
A complete kit of parts (including PCB) is available (excluding optional items) for each variant. The PCBs are also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 106 XD06G, and instruction leaflet XZ31J.

### Retail Unit Price each (inc. VAT).

Order Code	Type 1258	Price each exc. VAT 1+	inc. VAT each 1+
LU42V	+15V @ 100mA PSU	£4.240	£4.990
LU41U	+12V @ 100mA PSU	£4.240	£4.990
LU39N	+5V @ 100mA PSU	£4.240	£4.990
LU38R	-5V @ 100mA PSU	£4.240	£4.990
LU37S	-12V @ 100mA PSU	£4.240	£4.990
LU36P	-15V @ 100mA PSU	£4.240	£4.990
GJ67X	+100mA Reg PCB	£1.690	£1.990
GJ68Y	-100mA Reg PCB	£1.690	£1.990
XT31J	Ext Horn Mod Leaflet	£0.500	£0.500 NV

### 500mA Fixed Voltage Regulators

1



A range of 500mA, fixed voltage regulator kits available in +15V, +12V, +5V, -5V, -12V, and -15V variants. All kits are supplied complete with on-board rectification and smoothing, and only require the addition of a suitable transformer and mains fuse.

### Optional Items

The following items, not included in the kit, may

also be required.

<b>LU49D 500mA +15V Regulator</b>		
Std 12VA 9V Transformer	1	(WB11M)
T50mA Fuse	1	(CZ85G)
<b>LU48C 500mA +12V Regulator</b>		
Std 12VA 9V Transformer	1	(WB11M)
T50mA Fuse	1	(CZ85G)
<b>LU47B 500mA +5V Regulator</b>		
Std 6VA 6V Transformer	1	(WB06G)
T50mA Fuse	1	(CZ85G)
<b>LU46A 500mA -5V Regulator</b>		
Std 6VA 6V Transformer	1	(WB06G)
T50mA Fuse	1	(CZ85G)
<b>LU45Y 500mA -12V Regulator</b>		
Std 12VA 9V Transformer	1	(WB11M)
T50mA Fuse	1	(CZ85G)
<b>LU44X 500mA -15V Regulator</b>		
Std 12VA 9V Transformer	1	(WB11M)
T50mA Fuse	1	(CZ85G)

### Kit and Special Parts

A complete kit of parts (including PCB) is available (excluding optional items) for each variant.

The PCBs are also available separately.

Full constructional details may be found in Maplin Magazine/Projects Book 106 XD06G, and instruction leaflet XZ32K.

### Retail Unit Price each (inc. VAT).

Order Code	Type 1255	Price each exc. VAT 1+	inc. VAT each 1+
LU49D	+15V @ 500mA PSU	£7.650	£8.990
LU48C	+12V @ 500mA PSU	£7.650	£8.990
LU47B	+5V @ 500mA PSU	£7.650	£8.990
LU46A	-5V @ 500mA PSU	£7.650	£8.990
LU45Y	-12V @ 500mA PSU	£7.650	£8.990
LU44X	-15V @ 500mA PSU	£7.650	£8.990
GJ70M	+500mA/1A Reg PCB	£2.110	£2.490
GJ71N	-500mA/1A Reg PCB	£2.110	£2.490
XZ32K	500mA/1A Regtrs Lft	£0.500	£0.500 NV

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## 1A Fixed Voltage Regulators 1



A range of 1A, fixed voltage regulator kits available in +24V, +15V, +12V, +8V, +6V, +5V, -5V, -8V, -12V, -15V, and -24V variants. All kits are supplied complete with on-board rectification and smoothing, and only require the addition of a suitable transformer and mains fuse.

### Optional Items

The following items, not included in the kit, may also be required.

Order Code	Type	Price each exc. VAT	inc. VAT each
<b>LU60Q 1A +24V Regulator</b>			
Std 25VA 12V Transformer	1 (WB25C)		
T125mA Fuse	1 (CZ88V)		
<b>LU59P 1A +15V Regulator</b>			
Std 25VA 9V Transformer	1 (DH26D)		
T125mA Fuse	1 (CZ88V)		
<b>LU58N 1A +12V Regulator</b>			
Std 25VA 15V Transformer	1 (DH27E)		
T125mA Fuse	1 (CZ88V)		
<b>LU57M 1A +8V Regulator</b>			
Std 12VA 6V Transformer	1 (YJ50E)		
T100mA Fuse	1 (CZ86T)		
<b>LU56L 1A +6V Regulator</b>			
Std 12VA 9V Transformer	1 (WB11M)		
T100mA Fuse	1 (CZ86T)		
<b>LU55K 1A +5V Regulator</b>			
Std 12VA 9V Transformer	1 (WB11M)		
T100mA Fuse	1 (CZ86T)		
<b>LU54J 1A -5V Regulator</b>			
Std 12VA 9V Transformer	1 (WB11M)		
T100mA Fuse	1 (CZ86T)		
<b>LU53H 1A -8V Regulator</b>			
Std 12VA 6V Transformer	1 (YJ50E)		
T100mA Fuse	1 (CZ86T)		
<b>LU52G 1A -12V Regulator</b>			
Std 25VA 15V Transformer	1 (DH27E)		
T125mA Fuse	1 (CZ88V)		
<b>LU51F 1A -15V Regulator</b>			
Std 25VA 9V Transformer	1 (DH26D)		
T125mA Fuse	1 (CZ88V)		
<b>LU50E 1A -24V Regulator</b>			
Std 25VA 12V Transformer	1 (WB25C)		
T125mA Fuse	1 (CZ88V)		

### Kit and Special Parts

A complete kit of parts (including PCB) is available (excluding optional items) for each variant. The PCBs are also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 106 XD06G, and instruction leaflet XZ32K.

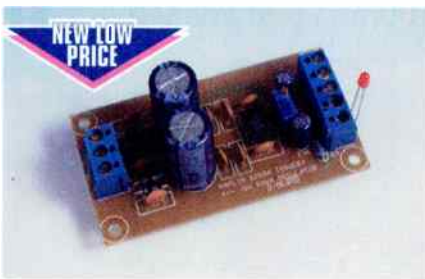
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
<b>LU60Q</b>	+24V @ 1A PSU	£8.500	£9.990
<b>LU59P</b>	+15V @ 1A PSU	£8.500	£9.990
<b>LU58N</b>	+12V @ 1A PSU	£8.500	£9.990
<b>LU57M</b>	+8V @ 1A PSU	£8.500	£9.990
<b>LU56L</b>	+6V @ 1A PSU	£8.500	£9.990
<b>LU55K</b>	+5V @ 1A PSU	£8.500	£9.990
<b>LU54J</b>	-5V @ 1A PSU	£7.650	£8.990
<b>LU53H</b>	-8V @ 1A PSU	£8.500	£9.990
<b>LU52G</b>	-12V @ 1A PSU	£8.500	£9.990
<b>LU51F</b>	-15V @ 1A PSU	£8.500	£9.990
<b>LU50E</b>	-24V @ 1A PSU	£8.500	£9.990
<b>GJ70M</b>	+500mA/1A Reg PCB	£2.110	£2.490
<b>GJ71N</b>	-500mA/1A Reg PCB	£2.110	£2.490
<b>XZ32K</b>	500mA/1A Reg Lft	£0.500	£0.500 NV

## Call and Collect

At all our stores nationwide. See the maps at the front of the catalogue for the nearest one to you.

## ±15V 50mA Regulator 1



### Features

- ★ Low component count
- ★ ±50mA output current
- ★ Short circuit protection
- ★ Thermal shutdown

This is a ±15V 50mA regulator built around the RC4195, a dual-polarity 'tracking' regulator designed to provide balanced positive and negative 15V output voltages.

### Optional Items

The following items, not included in the kit, may also be required.

22-Turn Cermet 50k	1 (UH26D)
20-0/20-0 Transformer	1 (WB16S)
Time Lag Glass T50mA	1 (CZ85G)

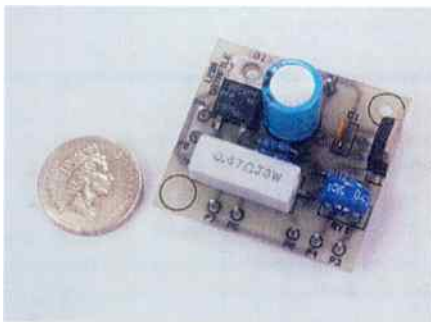
### Kit and Special Parts

A complete kit of parts (including the PCB) is available. The PCB is also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 106 XD06G, and instruction leaflet XZ33L.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
<b>LU43W</b>	+15V @ 50mA PSU	£7.650	£8.990
<b>GJ69A</b>	+/- 15V Reg PCB	£2.110	£2.490
<b>XZ33L</b>	+/- 15V 50mA Reg Lft	£0.500	£0.500 NV

## L200 Adjustable Voltage/Current Regulator 1



- ★ Adjustable output current
- ★ Adjustable output voltage
- ★ Short circuit protection
- ★ Thermal over-load protection

The L200 is a monolithic IC designed for programmable voltage and current regulation. Voltages of 2.85V to 36V, and currents up to 2A, can be achieved. Internal protection in the L200 cuts down the risk of possible damage.

This comprises current limiting, power limiting, thermal shut-down and input over-voltage protection (up to 60V for 10ms). The unit can be used for different applications such as a battery charger, power supply or DC-DC converter.

### Specification

Supply voltage:	40V max
Current @ 20V:	4.2mA
Voltage range:	2.85V to 36V
Temperature range:	-5°C to +150°C (max)
Line regulation:	60dB (nominal)
Dropout voltage:	2V (nominal) 2.5V (max)

Reference voltage: 2.77V (nominal)

Note: As this board is intended as a 'building block' project it is not eligible for our 'Get-you-working' service.

### Kit and Special Parts

A complete kit is available and the PCB is also

available separately. Full construction details may be found in Maplin Magazine/Projects Book 46 XA46A, and instruction leaflet XT00A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
<b>LP69A</b>	L200 Kit	£6.600	£7.990
<b>GE84F</b>	L200 PCB	£1.260	£1.490
<b>XT00A</b>	L200 D.F. Leaflet	£0.800	£0.800 NV

## 1.5A Positive & Negative Variable Voltage Regulators 1



### Features

- ★ Suitable for beginners if power supply is pre-built unit
- ★ Variable output voltage
- ★ Low noise output
- ★ Virtually indestructible

### Applications

- ★ Power supply for higher current uses
- ★ Bench PSU for designers
- ★ Combine both kits for a dual supply

Two kits are available, one providing a positive supply and the other a negative supply. Both are supplied without enclosures as this will depend upon application. A transformer or mains adaptor is required. Full wiring options for single and complementary supplies from one transformer are given in the leaflet. Protected against wrong input polarity, output overcurrent, back-voltage and thermal overload.

### Specification

Input voltage:	28V AC max. (24V AC for full rated output)
Input/output differential:	6V DC maximum for full rated current
Output voltage:	2V to 30V DC
Output current:	1.5A DC maximum (Min load 5mA for stability) Dropout voltage 4V DC

The above figures are to assist the constructor choosing suitable transformer. AC voltages are RMS, DC input voltages are measured at the regulator input. Higher differential voltages are possible if less current is required or additional heatsinking for the regulator is provided. The regulator can be mounted off the board if required.

### Kit and special parts

A complete kit of parts is available. The PCBs are available separately. Full constructional details may be found in Maplin Magazine Issue 113 XD13P and in instruction leaflet XZ40T.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
<b>LU86T</b>	+1.5A Variable PSU	£6.600	£7.990
<b>LU87U</b>	-1.5A Variable PSU	£6.600	£7.990
<b>GG42V</b>	+1.5A Vari PSU PCB	£2.110	£2.490
<b>GG43W</b>	-1.5A Vari PSU PCB	£2.110	£2.490
<b>XZ40T</b>	+/- 1.5A Vari PSU Lft	£0.500	£0.500 NV

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## K1823 1A Power Supply 1

This small power supply provides a stable voltage adjustable between 1.5 and 35V at 1A. Its LM317 floating regulator provides markedly better ripple and regulation characteristics than standard regulators.



Current limiter and thermal overload protection are on the chip. Input voltage: 28V AC max. Line reg: typ. 0.01%. Load reg: typ. 0.1%. Ripple rejection: 80dB

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE58N	Velleman Kit K1823	£7.650	£8.990

## K2570 Universal Power Supply 5 to 14V DC/1A 1



Suits all Velleman kits which need a regulated power supply between 5 and 14V DC rated at no more than 1A.

Input voltage: 7 to 16V AC, 1A (depending on the application)  
Output: 5 to 14V DC, stabilised, 1A max.  
Ripple rejection: typ. 78dB  
Temperature stability: 0.025%/°C  
Thermal overload protected.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE59P	Velleman Kit K2570	£8.500	£9.990

## Bench Power Supplies

### K7202 30V 5A Laboratory Power Supply 4



A laboratory power supply is indispensable for both the professional and amateur electronics engineer. This power supply is short-circuit protected and variable from 0 to 30V and from 0 to 5A. A connection is supplied for both voltage meter and ampere-meters, such as K7201. A front foil and matching buttons are supplied. The heatsink, case, and transformer are not included.

Output voltage variable from 0 to 30V  
Fine control over 1V  
Output current limit variable from 0 to 5A.  
Fine tuning between 0 and 1A  
LED (light emitting diode) – indication of current limitation  
Output current: 4A continuous/5A peak  
Short-circuit protected

Ripple maximum: 0.5mV rms  
Input voltage 2 x 15V AC 5-3A  
Connection for K7201 digital volt/ampere-meter

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF16S	Velleman Kit K7202	£50.200	£58.990

### K7200 30V 10A Laboratory Power Supply 4



#### Features

- ★ Digital voltage meter: 3 digit 0.1V accuracy
- ★ Digital ampere meter: 3 digit 0.01A accuracy
- ★ Output voltage variable from 0V to +30V (fine adjustment over 1V)
- ★ Variable current limit from 0 to 10A
- ★ LED current limit indicator
- ★ Output short circuit protected
- ★ Maximum output ripple 0.5V rms
- ★ Cooling fan for prolonged usage at full power

#### Applications

- ★ Laboratories and test benches
- ★ Powering mobile radio equipment
- ★ Precision charging of batteries

This extremely flexible laboratory PSU is capable of supplying a well-regulated continuously variable DC voltage up to 30V at currents up to 8A continuous, 10A peak. As a result, there is a wide range of potential applications for the hobbyist, service department and educational establishments. It is ideal for testing prototypes, and with the current limiting function, suitable for the more sensitive circuits. In addition, it is suitable for the running of CB and amateur radio equipment, and even the charging of batteries. A digital voltage meter and a separate digital ammeter are supplied as indicators. With the built-in fan, the power supply is able to cater for long-term full loads. It is supplied complete with housing, buttons and transformers.

#### Specification

Output voltage: 0V to 30V variable with fine control over 1V  
Output current: 8A continuous, 10A peak, variable limit from 0 to 10A, LED indication when limiting. Short-circuit protected  
Maximum ripple: 0.5mV rms  
Digital voltmeter: 3-digit, 0.1V accuracy  
Digital ammeter: 3-digit, 0.01A accuracy  
Consumption: 300W maximum  
Dimensions: 330 x 90 x 215mm

#### Optional items

The following items, not included in the kit, may also be required.

Nylon Mains Plug 13A	1	(RW67X)
Fuse 3A	1	(HQ32K)
Insulating Boot for Fuseholder	1	(FT35Q)
Insulating Boot for Chassis plug	1	(JK66W)
Heat Transfer Compound	1 syringe	(FL79L)
BC Lampholder	1	(FQ02C)
Mains Lamp Bulb 40W	1	

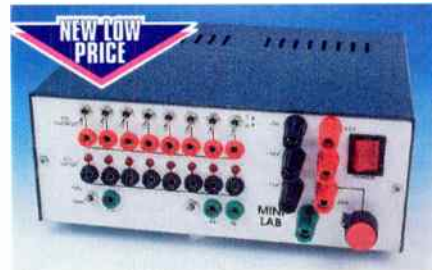
#### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 58 XA58N, and instruction leaflet XT91Y.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF14Q	Velleman Kit K7200	£195.730	£229.990
XT91Y	Velleman 10A PSU	£C.800	£D.800NV

## The Maplin Minilab 4



#### Features

- ★ Wide variety of power supplies – ±5V, ±12V, –15V and +1.25 to 24V variable
- ★ Eight LED TTL-logic state indicator
- ★ Eight TTL-logic test outputs
- ★ 1Hz/1kHz TTL-level oscillator
- ★ Debounced TTL-level switch with complementary outputs

#### Applications

- ★ Education
- ★ Servicing analogue and digital equipment
- ★ Project development

The Minilab is a very useful piece of test equipment, for repairing and developing both digital and analogue circuits. Features of the Minilab include fixed DC voltage supplies at ±5V at 500mA continuous (1A peak), ±12V at 500mA continuous (1A peak), and –15V at 100mA continuous (200mA peak). There is also a variable positive DC voltage supply that can be adjusted to give between 1.25V and 24V; the current available from this supply depends upon the output voltage. However, the current drawn by the +5V and +12V rails combined must not exceed a total of 1A – the same comment applies for the ±5V and ±12V rails.

Other features of the Minilab include eight TTL-level outputs, and eight TTL-level inputs – each fitted with an LED that indicates a logic 1 ('high') condition when illuminated. There is also a TTL-level oscillator switchable between approximately 1Hz and 1kHz, and a debounced TTL-level 'one-shot' switch with complementary (Q and –Q) outputs, which is very useful for single-stepping through digital circuits that use sequential logic. Debouncing is, as the name suggests, a 'cleaning up' of the switching action – the complementary outputs are always either high or low.

#### Specification

Power Supply Voltages:	+5V*, +12V*, +1.25V to 24V variable (refer to Figure 2 for output characteristic)
Power Supply Ripple:	–5V*, +12V*, +15V (100mA continuous, 200mA peak)
Oscillator Output:	Less than 5mV per rail TTL compatible – frequency 1Hz or 1kHz
Octal Logic Input:	TTL compatible – indication by LED (On = High)
Octal Logic Output:	TTL compatible
'One Shot' Switch:	TTL compatible – debounced

\* The total load on the +5V and +12V supplies must not exceed a peak value of 1A, since the 5V supply is sourced from the +12V supply's regulator. The same is true of the –5V and –12V supplies.

#### Optional items

The following items, not included in the kit, may also be required.

Steel Case 2108	1	(XJ30H)
13A Plug Nylon	1	(RW67X)
Plug Fuse 2A	1	(HQ31J)

#### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items). The PCB and the front panel are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 66 XA66W, and instruction leaflet XU18U.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT28D	Mini-Lab 2	£42.540	£49.990
DH85G	Minilab 2 F/Panel	£1.690	£1.990
GH34M	Minilab 2 PCB	£4.670	£5.490
XU18U	Minilab 2 Leaflet	£1.000	£1.000 NV

## DC/DC Converters

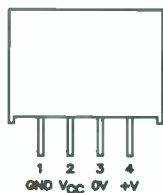
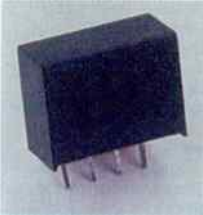
### Miniature PCB Mounting DC/DC Converters

#### Newport Components

A range of miniature and sub-miniature, high-efficiency DC/DC converters, the outputs of which are isolated to 1000V DC relative to the input, made possible through the use of tiny toroidal ferrite transformers. With efficiencies of up to 80% and a physical bulk down to the scale of a logic IC, these devices are ideal for eliminating complex power busses on PCBs, or special (and inconvenient) provisions for extra odd supply lines from the main PSU, by providing them anywhere where the additional or isolated power rail is required locally. Furthermore any number of them can be used together in a system. All converters are 100% 'burned-in' and triple tested. They feature a high power to density ratio equivalent to 1.4W per cm<sup>3</sup>, which is probably the highest currently available. Derating at temperatures above 70°C is required. The operating temperature range is -50°C to +125°C. In all cases a switched mode method is employed at a typical frequency of 100kHz, with a no-load power consumption of 100mW. This efficiency makes them compatible with battery powered applications.

The packages are SIP (Single Inline Pin) with full epoxy encapsulation rated to UL94-VO within a flame retardant, polyurethane case. Any converter can be soldered into place just like any other IC or SIL array, and no heatsinks are necessary for the rated performance. Input voltages are 5V or 12V DC depending on type. Pin '1' is marked with a dot. Pins are spaced 2.54mm (0.1in.) and are 3mm long on all types.

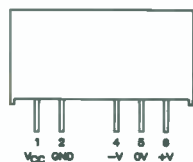
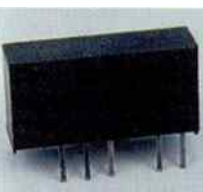
#### Single Output Types



The NME range operate from a 5V or 12V DC input, and provide an isolated single positive output of 5V, 12V or 15V DC, depending on type. The delivered power is 1W total and up to 200mA is available from a 5V output, 84mA from a 12V output, and 67mA from a 15V output. Each device is contained in a 4-pin inline package measuring only 11.5 x 6 x 10mm high.

Type	Input voltage	Output voltage	Output current mA	Load regulation
NME05055V (7 max.)	5V	5V	200	10%
NME05125V (7 max.)	12V	12V	84	10%
NME12055V (7 max.)	5V	5V	200	10%
NME12125V (15 max.)	12V	12V	84	10%
NME12155V (15 max.)	15V	15V	67	10%
NME0515 5V (7 max.)	15V	5V	67	10%

#### Dual Output Types



Each of the NMA range provides dual ±5V, ±12V or ±15V DC supply rails with centre-tapped 0V from a single 5V or 12V DC input, depending on type, with a total power throughput of 750mW. Up to 100mA is available from the 5V output type, 42mA from each of the 12V outputs and 25mA from each of the 15V. The device is contained in a 6-pin inline package (pin 3 is excluded, not used) measuring only 19.5 x 7 x 10mm high.

Type	Input voltage	Output voltage	Output current mA	Load regulation
NMA0512S	5V(7 max)	±12V	42	10%
NMA0515S	5V(7 max)	±15V	34	10%

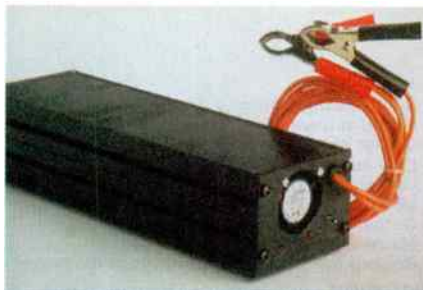
NMA1205S	12V(15 max)±5V	100	10%
NMA1212S	12V(15 max)±12V	42	10%
NMA1215S	12V(15 max)±15V	25	10%

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 248	Price each exc. VAT			inc. VAT each
		10+	25+	50+	
AH18U	NME0505S	£5.990	£5.490	£4.870	£8.790
JY55K	NME0512S	£5.990	£5.490	£4.870	£8.790
AH19V	NME1205S	£5.990	£5.490	£4.870	£8.790
AH20W	NME1212S	£5.990	£5.490	£4.870	£8.790
JY57M	NME1215S	£5.990	£5.490	£4.870	£8.490
JY56L	NME0515S	£5.990	£5.490	£4.870	£8.490
AH14Q	NMA0512S	£5.990	£5.490	£4.870	£8.790
AH15R	NMA0515S	£5.990	£5.490	£4.870	£8.790
AH16S	NMA1205S	£5.990	£5.490	£4.870	£8.790
AH17T	NMA1212S	£5.990	£5.490	£4.870	£8.790
JY54J	NMA1215S	£5.990	£5.490	£4.870	£8.790

## Inverters

### 250W 12/24V DC to Mains Inverters



A very compact 12/24V DC to 230V AC mains inverter having a quartz controlled 50Hz 'modified' sine wave output frequency. The inverters have a continuous power output of 250W but are capable of handling peak outputs of up to 500W. Other features include short circuit and overload protection, temperature protection of output transistors, V DC inverse polarity protection and low battery voltage protection – the unit will shut down if battery power becomes too weak. It is possible to modify the inverter to produce an output of 110V AC at 60Hz that will give 150W. The inverter is not suitable for capacitive loads. K3507 (VF35Q) is the 12V version. K3509 (VF42V) is the 24V version.

#### Specification

Input voltage:	10-5V to 15V DC or 20V to 28V DC
Current consumption:	25A (12V) or 13A (24V)
No-load consumption:	0.2A
Output voltage:	230V AC at 26V DC input
Continuous output power:	250W
Peak output power:	500W
Output frequency:	50Hz
Efficiency:	80% max.
Battery protection:	±20V
Thermal limit:	90°C
Dimensions:	270 x 85 x 60mm
Weight:	1.4kg

Retail Unit Price each (inc. VAT).

Order Code	Type 3406	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VF35Q 3	Velleman Kit K3507	£106.370			£124.990
VF42V 10	Velleman Kit K3509	£104.670	£97.920	£95.370	£122.990

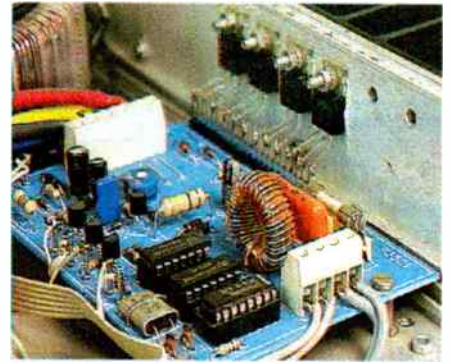
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## K3501 12V/24V DC to 220V AC Converter

4



For use in cars, trucks, boats, caravans or other places where only 12 or 24 volt battery power is available to supply mains powered audio equipment such as video recorders, TV, computer, electric shaver, etc. It will be necessary to buy a transformer to suit 12V or 24V separately.

- ★ 300 W output power at 24 VDC input or 160 W output power at 12 VDC input
- ★ 50 Hz crystal oscillator
- ★ FET power transistors (including cooling fin)
- ★ Output voltage monitor
- ★ Battery voltage monitor
- ★ Quiescent current 0.5A
- ★ Not suitable for electric motors
- ★ PCB dimensions: 82 x 110 mm.

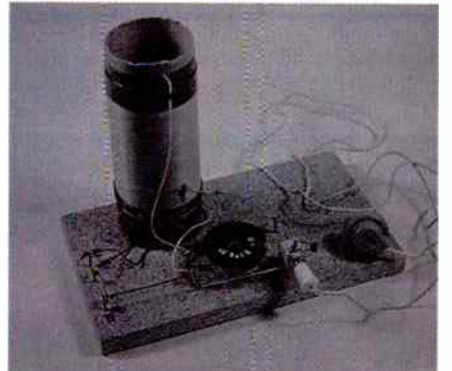
Retail Unit Price each (inc. VAT).

Order Code	Type 19501	Price each exc. VAT		inc. VAT each
		1+	1+	
VF62S 1	K3501 12/24V Inv Kit	£43.990		£50.990
VF69A 1	1609 12V Inv Tx	£34.030		£39.990
VF70M 1	30021 24V Inv Tx	£30.620		£35.990

## Radio Receivers

### Crystal Set Radio

1



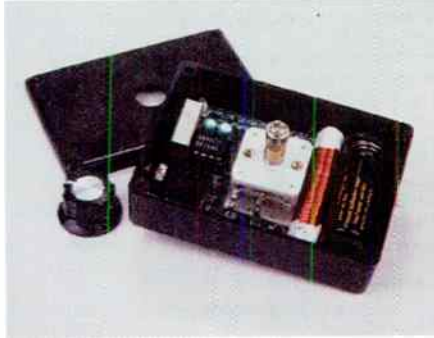
A novel mini project that is easy to build and ideal for construction for all ages. A Crystal Set was an early design for a radio receiver, our design incorporates modern components in place of difficult or impossible to obtain old style components. For example, what once would have been a 'cat's whisker' detector has been replaced by a germanium point contact diode. Original designs would have driven a pair of high impedance headphones, but its modern counterpart uses an inexpensive crystal earpiece, etc. Please note that this project is not eligible for repair under our 'Service' rules. Full construction details are available on leaflet XU01B.

Retail Unit Price each (inc. VAT).

Order Code	Type 3433	Price each exc. VAT		inc. VAT each
		1+	1+	
XU01B	Crystal Set Leaflet	£0.400		£0.400 NV

## Beginners AM Radio

1



- ★ On board attenuator
- ★ Compact design
- ★ Integral aerial
- ★ Headphone operated on/off

This project is ideal for the total beginner to radio electronics. Based around a ZN415 IC the unit has a limited amount of components, including a 'wind-it-yourself' aerial. The small compact project uses basic electronics techniques to receive local stations. The device is tuned by a knob on the box, varying the frequency between 540 and 1600kHz depending on the aerial winding. An attenuator is provided to reduce the AM signal. The receiver is designed to be used with personal stereo headphones of 32Ω impedance.

A power supply of 1.5V is delivered by an N type cell fitted into the box LL12N. The box, knob, battery and screws are not supplied in the kit.

### Optional Items

The following items, not included in the kit, may also be required.

Verobox 301	1	(LL12N)
Alkaline N Battery	1	(JY51F)
Knob K7A	1	(YX01B)
Spacer 4BA x 6.35mm (1/4in.)	1 Pkt	(FW31J)
Poziscrew M2.5 x 12mm	1 Pkt	(BF40T)
Isoshake M2.5	1 Pkt	(BF45Y)
Isonut M2.5	1 Pkt	(BF59P)

### Kit and Special Parts

A complete kit is available and the PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 42 XA42V, and instruction leaflet XK22Y.

Retail Unit Price each (inc. VAT).

Order Code	Type 3435	Price each exc. VAT	inc. VAT each
LP28F	Beginners AM Radio	£9.350	£10.990
GE43W	AM Radio PCB	£2.110	£2.490
XX22Y	Beginners AM Rx Leaflet	£0.500	£0.500 NV

## TDA7000 Radio Mk 1

3



- ★ No alignment equipment needed
- ★ Easy to build
- ★ Ready wound RF coils
- ★ Onboard power amplifier
- ★ Headphone/earpiece jack socket

This design is based on the TDA 7000 IC which contains essentially a complete FM receiver on a chip. With only the core of one coil to be adjusted, building and aligning this radio is no more difficult

than the simple ZN414 AM radio! The frequency coverage is 88 to 108MHz and uses a telescopic six section aerial. The receiver also incorporates a power amplifier IC, the TDA820M delivering 250mW RMS to an internal 8Ω speaker. Four small batteries provide the power with a maximum current drain of just 80mA, making this radio truly portable.

### Optional Items

The following items, not included in the kit, may also be required.

Battery AA x 4	1 Pkt	(ZB36P)
Mag Earpiece 3.5mm	1	(LB24B)

### Kit and Special Parts

A complete kit is available separately, as well as a PCB and front panel. Full construction details may be found in Maplin Magazine Issue 27.

Retail Unit Price each (inc. VAT).

Order Code	Type 3440	Price each exc. VAT	inc. VAT each
LM55K	TDA7000 MkII Kit	£21.260	£24.990
GD77J	TDA7000 MkII PCB	£3.390	£3.990
JG28F	TDA7000 MkII F/Panel	£1.690	£1.990

## Transmitters/Receivers

### K1771 FM Oscillator

2



A Mini FM transmitter that operates on the range 100 to 108 MHz. Featuring an integrated pre-amplifier (sensitivity 4mV), which is suitable for use with most types of microphone. Power requirements: 9 to 12V DC. Suitable for family broadcasts, babyphone, security, etc. May be received by any portable FM radio or tuner.

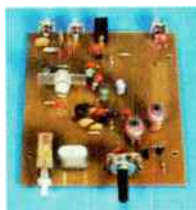
PCB dimensions: 45 x 70mm. Not licensed for use in the U.K.

Retail Unit Price each (inc. VAT).

Order Code	Type 10504	Price each exc. VAT	inc. VAT each
VF67X	K1771 FM Tx Kit	£9.350	£10.990

## Ramsey Amateur Radio Receivers & Transceivers Models for 80, 40, and 20 Metres

Each receiver kit (prefixed HR) builds up into a single band unit capable of copying CW and SSB signals and uses varicap frequency tuning. The matching transmitter kits (prefixed QPR) offer 1W output and are supplied with an appropriate crystal for the chosen band. Cases are optional extras.



Retail Unit Price each (inc. VAT).

Order Code	Type 10053	Price each exc. VAT	inc. VAT each
CP13P	HR-20M Receiver	£27.190	£31.950
CP14O	HR-40M Receiver	£27.190	£31.950
CP15R	HR-80M Receiver	£27.190	£31.950
CP08K	QRP-20 CW Transmitter	£25.480	£29.950
CP10L	QRP-40 CW Transmitter	£25.480	£29.950
CP11M	QRP-80 CW Transmitter	£25.480	£29.950
RUB9W	Case CHR/CSR	£12.720	£14.950
CP12N	Case CQRP	£12.720	£14.950

## FR-1 FM Broadcast Receiver



This builds up into a fully working FM receiver covering 88 to 108MHz and has enough power to drive a small speaker.

Retail Unit Price each (inc. VAT).

Order Code	Type 10047	Price each exc. VAT	inc. VAT each
CP19V	FR-1 Receiver Kit	£22.080	£25.950
CP18U	C-RR Case	£12.720	£14.950

## AR-1 Airband AM VHF Receiver



This builds up into a complete VHF airband receiver including squelch control and will drive a small loudspeaker.

Retail Unit Price each (inc. VAT).

Order Code	Type 10050	Price each exc. VAT	inc. VAT each
CP17T	AR-1 Aircraft Rcvr	£25.480	£29.950
CP20W	Case CAR	£12.720	£14.950

## FR-146 2 Metre Receiver



The FR-146 kit produces a VHF receiver covering the 2 metre Amateur Radio band. Includes ceramic IF filter and squelch control.

Retail Unit Price each (inc. VAT).

Order Code	Type 10051	Price each exc. VAT	inc. VAT each
CP21X	FR-146 2m Receiver	£29.740	£34.950
CP22Y	Case CFR	£12.720	£14.950

† = While Stocks Last

## 2 Metre VHF FM Receiver Kit

**NEW LOW PRICE**



A complete receiver kit including cabinet, knobs and slow motion dial. Double conversion with ceramic filter, squelch, and very sensitive. Extremely instructional and will enable you to listen to the local ham radio operators. Powered by internal PP3 battery, it has its own internal speaker.

Frequency: 144-148MHz  
Size: 125 x 100 x 60mm  
Power: PP3 or Ext. 12V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS72P 1	MFA-8400 2m Rcvr Kit	£68.040	£79.950

## ASL-5 SSB/CW Audio Filter

**NEW LOW PRICE**

Dramatically improves SSB and CW signals. Plugs into receiver headphone or speaker socket. Gives you sharp band-pass filtering for SSB and 300Hz selectivity for CW. Requires 12V DC and provides 1W output. Ideal for improving scanner reception. Case 180 x 204 x 32mm.

Retail Unit Price each (inc. VAT).

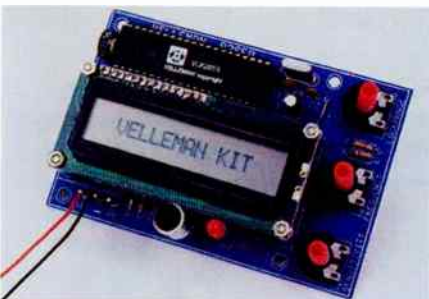
Order Code	Type	Price each exc. VAT	inc. VAT each
AB99H	ASL-5 Audio Filter	£13.570	£15.950
AM33L 1	HA-50R Case	£11.870	£13.950

## Morse, Packet & RTTY

## K2659 Morse Decoder With Liquid Crystal Display

**2**

Velleman



- ★ LCD readout
- ★ Adjustable centre frequency
- ★ Adjustable sensitivity and lock range
- ★ Low voltage operation
- ★ Compact size

If you have problems trying to decode those mysterious Morse Code signals, or keeping up with experienced signallers or automatic stations, then this decoder is the ideal solution. It will keep up with fast signallers, and conveniently 'notates' everything on a clear alphanumeric LCD readout. The decoder operates over a wide range of audio frequencies and picks up the Morse from the speaker of a suitable receiver using an on-board electret microphone. Sensitivity, centre frequency and maximum frequency deviation are adjustable. To achieve good results a 'clean' signal is required.

### Specification

Display: Alphanumeric LCD, 1 line of 16 characters  
Power supply voltage: +9V to +12V DC  
Power supply current: 100mA DC  
Centre frequency: Variable 700Hz to 1.9kHz

Dimensions: 105 x 70 x 28mm

### Kit and Special Parts

A complete kit of parts (including the PCB) is available. Full construction details may be found in Maplin Magazine/Projects Book 53 XA53H, and instruction leaflet XT81C.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE89W 1	Velleman Kit K2659	£52.750	£61.990
XT81C	Morse Dec Leaflet	£0.800	£0.800 NV

## Packet Radio Kit

### Ramsey Kit

- ★ Free Software
- ★ IBM Compatible
- ★ VHF/UHF Packet
- ★ Powered from Radio TNC RS232 Socket



This must be one of the most remarkable kits to be offered. You get a kit of parts to build a complete Packet Radio terminal and also free software for IBM computers. In just a few hours you could be sending and receiving Packet Radio at a fraction of the cost of any ready built unit. Full instructions are supplied and the unit is powered directly from the serial port of your computer. Ideal for those that have not yet tried Packet Radio and want a simple, no nonsense unit that will work first time. Ideal for schools and club projects. Amazing value!!! For a suitable case, order C-IBM.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CP36P 1	P-IBM	£51.020	£59.950
CP37S	C-IBM	£12.720	£14.950

## Preamplifiers, Active Aerials & Tuning Unit

### VHF/UHF Preamplifier

**2**



### Features

- ★ Multi-range VHF/UHF preamplifier
- ★ Low power consumption
- ★ Power supply through co-ax cables
- ★ High gain
- ★ No tuning required
- ★ Surface mount components

### Applications

- ★ VHF satellite bands
- ★ UHF TV
- ★ FM radio broadcasts
- ★ Amateur radio bands
- ★ Aircraft transmissions

This preamplifier was originally intended for use with the MAPSAT VHF Weather Satellite Receiving System; it was designed to be a replacement for the previous Maplin VHF preamplifier kit. However, the new design is based around a MAR-6 MMIC (Monolithic Microwave Integrated Circuit), which is unconditionally stable across its entire range (DC-2GHz). The gain is at least 16dB over this range, and may rise up to a maximum of 19dB for certain applications. Note that the MAR-6 is actually usable up to 4GHz, with a typical gain of around 9dB at this frequency. This means that the preamplifier is highly versatile, and can be used for any number of different applications. The power supply for this preamplifier can be fed via the co-ax cable that carries the signal to a receiver. If your receiver does not supply 12V DC through the co-ax cable, then a power supply can

be either purchased ready made (PU1 stock code BW50E suitable for 40-1000MHz), or built very easily from a few stock components. Surface mount components are used in this project but do not be put off, as the component count is very low and there is a way to solder these tiny components using only 'ordinary' equipment.

### Specification

Power supply: +12V DC  
Power source: External PSU or via co-ax cables  
Power consumption: 16mA  
Gain: up to 19dB  
Frequency range: DC-2GHz

### Optional Items

The following items, not included in the kit, may also be required.

16.5mm Heatshrink Sleeving 1m (BA01B)  
Gasket CAN 1 (FE40T)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is available separately. Full construction details may be found in Maplin Magazine/Projects Book 81 XA81C, and instruction leaflet XU88V.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT73Q	VHF/UHF Pre-Amp Kit	£17.010	£19.990
GH84F	VHF/UHF Preamp PCB	£4.670	£5.490
XU88V	VHF/UHF Preamp Ltr	£0.800	£0.800 NV

## 'Super-Scan Mk II' – A HF/VHF/UHF Wideband Active Aerial for Scanning Receivers

**2**

### Features

- ★ Indoor or outdoor use
- ★ Wideband HF/VHF/UHF preamplifier
- ★ Low power consumption
- ★ Power supply through coaxial cable
- ★ High gain
- ★ No tuning required
- ★ Surface mount components

Receiving applications  
★ Ideal for scanning receivers

- ★ 160, 80, 40, 20, 15, 10m HF amateur radio bands
- ★ 6, 4 and 2m VHF amateur radio bands
- ★ 70cm and 23cm UHF amateur radio bands
- ★ VHF FM broadcast band
- ★ UHF TV band
- ★ 27MHz and 93MHz CB bands
- ★ VHF/UHF aircraft bands
- ★ VHF and UHF PMR bands
- ★ VHF marine band
- ★ VHF taxi band

A radio receiver or scanner will only perform within the operating restrictions of its aerial system. Nearly all scanners are supplied with a small telescopic aerial. Although this is adequate for local reception, for long distance (DX) or weaker signals an outside aerial mounted as high as possible is required. With the increasing frequency range of modern VHF/UHF scanners, a very broadband aerial is needed. The cable, or feeder connecting it to the scanner must have good low loss signal characteristics if the advantages of an outdoor aerial are to be fully realised. All cable will have some losses which increase with feeder length and frequency. To compensate for this the aerial must have signal gain. The best method is to use a wideband masthead signal amplifier. The DC voltage used to power this amplifier is fed up through the centre core of the coaxial cable, which is introduced by using a PSU interface at the receiver end. The aerial described in this article has a weatherproof housing for outdoor use, with four ground radials to aid performance.

### Specification

Power supply: +9V to +14V DC  
Supply current: 17mA (at +12V)



Frequency range: 1MHz to 2000MHz  
Gain: 19dB (maximum)  
Impedance: 50Ω  
Connectors: N/BNC  
Length: 75cm  
Weight: 0.25kg

**Optional Items**

The following items, not included in the kit, may also be required.

50Ω cable	As Req.	(XS51F)
UR67 RF Cable	As Req.	(XR63T)
Plug N-050	2	(FJ77J)
Plug N-011	2	(FJ78K)
BNC Plug 50	2	(HH17T)
N Male to BNC Adapt	1	(FJ82D)
Adaptor 259	1	(YW05F)
AC Adaptor Regulated	1	(YB23A)

**Kit and Special Parts**

A complete kit of parts (including the PCB's, label and all hardware) is available. The PCB's, label and hardware are available separately. A ready assembled version is also available. Full constructional details may be found in Maplin Magazine/Projects Book 106 XD06G, and instruction leaflet XZ27E.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU33L	1 Super Scan Mk II Kit	£51.050	£59.990
AM37S	1 Super Scan Mk II	£68.070	£79.990
GJ66W	1 Super Scan Mk II PCB	£13.600	£15.990
GJ76H	1 S/Scan Mk II PSU PCB	£2.110	£2.490
KV21X	1 S/Scan Mk II Label	£2.970	£3.490
GA37S	1 Aerial Enclosure	£21.260	£24.990
GA38R	1 RF In-Line Box	£3.390	£3.990
XZ27E	1 Superscan MkII Lit	£1.000	£1.000 NV

## Aerial Activator



**Features**

- ★ Gain of over 15dB
- ★ Six wavebands
- ★ Usable with a wide range of radio receivers
- ★ Low power consumption
- ★ On-board voltage regulator
- ★ Signal input protection
- ★ Power input polarity protection
- ★ Internal battery or external power supply

**Applications**

- ★ Improve radio reception
- ★ Indoor active aerial
- ★ aerial tuner

The Aerial Activator is designed as an add-on device for your LW/MW/SW receiver. It is designed to increase the strength of the radio signals received over a wide range of frequencies. For LW/MW broadcasts and shortwave listeners using a general coverage receiver, the unit offers an improvement in reception even when used in conjunction with a small aerial system. The RF amplifier used in this design is based upon the SL560C data file first seen in the February 1994 issue of Electronics. The SL560C is a monolithic Integrated Circuit (IC) which contains three very high performance transistors and associated biasing components held in an eight-pin package. In this application it is configured as a 50Ω line driver circuit, with a gain of approximately 15dB.

**Specification**

Frequency range:	150kHz to 30MHz (six wavebands)
1.	150kHz - 300kHz
2.	300kHz - 600kHz
3.	600kHz - 1.5MHz
4.	1.5MHz - 4MHz
5.	4MHz - 10MHz

RF gain: 15dB  
Noise figure: 2dB  
Input impedance: Variable  
Output impedance: 50Ω  
Internal power: Four AA cells (+6V DC)  
External DC power: +10 to +16V DC  
Supply current: 20mA (internal batteries)  
28mA (external +12V DC)

**Optional Items**

The following items, not included in the kit, may also be required.

Metal Panel Box M4005	1	(WY02C)
M3 x 16mm Steel Screw	1 Pkt	(JY24B)
M3 Steel Washer	1 Pkt	(JD76H)
M3 Shakeproof Washer	1 Pkt	(BF44X)
M3 Steel Nut	1 Pkt	(JD61R)
M3 6-35mm (1/4in.) Spacer	1 Pkt	(FG33L)
4prs 25-4mm (1in.) Velcro	1 Pkt	(FE45Y)
BNC Round Socket 50Ω	1	(HH18U)
Small Terminal Post White	1	(FD71N)
Small Terminal Post Green	1	(FD71N)
UHF Socket Round	1	(BW84F)
Panel Mount 2.5mm Power Socket	1	(JK10L)
Alkaline AA Cells	4	(FK64U)
AC Adaptor Unregulated 300mA	1	(XX09K)
Standard 2.5mm Power Plug	1	(HH62S)
BNC Plug 50Ω	1	(HH17T)
PL259 Plug	1	(BW81C)
UHF Reducer Small	1	(BW82D)
UHF Reducer Large	1	(BW83E)
4mm Plug White	1	(HF67X)
4mm Plug Green	1	(HF65V)
144/430 BNC Aerial	1	(JM12N)

**Kit and Special Parts**

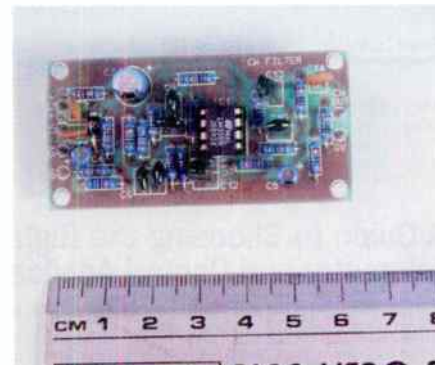
A complete kit of parts (including the PCB) is available (excluding optional items). The PCB and front panel are also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 80 XA80B, and instruction leaflet XU93B.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT58N	1 Aerial Activator	£42.540	£49.990
GH78K	1 ATU/Active Ant PCB	£10.200	£11.990
KP68Y	1 Aerial Activator F/P	£1.690	£1.990
XU93B	1 Aerial Activator Lit	£0.800	£0.800 NV

## Audio Filters

### CW Filter



- ★ Sharp audio peak filter
- ★ Low power consumption
- ★ Reverse polarity protection
- ★ Ideal novice project

Although many homebrew or kit receivers are generally adequate for continuous wave reception under normal conditions, this is not always so, especially during contest or openings on the bands. It becomes increasingly difficult to pick out the DX as the number of stations tend to seemingly overlap. One method to overcome this is to have a CW notch filter fitted into the receiver.

**Specification**

DC power supply voltage:	11 to 15V DC
Overall gain:	0dB
Input level:	8V pk-to-pk
Input impedance:	>1kΩ
Centre frequency:	775Hz
Bandwidth:	100Hz @ -3dB, 150Hz @ -6dB

**Kit and Special Parts**

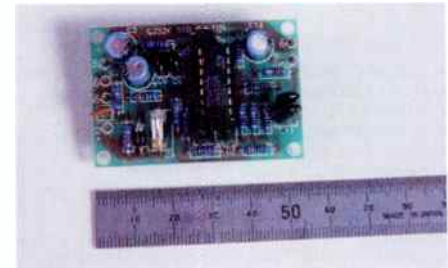
A complete kit of parts is available, including the PCB, the Instruction Leaflet, and the Constructors

Guide. The PCB is available separately. Full constructional details may be found in Maplin Magazine/Projects Book 93 XA93B, and instruction leaflet XV67X.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU13P	1 CW Filter Kit	£6.800	£7.990
GJ26D	1 CW Filter PCB	£1.690	£1.990
XV67X	1 CW Filter Lit	£0.500	£0.500 NV

## SSB Filter



**Features**

- ★ 8-pole Chebyshev filter
- ★ Reverse polarity protection
- ★ Low power consumption
- ★ Ideal novice project

Although many homebrew or kit receivers are generally adequate for SSB reception under normal conditions, this is not always so, especially during contest or openings on the bands. It becomes increasingly difficult to pick out the DX as the number of stations tend to seemingly overlap. One method to overcome this is to have an SSB filter fitted into the receiver, this is similar to the CW filter except that it is used over a limited bandwidth rather than a single frequency.

**Specification**

DC power supply voltage:	11 to 15V DC
Filter type:	Active 8-pole Chebyshev
Passband ripple:	±0.5dB maximum
Bandwidth:	-3dB points approx 250Hz and 3200Hz -6dB points approx 240Hz and 3400Hz
Input impedance:	24kΩ
Overall gain:	0dB

**Kit and Special Parts**

A complete kit of parts is available, including the PCB. The PCB is also available separately. Full constructional details may be found in Maplin Magazine/Projects Book 94 XA94C, and instruction leaflet XV79L.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LU15R	1 SSB Filter Kit	£5.090	£5.990
GJ32K	1 SSB Filter PCB	£1.690	£1.990
XV79L	1 SSB Filter Lit	£0.500	£0.500 NV



**24**<sup>HR</sup>  
**ORDER SERVICE**

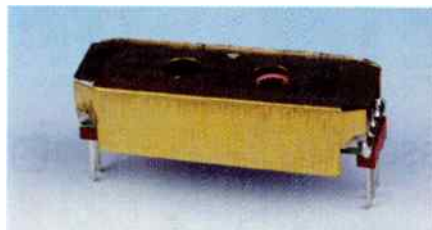
SALES: 01702 554000  
FAX: 01702 554001  
CASHTEL: 01702 552941  
KEY CALL: 01702 556751  
e-mail: Sales@maplin.co.uk

## Remote Control/Telemetry

### Radio

## 173MHz FM Transmitter Module

Radiometrix



- ★ Complete PCB mounting transmitter modules
- ★ Up to 1500bps data bit rate
- ★ CMOS / TTL compatible inputs
- ★ 10mW RF output power
- ★ Up to 1km range (direct line of sight).
- ★ Single +5V DC supply
- ★ DTI MPT1344 approved, WT licence exempt

This 173.225MHz transmitter module is a PCB mounting low power VHF narrowband FM transmitter module, designed for general purpose telemetry applications. The transmitter is directly compatible with the FM 173.225MHz receiver module GT45Y. When combined a short range telemetry link may be achieved up to 1km in direct line of sight.

#### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

#### Specification

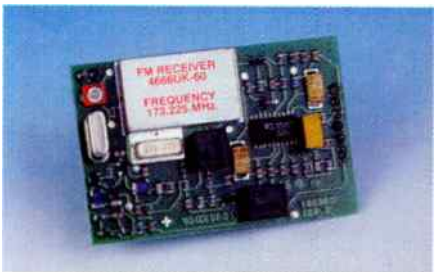
Supply Voltage:	+5.0V DC
Supply Current:	9mA
Working Frequency:	173.225MHz
Frequency Accuracy:	±1kHz
Output Power:	+10mW
Output Frequency:	173.225MHz
Modulation Bit Rate:	20 to 1500bps
Approval:	MPT1344
Dimensions:	40 x 13 x 11mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GT44X	173MHz FM 10mW Tx	£36.580	£32.920	£29.630	£42.990

## 173MHz FM Receiver Module

Radiometrix



- ★ Selective single conversion superhet
- ★ Suitable for direct PCB mounting
- ★ High sensitivity
- ★ Uses SAW filter for high immunity from interference
- ★ Open collector, true data output
- ★ Low power consumption
- ★ Signal strength output

This 173.225MHz receiver is a single conversion PCB mounting NBFM superhet receiver using Surface Acoustic Wave (SAW) technology. It is designed for general purpose telemetry applications and is compatible with 173.225MHz FM Transmitter (GT44X).

The unit incorporates antenna tamper detection circuitry which detects if the antenna has been removed, and a signal strength output. The module may be operated from from +3.3V to +5V logic supplies.

#### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

#### Technical Information

Voltage	+5.0V DC
Supply Current	10mA (typ)
Working Frequency	173.225MHz
RF Input Sensitivity	0.25mVpd
3dB Bandwidth	±6kHz
Frequency Error	±2kHz
Data Rate	50 to 1200bps
Dimensions	58 x 38 x 18.5mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GT45Y	173MHz FM Rx	£55.310	£49.770	£44.800	£54.990

## 173MHz Antennae

Two high performance antennae for use at 173MHz. These will provide optimum range and reliability when used in conjunction with the 173MHz transmitters and receivers elsewhere in this section.

#### 90mm (3 1/2in.) Helical Antenna (GT42V)

- ★ 1/4 wavelength helical antenna
- ★ 4BA mounting screw thread
- ★ Easy to install/remove
- ★ Rugged plastic finish

#### +3dB Gain 5/8 Wave Antenna (GT43W)

- ★ +3dB gain base loaded 5/8 wavelength whip antenna
- ★ Supplied with waterproof panel mounting base (requires 9mm (3/8in.) hole)
- ★ Easy to install/remove
- ★ Rugged ABS plastic moulded base coil mounted onto black stainless steel whip

Please note: in order to comply with UK DTI Regulations, an antenna with gain may only be used on a 173MHz receiver and not the transmitter



GT42V



GT43W

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GT42V	173MHz Stub Ant Stud	£13.600	£12.900	£12.230	£15.990
GT43W	173MHz Whip Antenna	£29.770	£28.230	£26.760	£34.990

## 418MHz AM Transmitter and Receiver Modules

RF Solutions

#### Applications

- ★ Pagers
- ★ Car alarms
- ★ Domestic alarms
- ★ Garage door openers
- ★ Nurse-call systems

## Transmitter (GT39N)

#### Features

- ★ Transmitting range up to 100 metres
- ★ SAW controlled frequency stability
- ★ No adjustable components
- ★ Only two connections
- ★ Single supply voltage +3V to +12V DC
- ★ DTI MPT1340 approved, WT licence exempt

A complete AM RF transmitter module (GT39N), which can be used to transmit data from any standard CMOS/TTL source up to 600bps.

The module is very simple to operate, requiring only two connections. The module is also low power, using only 2.5mA (typ) which means that it may be driven directly from an encoder IC or microcontroller. The module requires a simple antenna such as a tuned loop or short whip. The module is compatible with the AM Receiver Module (CR75S) below.

#### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

#### Specification

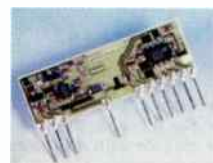
Supply voltage:	+3V to +12V DC
Current Consumption:	2.5mA when transmitting
Output Power:	250µW
Frequency:	418MHz
Range:	100 metres max
Operating temperature:	-10°C to +40°C
Dimensions (WHD):	7 x 11.5 x 4mm
Lead Pitch:	5mm
Approvals:	MPT1340



## Receiver (CR75S)

#### Features

- ★ Hybrid SIL module.
- ★ RF sensitivity typically -105 dBm
- ★ Extremely high accuracy laser trimmed inductor



## A Guide to Choosing the Right RF Solution for Radio-based Telemetry and Control Applications

- RF systems can be supplied in either AM or FM, in many different frequencies, ranges and sizes
- Our standard range of products have been designed around the general purpose frequency of 418MHz this frequency has been set by the Radiocommunications Agency to enable a manufacturer of an RF product to gain a licence exemption for a product, therefore allowing anyone to use this product without requiring a radio broadcasting licence
- Products may be supplied as either AM or FM. They are modular in design enabling an easy switch between the two
- The following table highlights the basic features of AM and FM systems, helping you determine the most suitable system for your application

FEATURE	AM	FM
Range (optimum)	-30 metres typically	up to 200 metres
Cost	Least	Most
Transmitter Physical size	Standard keyfob style	Hand held remote control
Transmission Frequency	418MHz	418MHz
Transmitter Battery	27A-type, 12V	PP3-type, 9V
Transmitter Battery Life	1,000 operations	>1,000,000 operations

#### Glossary of terms

<b>Transmitter</b>	A device which transforms electrical signals into electromagnetic waveforms
<b>Receiver</b>	A device which transforms electromagnetic waveforms into electrical signals
<b>Encoder</b>	A device which encrypts a signal into suitable format ready for RF transmission
<b>Decoder</b>	A device which translates an encoded signal into understandable message
<b>Transceiver</b>	A bidirectional Transmitter and receiver



- ★ Receiving range 30 metres typically
- ★ No adjustments required
- ★ CMOS/TTL compatible output
- ★ Single +5V supply
- ★ Current consumption 2.5mA
- ★ EMC/CE compliant
- ★ No licence requirements

This AM radio receiver module, can be used to pick up data from any 418 MHz AM transmission source including AM Transmitter Module (GT39N) above. The receiver is a SIL packaged module for mounting on a PCB.

The module has no moving or adjustable components thanks to an advanced laser trimming process which provides a very accurate trimming of the RF components.

This means that the module is highly stable and very robust, particularly when used in applications, such as automotive, where there is a high level of vibration, and a wide temperature range.

The module is suitable for any AM telemetry system, and provides digital data out at standard CMOS/TTL voltage levels. The module requires no special interfacing, the user need only to connect an antenna to the input and data out may be fed directly into a microprocessor or micro-controller I/O input.

Specification	
Supply voltage:	+5V DC
Current consumption:	2.5mA
Frequency:	418MHz
Operating temperature:	-25°C to 85°C
Max data rate:	2Kbps
RF Sensitivity:	-105dBm (typically)
Dimensions:	38mm x 14mm x 2mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GT39N	418MHz AM250W ErcTx	£14.450	£13.700
CR75S	AM Hybrid Rx 418	£14.450	£13.010

## 418MHz AM Transmitter and Superhet Receiver Modules

### LPRS

#### Applications

- ★ Pagers
- ★ Car alarms
- ★ Domestic alarms
- ★ Garage door openers
- ★ Nurse-call systems

### Transmitter (NV08J)

- ★ Transmitting range up to 100 metres
- ★ SAW controlled frequency stability
- ★ No adjustable components
- ★ Only two connections
- ★ Single supply voltage +2.5V to +13.1V DC
- ★ DTI MPT1340 approved, WT licence exempt

A complete AM RF transmitter module (GT39N), which can be used to transmit data from any standard CMOS/TTL source up to 1200bps. The module is very simple to operate, requiring only two connections. The module is also low power which means that it may be driven directly from an encoder IC or microcontroller. The module requires a simple antenna such as a tuned loop or short whip.

The module is compatible with the AM Receiver Module (NV09K) below.

#### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

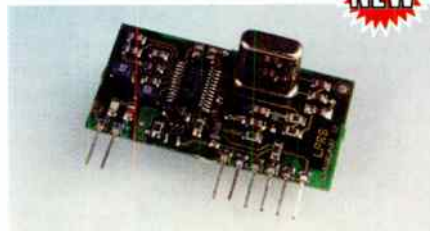
<http://www.maplin.co.uk>

#### Specification

Supply voltage:	+2.5V to +13.1V DC
Current consumption - Mark:	3mA to 3.6mA
Space:	0mA
RF output:	-6dBm ERP
Frequency:	418MHz ±75kHz
Range:	150 metres max

Operating temperature: -10°C to +40°C  
Dimensions (WHD): 7 x 11.5 x 4mm  
Lead Pitch: 5mm  
Approvals: MPT1340

### Receiver (NV09K)



#### Features

- ★ SIL PCB module.
- ★ RF sensitivity typically -104 dBm
- ★ Crystal controlled synthesised receiver
- ★ Receiving range 150 metres typically
- ★ No adjustments required
- ★ Data and audio outputs
- ★ Single +5V supply
- ★ Current consumption 2.5mA
- ★ EMC compliant
- ★ No licence requirements

This AM superhet receiver provides greatly improved sensitivity and bandwidth over super regenerative receivers. It is ideal for upgrading car alarm, domestic or other low cost applications that require improved range (up to 150 metres) and more consistent operation. The receiver can be duty cycled to reduce average current consumption to below 200µA which is ideal for 'pager' receivers.

The audio output can be easily processed to provide a signal strength output (RSSI) allowing radio link reliability to be dynamically assessed. Low radiated emissions ensure compliance with EMC requirements. The receiver operates from a single +5V DC supply and is compatible with AM Transmitter Module (NV08J) above.

#### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

#### Specification

Supply voltage:	+4.75 to +5.25V DC
Current consumption:	2.5mA
Frequency:	418MHz
Operating temperature:	0°C to 70°C
LF passband:	50Hz to 5kHz
RF passband:	250kHz
RF Sensitivity:	1.4µV/-104dBm (typ.)
Data output -	Low 0.5V max High 4.5V min

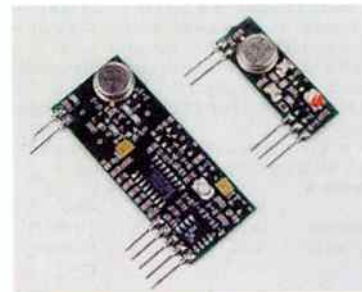
Dimensions: 20 x 40 x 6mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV08J	418MHz AM Tx Module	£8.500	£7.220
NV09K	418MHz AM SuperhetRx	£17.010	£14.460

## 418MHz Transmitter and Receiver Modules

### Radiometr



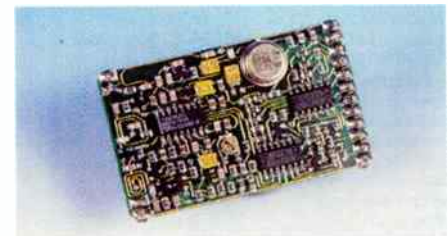
AM27E

AM28F



GT48C

GT49D



CR82D

#### Features

- ★ Ready made and tested modules
- ★ DTI approved to MPT 1340
- ★ Inherent ESTI 300-339 conformity (GT48C & GT49D only)
- ★ High stability
- ★ Small size (SMD-Based)
- ★ Ease of use
- ★ Wide supply range
- ★ Low current

#### Applications

- ★ Domestic and commercial security
- ★ Guard patrol protection
- ★ Lone worker protection
- ★ Medical alert
- ★ Nurse call systems
- ★ Mobile panic attack
- ★ Site paging receivers
- ★ Paging car alarms
- ★ Fire alarms
- ★ Remote control systems
- ★ Door bell

The TXM-418-A (AM27E) radio transmitter and matching SILRX-418-A (AM28F) receiver are low cost PCB mounting modules capable of reliably transferring analogue and digital data over distances of 50m in buildings, and over 200m under open field conditions. The modules can transmit data at speeds up to 5kbit/s. The transmitter is type approved to DTI (RA) specification MPT 1340, thus avoiding the need to submit the finished product for further approvals. Optimised for battery powered operation, both modules are designed for reliability and performance. They perform well with very small antennas, and require no complicated RF alignment. The modules are suitable for general purpose telemetry/telecommand, where their small size and high data rates may be used to advantage. Typical applications include: domestic and commercial security, guard patrol/lone worker protection, medical alert, nurse call systems, mobile panic attack, site paging receivers, paging car alarms, fire alarms, remote control etc.

The transmitter has a DC to 10kHz modulation bandwidth and will accept direct analogue (AFSK) or digital data. A modulation lowpass filter (10kHz @ -6dB, 1st order) is used internally. Data input, pin 5, is normally driven directly by CMOS logic levels from a data encoder IC, such as a UM3750 (UK77J), which should be powered from the same power supply as the transmitter module.

The positioning of the receiver antenna is very important and will determine the system range. The antenna should be kept clear of other metal in the system, and ideally should protrude directly out of the case in which it is enclosed.

Specification MPT 1340 requires that the transmitter

must only be used with an integral antenna. Three types of integral antenna are approved for use with the TXM-418-A transmitter module: the helical aerial, which is a wire coil connected directly to pin 2 at one end, and left free at the other; the loop aerial which consists of a loop of PCB track, tuned by a fixed or variable capacitor, and fed from pin 2 and the ground end, pin 1; the whip aerial, which can be a wire, rod, PCB track or combination that is connected directly to pin 2 of the module. Optimum total length is 17cm (a quarter-wavelength of 418MHz).

The choice of antenna and its position will greatly influence the effective range of the transmitter.

Antenna parameters	Type of Antenna		
	Helical	Loop	Whip
Ultimate performance	Good	Fair	Excellent
Ease of design set up	Good	Fair	Excellent
Size	Excellent	Good	Fair
Immunity to proximity detuning	Good	Excellent	Fair

#### Specification - Transmitter

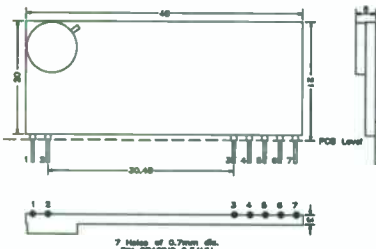
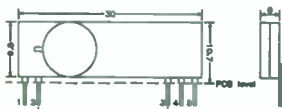
Power supply voltage: 6V to 12V DC  
 Current consumption: 6mA (6V) to 14mA (12V)  
 Effective Radiated Power (ERP): -10dBm (6V) to -6dB (12V)  
 Initial frequency accuracy:  $\pm 50$ kHz  
 Overall frequency accuracy:  $\pm 80$ kHz  
 Spurious radiation: To MPT 1340  
 FM deviation:  $\pm 25$ kHz  
 Modulation bandwidth (analogue): DC to 10kHz (-3dB)  
 Pulse width (digital modulation): 100 $\mu$ s

#### Specification - Receiver

Operating supply range (VCC): 4.5V to 9V DC  
 Supply current: 13mA  
 Overall frequency accuracy:  $\pm 100$ kHz  
 Sensitivity: 0.5 $\mu$ V for 20dB S/N  
 Carrier detector threshold: 1 $\mu$ V  
 RF input impedance: 50 $\Omega$   
 LO leakage: -54dBm  
 IF bandwidth: 250kHz  
 AF output level: 500mV pk to pk  
 AF bandwidth: DC to 5kHz (-3dB)  
 Frequency to voltage conversion: 10mV/kHz  
 Data output - logic low: 0.2V  
 Data output - logic high: 3.8V  
 Data bit duration: 0.2ms to 30ms  
 Data mark/space ratio: 5% to 66%  
 Data settling time: 10ms  
 Enable time: 1.5ms  
 Signal detect time: 1ms

#### Transmitter

- Pin 1: RF GND - internally connected to pin 4 and should be connected to the ground plane against which the integral antenna radiates.  
 Pin 2: RF out - connects to the integral antenna with an output impedance of 50 $\Omega$ .  
 Pin 3: Positive supply.  
 Pin 4: 0V connection for the modulation and supply.  
 Pin 5: Data In - should be driven directly by a CMOS logic device powered from the same supply voltage as the module.

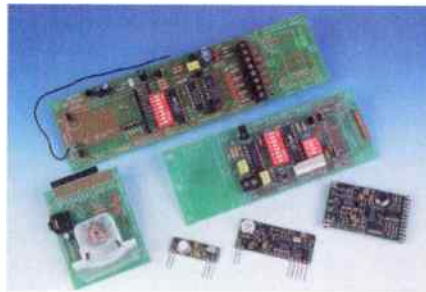


7 Holes of 0.7mm dia. Per SMD208 2.54mm

#### Receiver

- Pin 1: RF in - nominal impedance 50 $\Omega$   
 Pin 2: RF ground - internally connected to pin 4, and should be connected to any ground plane against which the antenna works.  
 Pin 3: Detect - may be used to drive a carrier detect to enable external circuits when a signal is being used, other wise a 10k $\Omega$  pull up resistor to pin 5 should be connected  
 Pin 4: 0V  
 Pin 5: +4.5V to 9V DC supply.  
 Pin 6: AF - FM demodulated output which can be

used to drive analogue data decoders.  
 Pin 7: DATA - a digital output derived from an internal data slicer and is a squared version of the AF output.



DM52G

A DIL version of the receiver (CR82D), with extra functions, is also available.

To assist OEMs with ensuring that end products comply with the requirements of the EMC directive, two enhanced, completely re-engineered, versions of the TXM transmitter and RXM receiver modules are available with inherent EMC conformity. The transmitter is GT48C and the receiver is GT49D, these modules include screening cans and employ new construction technology to intrinsically meet the requirements of the directive. These new versions, when incorporated into a design using sound engineering practice, will greatly assist in reducing the effort involved in meeting the requirements of the EMC directive.

#### Applications Information

Experimental circuits and explanations for using modules AM27E and AM28F are described in Maplin Magazine/Projects Book 73 XA73Q, and applications leaflet XU65V.

#### Technical Data

Technical data is available from Maplin MPS Technical Sales and is also downloadable in Adobe<sup>®</sup> Acrobat<sup>®</sup> PDF format from the Maplin Website:  
<http://www.maplin.co.uk>

#### Evaluation Kit DM52G

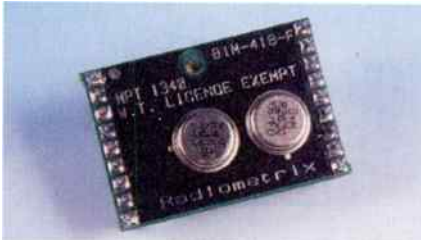
A comprehensive evaluation kit (DM52G) is available, this kit comprises: application notes, pre-built transmitter, receiver and signal strength PCBs, plus 1 x AM27E, 1 x AM28F and 1 x CR82D modules.

#### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AM27E	418MHz Tx	£11.900	£10.000	£8.400	£13.900
AM28F 1	418MHz Rx	£22.110	£19.240	£16.740	£25.900
CR82D 1	418MHz DIL Rx	£36.580	£32.920	£29.630	£42.900
GT48C	418MHz FM 250uW Tx EMC	£25.520	£24.190	£22.930	£29.900
GT49D	418MHz FM Rx EMC	£38.280	£36.290	£34.400	£44.900
DM52G 1	Eval Kit for AM27/28	£114.860			£134.900
XU65V	418MHz Modules Lft	£0.800			£0.800 NV

## BiM-418F FM Transceiver Module

Radlometrix



#### Features

- ★ Miniature transceiver module
- ★ Half duplex data transmission up to 40Kbps
- ★ Up to 120m open field range
- ★ Reliable 30m in-building range
- ★ Single 5V supply
- ★ CMOS/TTL interface
- ★ On-board data slicer, supply switches and antenna changeover
- ★ Double conversion superhet receiver
- ★ -107dBm receiver sensitivity
- ★ SAW controller FM transmitter at -6dBm ERP
- ★ Fast power-up enable(1ms) for duty cycle

#### power saving

- ★ DTI approved to MPT1340
- ★ Meets I-ETS-300 220
- ★ Licence exempt operation in UK

#### Applications

- ★ Medium speed computer networks
- ★ Lap-top - PC - printer links
- ★ High integrity wire-free fire/security alarms
- ★ Building environmental control/monitoring
- ★ Vehicle alarm systems
- ★ Remote metering
- ★ Authorisation/access control

This miniature transceiver module is a miniature UHF radio module; ideal for high speed two way data communication links. The module is capable of communicating at up to 40Kbps in half duplex. Supplied in a miniature PCB mounting module, the unit provides a low cost solution to implement a Bi-directional short range radio data link.

The transceiver integrates a low power UHF FM transmitter and matching superhet receiver together with the data recovery and Tx/Rx change over circuits.

The high data rates (up to 40Kbit/s) and fast Tx/Rx changeover (<1ms) make the BiM-418-F transceiver ideal for high integrity one-to-one links/multi-node packet switch networks. Rapid Rx power up (<1ms) allows effective duty cycle power saving of the receiver for battery powered applications. Full technical data and applications information available.

#### Technical data

Full technical data is available on request and is also downloadable in Adobe<sup>®</sup> Acrobat<sup>®</sup> PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

#### Specification

Supply Voltage:	+5V DC $\pm$ 0.5V
Current Consumption -	
Quiescent (standby):	1 $\mu$ A
Minimum:	8mA
Typical:	12mA
Maximum:	25mA
Radiated Power (transmitting):	-6dBm
Frequency:	418MHz
Range -	
in-building:	30 metres
Open-field:	120 metres
Operating temperature:	-20°C to +55°C
Approval:	MPT1340

#### BiM Transceiver Evaluation Kit



#### Features

- ★ Two-way transceiver interface kit
- ★ Allows testing in the target environment
- ★ Interface identification
- ★ Antenna evaluation
- ★ Can link to external hardware

This comprehensive BiM transceiver evaluation kit enables the user to realise a system for generating Two way communications in the shortest possible time. The kit may interface directly to the users circuit, and can operate in four modes to achieve the desired system.

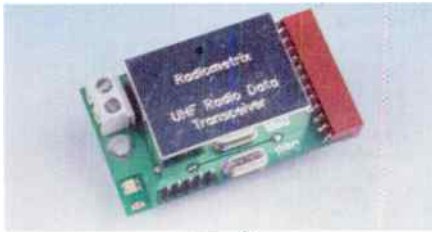
The kit is supplied in a protective case and includes two matching transceivers with micro-controller based interface, whip aerials and full technical data.

#### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CR83E 1	418MHz BiM	£55.310	£52.540	£49.910	£64.900
CR84F 1	Eval Kit for 418 BiM	£199.990			£234.900

## 418MHz FM Radio Packet Controller

Radiometrix



GT37S

- ★ Radio transceiver with host interface
- ★ 27 byte packet buffer
- ★ CMOS-TTL Interface
- ★ Packet framing and error checking are user transparent
- ★ SAW controlled FM transmitter and superhet receiver
- ★ Reliable 30 meter in-building range, 120m open ground
- ★ Built-in self-test / diagnostics / status LEDs
- ★ Complies with ETSI 300-220 regulations
- ★ Single rail +5V DC supply @ <20mA
- ★ 40Kbit/sec half duplex
- ★ Collision avoidance (listen before transmit)
- ★ Direct interface to 5V CMOS logic
- ★ Power save mode

### Radio Packet Controller

The Radiometrix RPC-418A provides a easy to implement solutions to a local area radio link or network. The Radio Packet Controller (RPC) consists of a UHF transceiver front end with host interface controller. The unit is capable of up to 40Kbps data rate (under ideal conditions). The RPC is supplied as a self-contained module which requires only a simple antenna, 5V supply and an 8-bit interface to a host microcontroller or bi-directional PC port.

The module provides packet formatting and packet recovery functions to realise a number of host microcontrollers or PCs in a radio network. A data packet of 1 to 27 bytes downloaded by the connected host into the RPC's packet buffer is transmitted out as RF signal by the RPC and will 'appear' in the receive buffer of all the other RPCs within radio range.

A data packet received by the RF stage of the RPC is decoded, stored in a packet buffer and the Host controller is informed of a packet is waiting to be uploaded.

Generating a local area radio network couldn't be easier!

### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

### Specification

Supply Voltage: +5V DC  
 Current Consumption: <20mA  
 Frequency: 418MHz  
 Radiated Power (Tx): -6dBm (typ)  
 Range: 30m within buildings  
 120m in direct line of sight  
 Operating Temperature: 0°C to 60°C

### Radio Packet Controller Evaluation Kit



GT38R

To aid system design, the RPC Evaluation kit provides a development platform for easy integration of the packet controller within an

application. Supplied with PC communications software the system provides all the user needs to develop an embedded packet control communications system. The system has several different operating modes as well as providing hardware for a peripheral microcontroller.

### Retail Unit Price each (inc. VAT).

Order Code	Type 13818	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GT37S	418MHz FM BIM RPC	£85.090	£76.580	£68.920	£99.990
GT38R	418MHz BIMRPC DevKit	£340.410			£399.990

## 418MHz AM Key-fob Transmitters

RF Solutions



CR71N & CR73Q



CR72P & CR74R

### Features

- ★ 418MHz SAW controlled transmitter
- ★ Unique transmission data code from one in over 16,000,000 combinations
- ★ High security 'anti-scan' models transmit one unique code from one in over 16,000,000 combinations on each key-press then 'hop' onto another code.
- ★ Tough water-resistant ABS plastic enclosure.
- ★ Battery low indicator
- ★ MPT1340 license exempt
- ★ EMC/CE compliant

These radio transmitter keyfobs available as either one switch, single channel, or two switch, three channel versions.

These keyfobs are used in conjunction with the AM Receiver Module (CR75S) or Receiver Decoders (GT35Q, GT36P, CR76H, CR77J, CR78K & CR80B) listed elsewhere in this section, to provide a complete remote control system.

On depression of a switch, the unit transmits a unique pattern data stream. The algorithm of transmitted data is controlled by on-board micro-controller.

A SAW resonator is used to ensure accurate transmission frequency. A low power LED is used to indicate code transmission and low battery status (blinking).

Each unit is supplied complete with a battery (replacement, ZB55K), in a water-resistant plastic housing with split-ring attached for easy fixing on to a key-ring etc.

The transmitter is fully approved for use in The UK and requires no licence.

The transmitters are available in either 'Standard' data transmission format or as 'High Security Code Hopping' versions.

### Standard Versions

Each transmitter keyfob has a unique signature code designated during manufacture, from one in >16 million possible combinations. The signature code is part of the data transmitted each time the keyfob is operated.

- 1 Button, 1 Channel, Standard: CR71N
- 2 Button, 3 Channel, Standard: CR72P
- Code Hopping Versions

The data transmitted is a pseudo-random number from over 16 million possible combinations and changes on each keypress. Once transmitted, the same data is guaranteed never to be repeated even if the batteries are changed (the data stream appears as a random number).

A code hopping system provides the ultimate security remote control, preventing any third party from scanning the code and replaying it in order to defeat the security system.

- 1 Button, 1 Channel, Code Hopping: CR73Q
- 2 Button, 3 Channel, Code Hopping: CR74R

### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

### Specification

Supply Voltage: 12V DC (27A battery)  
 Current Consumption: 8.5mA when transmitting  
 Output Power: 250µW  
 Frequency: 418MHz  
 Range: 30 metres typically  
 Operating temperature: 0°C to 60°C  
 Approval: MPT1340  
 EMC: meets ETS 300-220

### Retail Unit Price each (inc. VAT).

Order Code	Type 12550	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CR71N	AM 1Sw 1Ch Tx 418	£17.860	£16.070	£14.460	£20.990
CR72P	AM 2Sw 3Ch Tx 418	£19.560	£17.600	£15.840	£22.990
CR73Q	AM Hop 1Sw 1Ch Tx418	£21.260	£19.140	£17.220	£24.990
CR74R	AM Hop 2Sw 3Ch Tx418	£22.970	£20.670	£18.600	£26.990

ORDER BEFORE 5PM FOR SAME DAY DESPATCH

Tel: 01702 554000

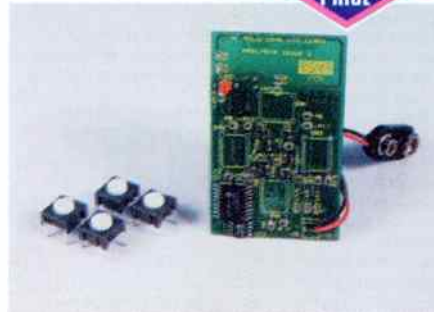
Fax: 01702 554001

e-mail: [Sales@maplin.co.uk](mailto:Sales@maplin.co.uk)

## 418MHz FM Transmitter-Encoders

RF Solutions

**NEW LOW PRICE**



CR85G



CR87U

### Features

- ★ Compact transmitter-encoder
- ★ Integral antenna
- ★ Range up to 200m open field
- ★ High security anti-scanning 'code hopping' data encoding as standard on all versions
- ★ Transmission code changes on each key press from over 16,000,000 combinations
- ★ Available in 1 and 4 channel versions
- ★ Available cased or as a bare board
- ★ Over 1 year operation from a single Alkaline PP3 battery
- ★ MPT1340 License exempt
- ★ EMC/CE compliant

These compact FM transmitter-encoders are intended to be paired with matching FM receiver-decoders (CR88V, CR89W or CR90X). The Tx/Rx pair will provide a highly secure, reliable telemetry link, with long range and low power operation – such cannot be achieved with AM systems.

The data transmitted is a pseudo-random number from over 16 million possible combinations and changes with each transmission. Once transmitted, the same number is guaranteed never to be repeated even if the batteries are changed (the data stream appears as a random number).

A code-hopping system provides the ultimate security remote control, preventing any third party from scanning the code and replaying it in order to defeat the security system.

Three versions are available: 4-channel bare-board (CR85G), 1-switch cased (CR86T) and 4-switch cased (CR87U). The bare board version is supplied with switches *unmounted* on the PCB, to facilitate ease of use in applications where the transmitter is controlled by dry-contacts (e.g. from relays, reed switches, remotely mounted switches, etc.). The bare board is ideal for use in 'remote reporting' systems, security alarms, etc.

4-Channel bare board: CR85G  
1-switch cased: CR86T  
4-switch cased: CR87U

### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

### Specification

Supply voltage: 9V DC (PP3 battery)  
Current consumption: 15mA when transmitting  
Zero power standby  
Output power: 250µW  
Frequency: 418MHz

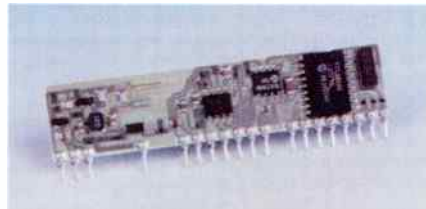
Range: up to 200 metres  
Operating temperature: 0°C to 60°C  
Dimensions: 107mm x 60mm x 22mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CR85G	1 FM Hop 4Sw 4Ch Tx Bd	£39.990	£34.360	£29.570	£46.990
CR86T	1 FM Hop 1Sw Tx In Box	£42.540	£41.960	£37.780	£49.990
CR87U	1 FM Hop 4Sw Tx In Box	£49.090	£43.690	£38.890	£57.690

## 418MHz AM Receiver-Decoder Hybrid Module

RF Solutions



### Features

- ★ Complete decoder for AM Transmitter keyfobs (CR71N-CR74R).
- ★ Laser trimmed inductor gives very high stability with no moving or adjustable parts.
- ★ Learns codes from up to 16 unique transmitters (8 high-security code-hopping)
- ★ 4 data channel outputs
- ★ CMOS outputs programmable as momentary or latching.
- ★ Data reception output signal (direct drive of LED)
- ★ Single rail supply +5V DC
- ★ Low power consumption

### Applications

- ★ Garage door openers
- ★ Car, motorcycle, caravan domestic alarms
- ★ General purpose remote control
- ★ Gate entry systems

These miniature SIL hybrid modules are a complete three channel RF Receiver/Decoder which can be used to generate a complete remote telemetry system.

These modules consists of a front end super-regenerative receiver with an embedded controller providing all decoding functions. When used in conjunction with the transmitter keyfobs (CR71N-CR74R) a remote control 'front end' may easily be added to any application.

These modules show a very high frequency stability thanks to a unique laser trimming process which has been patented to give a very accurate on board inductor removing the need for any moving components.

These modules have an easy-to-use 'LEARN' facility. GT35Q is capable of learning up to 16 standard (CR71N & CR72P) RF Solutions Key-fob Transmitters. GT36P is capable of learning up to 8 high-security code-hopping unique (CR73Q & CR74R) RF Solutions Key-fob Transmitters.

Modules require connection to the power supply, and provides four data outputs. The outputs may be programmed for momentary or latching configuration via a link input, a data reception direct LED drive is also provided

### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

### Specification

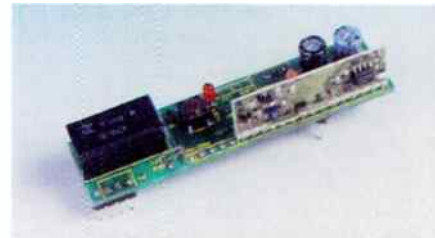
Supply Voltage: +5V DC  
Current Consumption: 9mA  
Frequency: 418MHz  
Operating Temperature: 0°C to 60°C  
Dimension (WHD): 63.5 x 14.25 x 3.3mm

Retail Unit Price each (inc. VAT).

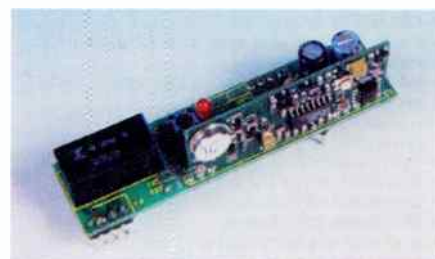
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GT35Q	418MHz AM Rx Decd Hybrid	£25.520	£22.970	£20.670	£29.990
GT36P	418MHz AM Rx Decd Hybrid	£29.770	£26.800	£24.120	£34.990

## 418MHz AM and FM Receiver-Decoders – PCB Mounting

RF Solutions



CR76H & CR77J



CR88V

### Features

- ★ Complete receiver-decoder modules
- ★ PCB mounting with relay
- ★ Available in 3 channel AM & 4 channel FM versions
- ★ Available in standard and high-security code-hopping versions
- ★ AM range 30 metres typically
- ★ FM range up to 200 metres
- ★ Receiver-decoders 'learn' up to 16 standard transmitter-encoders or up to 8 code-hopping transmitter-encoders

These receiver-decoder modules mount on a PCB as a complete component, providing RF receiver and decoder functions with built-in intelligent 'easy learn' feature. The modules are taught to recognise the codes from transmitter-encoders.

These modules are very easy to design-in, adding remote control has never been easier! The modules have the same footprint as a standard 40-pin DIL integrated circuit, plus a relay section – the module simply plugs into the end application.

These modules are very versatile: having the capacity to learn up to 8 standard transmitter-encoders or 16 high-security code-hopping transmitter-encoders. An LED provides indication of data reception. Four high current digital outputs and an on-board relay are provided – which can be set to momentary or latching operation. The relay section can be 'snapped off' to reduce the size of the module if it is not required.

The modules are available in a number of configurations:

### AM Standard Receiver-Decoder (CR76H)

- ★ 3-channel
- ★ 1-relay on-board
- ★ Four outputs
- ★ 30m range typically
- ★ For use with 1 button, 1 channel, standard AM Key-fob transmitter (CR71N) or 2 button, 3 channel, standard AM Key-fob transmitter (CR72P)

### AM High-Security Code-Hopping Receiver-Decoder (CR77J)

- ★ High security
- ★ 3-channel
- ★ 1-relay on-board
- ★ Four outputs
- ★ 30m range typically
- ★ For use with 1 button, 1 channel, Code-Hopping AM Key-fob Transmitter (CR73Q) or 2 button, 3 channel, Code-Hopping AM Key-fob Transmitter (CR74R)

### FM High-Security Code-Hopping Receiver-Decoder (CR88V)

- ★ High security
- ★ 4-channel
- ★ 1-relay on-board
- ★ Four outputs
- ★ Up to 200m range
- ★ For use with 4-Channel Bare-Board FM Transmitter-Encoder (CR85G), 1-Switch Cased FM Transmitter-Encoder (CR86T) or

**4-Switch Cased FM Transmitter-Encoder (CR87U)**

**Technical data**

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

**Specification**

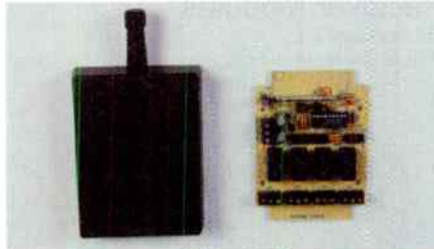
Supply voltage:	+12V DC or +5V DC without relay
Current consumption –	
Quiescent:	10mA
Operating:	50mA
Range –	
AM:	30m typical
FM:	up to 200m
Frequency:	418MHz
Operating temperature:	0°C to 60°C
Relay connections:	NO, NC, COM
Relay rating:	2A @ 12V DC
Dimensions –	
AM:	76mm x 19mm x 15mm
FM:	76mm x 23mm x 15mm

Retail Unit Price each (inc. VAT).

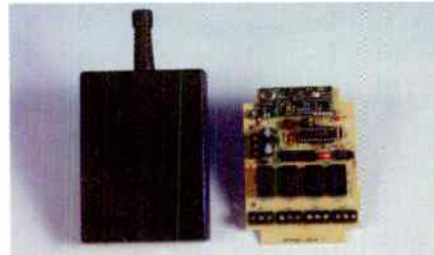
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CR76H 1	AM 1Rly 3Ch Rx 418	£35.900	£30.870	£26.550	£42.190
CR77J 1	AM Hop 1Rly 3Ch Rx 418	£39.730	£34.170	£29.380	£46.690
CR88V 1	FM Hop 1Rly 4Ch Rx 418	£58.110	£49.980	£42.980	£68.290

**418MHz AM & FM Receiver-Decoders – Cased**

**RF Solutions**



CR78K, CR80B



CR89W

**Features**

- ★ Complete cased receiver-decoders
- ★ Available in 3 channel, 4 relay AM & 4 channel, 4 relay FM versions
- ★ Available in standard and high-security code-hopping versions
- ★ AM range 30 metres typically
- ★ FM range up to 200 metres
- ★ Receiver-decoders 'learn' up to 16 standard transmitter-encoders or up to 8 code-hopping transmitter-encoders

These cased receiver-decoders provide an easy way of adding a remote control system to virtually any application. The receiver-decoders are self-contained and provide 3-channel (AM) or 4-channel (FM) remote control with relay outputs (see specification table for relay contact ratings). A host of applications can be switched remotely; e.g. garage doors, domestic appliances, garden lights, alarm systems, etc.

Installation simply requires connections to be made to the receiver-decoder's power input and control outputs via PCB screw terminals. These receiver-decoders are very versatile: having the capacity to learn up to 8 standard transmitter-encoders or 16 high-security code-hopping transmitter-encoders.

Full data available.

These receiver-decoders are available in a number

of configurations in ready built form only:

**AM Standard Receiver-Decoder (CR78K)**

- ★ 3-Channel
- ★ 4-Relays
- ★ 30m range typically
- ★ For use with 1 button, 1 channel, standard AM Key-fob Transmitter (CR71N) or 2 button, 3 channel, standard AM Key-fob Transmitter (CR72P)

**AM High-Security Code-Hopping Receiver-Decoder (CR80B)**

- ★ 3-Channel
- ★ 4-Relays
- ★ 30m range typically
- ★ For use with 1 button, 1 channel, Code-Hopping AM Key-fob Transmitter (CR73Q) or 2 button, 3 channel, Code-Hopping AM Key-fob Transmitter (CR74R)

**FM High-security Code-Hopping Receiver-Decoder (CR89W)**

- ★ High Security
- ★ 4-Channel
- ★ 4-Relays
- ★ up to 200m range
- ★ For use with 4-Channel Bare-Board FM Transmitter-Encoder (CR85G), 1-Switch Cased FM Transmitter-Encoder (CR86T) or 4-Switch Cased FM Transmitter-Encoder

**Technical data**

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

**Specification**

Supply voltage:	+12V DC
Current consumption –	
Quiescent:	10mA
Operating:	200mA (all relays)
Range:	
AM:	30m typical
FM:	up to 200m
Frequency:	418MHz
Operating temperature:	0°C to 60°C
Relay connections:	NO, NC, COM
Relay rating-	
Max switching power:	30W DC, 60VA AC
Max current:	2A
Max voltage:	150V DC, 220V AC
Example ratings:	12V DC @ 2A 30V DC @ 1A 60V AC @ 1A 120V AC @ 500mA
Dimensions:	112mm x 83mm x 38mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CR89W 1	FM Hop 4Rly 4Ch Rx 418	£85.090	£80.850	£76.800	£99.990
CR78K 1	AM 4Rly 3Ch Rx 418	£54.880	£47.200	£40.590	£64.490
CR80B 1	AM Hop 4Rly 3Ch Rx 418	£59.560	£51.220	£44.050	£69.990

**418MHz High-Speed Transparent RS232 Radio Data Modem**

**LPRS**



**Features**

- ★ Wireless RS232 operation
- ★ Half-duplex data transmission at up to 19.2Kbps
- ★ Hardware (CTS/RTS) or software (Xon/Xoff) flow control
- ★ LED transmit and receive status indicators
- ★ User selectable host data rate
- ★ Selectable internal or external antenna
- ★ MPT1340 approval

**★ Licence exempt operation**

**★ Range up to 100 metres open-field**

**Applications**

- ★ PC to PC link
- ★ Laptop PC to PC/Mainframe links
- ★ Remote printer
- ★ Remote data acquisition/logging
- ★ Stock/inventory control systems
- ★ EPOS systems

This radio data modem provides a reliable transparent asynchronous RS232 data link using a miniature UHF radio transceiver. Data can be transmitted at user selectable baud rates of 4800, 9600 or 19200bps. The radio transceiver is Type Approved for licence exempt use in the UK (MPT1340)

The unit requires a DC supply voltage in the range +8V to +12V. The unit will operate from a simple three-wire RS232 connection using Tx, Rx and Gnd, however, flow control can be implemented, if required, using the CTS and RTS control lines.

Please note that units are supplied individually - two units will be required to establish a radio data link.

**Operation**

The quiescent state of the unit is receive. In this condition the unit is continually looking for either RS232 data from the host or the RF carrier from another unit. When the unit receives RS232 data from the host, the transmitter is turned on and the data is then transmitted in packets preceded by a header block. This block contains a synchronisation word, the number of bytes in the packet and a checksum. The header does not degrade the overall performance of the link and provides good data integrity and security. When the unit detects the RF carrier from another unit, it checks the header block and data for the synchronisation word, the correct number of data bytes and a valid checksum. If all three are correct, the header block is discarded and the original data is output via the RS232 port.

**Range**

As will all radio systems, range will vary according to the environment. In open field conditions a range of up to 100 metres may be achieved. In-building range may reduce this distance considerably.

**Specification**

**General**

Supply voltage:	+8V to +12V DC
Supply current:	45mA typical
Host interface:	Half duplex asynchronous RS232, 9-way D-type connector

Data rate:	4800, 9600, 19200bps jumper selectable
Data bits:	8 (or 7 with parity)

Stop bits:	1
Parity:	None
Tx/Rx switchover time:	<1ms

**RF Parameters**

Frequency:	418MHz
Frequency stability:	±95kHz
RF power output:	-6dBm typical ERP
FM Deviation:	20kHz
Modulation:	GMSK
Spurious emissions:	meets ETS 300-220
Receiver sensitivity:	-107dBm
Local osc leakage:	-57dBm
IF Bandwidth:	200kHz
AFC lock range:	200kHz

**Mechanical & Environmental**

Size:	114 x 63 x 17mm
Weight:	55 grams
Operating temp:	-20°C to +55°C

**Technical Data**

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website: <http://www.maplin.co.uk>

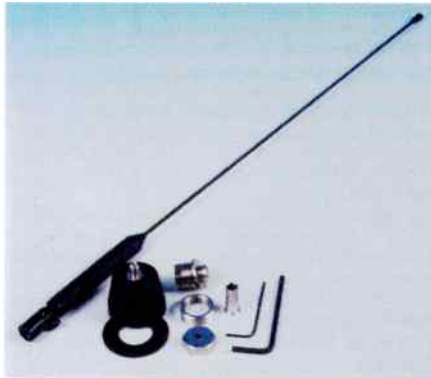
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	4+	
NV06G 1	418MHz Radio Modem	£255.310	£245.090	£235.290	£299.990

**MAPLIN**  
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## 418MHz Antennae

A range of three high performance antennas for use at 418MHz. These will provide optimum range and reliability when used in conjunction with the 418MHz transmitters and receivers elsewhere in this section.



CR95D

- +3dB Gain 5/8 Wave Antenna (CR95D)
- ★ +3db Gain base loaded 5/8 wavelength whip antenna
- ★ Supplied with waterproof panel mounting base (requires 9mm (3/8in. hole)
- ★ Easy to install
- ★ Rugged ABS plastic moulded base coil mounted onto black stainless steel whip.

Please note: in order to comply with UK DTI Regulations, an antenna with gain may only be used on a 418MHz receiver and not the transmitter.

### Helical Stub Antenna (CR94C)

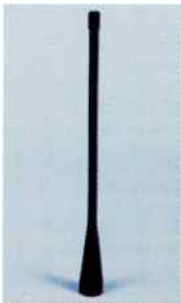
- ★ 1/4 wavelength helical antenna
- ★ 4BA mounting screw thread
- ★ Easy to install
- ★ Rugged plastic finish



CR94C

### 150mm (6in.) Flexible Antenna (CR93B)

- ★ 1/4 wavelength flexible whip antenna
- ★ 4BA mounting screw thread
- ★ Easy to install
- ★ Rugged plastic finish



CR93B

Retail Unit Price each (inc. VAT).

Order Code	Type 12554	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
CR95D 1	BaseLoad 418 MHz Ant	£29.180	£25.380	£22.080	£34.290
CR94C	Helical 418MHz Ant	£11.650	£10.130	£8.810	£13.690
CR93B	Flexo 418MHz Ant	£11.650	£10.130	£8.810	£13.690

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## 458MHz FM 10mW Fixed Frequency Transmitter & Receiver Modules

Circuit Design Inc.



GT17T



GT18U

- ★ Crystal controlled fixed frequency
- ★ Narrow band FSK (NBFSK) modulation
- ★ 10mW transmitter
- ★ Sensitive double conversion superhet receiver
- ★ Up to 1km range, direct line of sight
- ★ Fully screened
- ★ DTI MPT1329 and MPT1361 approved, WT licence exempt
- ★ ETSI 300-220 compliance for EMC
- ★ Transmitter supplied with flexible antenna (can be removed and fitted with rigid antenna or have coax-connected antenna attached)
- ★ Easy to use

This pair of transmitter and receiver modules are designed for longer range applications and use the 458MHz band. They are approved to MPT1329 and MPT1361 for use in the UK. The modules comply with ETSI 300-220 and are thus intrinsically compliant with the requirements of the EMC directive. Both modules are CMOS/TTL compatible and include all functions that are necessary for the transmission of digital data by radio. They are suited for general purpose telemetry and telecommand such as industrial machine control systems, security, surveillance, as well as general data transmission. In combination, these modules will typically provide an operating range of between 800m and 1km, direct line of sight.

The transmitter is supplied with a flexible antenna, attached to the transmitter by means of a miniature coax connector. This antenna can be unplugged and either a rigid antenna substituted (GT25C) or an external 458MHz antenna connected by means of 50Ω coax using miniature coax plug (GT24B).

### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>



### Specifications

**General:**  
 Operating frequency: 458.650MHz  
 Frequency response: 100Hz to 3kHz  
 BAUD rate: 1200 to 2400 BAUD  
 (async serial data with start and stop bit)  
 4800 BAUD (selected data protocols and applications)  
 Operating temperature: -10°C to +60°C

**Transmitter:**

RF output power: 10mW ±3dB @50Ω  
 Frequency stability: <2.5kHz (0°C to +50°C)  
 Modulation: Narrow band FM  
 Data input: CMOS or TTL  
 Supply voltage: +5.5V to +10V DC  
 Supply current: 18mA, typ. 25mA max  
 Size (WHD): 36 x 26 x 10mm  
 Weight: 9.8g

### Receiver:

Type: Double conversion superhet  
 Sensitivity: 200µV, typ. 300µV max (for 12dB SINAD)  
 Selectivity: ±5kHz at -6dB point  
 Demodulation: Narrow band FM  
 Distortion: <5% at 1kHz  
 S/N ratio: 50dB overall  
 Data output: Open collector (digital)  
 Other outputs: RSSI (field strength)  
 AF (analogue)  
 Supply voltage: +4.5V to +14V DC  
 Supply current: 10mA, typ. 15mA max.  
 Size (WHD): 50 x 30 x 7mm  
 Weight: 19.3g

Retail Unit Price each (inc. VAT).

Order Code	Type 13823	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
GT17T	458MHz FM 10mW Fxd Tx	£65.090	£77.430	£70.460	£98.990
GT18U	458MHz FM Rx Fxd	£119.140	£108.410	£98.660	£139.990
GT24B	Miniature Coax Plug	£1.690	£1.600	£1.520	£1.990
GT25C	458MHz Rigid Antenna	£3.390	£3.220	£3.050	£3.990

## 458MHz FM 10mW PLL Synthesised Transmitter & Receiver Modules

Circuit Design Inc.



GT22Y



GT23A

- ★ 16 Channels in 458MHz band (25kHz channel step) - DIL switch selectable
- ★ PLL controlled VCO with fast settle time (<70ms)
- ★ Narrow band FSK (NBFSK) modulation
- ★ 10mW transmitter
- ★ Sensitive double conversion superhet receiver
- ★ Up to 1km range, direct line of sight
- ★ Fully screened
- ★ DTI MPT1329 and MPT1361 approved, WT licence exempt
- ★ ETSI 300-220 compliance for EMC
- ★ Transmitter supplied with flexible antenna (can be removed and fitted with rigid antenna or have coax-connected antenna attached)
- ★ Easy to use

This pair of transmitter and receiver modules are designed for longer range applications and use the 458MHz band. The frequency is selectable by means of a DIL switch, this allows a number of similar transmitter/receiver pairs to be used in proximity without mutual interference. Additionally, a

channel may already occupied and thus being able to select the frequency allows a 'free' channel to be used. These modules are approved to MPT1329 and MPT1361 for use in the UK. The modules comply with ETSI 300-220 and are thus intrinsically compliant with the requirements of the EMC directive. Both modules are CMOS/TTL compatible and include all functions that are necessary for the transmission of digital data by radio. They are suited for general purpose telemetry and telecommand such as industrial machine control systems, security, surveillance, as well as general data transmission. In combination, these modules will typically provide an operating range of between 800m and 1km, direct line of sight.



The transmitter is supplied with a flexible antenna, attached to the transmitter by means of a miniature coax connector. This antenna can be unplugged and either a rigid antenna substituted (GT25C) or an external 458MHz antenna connected by means of 50Ω coax using miniature coax plug (GT24B).

**Technical data**

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

**Specifications**

**General:**

Operating frequency: 458MHz band/16 channels  
 Frequency response: 100Hz to 3kHz  
 BAUD rate: 1200 to 2400 BAUD  
 (async serial data with start and stop bit)  
 4800 BAUD (selected data protocols and applications)  
 Operating temperature: -10°C to +60°C

**Transmitter:**

RF output power: 10mW +0dB -3dB @50Ω  
 Transmitter start-up: 60ms  
 Frequency stability: <2.5kHz (0°C to +50°C)  
 Modulation: Narrow band FM  
 Data input: CMOS or TTL  
 Supply voltage: +3V to +12V DC  
 Supply current: 30mA, typ.  
 Size (WHD): 36 x 26 x 10mm  
 Weight: 11g

**Receiver:**

Type: Double conversion superhet  
 Sensitivity: 200µV, typ. 300µV max (for 12dB SINAD)  
 Selectivity: ±7.5kHz at -6dB point  
 Demodulation: Narrow band FM  
 Distortion: <5% at 1kHz  
 S/N ratio: 35dB overall  
 Data output: Open collector (digital)  
 Other outputs: RSSI (field strength)  
 AF (analogue)

Supply voltage: +3.6V to +12V DC  
 Supply current: 30mA, typ.  
 Size (WHD): 50 x 30 x 9mm  
 Weight: 18g

Retail Unit Price each (inc. VAT).

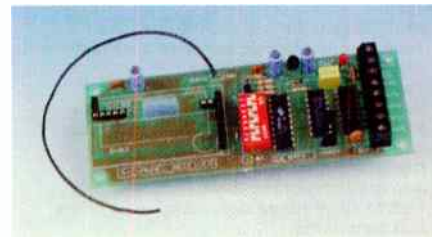
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GT22Y	458MHz FM 10mW Tx Syn	£97.860	£89.050	£81.040	£114.990
GT23A	458MHz FM Rx Syn	£127.650	£116.160	£105.704	£149.990
GT24B	Miniature Coax Plug	£1.690	£1.600	£1.520	£1.990
GT25C	458MHz Rigid Antenna	£3.390	£3.220	£3.050	£3.990

**458MHz FM 10mW Transmitter-Encoder and Decoder**

Low Power Radio Solutions



GT26E



GT27F

- ★ Up to 800m range, direct line of sight
- ★ FM modulation – high integrity operation
- ★ LED transmit indicator
- ★ 255 codes, DIL switch selectable
- ★ 4-button, 4-channel operation
- ★ Ideal for lighting control, non-critical process control, remote switching and general purpose telecommand
- ★ Hand-held transmitter
- ★ DTI MPT1329 & MPT1361 approved, WT licence exempt

When used as a pair, this hand held transmitter and receiver provide a remote control system with a range of up to 800m (direct line of sight). The system can be set to operate on 1 of 255 codes by means of a DIL switch, thus allowing several pairs to be used in close proximity, although not simultaneously. 4 buttons on the transmitter operate 8 separate outputs on the receiver (inverted and non inverted). Transmitter is powered by a 9V PP3 Alkaline battery (JY49D), providing power for up to 5000 1.5 second operations over 2 years. Receiver has open collector outputs which can sink up to 500mA max (each). Supply voltage of the receiver is +8 to +24V DC, 20mA quiescent. Receiver dimensions are 120 x 45mm.

Please note that the receiver board IS NOT supplied with the RF Receiver Module, this item must be purchased separately (GT18U).

**Technical data**

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GT26D	458MHz FM 10mW Encd Tx	£123.390	£106.430	£96.850	£144.990
GT27E	458MHz FM Decd Rx NoMod	£38.280	£34.840	£31.700	£44.990

**458MHz FM Crystal Controlled 500mW Transmitter & Receiver Modules**

Warwick Industrial



GT52G



GT52G

- ★ Up to 20km range direct line of sight
- ★ 1 to 3km range through buildings
- ★ Fixed frequency 458.850MHz
- ★ RF output power 500mW
- ★ Data rate up to 9,600bps
- ★ Single rail supply voltage
- ★ Low power consumption
- ★ DTI MPT1329 approved, WT licence exempt

Crystal controlled data radio transmitter and receiver modules. These miniature modules are supplied ready to operate, using the MPT1329 license exemption which enables up to 500mW of RF output power. This gives a range of up to 20km in direct line of sight with up to 1 to 3km within buildings. All units are licence exempt and EMC compliant thus requiring no user licensing. Both transmitter and receiver have CMOS/TTL or analogue data input/output interface to their host controller. The data rate which can be transmitted is up to 9,600bps. Connections are made via gold plated pins on the module base. Each module may be socket mounted and easily interchanged.

**Technical data**

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

**Specifications**

**Transmitter**

Supply Voltage: +5.5 to +8.5V DC  
 Current Consumption: 170 to 200mA (Tx)  
 1.5mA (standby)

Frequency: 458.850MHz  
 Baud Rate: 9,600bps max  
 Channels: 1  
 RF Power: 500mW  
 Start up time: <5ms  
 Operating Temperature: -25°C to +55°C  
 Dimensions (WHD): 36 x 51 x 12.5mm  
 Weight: 30g  
 Approval: MPT1329

**Receiver**

Supply Voltage: 5V  
 Current Consumption: 15mA nominal  
 Output Signal: 2Vpk-pk  
 Frequency: 458.850MHz  
 Baud Rate: 9,600 bps max  
 Channels: 1  
 Receiver Sensitivity: -122dBm  
 Operating Temperature: -25°C to +55°C  
 Dimensions (WHD): 36 x 51x 12.5mm  
 Weight: 30g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GT52G	458MHz FM 500mW Tx Fxd	£238.280	£220.220	£200.400	£279.990
GT53H	458MHz FM Rx Fxd	£276.580	£256.920	£233.790	£324.990

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## 458MHz FM Synthesised 500mW Transceiver

WEI



- \* Up to 20km range direct line of sight
- \* 1 to 3km range through buildings
- \* Frequency range 458.50MHz to 458.95MHz
- \* 15 user selectable channels
- \* RF power output 5mW to 500mW
- \* Data rate up to 9,600bps
- \* Serial digital data or DIL switch configurable
- \* Single rail supply +12V DC
- \* Low power consumption
- \* DTI MPT1329 approved, WT licence exempt

This miniature module is complete synthesised radio data transceiver module. It makes use of the 458MHz general purpose telemetry band providing up to 20km range of data transmission in direct line of sight, and up to 1 to 3km through buildings, at up to 9600bps data rate.

Both transmitter and receiver have CMOS/TTL or analogue (this can be GMSK or FSK) data in/out interface to their host controller. Connection is via a 26 way PCB connector, protruding from the module underside.

Configuration of the module can be from either DIL switches or from the host sending serial commands. The frequency of operation may be set from 458.500 - 458.950MHz (15 channels available for general purpose use) to ensure that an available channel can be used within the application environment. Please note that frequencies 458.825MHz (ch. 13) and 458.900MHz (ch. 16) are reserved for use by the emergency services only and must not be used under any circumstances (15 other channels are available for use). The module is supplied ready to operate and is DTI MPT1329 approved for licence free use.

### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

### Specification

Supply Voltage: 8.5-13V

Current Consumption –

Transmit: <295mA

Receive: <70mA

Standby: <5mA

Frequency Range: 458.500 - 458.950MHz

Channel Separation: 12.5 or 25kHz

Input / Output Signal: CMOS/TTL

Transmitter Power: 5mW - 500mW

Receiver Sensitivity: 0.3µV for 10dB SINAD

Dimensions (WHD): 93 x 60 x 17mm

Approval: MPT1329

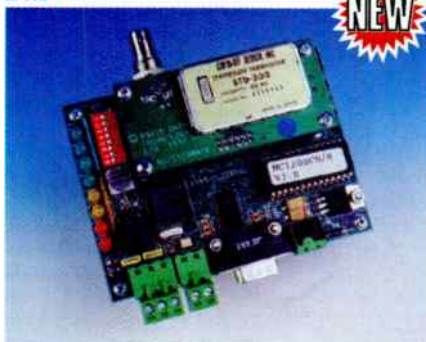
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GT34M	458MHz FM 500mW Transceiver	£399.990	£363.990	£331.230	£469.990

PHONE/FAX for next day delivery **PHONE: 01702 554000**  
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## 458MHz Synthesised Multi-Mode Transparent RS232 Radio Data Modem

LPRS



### Features

- \* UHF FM synthesised radio transceiver
- \* Transparent 1200bps serial data transmission
- \* RS232 serial data interface
- \* Four modes of operation
- \* User selectable RF channel and address
- \* LED indicators for radio functions, signal strength and serial line status
- \* Digital input and relay output port
- \* Automatic repeat request
- \* 1km to 10km range depending on antenna and conditions
- \* Licence exempt operation
- \* MPT1329 and ETSI approval

### Applications

- \* Alarm systems
- \* Remote metering
- \* Video surveillance control
- \* Traffic information systems
- \* Utility control, logging and diagnostics
- \* PC to PC link
- \* Laptop PC to PC/Mainframe links
- \* Remote printer
- \* Remote data acquisition/logging
- \* Stock/inventory control systems
- \* Warehousing and dispatch
- \* EPOS systems
- \* Robotics
- \* Process control and monitoring
- \* Intelligent buildings
- \* Environment control and monitoring

This unit is a UHF multi-channel transceiver, incorporating FFSK baseband modem, serial data interface and digital input and relay (n.c. & n.o.) output ports. It provides fully transparent operation regardless of the serial data protocol. An over-air speed of 1200bps provides excellent data integrity and range whilst on-board buffering permits serial data to be input at various baud rates up to 19200bps. Access to all user configurable parameters is possible using on-board switches and operational status is easily monitored using the standard LED indicators.

The unit includes addressing capability, user selectable frequency of operation, automatic repeat request (ARC) and MODBUS compatibility (ASCII & RTU).

The unit requires a +12V DC supply which should be well filtered and regulated. On-board voltage regulator circuits will maintain a constant supply voltage to the radio and logic circuits, however, excessive noise, fluctuations and interference on the DC supply may cause data loss.

Please note that units are supplied individually - two units will be required to establish a radio data link.

### Modes of Operation

Asynchronous Mode

Synchronous Mode

Modem Mode

ARQ (error corrected) Mode

Please refer to Technical Data Sheet for full explanation of operating modes.

### Antenna and Range

As with all radio systems, range will vary according to the environment and antenna used. The antenna should be designed for use at 458MHz. The radio range achieved will be dictated by the land topography between nodes. In many cases increasing antenna height can greatly improve signal strength. Typical range: 1km with 1/2 wave whip, 5km with end-fed dipole, 10km with 8-element yagi

### Specification

#### General

Supply voltage: +10.5V to +15V DC

Supply current: 80mA Rx, 100mA Tx with relay on add 30mA

Host interface: RS232, 9-way D-type connector

I/O data rate: 150 to 19200bps

RF bit rate: 1200bps

Mode: Half duplex

Data bits: 7, 8 or 9

Stop bits: 1 or 2

Parity: Odd, Even or None

Data buffer: 2K bytes

#### RF Parameters

Frequency: 458.5125 to 458.9500MHz

RF power output: 10mW

Modulation: FFSK

Receiver sensitivity: -110dBm

Intermodulation: -70dBm

Adj channel rejection: -70dBm

RSSI threshold: -110dBm

#### Mechanical & Environmental

Size: 130 x 109 x 32mm

Weight: 154 grams

Operating temp: -25°C to +60°C

Operating humidity: 20% to 75% RH

#### Technical Data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website: <http://www.maplin.co.uk>

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	4+	1+
NV07H 1	458MHz Radio Modem	£382.970	£367.650	£352.940	£449.990

## 458MHz Antennae

Two high performance antennae for use at 458MHz. These will provide optimum range and reliability when used in conjunction with the 458MHz transmitters and receivers elsewhere in this section.

### 160mm (6 1/4 in.) Flexible Antenna with BNC Plug (GT40T)

- \* 1/4 wavelength flexible antenna
- \* BNC plug connector
- \* Easy to install/remove
- \* Rugged plastic finish



GT40T

### 66mm (2 5/8 in.) Helical Antenna with BNC Plug (GT41U)

- \* 1/4 wavelength helical antenna
- \* BNC plug connector
- \* Easy to install/remove
- \* Rugged plastic finish



GT41U

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT				inc. VAT each
		1+	5+	10+	1+	
GT40T	458MHz Flexi Ant BNC	£23.820	£22.580	£21.400	£27.990	
GT41U	458MHz Stub Ant BNC	£17.010	£16.120	£15.290	£19.990	

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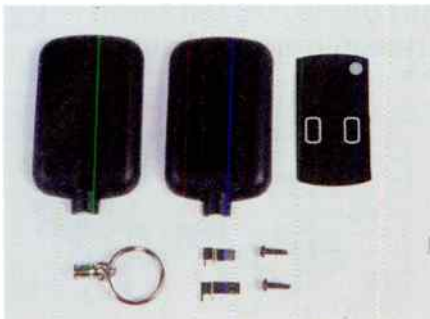
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## Miniature Key-fob Case

RF Solutions



### Features

- ★ Miniature transmitter case
- ★ Available as single switch or two switch versions
- ★ Tough ABS enclosure
- ★ Supplied with mylar membrane panel sticker
- ★ Supplied with battery contacts for type 27A 12V battery
- ★ Supplied with split-ring attachment and case screws
- ★ Integral PCB guides
- ★ LED view window

These cases are ideal for miniature RF transmitters, supplied ready marked with MPT Licence Exempt and the CE Mark. Supplied complete with a mylar membrane sticker which fits in a recess of the top pane, thus lending itself to easy OEM customisation. Ergonomically styled from tough ABS plastic, the case may be completely sealed by inserting a 1mm rubber gasket (not supplied).

### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

### Specification

Overall case dimensions: 58mm x 36mm x 15mm  
 Material: High impact ABS  
 Label recess depth: 0.25mm  
 PCB size: 28mm x 36mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CR91Y	1 Sw Case	£1.770	£2.090
CR92A	2 Sw Case	£1.770	£2.090

## 418MHZ Encoded Transmitter And Receiver



### Features

- ★ Easy to build and use
- ★ Wide supply range
- ★ Low current consumption
- ★ Ready-made and aligned RF module
- ★ 4,096 codes
- ★ FM operation
- ★ DTI approved to MPT1340

### Applications

- ★ Domestic/commercial security
- ★ Guard patrol protection
- ★ Lone worker protection
- ★ Medical alert
- ★ Nurse call systems
- ★ Site paging receivers

1 TX

2 RX

- ★ Paging car alarms
- ★ Fire alarms
- ★ Remote control systems
- ★ Doorbell



### Important Note

Commercial use of the transmitter may require additional type approval; in case of doubt contact the Radio Communications Agency at the Department of Trade and Industry at: Radio Communications Agency, Waterloo Bridge House, Waterloo Road, London, SE1 8UA. Switchboard, Tel: 0171 215 5000 Radio Communications, Tel: 0171 215 2150 MPT1340 Enquiries. Tel: 0171 215 2129 Copies of MPT1340 are available from the Radio Communications Agency.

Previously, it had been difficult for the electronics enthusiast to build, and legally use, UHF radio transmitters and receivers. Fortunately, this situation has now changed. These projects are based on the TMX-418-A transmitter module (AM27E), and the matching, ready-built and aligned radio receiver module SILRX-418-A (AM28F). With ideal antennae, these modules are capable of transferring data reliably up to a distance of 50m in buildings and over 200m under open field conditions. The transmitter is type approved to Department of Trade and Industry (DTI) Radio Communications Agency (RA) specification MPT1340, thus avoiding the need to submit the finished project for further approval. The modules have been optimised for battery powered operation and both are designed for reliability and performance in the field. They perform well with very small antennas and require no alignment whatsoever.

The projects are a boon for security and other applications. Using these projects means that stand alone or wire-interconnected equipment can now be linked to good effect by totally wireless means. The Telephone Bell Repeater project LT67X is an ideal candidate for wireless operation. With the 418MHz transmitter interfaced to the Telephone Bell Repeater, when the telephone rings, the Telephone Bell Repeater activates and keys the transmitter. This then transmits an encoded signal on 418MHz, and is received by the 418MHz receiver. The signal is decoded, and a piezo buzzer and LED then activate on the 418MHz receiver, informing the person with the receiver that the telephone is ringing. The receiver, when housed in the optional case, is a very compact unit, and can be clipped onto a pocket or belt and carried around. These transmitter/receiver projects could be used as a means of connecting a remote sensor to an alarm system without having to run wires. A remote sensor can be connected to the transmitter by means of normally open contacts, such that when the sensor is triggered, the transmitter is activated. Interfacing the receiver to an alarm system can be achieved by connecting a low-current low-voltage relay in place of the piezo buzzer. The relay contacts would be connected to either a normally open or normally closed loop on the alarm system so that when a valid code is received, the relay is operated and the alarm system triggered. This principle could be applied to provide a 'nurse/relative call' system for an elderly relative. The transmitter, fitted with a latching button could be carried in the relative's pocket, so it could be operated in case of emergency. The receiver could be connected to a telephone communicator, such as GL03D, by means of a low-current low-voltage relay connected in place of the piezo buzzer. Activating the transmitter would cause the receiver to operate the relay, which in turn would cause the

telephone communicator to dial the pre-programmed number and relay the pre-recorded emergency message. The GL03D unit mentioned stores the emergency message in battery backed-up RAM and can be programmed with up to four telephone numbers.

By connecting the transmitter to a car or house alarm system, a paging system would be created such that when the alarm is triggered, the transmitter is activated. When a valid code is received, the piezo buzzer on the receiver would sound, alerting the owner to a theft attempt. The transmitter and receiver could also form the basis of a wireless doorbell.

With a total of 4,096 codes to choose from there is plenty of scope for using multiple units in many different applications. In all cases it is wise to perform range tests to ensure adequate coverage is obtained. With security applications or emergency call systems, correct operation should be checked regularly and batteries replaced as a matter of course.

### Specification

#### Transmitter

Power supply voltage: 16 to 35V DC  
 Current consumption  
 Quiescent current: 3-8mA  
 Operating current: 14-5mA

#### Receiver

Power supply voltage: 3.5 to 9V (PP3 battery)

Current consumption  
 Supply current average: 1.2mA  
 Supply current peak: 160mA @ 800µs  
 20mA @ 4ms  
 0mA @ 49ms

#### Optional items


The following items, not included in the Receiver kit, may also be required.

Pocket Clip Case	1	(KC95D)
9V PP3 Alkaline Battery	1	(FK67X)
PP3 Battery Clip	1	(HF28F)


#### Kit and Special Parts

Complete kits of parts (including the PCBs and Labels) are available (excluding optional items). Full construction details for both projects can be found in Maplin Magazine/Projects Book 83 XA83E, and instruction leaflets XU96E and XU97F. Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LT87U	418MHz Encoder/Tx	£21.280	£24.990
LT88V	418MHz Decoder/Rx	£38.280	£44.990
GH94C	418MHz Tx PCB	£2.110	£2.490
GH95D	418MHz Rx PCB	£2.540	£2.990
KP73Q	418MHz Rx Label	£1.260	£1.490
KP72P	418MHz Tx Label	£0.587	£0.690
XU96E	418MHz Tx Leaflet	£0.800	£0.800 NV
XU97F	418MHz Rx Leaflet	£0.800	£0.800 NV



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## Radi-Call System

2



### Features

- ★ Easy to build and use
- ★ Compact and lightweight
- ★ Ready-made and aligned RF modules
- ★ 4,096 possible codes
- ★ FM operation
- ★ DTI approved to MPT 1340

### Applications

- ★ Domestic/commercial security
- ★ Guard patrol protection
- ★ Lone worker protection
- ★ Medical alert
- ★ Nurse call systems
- ★ Site paging receivers
- ★ Paging car alarms
- ★ Fire alarms
- ★ Remote control systems

The 418MHz Radi-Call transmitter and receiver projects are a boon for the frail, infirm, sick and the elderly and their carers. However, the system may also be used for many other security and remote-control applications – enabling stand-alone or wire-interconnected equipment to be linked to good effect by totally wireless means.

The transmitter features very low power consumption, giving long battery life. The operation of the transmitter is such that when activated, it will briefly transmit an encoded 418MHz signal.

Transmission will then cease, but an LED will continue to flash and a buzzer will sound in piercing bleeps until the reset button is pressed. The panic button is a large 'activation pad' on the front panel of the unit, whereas the reset button is concealed, so that the activated transmitter can only be reset by persons notified of its position, eliminating the possibility of it being prematurely switched off before help has been summoned.

The receiver is designed to be directly compatible with telephone auto-diallers (such as our GL03D). Activating the transmitter would cause the receiver to operate a relay, which in turn, would cause the telephone communicator to dial the pre-programmed number(s) and relay the pre-recorded emergency message.

Other applications include connecting a remote sensor to an alarm system without having to install wiring in a building. By connecting the transmitter to a car or house alarm system, a paging system would be created such that when the alarm is triggered, the transmitter is activated, triggering the relay on the receiver and activating an alarm, thereby alerting the owner to a theft attempt. In addition, as long as the range of the system is not exceeded, it is also possible to use the system secure a boat, caravan, garage, shed, etc. (protect your tools and ladders - burglars find them very useful!)

### Specification

#### Transmitter

Supply voltage: 6 to 12V DC (9V nominal)  
 Quiescent current: <0.5µA  
 Operating current: <25mA  
 Sound output: 75dB @ 30cm  
 PCB dimensions: 55 x 62mm

#### Receiver

Supply voltage: 9V DC (230V AC with optional transformer)  
 Current consumption: 14mA Quiescent  
 35mA Operating  
 PCB dimensions: 49 x 57mm

#### Optional items

The following items, not included in the kit, may also be required.

PP3 9V Battery	1	(JY49D)
R/A Phono Plug	1	(FE74R)
ABS Box Type H2851	1	(BE74R)
Stick-on Feet Small	1 Pkt	(FE32K)
Auto-Dialler	1	(GL03D)
Epoxy Resin 15g	1	(JL92A)

50Ω BNC Rnd Socket	1	(HH18U)
144/430MHz Telescopic Aerial	1	(JM12N)
9-0-9V 250mA Transformer	1	(YN15R)
Chassis Mtg Phono Skt	1	(YW06G)
Fused Euro Chassis Plug	1	(FT37S)
Cover For FT37/MK18	1	(JK67X)
50mA 20mm Time-delay	1 Pkt	(CZ85G)
Miniature Coaxial Cable	1m	(XR88V)
10m 16/0-2 Wire, Red	1 Pkt	(FA33L)
10m 16/0-2 Wire, Black	1 Pkt	(FA26D)
Wire, Green/Yellow	1m	(XR38R)
Heat-Shrink CP24	1	(BF87U)
Euro Socket to 13A Plug Lead	1	(MK41U)
M3 x 16mm Pozzi-drive screw	1 Pkt	(JC70M)
M3 x 1/4in. (6.35mm) Spacer	1 Pkt	(FG33L)
M3 Steel Nut	1 Pkt	(JD61R)
M3 Shakeproof Washers	1 Pkt	(BF44X)
M3 Solder Tag	1 Pkt	(LR64U)

### Kit and Special Parts

Complete kits of parts (including the PCBs) are available (excluding optional items). Full constructional details can be found in Maplin Magazine/Projects Books 101 and 102 XD01B and XD02C, and instruction leaflets XZ11M and XZ12N.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
	12490	1+	1+
LLU20W	Nurse Call Tx Kit	£29.770	£34.990
LLU27E	Nurse Call Rx Kit	£38.280	£44.990
GJ51F	Nurse Call Tx PCB	£4.840	£5.690
GJ50E	Nurse Call Rx PCB	£4.840	£5.690
KV08J	Nurse Call Tx Label	£3.820	£4.490
XZ11M	Radi-Call Tx Lft	£0.800	£0.800 NV
XZ12N	Radi-Call Rx Lft	£0.800	£0.800 NV

## K6706/K6707 Two Channel Codelock Transmitter and Receiver

2

Velleman



VF65V/VF84F

VF66W

A two channel transmitter K6706 (VF65V) and K6706A (VF84F) and a single channel receiver K6707 (VF66W). The K6706 is *not* approved for use in the UK. The K6706A operates on 433MHz (I-ETS 300 220) and can be used for automotive telemetry *only* in the UK and general purpose telemetry in continental Europe. If two channel operation is required, two receivers are required; one programmed to respond to button one, the other programmed to respond to button two. The system is ideal for alarm and remote control applications. The keyfob features two buttons and an LED which illuminates when the unit is activated. When the receiver picks up the transmitted signal it can either toggle the outputs or perform a momentary action – ideal for door releases! The receiver can be operated by any K6706/6A type keyfob after first programming in its unique signature. Kits are supplied separately, with operating, construction and installation instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
	10615	1+ 3+ 5+	1+
VF65V	K6706 2ch Tx Kit	£10.200	£11.990
VF84F	K6706A 2 Ch Tx Kit	£12.750	£14.990
VF66W	K6707 1Ch Rx Kit	£17.860	£20.990

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## Infra-Red

### K6708/K6709 Infra-Red Transmitter and Receiver

2

Velleman



These two kits, when used together, provide an effective short range infra-red controlled switch for use in applications such as access control systems, alarm arm/disarm, etc. The transmitter and receiver are single channel. The transmitter and receiver can be set to operate on one of 8,748 codes. Operating distance is approx 7m. LEDs are provided on both transmitter and receiver to indicate transmission and reception of code.

Transmitter is powered by a 12V 'lighter' type battery type GP23A. The receiver is powered from a +12V to +16V DC or 2 x 9V AC supply @ 100mA. Receiver's switched output can be set to operate momentarily or with toggle action. Relay is rated at 10A @ 12V DC.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
	13031	1+	1+
VF80B	K6708 IR Tx Kit	£12.750	£14.990
VF81C	K6709 IR Rx Kit	£21.260	£24.990

### K6710 15-Wire Infra-Red Transmitter

2



- ★ 15 channels
- ★ Remote control of light dimmer
- ★ 21 keys
- ★ 'Click-touch' keypad
- ★ Robust aluminium case

This infra-red transmitter can be used with the universal 15-channel receiver K6711 and/or the one-channel receiver K6712. One key will reset all the outputs at once. The keypad features a superb 'click-touch' design which has a characteristic responsive feel, unlike other membrane designs which offer no tactile feedback whatsoever. Additionally, 'click-touch' offers a high degree of protection against moisture ingress. The transmitter is housed in an attractive and robust aluminium case.

### Specification

Range:	30m maximum
Tx carrier frequency:	38kHz
Identification codes:	6
Independent channels:	15
Power supply voltage:	9V (PP3 battery)
Current consumption standby:	0.1µA

transmit: 10mA average  
Dimensions: 175 x 50 x 23mm

**Kit and Special Parts**

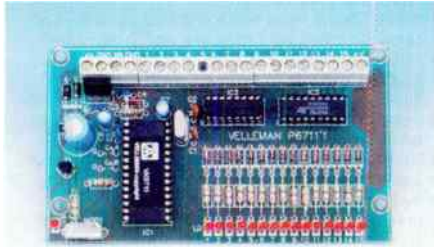
A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 59 XA59P.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE72P 1	Velleman Kit K6710	£34.880	£41.990

**K6711 15-Channel Infra-Red Receiver**

**2**



**Features**

- ★ Controls up to 15 separate open collector outputs
- ★ Each output can have 'pulse' or 'toggle' operation modes
- ★ 'Rotary' switching or independent channels
- ★ Two memories for storing commonly-used output combinations

**Applications**

- ★ Lighting
- ★ Stage effects
- ★ Home automation
- ★ Adding infra-red remote control to logic-controlled VCRs and cassette decks
- ★ Security systems

The receiver has 15 independent outputs, each of which can be operated separately, and for every single output there is the option of using it as a changeover switch or as a pulse contact. The receiver is built around a modern microcontroller, allowing two output states to be stored in memory, which can be called at any time. A reset function allows the resetting of ALL outputs at once using only one key (could be adapted for use as a panic alarm).

**Specification**

Number of open collector outputs: 15 outputs at 50V  
500mA maximum  
Output status monitoring: LED for every output  
Emitting/receiving area: 30m maximum  
Supply voltage: 8 to 14V DC, or 2 x 6 to 2 x 12V AC, 150mA

**Optional Items**

The following items, not included in the kit, may also be required.

15-channel Infra-red Transmitter Kit	1	(VE72P)
250mA Transformer 9V-0-9V	1	(YN15R)
Relays	As Req	
1N4001	As Req	(QL73Q)

**Kit and Special Parts**

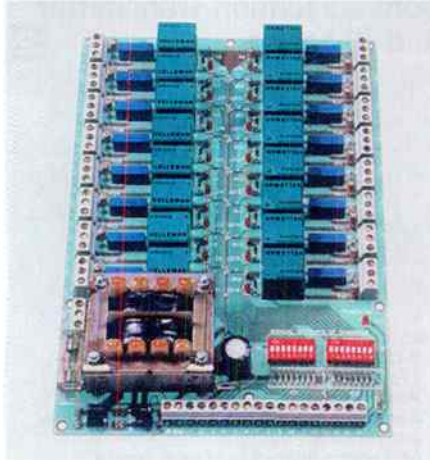
A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 69 XA69A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE73Q 1	Velleman Kit K6711	£28.920 5+ £25.090 10+ £24.820	£33.990 1+

**K6714 Universal Relay Card**

**3**



If you want an electronic controller to be able to switch higher currents and at the same time provide isolation between the controller and the controlled items, then this relay module is for you. It is very well suited to be connected to our kits K6711 (15 channel IR receiver) and one or two times K6701 (8 channel 2 wire receiver). For those two kits power can be taken direct from the relay module. The module can also be used together with the open collector interface module K2609. In its standard version the module contains 8 relays, but it can be extended up to a maximum of 16 relays.

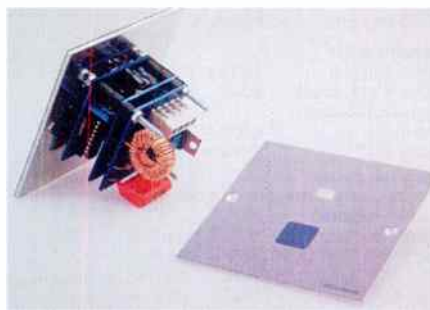
Relay switch-over contact: 5A at 220V max.  
12V/250mA for feeding K6701/K6715  
Power supply: 220 or 125V AC/12VA  
Dimensions: 150 x 212mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF10L 1	Velleman Kit K6714	£34.880	£40.990

**K6712 IR Remotely Controlled Dimmer**

**4**



This one-channel IR-receiver/dimmer works together with the 15-channel IR-transmitter (K6710). The receiving code can be set to one of the 15 transmitting codes so that you can operate up to 15 receivers (K6712 and/or K6713) independently of each other. Can be fitted to a standard light switch wall box by using ZB40T with the back knocked out.

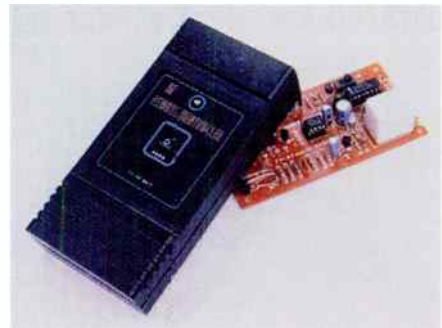
Emitting/receiving area up to 30m.  
Max. load: 2A (4A with cooling).  
Not suitable for use with halogen lamps.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VE74R 1	Velleman Kit K6712	£27.220	£31.990

**Infra-Red Remote Control Switch**

**3**



- ★ Ranges in excess of 10 metres
- ★ Relay output
- ★ Latched or momentary output

In many situations it may be impractical to use direct manual switching, especially when switches are located in inaccessible places or where it is inconvenient to operate them. A useful option for short range is the use of infra-red remote control. This has the advantage of needing no extra wiring to a control unit and is relatively free from interference associated with radio control. This project will provide remote switching of a single pole changeover relay with the provision of either selecting a latched output or momentary output. LEDs on both the transmitter and receiver flash when they are operating. A purpose made case is provided for the transmitter although the receiver needs to be housed, preferably in a metal enclosure.

**Specification**

Receiver Supply Voltage: 9V to 12V  
Standby Current: 35mA @ 12V  
Operating Current (relay switched): 120mA @ 12V  
Transmitter Power Supply: 9V battery (PP3 alkaline)  
Operating Current: Dependent on required range, but between 35mA to 180mA

Carrier Frequency: 18-5kHz to 23-5kHz

**Kit and Special Parts**

A complete kit of parts for the transmitter and receiver is available. Full construction details may be found in Maplin Magazine/Projects Book 33 XA33L.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LM69A	IR Remote Switch Kit	£17.010	£19.990

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## Miscellaneous Remote Control/Telemetry

### UM3750 Encoder/Decoder 2



#### Features

- ★ Wide supply voltage range
- ★ Same chip and PCB can be used as encoder and decoder
- ★ Up to 4096 unique codes

#### Applications

- ★ Alarm control systems
- ★ Security systems
- ★ Automatic door openers
- ★ Remote control

The UM3750 encoder/decoder IC is a complete digital code transmit and receive system. A high quality PCB is available on which can be built an infra-red transmitter or a receiver (but not both sharing the same board). In the transmit mode 12-bit data, offering up to 4096 unique values, can be presented in parallel to the IC which is provided with internal pull-up resistors, thus greatly reducing component count and enabling simple, single pole switches or buttons to be used. Using the suggested component values, a clock frequency of 100kHz will generate 43.4 coded 12-bit words per second. The PCB has provision for two infra-red emitter LEDs and an indicator LED if desired. For receiving the addition of a dual op-amp as a preamplifier for an infra-red photo-diode is made instead, and the incoming signal is in serial bit form when received, which is sequentially compared with a local programmed 12-bit word pattern which should be identical for a single signal output to go active low. Several decoders can be cascaded, each simultaneously attempting to match words; in this way two or more 'channels' can be accommodated for simple remote control applications.



#### Specification

Supply voltage range: +3 to 11V DC

For  $V_S = 9V$ :

Receive input

low: +0.5V max.  
high: 8.5V min.

Transmit/signal output level

low: 1V, 2mA sink  
high: 8.5V, 5µA source

Full information is given in the 'Data File' in Maplin Magazine Issue 36. See end of this section.

A PCB only is available for the UM3750 application circuit.

Note: as these projects are intended as 'building block' projects only, they are not eligible for our 'Get-you-working' service.

PCB dimensions: 76 x 63mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3468	Price each exc. VAT	inc. VAT each
GE33L	UM3750 PCB	£2.970	£3.490

### K6700/1 2-Wire 8-Channel Communication Transmitter And Receiver 2



#### Features

- ★ 8-channel communication
- ★ Expandable to 16 channels
- ★ Power supply through data line
- ★ 2-wire communication between transmitter and receiver
- ★ LED status indication of each output

#### Applications

- ★ Part of a security system
- ★ Signal and control systems
- ★ Railway modelling
- ★ Data logging

These modules enable up to eight individual switching devices to be operated from a distance of 50m or more. Further expansion using more modules is also possible. There are only two connecting wires between the transmitter and receiver, with power for the transmitter obtained from the data line. It is also possible to connect several receivers to one transmitter, to receive switching connections in several places. There are many more uses for this project, using a combination of switching devices for controlling models, lighting, motors, alarms, locks, various theatrical on-stage applications, and indication wiring in cars and caravans. The hobbyist can control lighting in individual rooms in a doll's house, or houses and street lighting in a model village, where the houses may be situated remotely. Model train enthusiasts can use pairs of transmitters and receivers to cut down on the wiring between the control panel and the layout. Other possibilities include data logging where contacts embedded in remote machinery can be checked to see if the particular piece of equipment is on. Similarly, machinery interfaced, with suitable switching arrangements, such as heavy duty relays, could be switched on remotely.

#### Specification

Power supply: +9 to +16V DC  
Current quiescent: 80mA  
Current maximum (full load): 480mA  
Channels: 8 channels expandable to 16

#### Optional items

The following items, not included in the kit, may also be required.

Micro-Min Relay 12V	As Req	(BK47B)
Micro-Min 12V 1A 200mW	As Req	(DC52G)
Ultra-Min Relay 12V SPDT	As Req	(YX94C)
Ultra-Min Relay 12V DPDT	As Req	(JX55K)
BT Relay 12V DPDT	As Req	(DC77J)
BT47W/6 Relay 12V	As Req	(DC80B)
Min Relay 3A	As Req	(YX96E)
Min Relay 12V/5A	As Req	(JM18U)
Min Relay 12V/10A	As Req	(JM67X)
Mains Relay 10A	As Req	(YX97F)
Relay 12V 16A	As Req	(YX99H)
Min Relay 12V 6A	As Req	(FJ43W)
Relay Flat 12V	As Req	(HY20W)
Relay 16A 250V AC	As Req	(JG22Y)
Reed Relay 12V SPDT	As Req	(JH13P)
Reed Relay 12V DPST	As Req	(JH16S)

#### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 77 XA77J, and instruction leaflet XU82D.

Retail Unit Price each (inc. VAT).

Order Code	Type 3468	Price each exc. VAT	inc. VAT each
VE70M	Velleman Kit K6700	£8.500	£10.000
VE71N	Velleman Kit K6701	£14.450	£17.340
XU82D	2-Wire Tx/Rx Leaflet	£0.800	£0.960

## Security

### Touch Key Technology

#### Features

- ★ Ultra high security - over 200,000 billion key differs
- ★ Laser etched codes - no code numbers ever repeated, so there will never be two keys the same
- ★ Keys are passive - no battery required
- ★ Keys are virtually indestructible
- ★ System can learn up to eight keys at any one time
- ★ Lost keys can be 'locked out' by authorised personnel - without any specialised equipment
- ★ Replacement keys can be taught by authorised personnel - without any specialised equipment
- ★ Since Touch Keys are a contact device - not radio or infra-red - they are not 'grabbable'
- ★ Hybrid provides easy entry route for OEMs and individuals to utilise Touch Key Technology with minimal development work
- ★ System remembers and returns to last state when power is disconnected/reconnected
- ★ Hybrid incorporates full spec. alarm system!
- ★ System provides selectable passive arming
- ★ System can 'slave arm' - hybrid follows a master system arm command and provides an alternative method of disarm.

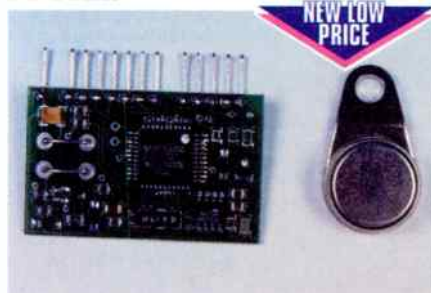
#### Applications

- ★ Vehicle alarms and immobilisers
- ★ Public service vehicle (PSV) equipment protection
- ★ Home/business security systems
- ★ Personal computer (PC) locking/protection devices
- ★ Electronic door locks
- ★ Electronic cabinet/safe/deposit box locks
- ★ Cash register access
- ★ Security access of control panel functions
- ★ Almost any application requiring high security electronic switching or control

The Dallas DS19xx Touch Key devices are miniature, low cost, coin shaped data carriers that can be read by a micro with momentary contact. The electrical interface has been reduced to a minimum: one data line, plus ground. Packaged in a stainless MicroCan, the durable package is highly resistant to environmental hazards and makes a virtually indestructible key. ERD have developed a custom chip to decode these Touch Key devices and have produced a hybrid circuit incorporating the chip, with many outstanding features, to utilise this exciting technology. The ERD Touch Key Decoder Hybrid, Dallas DS1990A Touch Key and support products are now available from Maplin.

### Pre-Taught Touch Hybrid with Master Touch Key

ERD & Dallas



This compact and highly versatile hybrid is ideal for a wide range of security applications and forms the 'kernel' around which complete systems can be developed.

The hybrid contains processor-based circuitry and on-board E<sup>2</sup> memory, enabling it to be taught the codes of User Touch Keys. Under control of the Master Touch Key supplied. User Touch Keys, once taught, can then be used to arm/disarm or lock/unlock whatever security or access control system the hybrid is incorporated into.

If desired the program contained within the hybrid's processor can be used to provide a complete alarm system in its own right, requiring a relatively small number of external components to realise this function.

For minimum development/installation time the ERD Touch Hybrid is supplied with a Master Touch Key

factory pre-taught. The hybrid can be taught up to eight User Touch Keys, these must be purchased separately (CK42V); please note that the Master Touch Key supplied with the hybrid cannot be used as a User Touch Key.

Suitable Touch Key Receptacles (CK43W and CK44X) are also available to facilitate 'reading' of the touch keys by the hybrid. Connection to the hybrid is by means of a 15-way 2.54mm (0.1in.) spaced pin-strip. 2-ways are missing so that 'keying' can be provided to prevent incorrect insertion. The hybrid can be directly soldered into a circuit board (requires 1mm dia holes) or connected by means of a suitable PCB connector (e.g. 2 x YW30H cut down to provide 15 ways).

The hybrid can be configured to operate in a number of different ways by means of on-board programming links.

Links: passive arm enable/disable; passive arm time 30 secs/1 sec; and user keys 8/4.

Interfacing to the hybrid is very straightforward using standard 5V logic - inputs and outputs are either high or low - no complicated clocked serial data streams! A dedicated flashing status LED output is also provided.

Inputs pins: touch key receptacle input (2-wire); user touch key learn enable input; trig. 1 & tng. 2 alarm inputs; and slave arming input.

Output pins: LED status indicator output (2-wire); siren control output; beep control output; and arm disarm output.

Supply pins: +5V and 0V.

**Specifications**

Supply voltage: +5V DC ± 0.5V DC  
 Supply current (typical):  
 Armed: 1.2mA (excluding LED)  
 Disarmed: 1.0mA  
 Output drive current:  
 Source: 10mA  
 Sink: 15mA  
 Operating temperature: -10°C to +60°C

**Technical data**

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>

Retail Unit Price each (inc. VAT).

Order Code	Type 12457	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CK41U	Touch Hybrid & Mstr	£19.990	£18.990	£17.990	£23.490

**DS 1990A-F3 Touch Key**

**Dalles**

A touch key for use with ERD's Touch Key Decoder Hybrid (CK41U). The stainless, virtually indestructible key incorporates a punched metal tab so that the touch key can be attached to a bunch of 'conventional keys'. Each key is individually laser etched with its code; there are 200,000 billion 'key differs' and no code is ever repeated.



Retail Unit Price each (inc. VAT).

Order Code	Type 12508	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CK42V	Touch Key	£4.750	£4.500	£4.100	£5.590

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**Touch Key Receptacles**

**ERD**



CK43W Touch Key Receptacle



CK44X Touch Key Receptacle with LED



**NV11M External Touch Key Receptacle with LED**

These receptacles provide a neat, durable and easy-to-install single-hole solution in Touch Key Systems.

Intended for use with ERD's Touch Key Hybrid (CK41U) and Dallas' Touch Key (CK42V).

Available in three versions:  
 Without LED (CK43W)  
 With LED (CK44X)  
 External with LED (NV11M)

Please note: 'With LED' version (CK44X) is being phased-out and is available only while stocks last, in most applications, the 'External with LED' version (NV11M) is a superior replacement.

Supplied complete with pre-attached leadouts and mounting hardware.

Retail Unit Price each (inc. VAT).

Order Code	Type 12510	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CK43W	Touch Key Receptacle	£6.510	£6.150	£5.600	£7.650
CK44X	Touch Key ReceptLED	£7.670	£7.400	£6.800	£9.250
NV11M	Touch Key ReceptLED	£7.670	£7.400	£6.800	£9.250

**Low Cost Home Alarm**



- ★ Tamper and panic button loop
- ★ Adjustable exit/entry delay
- ★ Extremely low stand-by current

This project contains many of the facilities normally found on more expensive alarm systems. These include entrance/exit delay, security loop trigger, siren entry delay, tamper and panic loop trigger, as well as switches for these controls. A small buzzer mounted on the PCB sounds when the entry/exit loop is activated, indicating the alarm is armed.

All usual protection accessories can be connected to the home alarm. A siren can be connected to the PCB as well as switches, panic buttons and arm/disarm key. Indication LEDs show the state of the unit, whether active, intruder, or help sections have been activated.

**Specification**

Supply voltage: 6V to 12V DC  
 Current (12V): Standby 1.3µA

Active 3mA  
 Intruder 7.5mA  
 Help 4.5mA

Siren switching current: 1A max  
 Entry/exit delay time: 1 to 60 seconds  
 Security loops: Normally open

Tamper loop: Normally closed  
 Panic button loop: Normally open

**Optional Items**

The following items, not included in the kit, may also be required.

Micro Piezo Siren	1	(JK42V)
Help Button	As Req	(FP12N)
Std Pressure Mat	As Req	(YB91Y)
Surface BA Reed	As Req	(YW47B)
Window Foil	As Req	(YW50E)
Foil Terms	As Req	(YW51F)
4-Wire Burglar Cable	As Req	(XR89W)
Alkaline AA	8	(ZB47B)
12V Battery Box	1	(RK44K)
PP3 Clip	1	(HF28F)
Gen Purpose 991	2	(ZB66W)
Gen Purpose HP992	2	(YJ23A)
Gen Purpose HP1	1	(YJ22Y)
AC Adaptor Regulated	1	(YB23A)
Rectifier Diode 1N4001	2	(QL73Q)

**Kit and Special Parts**

A complete kit is available and the PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 45 XA45Y, and instruction leaflet XT03D. PCB dimensions: 119 x 66mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 12435	Price each exc. VAT		inc. VAT each
		1+	10+	1+
LP72P	Lo Cost Alarm	£18.710		£21.990
GER2D	Lo Cost Alarm PCB	£4.240		£4.990
XT03D	Lo Cost Alm Leaflet	£0.800		£0.800 NV

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## Cycle Alarm

2



- ★ Loud sounder with 2 minute time-out
- ★ Vibration and movement sensing
- ★ Warning and anti-tamper switch facilities
- ★ Keyswitch arming delay

Help protect your expensive custom-designed or mountain bike from theft, with this easy to construct vibration cycle alarm. The unit is completely self-contained in a 129 x 64 x 44mm case, which is simply attached to one of the 'V' frame tube uprights. A special keyswitch 'arms' the system and after a short delay period the alarm will become active. Should the bicycle be tampered with, movement and vibration sensors will trigger the alarm and the sounder will give off a very loud 110dB 'screech' for 2 minutes (depending on the condition of the battery). The case can also be made tamper-proof, and a flashing red LED indicates that the alarm is in an armed state. In addition, an input is provided for connecting a push-to-make handlebar switch (not supplied) which can be used to operate the siren independent of the alarm. The PP3 type 9V battery used to power the unit should have a long operational life.

### Optional Items

The following optional items are not included in the kit, but may also be required.

Battery PP3	1	(ZB44X)
Min Lever Micro Sw	1	(FP42V)

### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in instruction leaflet XT27E.

Retail Unit Price each (inc. VAT).

Order Code	Type 5017	Price each exc. VAT 1+	inc. VAT each 1+
LP78H	Vibration Alarm	£20.410	£23.990
GE89W	Cycle Alarm PCB	£2.970	£3.490
XT27E	Cycle Arm. Leaflet	£0.800	£0.800 NV

## K2655 Electronic Watchdog

1



- ★ Choice of two different barks
- ★ Reacts to environmental noise
- ★ External trigger input
- ★ Loudspeaker and audio output
- ★ AC and DC power supply input

The Electronic Watchdog generates two selectable, different dog barks when triggered by environmental noise. Such a loud, furious, barking dog sound should deter even the most determined burglars! The circuit features a highly sensitive electret microphone, with a sensitivity control, to pick-up environmental noise. The barking sounds are held in a non-volatile memory IC that is supplied with the kit. The unit requires either a 6V-0-6V step down mains transformer or a non-stabilised DC power supply. Any 2W, 4Ω or 8Ω loudspeaker can be used, but XQ73Q, a horn speaker, is

recommended, as it offers a high sound output without the need for an enclosure.

### Specification

Loudspeaker output:	2W at 4Ω
Supply current	
Standby:	75mA
Barking:	400mA maximum

### Optional Items

The following items, not included in the kit, may also be required.

Horn Speaker 10W	1	(XQ73Q)
AC Unregulated Adaptor 300mA 1		(XX09K)
Transformer 6V-0-6V 500mA 1		(WB06G)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 53 XA53H, and instruction leaflet XT80B.

Retail Unit Price each (inc. VAT).

Order Code	Type 2655	Price each exc. VAT 1+	inc. VAT each 1+
VE85G	Velleman Kit K2655	£21.260	£24.990
XT80B	Watchdog Leaflet	£0.500	£0.500 NV

## Loop Alarm

1



### Features

- ★ Low-Cost
  - ★ Easy to build
  - ★ Needs no complicated adjustment, or test equipment to set up
  - ★ Long standby time from 1 set of alkaline batteries – typically 3 years or more
- ### Applications
- ★ Shop loop alarm – protect display items
  - ★ Office/school loop alarm – protect computers, monitors etc.
  - ★ Home loop alarm – protect ladders, garden tools, bicycles, etc. when left in back gardens
  - ★ Could be adapted for use with a back garden gate or garden shed.

This little gadget was developed in response to a growing problem – the pilfering of items from shops, and as the crime rate is increasing, so shopkeepers need to provide some kind of investment to protect their stock. In the case of this simple but effective Loop Alarm, this investment need not be too great. Also vulnerable are householders. Leaving aside obvious targets like bicycles, surprisingly large objects like ladders (and in one case, a 1.83m satellite dish!), have not been unknown to go missing. This situation has developed to the point that some insurers will not provide cover for such items; even where cover is provided, in some cases (garden tools, for example) it is simply not economically viable to pursue claims – but the annoyance and expense of replacement are still there. Again, the Loop Alarm will help considerably at home – it can be used to protect a garden shed, and/or even alarm a back gate – and is priced at a fraction of the cost of a new set of 12m aluminium ladders!

### Kit and Special Parts

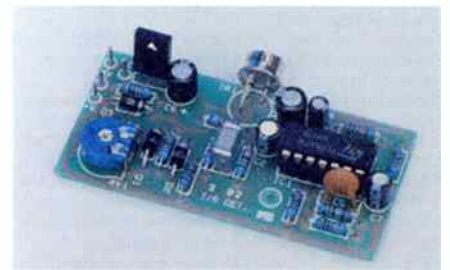
A complete kit of parts (including the PCB) is available. The PCB is also available separately. Full construction details may be found in instruction leaflet XU32K.

Retail Unit Price each (inc. VAT).

Order Code	Type 3458	Price each exc. VAT 1+ 5+ 10+	inc. VAT each 1+
LT36P	Loop Alarm	£17.010 £11.680 £10.460	£19.990
GH46A	Loop Alarm PCB	£2.110	£2.490
XU32K	LOOP ALARM LEAFLET	£1.000	£1.000 NV

## Infra-Red Proximity Detector

1



### Features

- ★ Uses latest pyro-electric device
- ★ Short-range, heat/movement detector
- ★ Low power consumption for long battery life

### Applications

- ★ Doorways, stairs and similar proximity systems

This I/R Proximity Detector has been designed as a simple, low-cost system for detecting heat changes, movement of a warm body, etc., such as those emitted from the human body. The unit responds to a definite change or disturbance in ambience – or background – heat levels and could be placed across a doorway or stairs to register movement in those areas.

Supply requirements for the module are 9V DC at 2 to 3mA. With such low current consumption, long periods of use from a PP3 battery are possible. The module is not capable of switching heavy loads and should only be used with external systems up to 12V DC and current levels below 100mA. Relays could be used for controlling larger voltage/current devices. Any battery supplying the electronics should NOT also be used for supplying the external devices as well (if more than a simple LED arrangement is to be used).

Sensing range is 4 to 5 feet, depending upon the sensor's field of view and variations in the light/heat background levels. A whole room could not adequately be covered by this system, but doorways, narrow hallways and corridors are suitable areas.

### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available. The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 54 XA54J, and instruction leaflet XT72P.

Retail Unit Price each (inc. VAT).

Order Code	Type 3457	Price each exc. VAT 1+	inc. VAT each 1+
LT00A	I/R Proximity Dctr	£12.750	£14.990
GD27E	I/R Prox. Detector PCB	£2.110	£2.490
XT72P	I/R Prox. Dtr Leaflet	£0.500	£0.500 NV

## µA3730 Electronic Code Lock

1



### Features

- ★ Low power consumption
- ★ Key-pad entry
- ★ 3 different outputs
- ★ 10<sup>12</sup> unique codes
- ★ Programmable up to 12 digits

### Applications

- ★ Security systems
- ★ Electronic locks

The µA3730 is a single chip electronic code-lock IC

utilising CMOS technology. The IC can handle passcodes of up to 12 digits, allowing the use of up to 1 million million unique codes. If an incorrect code is entered three times or more, an output is activated allowing a burglar alarm to be triggered. The code may be changed as many times as required by the user providing additional security. The IC requires a battery back-up to prevent the code being lost if the main power supply fails. There are three outputs which are activated from the keypad. OUT1 activates for two seconds when the correct code followed by 'K'(#). OUT2 changes state when the correct code followed by 'K' is entered providing a toggle action. OUT activates for 1 minute if an incorrect code is entered three times or more. All outputs are open drain types and require a pull-up resistor; the total load current should not exceed 40mA at any time as irreparable damage could occur. The module requires a regulated and well decoupled 4V to 6.5V DC power supply, that is capable of supplying at least 20mA. Outputs are provided for 3 LED indicators to show the state of the outputs OUT1 to OUT3.

**Note:** this is intended as a 'building block' project and not eligible for our 'Get-You-Working' Service.

**Specification**

Power supply voltage:	4V to 6.5V
Back-up battery voltage:	3.7V to 2V
(<supply voltage - 0.5V)	
Power supply current at 5V stand-by:	220nA
operating (without LEDs):	310µA
operating (LEDs active):	17mA
PCB size:	71 x 51mm
Output sink current:	40mA (absolute max.)

**Optional Items**

The following items, not included in the kit, may also be required.

LED Red 5mm 2mA	1	(UK48C)
LED Green 5mm 2mA	1	(UK49D)
LED Yellow 5mm 2mA	1	(UK50E)

**Kit and Special Parts**

A complete kit of parts (including the PCB, numeric keypad and instruction leaflet) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 56 XA56L, and instruction leaflet XT75S.

Retail Unit Price each (inc. VAT).

Order Code	Type 3501	Price each exc. VAT	inc. VAT each
LP82A	UA3730 Code Lock	£12.750	£14.990
GH18U	UA3730 Code Lock PCB	£2.540	£2.990
XT75S	UA3730 D.F. Leaflet	£0.800	£0.800 NV

**K6400 Keycode Lock**

2

- ★ More than 3,000 possible codes
- ★ Relay output
- ★ LED active indicator
- ★ Pulse or switched output
- ★ Nine keys for four digit code



Are you tired of losing your keys? Would you like a high tech way of locking up your valuables? Then the Keycode Lock is the answer. A small numerical keypad is placed by the door, and to open it, the correct code must be entered. However, it doesn't have to be confined to doors, as it could be used on cupboards, filing cabinets, desks, cars, caravans, trailers, lock-ups, garages, equipment, etc. Anything in fact that would normally require a conventional lock to secure a door or lid, and room enough for a door solenoid lock, the number of applications are endless.

The PCB mounted connector and track are not suitably spaced for voltages above 50V, and if mains voltages are switched then use an off-board mains rated relay. The external relay may require a diode to protect the circuit from the induced emf produced by the relay when it de-energises. Using the optional Mains Opto Switch kit (LP55K) with the Keycode Lock enables switched resistive mains loads of up to 250W (maximum). The actual details for the Mains Opto Switch are in Electronics Issue 41 (December 1990/January 1991).

**Specification**

Power supply:	9 to 15V DC or
	8 to 12V AC

Current consumption  
 off: 0.3µA  
 on: 40mA  
 Time limit for code input: 5s (only in pulse mode)  
 Dimensions: 80 x 80 x 40mm

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available. Full construction details may be found in Maplin Magazine/Projects Book 80 XA80B, and instruction leaflet XU94C.

Retail Unit Price each (inc. VAT).

Order Code	Type 3502	Price each exc. VAT	inc. VAT each
VE76H	Velleman Kit K6400	£20.410	£23.990
XU94C	Lit for VE76	£0.800	£0.800 NV

**K7105 & HHS5 Handheld LCD Scope**

Velleman



- ★ True RMS or peak-to-peak read-out
- ★ Markers for voltage and time
- ★ Auto range function for input sensitivity
- ★ DC readout with zero-reference function
- ★ Frequency readout through markers
- ★ Dot-join function
- ★ Screen-hold function
- ★ Grid or ruler function
- ★ Adjustable trigger function
- ★ Waveform memory
- ★ RS232 data output to computer
- ★ Auto power off (can be disabled)
- ★ Sine wave generator
- ★ Rechargeable battery option

At last - a portable LCD oscilloscope that is within reach of everybody! Available as a kit or ready built & tested. This compact unit has all the functions (and more besides!) of a 'traditional' oscilloscope, and is fitted with a high contrast, wide viewing angle, LCD display. All operations are performed through a handy keypad. The oscilloscope is equipped with a sinusoidal oscillator in order to make measurements and repairs to audio equipment easier. To round off its application potential, it also has a serial output for loading the most recently stored data onto computer for use in documents or other applications. Ideal for repair and testing of audio equipment, TV, automotive, digital and analogue circuits, RS232 signals, pulse circuits, sensors, etc.

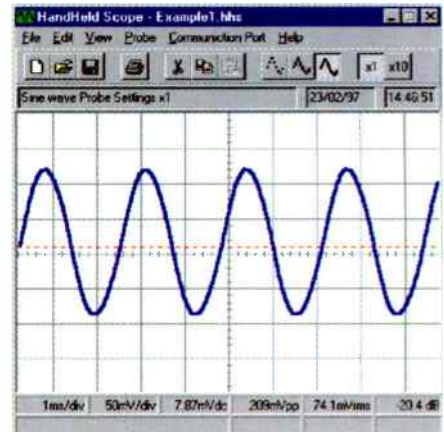
Available as a kit K7105 (VF82D) or ready built and tested HHS5 (VM79L).

**Specifications**

Maximum sample rate:	5MHz (repetitive signals) 0.5MHz (single shot events)
Input impedance:	1MΩ // 20pF
Maximum input voltage:	100V AC + DC
Input coupling:	DC, AC & GND
Vertical resolution:	8-bit (6-bit on LCD)
Linearity:	±1 bit
LCD:	64 x 128 pixels
Timebase:	2µs/div to 20s/div
Trigger mode:	normal, auto or single
Trigger edge:	rising or falling
Input sensitivity:	5mV/div to 20V/div
Sine wave output:	400Hz 1V rms
Square wave output:	400Hz 3.5V pk-pk
Supply voltage:	+9V DC @ 200mA
Rechargeable Battery:	6 x AA 900mAh NiCd
Charge current:	90mA
Charging time:	14 hours

Operating temp: 0°C to +50°C  
 Dimensions: 130 x 230 x 43mm

Opto-Isolated RS232 interface cable and Windows™ 95 software (VF86T)



Optically isolated link allows data captured on K7105/HHS5 to be downloaded and displayed on an IBM compatible PC, 386 or above (Windows™ 95 or later only), without risk of electrical discharge to the PC's serial (COM) port. Functions include: Displays time/div and volt/div settings

Readout for DC, peak-to-peak, true RMS and dB value

Text entry for waveform description

Time and Date

Marker function

Save to disk

Retail Unit Price each (inc. VAT).

Order Code	Type 13827	Price each exc. VAT	inc. VAT each
VF82D	K7105 H/H Scope Kit	£136.160	£159.990
VM79L	HHS5 H/H Scope	£170.200	£199.990
VF86T	OPTRS232 for LCDScope	£10.200	£11.990

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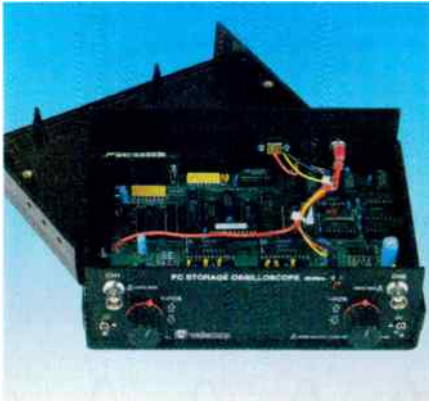
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## Servicing, Test & Measurement

### K7103 Digital Storage PC Oscilloscope 4

Velleman



Use your IBM compatible computer as an oscilloscope. This kit presents a very good, and cheap, way to convert your computer into a piece of test equipment.

The K7103 is a digital memory oscilloscope that can be used on an IBM compatible computer. It is operated from the computer using the computer screen as the oscilloscope display. All standard oscilloscope functions are available from the DOS program supplied. Operation seems like a normal oscilloscope, with the one difference that most operations are performed using the mouse. Connection is via the parallel port of the computer. The PC oscilloscope uses a sampling frequency of 32MHz and can drive up to two completely independent channels. The components for the second channel are an optional extra. Any waveform on the screen can be stored in TIFF format so that it may be later retrieved for use in documentation or for comparison to other waveforms. The kit comes complete with housing.

#### Oscilloscope Specifications

##### Minimum system requirements

- IBM compatible PC
- VGA display
- Free Printer port LPT1
- Mouse
- 400Kb free conventional memory

##### Technical data

Vertical deflection	
Sensitivity:	10mV to 5V/DIV
Frequency range:	DC to 16MHz
Input impedance:	1MΩ // 30pF
Input coupling:	DC - AC - Gnd
Input voltage:	100V max (DC + peak AC)
Horizontal deflection	
Timebase	100ns to 100ms/DIV
Triggering	
Trigger mode:	single, automatic or free running
Slope:	positive or negative
Level:	adjustable in steps of 1/2 division
Trigger channel:	channel 1 or channel 2
Digital storage	
Resolution:	8-bit
Sampling rate:	32MHz (max)
Memory size:	4Kb/channel
Interpolation:	linear or smoothed

#### Demo Disk

A Digital PC 'Scope Demonstration Disk is available (VF78K), the demonstration software is also downloadable *free of charge* from the Maplin website, the following URL will take you directly to the correct page of the site:

<http://www.maplin.co.uk/velleman/k7103.htm>

#### Software

Software supplied with the K7103 (VF75S) kit is DOS-based (requires '286 or better PC) and provides 'Scope functions. A software upgrade US7103 (VF79L) which offers Spectrum Analyser (FFT) & Transient Recorder functions is also available. Software is compatible with Windows™ 3.x and Windows™ 95).

#### Windows 95 Software

Dedicated software for Windows™ 95 is also available (VF87U), as an upgrade, which provides oscilloscope and spectrum analyser functions in an

integrated Windows™ 95 environment.

#### Kit and Special Parts

A complete kit of parts (including the PCB) to build a single channel unit is available. The kit for the 2nd channel is K7104 (VF77J).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	4+	
VF75S	K7103 Digitl PCScope	£148.920			£174.990
VF77J	K7104 2nd Channel	£57.010			£66.990
VF78K	Dig PCScope DemoDisk	£2.540			£2.990
VF79L	US7103 Scope S/Ware	£21.690			£25.490
VF87U	SCOPE-IT Win S/Ware	£42.540	£38.290	£34.460	£49.990

### PCS32 Mk II Dual Channel Digital Storage PC 'Scope

Velleman



A ready built, tested and aligned *dual* channel slimline version of the K7103 Digital Storage PC Oscilloscope (described above).

This latest version is supplied with manual, PC connecting cable and software. Requires +9V to +12V DC @ 700mA supply to operate. Power supply and probes are not included.

#### Software

Software supplied is DOS-based (requires '286 or better PC) and provides Scope, Spectrum Analyser (FFT) & Transient Recorder functions (software is compatible with Windows™ 3.x and Windows™ 95)

#### Windows 95 Software

Dedicated software for Windows™ 95 is also available (VF87U), as an upgrade, which provides oscilloscope and spectrum analyser functions in an integrated Windows™ 95 environment.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	4+	
VF85G	PCS32-II 2Ch PCScope	£238.280	£214.460	£193.010	£279.990
VF87U	SCOPE-IT Win S/Ware	£42.540	£38.290	£34.460	£49.990
VF78K	Dig PCScope DemoDisk	£2.540			£2.990

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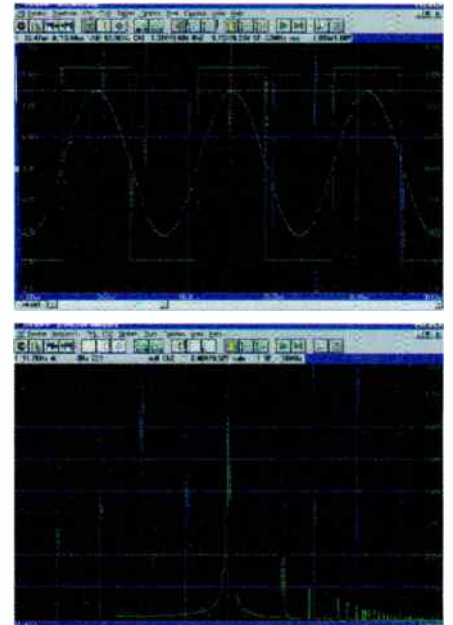
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### SCOPE-IT Software for K7103 and PCS 32

Omnix & Nedon



This comprehensive software package for use with K7103 and PCS32 Digital Storage PC Oscilloscopes with full Windows™ integration.

It features two-channel oscilloscope and spectrum analyser functions, both can be displayed simultaneously. Displays can be save to disk, printed or copied to other applications. Lots of options such as zooming, colour, cross-hairs, voltage and time readouts, math channel (Ch1 + Ch2, Ch1 - Ch2, Ch2 - Ch1), plus much more. Supplied on 3 1/2 in floppy disk.

#### Downloadable Demo

A demonstration version of this software is also downloadable *free of charge* from the Maplin website, the following URL will take you directly to the correct page of the site:

<http://www.maplin.co.uk/velleman/k7103.htm>

#### System Requirements

Velleman K7103 or PCS32 PC 'Scope  
IBM compatible PC, min 386SX or above  
Microsoft Windows 3.1, 3.11, 95 or later  
Free parallel printer port (LPT1 to 4)  
Math co-processor is not necessary but highly recommended

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	4+	
VF87U	SCOPE-IT Win S/Ware	£42.540	£38.290	£34.460	£49.990

### Temperature Controlled Soldering Iron Station 3



#### Features

- ★ Temperature range 70°C to 450°C
- ★ Minimal noise emission
- ★ Negligible element leakage current
- ★ LED indication of heating

#### Applications

- ★ Precision soldering
- ★ Thermal fault location
- ★ Pyro-graphic pen

Because of the high price of adjustable temperature



soldering irons, the home hobbyist is often resigned to having a 'standard issue' 17 to 25W mains powered iron. Although often adequate for most tasks, a fixed temperature iron suffers from several drawbacks. It may be too hot for delicate soldering operations involving thin PCB tracks, signal diodes and small polystyrene capacitors for example, or, at the other extreme, not powerful enough to solder something onto a piece of brass or tin-plate more than 50mm square. The Soldering Station is ideal for hobbyists on a budget, who cannot afford the expensive ready built units. This kit version offers a considerable saving over commercially available units, and includes the 50W XSD iron as used with the TCSU-D Solder Station.

The temperature of the iron can be adjusted over a range from 70°C to 450°C, making the unit very versatile and having more applications than just soldering, e.g., sealing plastic bags, a pyro-graphic pen, and even a controllable heat source for checking 'thermal faults' in semiconductors.

N.B. This project is designed to operate with the 50W XSD iron, and other irons of this type are NOT suitable for use with this project.

**Optional Items**

The following items not included in the kit, may also be required.

13A Plug Nylon	1	(RW67X)
2A Plug Fuse	1	(HQ31J)

**Kit and Special Parts**

A complete kit of parts (including the PCB) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects 59 XA59P, and instruction leaflet XT90X.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT	inc. VAT each
LT13P 4	Soldering Station	£59.560	£72.990
GH17T	Solder Station PCB	£2.280	£2.690
XT90X	Solder Stn Leaflet	£0.800	£0.800 NV

**Live Wire Detector**

1



- ★ Gives visual and audible warning of the presence of 240V AC mains live
- ★ Does not require wires under test to be connected to a load
- ★ Adjustable for sensitivity

The Maplin Live-Wire Detector will detect the presence of mains electricity whether there's a current flowing or not. It's better than neon screwdrivers or multimeters because you do not have to make contact with the wire – it signals the presence of mains better than metal detectors, because it only indicates if the wire is live; also, it's considerably cheaper.

It's the sort of device every household should own and anyone can use it because you don't have to actually touch dangerous points with any part of the Live-Wire Detector. Even if the wires are not connected to anything at one end, Live Wire will tell you if they're live. You could use it to find buried wires in dry plaster or plastic conduit or under floor or ceiling boards up to a distance of 50mm. Other uses of Live Wire include detecting breaks in cables or appliance leads. If a fuse blows, Live Wire will indicate mains present up to all the 'uses, and mains presence on the wires leaving the fuses

except the dead one. Before doing any work on your house wiring use Live Wire to make sure the circuit really is safe after pulling out what you think are the relevant fuses. Uses one PP3 battery.

**Kit and Special Parts**

A complete kit of all parts is available, excluding PP3 battery. The case and pcb are also available separately. Full construction details may be found in the Maplin Magazine/Projects Book 48 XA48C, and instruction leaflet XK07H. PCB dimensions: 25 x 46mm.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT	inc. VAT each
LK63T	Live Wire Det Kit	£5.940	£7.260
GB85G	Live Wire Detect PCB	£0.842	£1.010
FT39N	Live Wire Det Case	£1.260	£1.490
XK07H	Live Wire Detctr Ins	£0.500	£0.500 NV

**K7101 Mains Voltage Detector**



Now you easily check for mains wiring in or behind walls or to trace breaks in wiring. A flashing LED indicates whether or not a mains voltage is present. The detection distance is adjustable upto 100mm. Requires PP3 battery (JY49D).

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT	inc. VAT each
VF63T	K7101 Mains Det Kit	£7.650	£9.190

**Mini Metal Detector**

1



- ★ 25mm search range dependent upon size of object
- ★ Finds partition studs from nailheads or screws
- ★ Complements the live wire detector
- ★ Simple to build and use

If you have ever had to fit cupboards or shelving to partition walls then you will know how 'hit and miss' it can be when trying to find the studding. With this Mini Metal Detector you can detect the presence of ferrous or various non-ferrous metals within the search area. Along with the Live Wire Detector project, this is a must for DIYers of all ages.

**Optional Item**

The following item, not included in the kit, may also be required.

Battery PP3 9V1	(ZB34M)
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**Kit and Special Parts**

A complete kit is available. The PCB and box are also available separately. Full construction details may be found in the Maplin Magazine/Projects Book 48 XA48C, and instruction leaflet XT34M. PCB dimensions: 29 x 29mm.

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT	inc. VAT each
LM350	Mini Metal Dctr Kit	£8.500	£10.200
GD63T	Mini Metal Dctr Bd	£1.690	£2.000
JC24B	Mini Metal Dctr Box	£1.260	£1.490
XT34M	Min Met Leaflet	£0.500	£0.500 NV

**K7102 Metal Detector**



A versatile metal detector that is ideal for finding gas, water, central heating pipes or electric cables. An LED indicates when a metal object has been detected. The detection distance is adjustable up to 80mm. Requires PP3 battery (JY49D).

*Retail Unit Price each (inc. VAT).*

Order Code	Type	Price each exc. VAT	inc. VAT each
VF64U	K7102 Metal Det Kit	£8.500	£10.200

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## Metal Detectors

Celtic Electronics



Whether you are looking for the pleasures of unearthing evidence of the past or for profit from your metal detector, any of the low cost, high performance models in the Celtic range will give you an excellent start in your new hobby. Every model incorporates the best circuitry and runs for hours on a single PP3 battery (supplied) while being lightweight enough to allow users to take advantage of the extended searching time without arm fatigue. They are constructed from high impact ABS lightweight plastic and include 2D coils for greater sensitivity and fast response to thin gold and silver - all models are able to discriminate against small pieces of iron, nails etc. Output is via a speaker or a stereo output socket for headphones (not supplied) Choice of four models available. CE marked for EMC compliance. Manufactured in Wales.

### TRX (FN34M)

A non-automatic detector that's sensitive to small coins and excels in certain field conditions and iron contaminated sites. Good on beaches.

### D2 (FN35Q)

A good all round non-automatic detector with selectable fixed discrimination against iron and small pieces of aluminium foil.

### TRX Automatic (FN36P)

An automatic detector with fixed discrimination and non-motion pinpointing action and a switch to allow searching in automatic or non-automatic mode. Threshold searching as standard. Good on small hammered silver and gold coins.

### D2 Automatic (FN37S)

An automatic detector with variable discrimination (against iron, aluminium foil and ring-pull tabs) and non-motion pinpointing action. Threshold searching as standard. Good on beaches, riverbanks and battlefields.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT 1+	inc. VAT each 1+
FN34M	TRX N/Auto Detector	£46.800	£54.990
FN35Q	D2 N/Auto Detector	£59.560	£69.990
FN36P	TRX N/Auto Detector	£72.330	£84.990
FN37S	D2 N/Auto Detector	£93.600	£109.990

## K7000 Signal Tracer/Injector 2



### Features

- ★ Low cost
- ★ 1kHz sine wave oscillator (signal injector)
- ★ 40dB gain amplifier with 1W output (signal tracer)
- ★ Battery or mains operation

### Applications

- ★ Servicing audio equipment
- ★ 'Hands-on' learning
- ★ Can be used as simple amplifier/oscillator

This low-cost signal tracer/injector is a very useful piece of test equipment that will help to quickly find

faults in low-frequency analogue equipment. It will also be an invaluable addition to anyone's toolbox. The module can be used as a simple amplifier/oscillator, making it ideal for Morse Code practice, or just as a general-purpose amplifier. The signal tracer/injector will work from a standard 9V battery, and requires a small low impedance loudspeaker. Total power consumption under full load conditions is 170mA.

### Optional Items

The following items, not included in the kit, may also be required.

9V PP3 Alkaline Battery	1	(JY49D)
PP3 Battery Clip	1	(HF27E)
Low-Z 778 Speaker	1	(YW53H)
PX-3 ABS Box	1	(YU54J)

### Kit and Special Parts

A complete kit of parts (including the PCB) is available (excluding optional items). Full construction details may be found in Maplin Magazine/Projects Book 54 XA54J.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT 1+	inc. VAT each 1+
VE62S	Velleman Kit K7000	£10.200	£11.990

## Low-Cost Audio Waveform Generator 3



### Features

- ★ Four frequency ranges
- ★ Three output waveforms
- ★ Push-button switching
- ★ High and low outputs
- ★ Minimal wiring
- ★ Battery powered

### Applications

- ★ Testing projects
- ★ Setting filters
- ★ Bandwidth testing

This simple, low-cost, easily constructed, audio waveform generator is ideal for the hobbyist working on a restricted budget. The generator can be used for a range of applications including test tape production; testing projects; gain and phase measurement; setting filters and bandwidth testing. All the components are mounted on one PCB, keeping internal wiring to a minimum. Long term reliability is excellent due to the use of electronic switching; just two push-to-make non-locking PCB mounted switches. Power is provided by two PP6 9V batteries, not included in the kit, which will provide several hours of continuous use. To give your generator a professional finish, an optional front panel is available.

### Specification

Power supply input:	±6V to ±9V DC
Current @ ±9V:	±25mA
Standby current:	<±1µA
Waveforms:	Sine, Triangle, Square
Frequency ranges:	
10 to 100Hz:	9Hz to 105Hz
0.1 to 1kHz:	100Hz to 1.1kHz
1 to 10kHz:	895Hz to 10kHz
10 to 100kHz:	9.2kHz to 106kHz
Output amplitude full:	9V (PK-to-PK)
attenuated:	400mV (PK-to-PK)
Output impedance:	600Ω
Sinewave distortion:	
10Hz to 10kHz:	<1%
10kHz to 100kHz:	<4%
Triangle linearity:	
10Hz to 40kHz:	<0.1%
40kHz to 100kHz:	<1%
Square rise/fall time:	<2µs

### Optional Items

The following items, not included in the kit, may also be required.

Metal Panel Box	1	(WY02C)
PP6 9V Battery	2	(FM03D)
Screw-Cap Phono Black	1	(HQ54J)
Cable Single Black	1	(XR12N)
Red Croc Clip	1	(FM37S)
Black Croc Clip	1	(FK34M)
100µF 63V PC Elect	2	(FF12N)
Front Panel	1	(KW56L)

### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items). The PCB and Front Panel are also available separately. Full construction details may be found in Maplin Magazine/Projects 48 XA48C, and instruction leaflet XT16S.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT 1+	inc. VAT each 1+
LP01B	Lo Cost Wave Gen	£21.260	£24.990
GE87U	Lo Cost Wave Gen PCB	£6.540	£7.690
KW56L	LC Gen Front Panel	£4.240	£4.990
XT16S	LC Gen Leaflet	£1.000	£1.000 NV

## Audio Frequency Sine/Square Wave Generator 3



### Features

- ★ Excellent performance at low-cost
- ★ 3 frequency ranges
- ★ Low distortion
- ★ Single 9V DC power requirement
- ★ Precision attenuator

### Applications

- ★ Testing and designing low-frequency circuits
- ★ Setting up audio systems
- ★ Producing test tapes
- ★ Scientific experiments

An audio frequency (AF) oscillator is an essential piece of test apparatus for the construction and servicing of audio products, such as Hi-Fi, PA and disco equipment. Because of the very low distortion sine wave output from this oscillator, it is suitable for use with even the most sophisticated Hi-Fi equipment. In conjunction with an oscilloscope, problems such as crossover distortion (incorrectly biased amplifier output stage), intermodulation by hum (power supply smoothing capacitors suspect) and the effects of clipping (overdriving) can all be investigated. This essential piece of test equipment can also be switched to produce square waves; these, being rich in harmonics, are useful for evaluating the frequency response and phase shift characteristics of an amplifier.

The unit may be used to make test tapes for the alignment or evaluation of tape recorders. In conjunction with a suitable amplifier, this unit could also be used to drive various transducers; this may be of benefit in certain types of scientific experiment - physics, structural engineering etc.

### General Specification

Frequency Range:	17.5Hz to 22.8kHz in 3 ranges
Sine wave distortion (1kHz, maximum output):	<0.05%
Sine wave distortion (1kHz, 2/3 max. output):	<0.042%
Attenuator:	3 ranges; continuously variable
Sine wave output:	4V pk-to-pk
Square wave output:	2V pk-to-pk
Off-load current consumption:	8mA (square wave setting)

### Optional Items

The following items, not included in the kit, may also be required.

Verobox 213	1	(LL10L)
PP6 9V Battery	1	(FM03D)
AC Adaptor Regulated	1	(YB23A)

### Kit and Special Parts

A complete kit of parts (including the PCB, front panel and instruction leaflet) is available (excluding optional items). The PCB and front panel are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 63 XA63T, and instruction leaflet XU08J.

Retail Unit Price each (inc. VAT).

Order Code	Type 3510	Price each exc. VAT 1+	inc. VAT each 1+
LT25C	Sine/Square Gen Kit	£34.030	£39.990
BB72P	Sine/Square Gen PCB	£7.390	£8.090
BB73Q	Sine/Square Gen FP	£3.990	£4.690
XU08J	Lo Dist Osc Leaflet	£0.800	£0.900 NV

## Logic IC Tester

3



It is often necessary to check the operation of logic ICs, new or used. When dealing with simple gate circuits, this can be done without too much trouble. However, as the operating mode of the ICs becomes more complex, then checking out circuits, using simple tools such as switches and LEDs, becomes much more troublesome. The Logic IC Tester has been developed to bring about quick and simple testing of the operating mode of these standard devices. Nearly all devices in the standard TTL and CMOS families, up to 20-pin DIL package size, can be tested. ICs are simply inserted into the 'ZIF' test socket. This project is used in conjunction with an IBM PC-XT-AT or compatible clone, the Logic IC Tester card simply plugging into a vacant expansion slot. Software is supplied, ready-to-run on 133mm (5 1/4in.) floppy disk. Disk contains READ ME files for additional information. Software is compatible with all standard video cards, i.e. Hercules, EGA, etc. The cost of the Logic IC Tester compares favourably with other commercial systems and finds many applications in servicing, test and other areas.

### Kit and Module

A complete kit and a ready-built version are available. Full construction details for the kit may be found in Maplin Best of Projects Book 8 XC08J.

Retail Unit Price each (inc. VAT).

Order Code	Type 3620	Price each exc. VAT 1+	inc. VAT each 1+
LM83E	IBM IC Tester Kit	£55.310	£64.990
XM17T	IBM IC Tester Assm	£85.090	£99.990

## Video Line Selector

3



This extremely useful project, which is aimed at television engineers and experimenters, enables the waveforms of individual lines of television video information signals to be viewed on a standard oscilloscope, allowing for the easy and rapid diagnosis of faults and/or adjustments, improvements and exploratory work to be undertaken. This device allows any single line out of the 625 possible to be displayed on the scope screen: the sync separator part of the Line Selector now consists of one 8-pin chip and five passive components. One very useful application of a line selector, is to take a look at the information transmitted in the vertical interval of just about every off-air or satellite channel you can pick up.

### Specification

Operating voltage: 7.5 to 12V DC  
 Operating current: ±75mA @ 12V  
 Video input impedance: 75Ω  
 Video output impedance: 75Ω  
 Box dimensions: 175 x 130 x 58mm

### Optional Items

The following optional items, not included in the kit, may also be required.

BNC Chassis Sckt 75Ω	4	(FE31J)
Plastic Instrument Case	1	(KC61R)
AC Adaptor Regulated	1	(YB23A)
No.4 1/4in. S/Tap Screws	1 Pkt	(FE68Y)
Large Stick-on Feet	1 Pkt	(FW38R)

### Kit and Special Parts

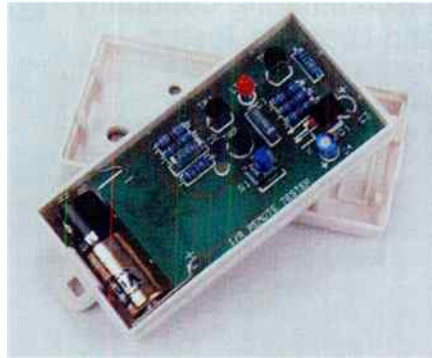
A complete kit of parts (including the PCB and the front and rear panel labels) is available (excluding optional items). The PCB and the Front and Rear Panel Labels are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 95 XA95D, and instruction leaflet XV74R.

Retail Unit Price each (inc. VAT).

Order Code	Type 11402	Price each exc. VAT 1+	inc. VAT each 1+
LU03D	Video Line Selector	£34.030	£39.990
GU28F	Video Line Sctr PCB	£6.800	£7.990
XV74R	Video Line Sctr Lft	£1.000	£1.000 NV

## Infra-Red Remote Control Tester

1



This handy little project is an infra-red (IR) detector. The unit checks to see if a remote control unit (or any other pulsed infra-red source) is transmitting an infra-red carrier or data stream. The unit ignores ambient infra-red energy, so it can be used in full sunlight.

An indication LED shows when a signal is detected and is used for checking the internal battery. The strength of the transmissions from a control unit can be measured by the distance from which the remote control is able to operate.

TV and Video repair engineers will find this infra-red tester an invaluable addition to their toolbox. It is also cheaper and more versatile than IR sensitive cards that attempt to serve the same purpose.

### Specification

Supply voltage range: 6 to 12V  
 Battery type: 12V lighter battery 23A  
 Operating current: 11-4mA  
 Operating frequency: 10Hz to 100kHz  
 Minimum pulse width: 1µs  
 Detector peak spectral response: 940nm

### Optional Item

The following item, not included in the kit, may also be required.

12V Lighter Battery 23A	1	(ZB56L)
-------------------------	---	---------

### Kit and Special Parts

A complete kit is available. A pcb, keyring remote case and panel are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 44 XA44X, and instruction leaflet XK33L.

Retail Unit Price each (inc. VAT).

Order Code	Type 3025	Price each exc. VAT 1+	inc. VAT each 1+
LP53H	I/R Remote Tester	£9.350	£10.990
GE71N	I/R Tester PCB	£2.110	£2.490
JX52G	Panel for Rem Tester	£1.430	£1.690
JR90X	Keyring Remote Case	£1.520	£1.790
XK33L	I/R Rem Test Leaflet	£0.500	£0.500 NV

## Audio Lead Checker

3



### Features

- ★ Rapidly and clearly identifies connections on most audio cables
- ★ Will test very long cables
- ★ Clear LED readout
- ★ Robust design
- ★ High quality, wear-resistant membrane label

### Applications

- ★ PA/Sound engineers
- ★ Gigging bands
- ★ Fault diagnosis

This unit accepts phono, 3.5mm and 6.35mm (1 1/4in) jacks, XLR, 5- and 3-pin DIN connectors in any combination. Plug any one connector into the input and the other connector into the output to instantly identify which pin connects to which pin. Will accept mono or stereo connectors and unusual combinations where pins are cross-connected. Can also be used to confirm continuity when the connection is known. Requires an alkaline PP3 battery JY49D (not included).

### Kit and special parts

A complete kit of parts is available. The PCB and pre-punched & pre-printed front panel label are available separately. Full construction details may be found in Maplin Magazine/Projects Book 114 XD14Q, and instruction leaflet XZ20W.

Retail Unit Price each (inc. VAT).

Order Code	Type 18454	Price each exc. VAT 1+	inc. VAT each 1+
LU2ED	Audio Lead Checker	£17.010	£19.990
GU65V	Audio Lead Check PCB	£5.940	£6.990
KV20W	Audio Lead Check Lbl	£5.940	£6.990
XZ20W	Audio Lead Check Lft	£0.800	£0.800 NV

25

## Low Resistance Continuity Tester

2



### Features

- ★ Provides 3 ranges of resistance indication
- ★ Buzzer indicates continuity

### Applications

- ★ Tracking faults
- ★ Continuity testing
- ★ Testing components

This compact, fast, easy to use, continuity tester is a combined low resistance and continuity tester. It is different from the more familiar type of instrument because it indicates, at a glance, one of three ranges in which the value of the resistance falls. A multicoloured LED is used as the visual indicator together with a continuity bleep when the resistance is below 0.5Ω. The LED glows red to indicate very high 'leakage' resistance, and this range is ideal for testing insulation, capacitor dielectrics and even skin. When the resistance across the probes is around 5kΩ, or less, the LED appears to glow orange. This range is ideal for indicating dry joints, the resistance of switch contacts and connectors, semiconductor junctions etc. In the lower range 0.5Ω to 300Ω, the LED glows green, and below 0.5Ω the buzzer simultaneously beeps (the LED stays green). The continuity tester is powered by one 9V PP3 battery, and a push-to-make type switch ensures that the unit is not left on by accident.

### Kit and Special Parts

A complete kit of parts (including the PCB and instruction leaflet) is available (excluding the battery). The PCB and box label are also available separately. Full construction details may be found in Maplin Magazine/Projects 53 XA53H, and instruction leaflet XT57M. PCB dimensions: 89 x 25mm.

### Retail Unit Price each (inc. VAT).

Order Code	Type 3810	Price each exc. VAT 1+	inc. VAT each 1+
LPS1F	Int'l Continuity Tstr	£10.200	£11.990
GH03D	Int'l Cont. Tester PCB	£1.690	£1.990
ZF40T	Cont. Tester Label	£1.690	£1.990
XT57M	Int'l Cont. Tst Leaflet	£0.800	£0.800 NV

## Continuity Tester

1



### Features

- ★ Discriminates between short circuits and semiconductor junctions
- ★ Audible continuity indicator
- ★ Pocket size

### ★ Suitable for beginners

### Applications

- ★ Fault tracing
- ★ Locating shorts or testing continuity
- ★ Component testing

A very useful continuity tester invaluable for testing fuses, connectors, cables, etc. This device can even tell the difference between a short circuit and a forward biased junction. Use it to test transistors, diodes and LEDs for short or open circuit. Unit draws zero current when not measuring and discriminator is not used. Audible indication makes fault tracing easy. Requires an alkaline PP3 battery JY49D (not included).

NOTE. The speaker included in the kit is fixed with impact adhesive or similar. Adhesive is not supplied.

### Kit and special parts

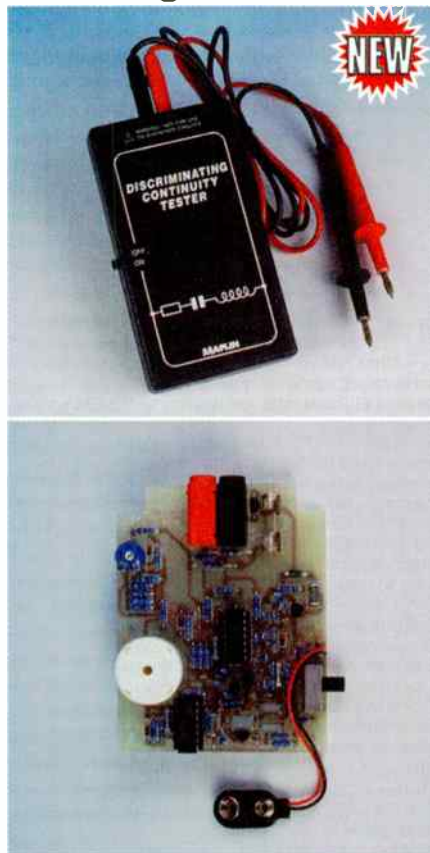
A complete kit of parts is available. The PCB and front panel label are available separately. Full constructional details may be found in Maplin Magazine/Projects Book 111 XD11M, and instruction leaflet XZ39N.

### Retail Unit Price each (inc. VAT).

Order Code	Type 10441	Price each exc. VAT 1+	inc. VAT each 1+
JA13P	Continuity Testr Kit	£12.750	£14.990
GA11M	Continuity Testr PCB	£2.540	£2.990
KV23A	Continuity Testr Lbl	£2.110	£2.490
XZ39N	Continuity Testr Lft	£0.500	£0.500 NV

## Discriminating Continuity And Leakage Tester

3



### Features

- ★ Uses the latest LinCMOSTM technology
- ★ Uses Wheatstone Bridge principle
- ★ Internal fuse protection
- ★ 9V portable operation
- ★ Minimal current consumption
- ★ Watchdog function

### Applications

- ★ Continuity testing
- ★ Leakage and earth leakage testing
- ★ Checks both passive and active components

When servicing a piece of electronic gear, electrical equipment such as a vacuum cleaner, or even the car, a continuity tester is almost essential. Some continuity testers will indicate a connection as good even if it has a resistance of several or many ohms. This is misleading at best, and in many

circumstances worse than useless; a good continuity tester should indicate clearly whether a connection is well under 1Ω or not. The project does just this, and also provides useful information at the other extreme – indicating leakage in the range 1 to 10MΩ. In fact, it can check out a multiway screened cable, or a rack backplane, in less than half the time needed to test it using separate leakage and continuity testers. It achieves this by an ingenious arrangement of several overlapping bridge circuits. The Wheatstone Bridge is one of the earliest and still a fundamental example of the arrangements used in electrical measurements.

This project owes its advanced performance to the use of the latest LinCMOSTM technology, the TLC2714CN quad opamp featuring exceedingly low bias current. This enables it to work from a source impedance of 1MΩ without incurring offset errors. In addition to testing for continuity, leakage and earth leakage, the completed unit checks components of all sorts both passive and active, and is safe to use on all normal semiconductor devices. It is protected against accidental connection to voltage sources up to and including 240V AC mains.

Please note that the kit is supplied complete with 4mm Test Lead Kit (FK21X), which is different from the test leads shown in the photograph.

### Important Note

This is a general purpose test instrument for checking continuity and leakage. It is not designed to test earth continuity, earth loop impedance or insulation on 240V AC mains installations systems or equipments for compliance with British IEE Wiring Regulations, nor on installations systems or equipments for this or any other mains voltage for compliance with any other specifications or regulations.

The internal F100mA fuse protects against permanent damage due to accidental connection to DC or AC sources up to 240V.

### Specification

Supply voltage: Internal 9V battery type PP3  
Supply current: 530μA quiescent,  
13mA operating

### Typical battery life

- on but not sounding: 800+ hours
- sounding leakage tone – intermittent use: 150+ hours
- sounding continuity tone – intermittent use: 25+ hours

### Optional items

The following items, not included in the kit, may also be required.

- Patch Lead Black 1 (BZ23A)
- 4mm Crock Clip 1 (HF23A)
- 9V Alkaline PP3 Battery 1 (JY49D)

### Kit and Special Parts

A complete kit of parts (including the PCB and front panel) is available (excluding optional items). The PCB and front panel are available separately. Full construction details may be found in Maplin Magazine/Projects Book 87 XA87U, and instruction leaflet XV25C.

### Retail Unit Price each (inc. VAT).

Order Code	Type 7395	Price each exc. VAT 1+	inc. VAT each 1+
LT78K	Disc Continuity Tstr	£17.010	£19.990
GJ07H	Disc Cont. Tester PCB	£3.390	£3.990
KP78K	Disc Cont. Meter Label	£2.280	£2.690
XV25C	Disc Cont. Tstr Lft	£0.800	£0.800 NV

## Low Cost 10MHz Counter

3



- ★ Functions as frequency, period and unit counter
- ★ 8-digit display
- ★ Low cost design

**★ 10/100/1000 cycle gate times**

Most multi-function generators are quite expensive, but this three function counter has been designed to be low cost. It is designed around the Intersil ICM7216A, allowing measurements of frequency, periodic time or a totalising count. Maximum frequency is 10MHz in frequency and unit counter modes and 2MHz in periodic time mode. For period measurement there is a 0.1µs resolution whilst frequency modes have gating periods of 0.1, 1 or 10 seconds, and display to an accuracy of 0.1Hz. Four 14mm high contrast, double digit displays are used, multiplexed at 500Hz with a 12.5% duty cycle. A low cost design, replacing three vital test bench facilities at a fraction of the price!

**Specification**

Supply voltage:	10V to 15V
Average current @ 12V:	110mA
Input impedance (nominal):	1MΩ
Input signal amplitude	
10kHz to 1MHz:	30mV
1MHz to 5MHz:	45mV
5MHz to 10MHz:	90mV
Gate times:	0.1, 1, 10 seconds (frequency)
	10, 100, 1000 cycles (period)
Resolution:	0.1Hz (frequency)
	0.1µs (period)
Indicators:	8 seven-segment LEDs
	2 range LEDs
Timebase:	10MHz high-stability crystal

**Optional Items**

The following items, not included in the kit, may also be required.

Box M4005	1(WY02C)
Red display filter	1(FR34M)
Regulated adaptor	1(YB23A)

**Kit and Special Parts**

A complete kit is available and the PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 45 XA45Y, and instruction leaflet XK31J.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 3590	Price each exc. VAT	inc. VAT each
LP37S	10MHz Counter Kit	£51.050	£59.990
GE55K	10MHz Counter PCB	£5.090	£5.990
XK31J	10MHz Counter Lft	£0.800	£0.800 NV

**UHF Prescaler**



**Features**

- ★ Part surface-mount technology
- ★ Compact and efficient design
- ★ No calibration required
- ★ Wide operating voltage range
- ★ AC or DC operation

**Applications**

- ★ Extends the measuring range of Digital Frequency Meters (DFMs)
- ★ For hobbyists, educational and development laboratories

This easy-to-build project has been designed to provide a simple, effective and economical means of extending the upper frequency measuring capability of older or lower-priced basic Digital Frequency Meters (DFMs), by as much as a factor of ten. This means, for example, that if you have a DFM with an upper frequency limit of 50MHz, the addition of this circuit to the input stage, will increase this limit to 500MHz, which would enormously increase the usefulness of the instrument in one move, allowing you to measure previously uncharted territory within the frequency spectrum! The UHF Prescaler would be particularly beneficial for use with some of the 'new generation' Digital Multimeters (DMMs), many of which now incorporate a frequency-measuring function, albeit usually with a very limited range, only covering up to around 20MHz at best. The UHF Prescaler has additional uses other than purely for DFMs, for

example, it could be used to obtain reduced output frequency from an oscillator or 'clock' stage, to give a more useful frequency signal for another section of a circuit. It could also be used in conjunction with an oscilloscope, to extend the measuring range when observing square or rectangular waveforms of logic circuits.

The circuit is compact, to facilitate its easy fitment into an existing instrument's casing, and gives both a taster of surface-mount construction and an insight into ultra high-frequency (UHF) circuit design. The project may be operated from a wide choice of power supplies, both AC and DC, and twin LEDs indicate the presence of an input signal, and that power is being applied.

**Specification**

Power supply:	9V rms AC or 5 to 15V DC
Current consumption:	150mA maximum
Sensitivity:	350mV pk-to-pk @ 650MHz, 600mV pk-to-pk @ 40MHz
Maximum input voltage:	2.5V pk-to-pk
Output voltage:	TTL levels (5V)
Minimum input frequency:	40MHz (10MHz typical)
Maximum input frequency:	650MHz (800MHz typical)
Prescale ratio:	F <sub>OUT</sub> :F <sub>IN</sub> = 1:10
Visual indicators:	Power on and Clocking LEDs

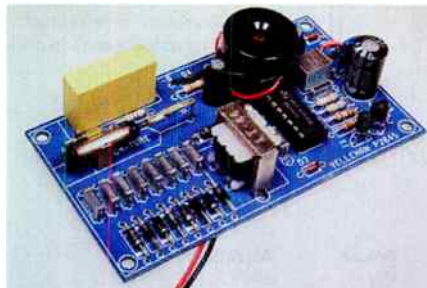
**Kit and Special Parts**

A complete kit of parts is available, including the PCB. The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 94 XA94C, and instruction leaflet XV78K.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 11401	Price each exc. VAT	inc. VAT each
LU14Q	UHF Pre-Scaler Kit	£29.770	£34.990
GJ31J	UHF Prescaler PCB	£1.690	£1.990
XV78K	UHF Prescaler Lft	£0.500	£0.500 NV

**K2645 Geiger-Müller Counter**



This Geiger-Müller counter provides an 'acoustic' measurement of radiation levels – the higher the radiation level, the 'faster' the audible output. The counter is most sensitive to high energy gamma and beta radiation. The counter is self-contained, compact, and may be mounted in a small box, together with the 9V battery (not supplied). The battery should provide about two months of continuous use with normal radiation levels. PCB dimensions: 99 x 54 x 25mm.

**Retail Unit Price each (inc. VAT).**

Order Code	Type 3652	Price each exc. VAT	inc. VAT each
VF34M	Velleman Kit K2645	£65.520	£76.990

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**TV & Video**

**Monochrome Flat CRT Video Monitor Module**



**Features**

- ★ Self contained open-frame design
- ★ 95mm (diagonal) white phosphor screen
- ★ Single +12V DC supply
- ★ Compact
- ★ Easy to use
- ★ 50Hz CCIR composite video compatible
- ★ Contrast, brightness, line, frame and picture geometry controls

**Applications**

- ★ Security and surveillance systems
- ★ Video door entry systems

This compact monochrome (black & white) cathode ray tube (CRT) video monitor module is self contained and requires only a +12V DC @ 400mA (approx.) supply, a 1V pk-to-pk video source and two external potentiometers (brightness and contrast) to operate. The module comprises flat CRT, high-voltage power-supply, time-base and deflection circuits and video drive electronics. Since it is of open-frame construction, the unit must be fitted into a suitable enclosure to avoid user contact with hazardous voltages. The are two PCB mounted connectors: one is for the video input and power supply connections; and the other is off-board brightness and contrast controls. Pre-terminated fly-leads are supplied to facilitate connection. There is an on-board fuse, but the module is *not* reverse polarity protected. Two potentiometers are required for off-board brightness and contrast control, these should be 50kΩ (or 47kΩ) and 1kΩ respectively. On board preset controls are provided for: line frequency (horizontal hold), field frequency (vertical hold), horizontal size, vertical size and geometry, sub brightness and focus. Supplied with information leaflet.

**Warning:** Whilst this module operates from a low voltage supply, the on-board power supply generates potentially hazardous 8kV EHT for the CRT. After power has been removed from the module, hazardous residual charge may remain present for some time. Safe installation and use is dependent on skill and knowledge of the installer, if in doubt, seek advice from a suitably qualified engineer.

**Specifications**

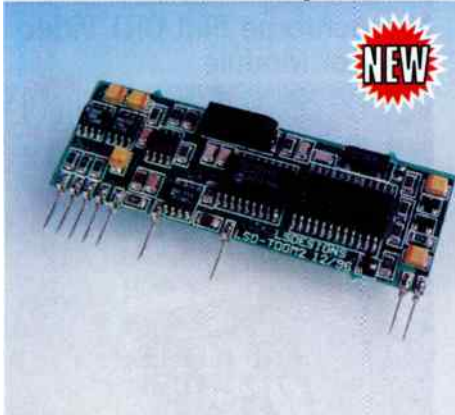
Supply voltage:	+12V DC
Supply current:	375mA nominal
EHT voltage:	6kV
Overall size:	203 x 36 x 103mm approx.
Video input:	1V pk-to-pk composite CCIR

**Retail Unit Price each (inc. VAT).**

Order Code	Type 18402	Price each exc. VAT	inc. VAT each
VF88V	Mono Flat CRT Module	£85.090	£99.990



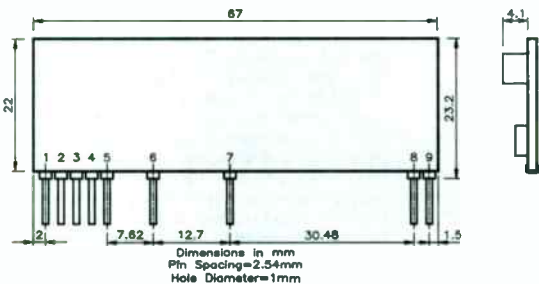
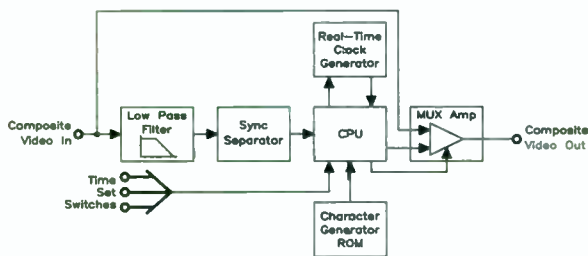
## Time & Date Video Graphics Module for Video Surveillance Systems



### Features

- ★ PCB mounting, space-saving SIL design
  - ★ Minimum of external components required
  - ★ Easily integrated into existing video systems
  - ★ In-built real-time clock
  - ★ Automatic day-of-month and leap-year correction
  - ★ Optional battery back-up for continuous time-keeping
  - ★ Semi-closed caption graphics for greater text definition
  - ★ Wide operating voltage range +7V to +20V DC
  - ★ Particularly suited for use with CCD and CMOS camera modules
  - ★ PAL, NTSC and SECAM compatible
  - ★ Capable of driving 75Ω loads directly
- ### Applications
- ★ Security and surveillance systems
  - ★ General video processing
  - ★ Ideal for professional and hobbyist use

The time and date graphics module splices self-generated time and date information onto standard PAL, NTSC and SECAM composite video signals producing a small digital clock display on the monitor picture image. The module is designed to work with standard composite video with negative-going sync. Composite video signals with amplitude between 500mV and 2V pk-to-pk are compatible with the module. An optional rechargeable backup-battery enables continuous operation of the real-time clock if power is removed from the module.



### Technical Data

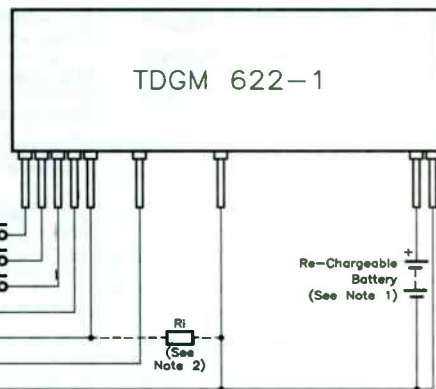
Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:  
<http://www.maplin.co.uk>

### Pin Designations

- Pin 1: Time/Date adjust up
- Pin 2: Time/Date adjust down
- Pin 3: Time/Date adjust select
- Pin 4: Composite video output
- Pin 5: Composite video input
- Pin 6: V<sub>CC</sub> (+V)
- Pin 7: V<sub>SS</sub> (0V)
- Pin 8: Backup battery (+V)
- Pin 9: V<sub>SS</sub> (0V)

### Electrical Characteristics

Parameter	Minimum	Typical	Maximum
DC Supply voltage:	+7V	+9V	+20V
Supply current:	55mA	68mA	75mA
Backup battery voltage:	+2V	+2.4V	+2.8V
Battery charge current (V <sub>batt</sub> = 2.4V):	1.4mA	1.6mA	2.8mA
Backup time (110mAh battery):	6 months	-	-
Video input signal level (pk-to-pk):	500mV	1V	2V
Video input resistance:	-	10 <sup>11</sup> Ω	-
Input offset voltage:	-	2mV	5mV
Video output signal level (pk-to-pk):	500mV	1V	2V
Output impedance: (f = 100kHz):	-	2Ω	-
Bandwidth (-3dB, R <sub>L</sub> = 75Ω):	30MHz	50MHz	-
Overall signal gain:	-	0dB	-

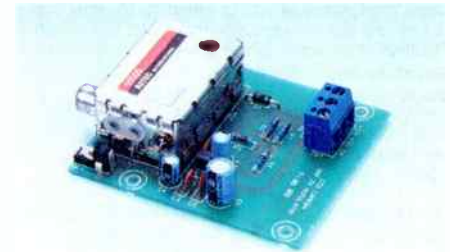


- Note 1: Back-up battery must be re-chargeable type. 2.4V recommended. Module charge current feed is limited to less than 3mA.  
 Note 2: RI is an optional video input resistor and may be required to match the video source impedance. 75Ω typical.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
NV10L 1	TDGM622-1TimeDateVGM	£42.540	£40.410	£38.390	£49.990

## Colour And Monochrome CCD TV Camera Modulator



Note: appearance may differ to that shown.

### Features

- ★ Low-cost
- ★ Easy to build
- ★ Gives boost to upper video frequencies
- ★ Reverse polarity protection
- ★ On-board regulator

### Applications

- ★ View CCD pictures on a normal TV with no modification
- ★ CCTV security systems
- ★ Interface video only devices to TV sets

The video output from either the colour or black-and-white CCD camera modules (CJ75S and ZA35Q) cannot be connected directly to the majority of domestic TV sets. Some TVs have a direct video input socket (Peritel, or SCART), but many only have a UHF aerial input socket. This add-on project is based around a low cost UHF colour modulator which superimposes the video signals from the CCD camera, or a wide range of other units, onto a high frequency carrier wave. A pre-tuned modulator module is used to simplify the construction and alignment of the project. The RF output from this modulator is suitable for connection to the aerial input of UK UHF TV sets.

### Specification

DC power supply voltage:	10.5V to 17V
Supply current at 12V:	8mA
Video input level:	1V pk to pk
Video input impedance:	600Ω (no termination) 75Ω (R1 terminated)
RF TV output:	Channel 36 (591.5MHz)
Output socket:	UHF Coax

### Optional Items

The following items, not included in the kit, may also be required.

Unregulated 300mA Mains Adaptor	1	(XX09K)
Monochrome CCD Video Camera	1	(ZA35Q)
Colour CCD Camera	1	(CJ75S)

### Kit and Special Parts

A complete kit of parts, including the PCB, is available (but excluding optional items). The PCB is also available separately. Full construction details may be found in Maplin Magazine/Projects Book 75 XA75S, and instruction leaflet XU55K.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
LT37S	CCD Camera TV Modult	£17.010	-	-	£19.990
GH62S	CCD Camera TV MD PCB	£3.390	-	-	£3.990
XU55K	TV Cam Mod Leaflet	£0.800	-	-	£0.800 NV

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## Infra-Red Video Link

4



### Features

- ★ Range up to 100m
- ★ 12V operation
- ★ Replaces long video cables

### Applications

- ★ Point-to-point video link
- ★ Security
- ★ General communications

The Infra-red Video Link allows the transmission of monochrome composite video over a distance of up to 100 metres. The system makes use of large fresnel lenses to focus the infra-red energy at much greater distances than are possible using standard techniques.

The Infra-red Video Link has many varied applications, but is particularly suited to security, e.g. to link a security camera to a video monitor. This is particularly useful between two buildings on the same premises. In this case, the infra-red link obviates the need for long external cable runs. Clearly, the system is only practical where the buildings are close enough together, and there is a direct line-of-sight between the Transmitter and Receiver. Under typical environmental conditions, a range of up to 100m may be expected from the link; however, if the optical path is attenuated (for example, by fog or heavy rain), reduced range can be expected.

The quality of picture is not as good as that from a TV receiver, or a direct connection to a video monitor, due to the reduced bandwidth. However, it is sufficient for general-purpose surveillance applications where fine detail is less important.

### Specification

Supply voltage:	12V to 14V DC
Supply current:	150mA Tx (quiescent @ 12V) 200mA Rx Up to 100m 4MHz approx.

Range:	Up to 100m
Video bandwidth:	4MHz approx.
Peak infra-red	
Wavelength:	270mm approx.
Comp. video input:	1V pk-to-pk Tx
video output:	1V Pk-to-Pk Rx

### Kit and Special Parts

The Transmitter and Receiver are available as two separate complete kits, excluding any power supply. The kits include a case, PCB, fresnel lens, suitable mounting bracket and construction details. Full construction details may be found in Maplin Magazine/Projects Book 51 and 52.

Tx PCB: 83 x 94mm.  
Rx PCB: 109 x 94mm.

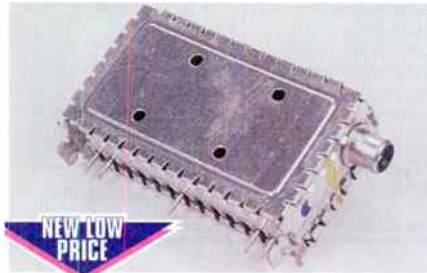
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP59P	21 IR Video Link Tx	£21.260	£24.990
LP99H	1 IR Video Link Rx	£21.260	£24.990

## UHF TV Tunerhead Module

Philips

The U943 is a high quality varicap tuned TV receiver front-end having three tuned circuits, three stages of amplification including post-I.F. amplifier, and covering the UHF TV channels E21 to E69 (471.25 to 855.25MHz picture carrier frequency). Aerial input is via a phono socket, normally this is linked to a standard 75Ω coaxial chassis socket with coaxial feeder. Output is TV I.F. comprising luminance, chrominance, F.M. sound I.F. and NICAM sound I.F. if present. This output should be processed with an S.A.W. (Surface Acoustic Wave) filter to separate the sound and vision signals. The module is designed for vertical mounting onto a PCB and is provided with five PCB pins and can securing tags at each end.



### Specification

Supply voltage:	+12V DC ±10%
Current consumption:	57mA max.
R.F. input impedance:	75Ω
R.F. bandwidth:	20MHz typ.
Voltage gain into I.F. load of 1200Ω/15pF:	40-42dB max., E21-E69
A.G.C. level for gain of 10dB:	+1V min.
A.G.C. voltage range:	+0.85 to 9.2V ±0.5V
A.G.C. current drawn:	15µA max.
Tunable R.F. range:	471-25MHz (E21) to 855-25MHz (E69)

Tuning voltage range:	+1 to 28V
Tune slope characteristic:	4MHz/V
Current drawn from tuning circuit:	0.6µA max.
I.F. components -	
Vision:	39-5MHz
Sound:	35-5MHz
Bandwidth:	9MHz
Output impedance:	100Ω
I.F. rejection:	80dB min.
Image rejection:	60dB typ.
Cross modulation:	1% typ.

Dimensions of screening can: length 66.2mm, height 38mm (not including PCB pins), width 20.1mm. Length of pins, 5mm.

With input phono socket (A) at top lefthand side, lead connections are:

5	A.G.C. input	16	Earth
6	Supply +V	17	I.F. output
11	Tuning voltage		

The case must be connected to ground.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JR59P	UHF Tuner Module 943	£11.050	£12.990

## Audio/Video RF Modulator

Aips



A high quality, compact audio/video RF modulator with integral 'through' RF mixer/booster and IEC connectors that is suitable for PCB direct rear panel mounting. The modulator has an RF phono output for connection to a UHF tuner. There is an in-built test signal for receiver tuning that is activated by an

integral mounting slide switch. Suitable for a wide range of applications including VCRs, satellite receivers, video disk, etc. Only suitable for use in UK (PAL-I system).

### Connections

A:	Channel selector
B:	Test switch
C:	Antenna out
D:	Antenna in
E:	RF phono out to tuner

1:	Video in
2:	Audio in
3:	+V for modulator
4:	NC
5:	+V for booster

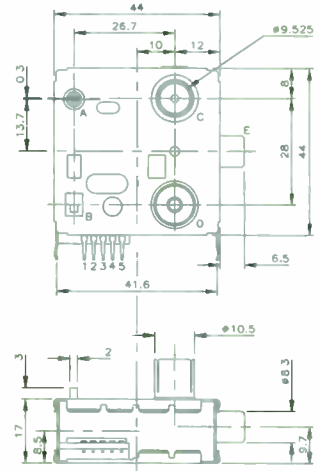
### Specification

Supply voltage:	5V at 160mA max.
Video input:	1V pk-pk
Audio input:	1.23V pk-pk
Output channel:	30 to 39
Output level:	75dBµV ±3dBµV
Video modulation:	75% ±6%
Audio modulation:	100% ±24
S/N audio:	40dB min
Audio distortion:	3% max.
Video carrier stability:	<±600kHz (0°C to 60°C)
Audio carrier accuracy:	<±15kHz (0°C to 60°C)

### Technical data

Full technical data is available on request and is also downloadable in Adobe® Acrobat® PDF format from the technical data archive area of the Maplin website:

<http://www.maplin.co.uk>



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC20W	UHF Modulator 6MHz	£9.350	£10.990

## Audio Video Modulator 2



### Features

- ★ Simple construction. No alignment required
- ★ Multiple inputs - SCART or BNC/Phono
- ★ Silk-screened, pre-punched case
- ★ Built in test signal for TV tuning

### Applications

- ★ Allows video equipment such as camcorders to be connected directly to the RF input of any TV
- ★ Low cost security monitoring using our range of CCD cameras
- ★ Provides a SCART input to your TV (Composite video and audio only)
- ★ Allows two videos to be linked without disconnecting the TV

A redesign of the Audio and Video Modulator kit LM79L offering a superior specification. The unit features simple connection to video sources via a BNC connector with a selectable termination resistor. The audio signal is connected via a phono connector and can be used to mix stereo signals. Alternatively a SCART connector can be used for either or both inputs. Output is PAL UK standard for connection to any UK television receiver, video or other equipment with a RF input.

### Specification

Operating voltage: +8V to +15V DC via 2.5mm power socket  
 Supply current: 144mA @ 12V DC  
 Audio input: 150mV to 3V pk-to-pk into 50kΩ  
 Video input: 200mV to 3V pk-to-pk into 1MΩ or 75Ω  
 RF channels: 30 to 39 adjustable

### Optional items

Regulated Mains adaptor YB23A  
 Aerial Extension Cable GW61R  
 2 to 1 Phono Adaptor YW39N  
 Single Phono to Phono Plug RW48C  
 Peritrel (SCART) Plug to Plug connecting cable JW36P

### Kit and special parts

A complete kit of parts is available. The PCB and case are available separately. Full constructional details may be found in Maplin Magazine/Projects Book 108 XD08J, and instruction leaflet XZ10L.

### Retail Unit Price each (inc. VAT).

Order Code	Type 18450	Price each exc. VAT	inc. VAT each
LU35Q	Audio/Video Modulat	£29.770	£34.990
GU59P	Aud/Vid Modulat PCB	£2.970	£3.490
BL98G	AV Modulator Box	£11.050	£12.990
XZ10L	Aud/Vid Modulat Lft	£0.800	£0.800 NV

## Active SCART Splitter/Selector 2



### Features

- ★ SCART, Composite and S-Video compatible
- ★ Separate phono audio outputs
- ★ Can be daisy chained for more outputs
- ★ Low power consumption - leave plugged in
- ★ Easy to build and use

### Applications

- ★ Connecting a single TV, VCR or cable/satellite unit to two other units
- ★ Buffering of signals to reduce degradation

### ★ Simple Input selection of audio and video source

The Active Scart Splitter is a video and audio signal buffer that enables the SCART signal from a TV, VCR or cable/satellite receiver to be split to two SCART compatible inputs with virtually no signal degradation. Separate phono connectors are provided that allow connection to a stereo amplifier or Hi-Fi. Switches are provided on the front panel that allow the composite video and audio source to be independently selected. The unit can thus be used as a source selector. Additional units can be cascaded or daisy chained with little signal loss or degradation.

### Specification

Operating voltage: 230V AC 50Hz  
 Power consumption: 1.84W  
 Video bandwidth: DC to 100MHz (-3dB)  
 Audio bandwidth: DC to 3MHz (-3dB)  
 Audio input: 10V pk-to-pk  
 Video input: 3V pk-to-pk  
 Audio/video gain: 0dB

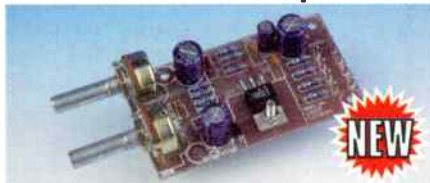
### Kit and special parts

A complete kit of parts is available. The PCB and silk-screened box are available separately. Full constructional details may be found in Maplin Magazine/Projects Book 107 XD07H, and instruction leaflet XZ36P.

### Retail Unit Price each (inc. VAT).

Order Code	Type 18450	Price each exc. VAT	inc. VAT each
LU21X 1	Active SCART Kit	£29.770	£34.990
GU77J	Active SCART PCB	£11.050	£12.990
JS82D	Active SCART Box	£5.090	£5.990
XZ36P	Active SCART Lft	£0.800	£0.800 NV

## Video Distribution Amplifier 1



### Features

- ★ Simple construction suitable for beginners
- ★ Cascadable for increased output
- ★ Neat, compact design
- ★ Lower cost alternative to TV splitters

### Applications

- ★ Improved video recording
- ★ Video signal distribution - connects up to 4 separate units
- ★ Buffering and boosting video signals for longer cable runs

This simple-to-build kit allows successful splitting of a video signal into four separate outputs. Alternatively, the unit may be constructed as a high current driver for relaying video signals. All connections are made using pins on the PCB allowing the user to specify the input and output connectors. A video gain and high frequency boost are provided allowing adjustment of the video signal for improved picture quality. A regulated power supply of +11 to +16V DC at 50mA is required.

### Optional items

Chassis Phono socket YW06G  
 BNC chassis socket FE31J  
 75Ω cable XS52G  
 Box MB2 LH21X  
 Knob RN15 Blue FE74R  
 Knob RN15 Red FE76H  
 Mains adaptor regulated YB23A  
 Vaned Heatsink TO126 (for high current driver alternative) JX21X

### Kit and special parts

A complete kit of parts is available. The PCB is available separately. Full constructional details may be found in Maplin Magazine/Projects Book 111 XD11M, and instruction leaflet XZ38R.

### Retail Unit Price each (inc. VAT).

Order Code	Type 18446	Price each exc. VAT	inc. VAT each
LU79L	Video Pre-Amp Kit	£12.750	£14.990
GH72P	Video Distr Amp PCB	£2.280	£2.690
XZ38R	Video Distr Amp Lft	£0.500	£0.500 NV

## VCR Dubbing and Changeover Kit 2



- ★ Eliminates constantly changing leads
- ★ Amplifies the video signal
- ★ Connections for three video recorders

With video cameras becoming more and more popular, a need arises for a simple way of editing tapes. This high quality kit permits two video recorders to be permanently connected together via special video relays in the unit. A switch on the front panel transposes all the connections so that the playback machine becomes the recorder and the VCR that was recording becomes the playback machine. Thus tapes can be edited backwards and forwards, completely eliminating the laborious task of transferring all the connections each time. The unit also incorporates an amplifier to eliminate losses in the video signal. A further feature is that a third VCR can be connected, which can record the final output to make the finished master. Connections are via scart sockets for all three machines (the plugs are not included in the kit), duplicated on 6-pin DIN sockets for machines 1 and 3 and for machine 2 on phono sockets for right and left audio and BNC socket for the video.

N.B. Not S-VHS compatible.

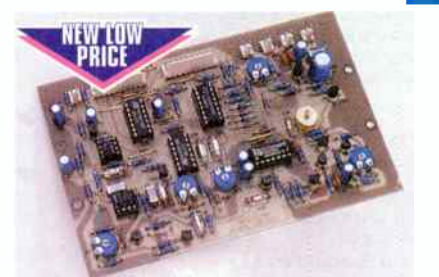
### Kit and Assembled Unit

A complete kit, including case and pcbs, is available. The plugs and interconnecting leads are not supplied and must be made up according to the particular connectors on your VCRs. Full construction details may be found in Maplin Magazine/Projects Book 30 XA30H.

### Retail Unit Price each (inc. VAT).

Order Code	Type 3058	Price each exc. VAT	inc. VAT each
LM71N 1	Video Dubber Kit	£29.770	£34.990
XM16S 2	Video Dubber Assmbld	£42.540	£49.990

## Video Box 3



- ★ Composite colour video in/out
- ★ Sync in/out
- ★ Fade to black
- ★ Normal or negative picture
- ★ DC video control
- ★ Picture synchronised switch functions

The main function of this excellent design is to provide the ability for fading the picture information down to a blank screen. This effect can be used as a 'fade-in' or 'fade-out' on dubbed recordings (e.g. camcorder to VCR), lending a more professional appearance to your video productions. The Video Box permits the reduction in amplitude of picture information, while maintaining the level of the timing signals used to synchronise it. To achieve this, the incoming composite video signal must be split up into its component parts, each of which undergo selective processing. Following this, these components are re-assembled, to produce the final composite output. An additional video inverter has been included, allowing the option for a negative picture to be displayed (useful for home video and long distance/satellite TV enthusiasts!). Apart from



its own function as a video fader, the system timing signals have been made available, and as a result the finished unit can be used as a versatile building block for use within other video projects. Two additional video effects have been provided. When operated, the picture inverse switch produces a 'negative' image. The colour burst defeat switch should have the effect of turning off the colour circuits within your video equipment. This function is commonly referred to as the 'colour-killer' circuit, and when activated has the effect of producing a black-and-white picture.

It is strongly recommended that the Video Box is powered from a regulated power supply e.g. 12V 300mA type (YB23A). Note: the Video Box is NOT reverse-polarity protected, so damage will occur to the circuit if the power supply connections are reversed.

**Specification**  
DC power requirement: +12V  
DC current: 120mA  
Video system: Comp. PAL colour video; 1V Pk-to-Pk  
Video gain: 0dB  
Frequency bandwidth: 10MHz  
Input impedance: 75Ω (nominal)  
Output impedance: 75Ω (nominal)  
Video control: Fade to black  
External control

Synchronised switches: Video normal or inverted  
Video defeat  
Colour burst defeat  
Output defeat  
Composite sync: On/off  
External input  
Timing outputs: Composite sync.  
(All +12V CMOS) Inverted composite sync.  
Vertical sync.  
Odd/even field index  
Video blanking  
Inverted video blanking  
Colour burst gate  
Inverted colour burst gate

**Optional Items**

The following items, not included in the kit, may also be required.

Min Slide Pot Lin 10kΩ	1	(JM85G)
Slide Knob B	1	(YG09K)
Knob K14B	1	(FK39N)
LED Clip 5mm	1	(YY40T)
SPST Ultra Min. Toggle	5	(FH97F)
AC Adaptor Regulated	1	(YB23A)
ABS Console M6006	1	(LH66W)
BNC Round Skt 75Ω	2	(FE31J)
Panel Mount Pwr Skt 2.5mm	1	(JK10L)
Self Tap Screw No. 4 x 6.35mm (1/4in.)	1 Pkt	(FE68Y)

**Kit and Special Parts**

A complete kit of parts (including the PCB and instruction leaflet) is available (excluding optional items). The PCB is also available separately. Full construction details may be found in instruction leaflet XT04E.  
PCB dimensions: 144 x 97mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP48C	Video Box Kit	£21.260	£24.990
GE85G	Video Box PCB	£5.370	£7.490
XT04E	Video Box Leaflet	£1.000	£1.000 NV

**K4600 Video And RGB Processor**

Velleman



To process a PAL colour video signal it first has to be converted back into the original Red, Green and Blue signals. In this way the colours can be adjusted separately, along with the colour intensity, brightness and contrast. After processing, the signal can then be converted back into the PAL video

signal.

A choice can be made between PAL Video or RGB outputs. In addition a place has been provided on the PCB for a UHF modulator, such that the antenna input of the TV or video can also be used. It is also possible to connect an S-VHS input signal. The RGB output is highly suitable for controlling our K8100 video digitizer card, so that PAL video signals can also be digitized in colour.

**Specification**

Colour system: PAL (CCIR standard)  
Composite video input: Phono sockets (RCA)  
S-VHS input: 4-pin mini DIN socket  
RGB input (as an option) 1Vtt  
Input level: 75  
Input impedance: Phono sockets (RCA)  
Composite video output: 9-pin D-type (suitable for K8100 digitizer board)  
RGB output: 1Vtt

Output level: 1Vtt  
Output impedance: 75  
Supply: 16V DC/0.5A un stabilised (adaptor connection)  
Dimensions: 200 x 67 x 170mm

Contrast, brightness and colour saturation control. Separate controls for Red, Green and Blue. RF antenna input/output. Housing included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VF74R 1	K4600 Vid/RGB Proc	£106.370	£124.990

**TVFX Unit**



- ★ Displays full colour
- ★ Video and TV outputs
- ★ Internal/external triggering

A 'partyLite' for your TV, the TVFX is a sound to light system with patterned or single coloured screens. The circuit uses the TEA2000, SAA1043 and an array of logic circuits to produce each screen. TVFX can be connected in two ways, either from the preamp to power amp link or from the power amp to speakers link. A switch for low and high sensitivity and a variable sensitivity control on the front panel allows different power levels to be selected. In addition to an audio input, internal triggering with a variable clock speed can change the screen patterns. Outputs to PAL TVs and videos display 64 different patterns, 8 plain screens and 8 different colours.

**Specification**

Supply voltage: 12V  
Supply current: 100mA  
Power: 1.2W

**RF (UHF)**

Carrier output: Channel 36, 591.5MHz

**Video (composite)**

Output level: 1V pk-pk  
Impedance: 75Ω

**Audio**

Input attenuator: -30dB (Low sensitivity)  
140kΩ (high)  
1.2MΩ (low)  
Filter response: 15Hz to 90Hz at -6dB  
Trigger sensitivity: 100mV (high) max sensitivity  
1.5V (low) max sensitivity

**Pattern control**

Clock speed: Max 12 screens per second  
Min 1 screen every 3 seconds  
Audio trigger: Max 9 screens per second

**Optional Items**

The following items, not included in the kit, may also be required.

Case 3502	1	(YN33L)
Self-Tapping Screw No.4 x 6.35mm (1/4in.)	1 Pkt	(FE68Y)
TVFX Front Panel	1	(JR68Y)
TVFX Back Panel	1	(JR69A)
AC Adaptor Regulated	1	(YB23A)
Phono/Coaxplg Vid Lead	1	(FV90X)

**Kit and Special Parts**

A complete kit is available. The main PCB, LED PCB, front and back panels are also available separately. Full construction details may be found in Maplin Magazine/Projects Book 42 XA42V, and instruction leaflet XK23A.

Main PCB: 162 x 125mm  
LED PCB: 051 x 12.7mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LP00A 1	TVFX Kit	£29.770	£34.990
JR68Y 1	TVFX Front Panel	£1.690	£1.990
XK23A	TVFX Leaflet	£0.400	£0.400 NV

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Rx/Decoder Std 40pin 1relay 3channel	772	CR76H
Tranceiver Module	770	CR83E
Tranceiver Module Eval Kit	770	CR84F
Tx Keyfob Hop 1	771	CR73Q
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<b>Security</b>		
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Touch Key	781	CK42V
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D2 N/Auto Detector	786	FN37S
PC Storage Scope Windows 95 Software	784	VF87U
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TRX N/Auto Detector	786	FN36P
TRX N/Auto Detector	786	FN34M

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## Radio Communications Equipment Prices

Due to the volatile nature of the radio communications market and in order to remain competitive, some prices shown in this section may change during the life of this catalogue. Please call to check the latest price on any item listed.

### Scanners, Aerials & Accessories

#### Scanners

### Alinco Scanner DJ-X1D AM NFM/WFM 200kHz - 1300MHz



### Alinco DJ-X10 Handheld Scanner 100kHz to 2GHz Continuous Coverage

Alinco



- ★ No gaps
  - ★ 1200 memories
  - ★ Modes AM, NFM/WFM, SSB (LSB/USB), CW
  - ★ Ultra sensitive
  - ★ Computer control capability
  - ★ Rugged and compact
  - ★ Dual frequency display
- This replacement for the very popular and highly regarded DJ-X1D now boasts coverage to 2GHz, while still maintaining the excellent specification. With computer control and 'cloning' capability, this superb scanner ranks amongst the best. Supplied complete with NiCds and charger.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV37S 1	DJ-X10 H-Hand Rcvr	£254.460	£298.000

### AOR AR-8000 Hand-held Scanner 500kHz - 1.9GHz AM/FM/USB/LSB

AOR



- ★ Spectrum Display
- ★ Band Scope
- ★ 4 Display Modes

- ★ Dual Frequency Display
- ★ Computer Control
- ★ Data Storage
- ★ High Sensitivity
- ★ 1000 Memories
- ★ Alpha-Numeric Store
- ★ SSB Filter
- ★ Password Protection

The AOR-8000 offers you true computer control. You can store both frequency and station name in its database. A data port enables it to be used for cloning, external computer control, or for computer logging with one of the growing number of software packages.

For the ultimate in portable scanning and data storage, the AOR-8000 has no rivals.

Technical data sheet available.

#### Specification

Supply: Internal Ni-Cad or 12V Battery  
Consumption: 160mA (20mA battery save)  
Size: 66 x 39 x 155mm  
Weight: 345g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RLJ98G 2	AR-8000 Scanner	£297.020	£349.000
YE60Q	SC-8000 Case	£15.270	£17.950

### Optoelectronics Scout Frequency Counter 10MHz to 2.8GHz



The Optoelectronics Scout in complete control of our AOR-8000 scanning receiver listed earlier in this section. Use it alone with its internal ni-cad pack and aerial to lock onto any radio transmission between 10MHz and 1.4GHz. Connect its data port to the AOR-8000 and it instantly tunes the receiver to the same frequency! Typical ranges are between 35m and 61m for handheld radios.

The Scout can store up to 400 different frequencies and record the number of repeated 'hits' (250 max.) on the same channel. An internal buzzer or body vibrator alerts the user of a 'hit'. Memories can be recalled and scrolled through and an internal filter eliminates random noise responses. Unit is supplied with AC charger and aerial.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE57M 2	OPT-400 Freq Counter	£297.820	£349.950

**Businesses and Government Establishments – open a Maplin MPS Account**

Just complete form at back of catalogue

- ★ No gaps
- ★ 100 memories
- ★ Battery save
- ★ Ultra sensitive
- ★ Rugged and compact
- ★ Programmable
- ★ Helical whip

The ideal scanner for those who need a rugged unit that is both compact and sensitive. This superb unit is proving very popular with aircraft enthusiasts due to its excellent UHF performance. Supplied complete with Ni-Cds and charger. This scanner is available in Maplin Stores only, while stocks last.

Sensitivity: 12dB SINAD 0.5µV  
Antenna: BNC 50Ω  
Supply: Ni-Cds or 12V DC  
Steps: 5-100kHz  
Dimensions: 110 x 53 x 37mm  
Weight: 370g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CM84F 1	DJ-X1 Hand Scanner	£170.200	£199.000
RU06F	ESC-15 Soft Case	£12.720	£14.950

**All Customers**  
No additional freight charges for heavy items



	COM102 (AY19Y)	COM112 (AY20W)	COM202 (AY21X)	COM203 (AY23A)	COM104 (NV02C)	COM213 (AY22Y)	COM212 (NV03D)	COM216 (NV04E)
No. of Channels	10	20	50	200	20	100	30	400
Memory Banks	-	-	-	10	-	10	-	10
Frequencies (MHz)	68-88 137-174 380-512	68-88 137-174 406-512	68-88 108-174 380-512	68-88 108-174 380-512 806-956	68-88 137-174 380-512	66-88 108-174 406-512 806-956	66-88 137-174 406-512	25-1300
Mode	FM	FM	AM/FM	AM/FM	FM	AM/FM	FM	AM/FM/WFM
Scan Speed (Ch/sec)	8	12	16	25	16	100	16	100
Search	-	√	√	√	√	√	√	√
Monitor Channels	-	-	1	10	1	√	1	1
Scan Delay (2 seconds)	√	√	√	√	√	√	√	√
Lock-Out	√	√	√	√	√	√	√	√
Key-Lock	√	√	√	√	√	√	√	√
Priority Channels	-	-	√	√	-	√	-	√
Power Save Circuit	√	√	√	√	√	√	-	-
Memory Backup	Super-cap	Super-cap	Super-cap	Super-cap	Super-cap	Super-cap	Super-cap	EEPROM
Power	9V DC	7-5V DC	9V DC	9V DC	9V DC	12V DC	12V DC	12V DC
Dimensions W.H.D (mm)	70x160x40	68x171x38	58x145x42	58x145x42	68x160x43	65x165x42	64x165x42	64x165x420
Built-in Charger	√	√	√	√	√	√	√	√
Low Batt. Warning	√	√	√	√	√	√	√	√

Specification	COM101 (AY34M)	COM215 (AY48C)	COM205 (AY52G)
No. of Channels	20	200	400
Memory Banks	-	10	10
Frequencies (MHz)	68-88 137-174 380-512	68-88 118-174 216-512 806-956	25-512 806-1300
Mode	FM	AM/FM	AM/FM/WFM
Scan Speed (Ch/sec)	16	100	2-speed 25/8
Search	√	√	6 banks
Monitor Channels	1	-	10
Scan Delay (2 seconds)	√	√	√
Lockout	√	√	√
Key-Lock	-	√	-
Priority Channels	√	√	√
Power Save Circuit	-	√	-
Memory Backup	Super-cap	Battery	Battery
Power	230V AC	230V AC 12V DC	230V AC
Dimensions WHD (mm)	210 x 52 x 175	266 x 85 x 190	275 x 75 x 230

**Commтел COM112 20-channel Hand-held Scanner**

Commтел



**NEW LOW PRICE**

A highly user-friendly scanner offering 20 channels with 7 preprogrammed frequency bands, direct up or down search and direct programming from search. It has a scan speed of 12 channels per second and a search speed of 12 steps per second. Other features include channel lockout, 2 second scan delay and a key-lock function. The LCD display shows channel number, lockout and frequency. The unit is powered by 5 'AA' cells (not included). Includes its own Ni-Cd battery charger circuit (requires external +12V DC PSU). This scanner is available in Maplin Stores only, while stocks last.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AY20W 11	COM112 20 Ch H-Hand	£93.600	£108.990

**Commтел COM102 10-channel Hand-held Scanner**

Commтел



This state of the art 10 channel scanner is fully programmable and can receive all sorts of public service transmissions. It is robustly designed, and

offers a full frequency LCD display for ease of use. Includes its own Ni-Cd battery charger circuit (requires external PSU). The unit is powered by 6 'AA' Cells (not included). An external PSU is available for mains operation and charging batteries (BA57M).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AY19V 1	COM102 10 Ch H-Hand	£85.090	£99.990
BA57M	COM102 Adaptor	£7.720	£9.080

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## Commtel COM104 20-channel Hand-held Scanner

Commtel



A fully programmable 20-channel scanner that is able to receive a variety of communications. It features a search option to find new unpublished frequencies which can then be stored, temporarily, in the monitor channel. The bright display can show channel number, frequency and mode of operation. The scanner requires 6 'AA' Cells (not included). Includes its own Ni-Cd battery charger circuit (requires external +9V DC PSU).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
NV02C 1	COM104 20 Ch H/Held	£93.600	£96.120	£79.230	£109.990

## Commtel COM212 30-channel Hand-held Scanner

Commtel



This cost-effective scanner will give you access to most communications in the VHF-low, VHF-high and UHF-low bands. It offers six programmable search bands that allows the user to explore new, unpublished frequencies. The display shows frequency and channel numbers as well as active functions. The lock out facility allows unwanted frequencies to be skipped. The built-in time delay of two seconds allows for any possible reply after communication on a particular frequency. The unit is powered by 4 'AA' Cells (not included). Includes its own Ni-Cd battery charger circuit (requires external +12V DC PSU).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
NV03D 1	COM212 30 Ch H/Held	£72.330	£57.990	£93.910	£94.990

## Commtel COM202 50-channel Hand-held Scanner

Commtel



A stylish unit with 50 programmable channels and a search function to explore new frequencies. These are automatically stored in the monitor channel and can be transferred to one of the 50 normal channels if you wish. It also includes a 'lockout' function, to skip stored frequencies which you do not wish to listen to. Includes its own Ni-Cd battery charger circuit (requires external PSU). An external PSU is available for mains operation and charging batteries (BA56L).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AY21X 1	COM202 50 Ch H/Held	£127.650	£116.140	£105.700	£149.990
BA56L	COM202/203 Adaptor	£7.720	£5.400	£4.800	£9.080

## Commtel COM213 100-channel Hand-held Scanner

Commtel



A high specification scanner offering 100 channels in 10 banks, with 1 priority channel in each bank. For speed and ease of use it offers Jetscan, which can scan 100 steps per second. It also features programmable band search, lockout for up to 10 frequencies, channel lockout, 2 second scan delay, data noise/birdies skip, a key-lock and a green backlit display. It uses 4 'AA' Cells (not included). Includes its own Ni-Cd battery charger circuit (requires external +12V DC PSU).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AY22Y 1	COM213 100 Ch H/Held	£153.180	£145.520	£138.240	£179.990

## Commtel COM203 200-channel Hand-held Scanner

Commtel



This scanner offers 200 channels in 10 banks which means you can group similar frequencies together for ease of use, and each bank can be included or excluded when scanning. It allows you to receive public services, civil air bands and also cellular phone bands. Further functions include a priority channel, very high scanning speed of 25 channels per second and a search function with 10 monitor channels for storing new frequencies. Includes its own Ni-Cd battery charger circuit (requires external PSU). An external PSU is available for mains operation and charging batteries (BA56L).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AY23A 1	COM203 200 Ch H/Held	£170.200	£158.280	£147.200	£199.990
BA56L	COM202/203 Adaptor	£7.720	£5.400	£4.800	£9.080

## Commtel COM216 400-channel Full Coverage Hand-held Scanner

Commtel



This top-of-the-range scanner covers the full frequency range from 25MHz to 1300MHz without gaps. Now you can pick-up almost anything from

CB and portable phones to FM radio, TV sound HAM radio and much more. Favourite frequencies can be stored in 400 channels, which can be grouped in 10 banks for convenience. 10 channels can be assigned as 'priority' channels. Scanning speed is extremely fast at 100 channels per second, and with the special search mode that has 100 memories for lock-out of known frequencies or birdies, makes this scanner extremely easy to use. It uses 4 'AA' Cells (not included). Includes its own Ni-Cd battery charger circuit (requires external +12V DC PSU).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV04E 1	COM216 400 Ch H-Held	£297.860	£349.990

### Commtel COM101 20-channel Desktop Scanner

Commtel



The COM101 is a dedicated base scanner able to receive all kinds of public services. This scanner stores up to 20 channels for automatic or manual scanning and also includes a lock-out function. It also offers a search feature, monitor channel and 2 second scan delay. The COM101 comes complete with telescopic antenna and AC adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AY34M 1	COM101 20 Ch BaseSt	£93.600	£109.990

### Commtel COM215 200-channel Desktop Scanner

Commtel



A highly-featured, desktop scanner offering 200 channels arranged in 10 scanning banks, with one Priority Channel in each bank. For ease of use it offers Turbo Scan at 100 channels per second max., with Autosort for maximum scan speed and Turbo Search at up to 100 steps per second. Other features include direct search, programmable band search, auto station programme mode, lockout for up to 10 frequencies, manual frequency sort, programmable auto-recording and optional CTCSS tone squelch. The unit is powered from either the mains or 12V DC.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AY48C 1	COM215 200 Ch BaseSt	£212.750	£249.990

See Stock Code Index For More Price Breaks

### Commtel COM205 400-channel Desktop Scanner

Commtel



Our top of the range base scanner unit offers you 400 channels arranged in 10 banks. It gives full coverage of all frequencies in the range 25-512 and 806-1300MHz, allowing reception of everything from CB to broadcast radio, civil aircraft to emergency services, and cell phones to cordless phones. It also gives you a choice between 8 or 25 channels per second scan speed, and excellent selectivity due to triple conversion technique circuitry.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AY52G 4	COM205 400 Ch BaseSt	£280.840	£329.990

### ICOM IC-R10 Hand-held Scanner 500kHz to 1.3GHz

icom



- ★ 1000 memories in 18 banks
- ★ Manual rotary tuning option
- ★ 15 preset tuning steps or user programmable
- ★ F/WAM/WFM/USB/LSB/CW
- ★ 16.7 channels/sec scan speed
- ★ Data cloning
- ★ Sleep timer function
- ★ Backlight illumination
- ★ Variable display contrast
- ★ Priority channel

A lightweight scanner with excellent sensitivity and selectivity, plus the option of manual rotary tuning. A data port allows the IC-R10 to be controlled from a PC, or transfer data to the PC. Receiver-to-receiver data cloning is possible allowing the programmed contents of one IC-R10 to be copied into another. Comes complete with Ni-Cds and 230V AC mains charger.

**Specification**  
Supply: Internal Ni-Cds or external +12V DC supply/charger  
Consumption: 180mA typ., 110mA typ stand-by  
Steps: 0.1, 0.5, 1, 5, 6.25, 8, 9, 10, 12.5, 15, 20, 25, 30, 50, 100kHz or user programmable  
Size: 58.5 x 130 x 31.3mm  
Weight: 310g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV35D 1	IC R-10 H-Held Rcvr	£322.550	£379.000

### Icom IC-R8500 Communications Receiver 100kHz to 1.999GHz

icom



- ★ FM (wide/narrow), AM (wide/narrow), SSB (USB/LSB), CW
- ★ 1,000 memories plus 20 scan edges and 1 priority channel
- ★ 40 channels/sec scan speed
- ★ Auto memory write scan
- ★ Programmed scan
- ★ Memory select scan
- ★ Memory editing
- ★ Audio peak filter
- ★ Data communications
- ★ Tape output and remote record
- ★ Sleep timer

A sophisticated communications receiver for the enthusiast who wants only the best. There are 1,000 regular memory channels, plus 20 programmable scan edge channels and one priority channel. The 5-digit bank names are programmed into 20 user banks for convenient recall and organisation of frequencies. In addition, memory channels can store mode information, tuning step and ATT (attenuation) information. A useful feature is the 'auto memory write scan'. When a signal is received, the received frequency is automatically written into a memory channel in the auto write bank. Supplied with 230V AC mains power adaptor and comprehensive instruction manual.

**Specification**  
Power supply: 13.8V dc 1.8A standby, 2A audio  
Audio output: >2W 8Ω load  
Dimensions: 287 x 112 x 309mm  
Weight: 7kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV36P 1	IC R-8500 Comms Rcvr	£1,402.400	£1,649.000

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## OptoElectronics Xplorer



The Xplorer is a multi-function nearfield communications test and surveillance receiver.

- ★ 30MHz - 2GHz
- ★ Demodulates FM Audio
- ★ 2 line LCD Display
- ★ Decodes CRSS, DTMF & DCs
- ★ RS-232 Interface

A unique product - a frequency counter, FM receiver, decoder, GPS interface and so much more, all in one box. Technical data sheet available.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV04E 1	Xplorer	£680.000	£799.950

## Pro-44 68 - 512MHz



- ★ AM/FM
- ★ 5/12.5kHz steps
- ★ 50 Memories
- ★ Direct Entry

Designed for those who don't need the ranges above 500MHz, this is an ideal entry level scanner. Just as sensitive as the more advanced units, it's

simple to operate and great value for money. Well recommended if you want performance on a budget. Powered by 6 x 'AA' cells. This scanner is available in Maplin Stores only, while stocks last.

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
AG98G 11	Pro - 44	£84.250	£99.000

## Pro-63 Handheld Scanner 68 to 512MHz



- ★ AM/FM
- ★ 5/12.5/25kHz steps
- ★ Direct entry
- ★ 100 channels

Designed for those who don't need the ranges above 500MHz, this is an ideal entry level scanner. Just as sensitive as the more advanced units, it's easy to use, and great value for money. Well recommended if you want performance on a budget. Powered by 6 x 'AA' alkaline or Ni-Cd cells (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV61R 1	Pro 63 Scanner	£126.800	£149.900

## Uniden Bearcat 220-XLT Wideband Scanner



- ★ 66 to 88MHz
- ★ 108 to 174MHz
- ★ 406 to 512MHz
- ★ 806 to 956MHz
- ★ 200 Memories
- ★ 10 Memory Banks
- ★ NiCd & Charger

This handheld scanner covers all the major services and provides FM reception throughout its range, apart from the VHF airband where it switches to AM.

UBC80-XLT 80 memory version also available.(order code ME13P).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE82D 1	220-XLT Scanner	£160.650	£199.000
ME13P 1	80-XLT Scanner	£143.820	£169.000



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**WELZ WS-1000E & WS-2000**  
500kHz - 1.3GHz  
"World's Smallest Scanner"

Welz



- ★ Direct Entry
- ★ 800 Memories (WS-2000)
- ★ 400 Memories (WS-1000E)
- ★ Battery Save
- ★ Very small design

Power: 2 x AA cells (not supplied)  
Size: 58 x 97 x 24mm  
Steps: 1kHz - 100kHz (UK spec.)  
Modes: AM/NFM/WFM  
Antenna: BNC  
Weight: 200g

The Welz WS-1000E and WS-2000 are the ultimate small and lightweight scanners. The WS-2000 offers the same features as the WS-1000E, but has 400 extra memories (800 in total) and improved VHF sensitivity. One push tuning in preset mode for beginners, and extended function mode for expert users are provided. Very sensitive. Long life on only 2 x AA Alkaline cells (not included).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JV43W 1	WS-1000E Scanner	£194.890	£229.000
NV70M 1	WS-2000 Scanner	£211.910	£249.000
ME85Y	Case WSC-1000	£12.720	£14.950

**Yupiteru MVT-7000**  
200kHz - 1300MHz AM/FM  
Hand-held Scanner

Yupiteru



- ★ Direct up/down tuning
- ★ Variable steps
- ★ 200 memories
- ★ 10 programmable bands
- ★ AM/FM/WBFM
- ★ Variable contrast display
- ★ Signal strength meter
- ★ High speed scanning
- ★ Backlight illumination
- ★ Battery sver
- ★ Attenuator
- ★ Superb sensitivity
- ★ 12V DC charge lead

The Yupiteru is a very advanced hand-held scanner. Indeed it is now in use in many professional applications. Unlike many of its cheaper rivals, the Yupiteru bears the hallmark of sound engineering that instills confidence. Engineers enthuse over it and hobbyists are equally complimentary about its ease of operation and versatility. The receiver covers every conceivable service including marine, aircraft, military, emergency services and lots more! Its fast scanning rate means rapid searching and its easy to use memory enables you to store up to 200 frequencies. Keypad entry adds to its versatility and provides the means of accessing its many different functions.

**Specification**

Sens: 10dB SINAD 0.23µV (FM)  
Size: 64 x 159 x 40mm  
Steps: 5/10/12.5/25/50/100KHz  
Power: 4 x AA ni-cads  
External 12V supply  
Antenna: 50Ω BNC  
Scan rate: 20 per second

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CM00A 2	MVT-7000 Scanner	£211.910	£249.000
RU01B	OP-50-Carrying Case	£16.970	£19.950

**Yupiteru MVT-7100 with SSB**  
100kHz - 1650MHz

Yupiteru



- ★ Direct Keypad Entry
- ★ Variable Steps
- ★ 100 Memories
- ★ 10 Programmable Bands
- ★ AM/NFM/WFM/LSB/USB
- ★ Search pass (500 ch.)
- ★ Backlight LCD
- ★ 30 ch. per sec. scan
- ★ 50Hz accuracy
- ★ Battery Saver Function
- ★ Attenuator & S-meter
- ★ Product detector
- ★ Rugged construction
- ★ 240V AC charger/supply

One of the most exciting handheld scanner ever to be produced and what a performer it is! Not only do you get a top performance VHF/UHF scanner, you also get a powerful short wave communications receiver all in one packaged. The scan and search speeds are a blistering 30 steps per second and it has a proper SSB detector. This means easy tuning and clear reception. Take it with you on holiday, on walks, in the garden, in fact anywhere and keep in touch with the world. With this scanner you will receive military and civil aircraft, commercial transmissions, all the emergency services, long distance marine and aeronautical broadcasts from as far away as Australia. No wonder everybody is talking about the MVT-7100.

**Specification**

Sens: 10dB SINAD 0.23µV (FM)  
Size: 64 x 159 x 40mm  
Steps: 50Hz - 100KHz  
Power: 4 x AA cells  
External 12V DC  
Ant: 50Ω BNC

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU00A 3	MVT-7100 Receiver	£228.930	£269.000
JR67X	OP-51 Carry Case	£16.970	£19.950

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## Yupiteru MVT-7200

Yupiteru



- ★ AM narrow mode added
  - ★ Built-in ferrite aerial for MW band
  - ★ Rubber duck aerial
  - ★ Narrow SSB filter fitted
  - ★ Lower battery consumption
  - ★ Increased selectivity
- Yupiteru took the MVT-7100, the world's best scanner, and made it better. Buy this one if you must have the best.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JV47B	MVT-7200 Scanner	£297.020	£349.000
JR67X	OP-51 Carry Case	£16.970	£19.950

## Yupiteru MVT-9000 Hand-held Scanner

Yupiteru



The ultimate hand-held scanner with ultra-wide frequency coverage: 530kHz to 2,039MHz. All mode operation: WFM, NFM, WAM, NAM, LSB & USB. 18 different frequency steps and 1,000 alpha-numeric memories. High search and scan speeds. Has dual frequency display and allows both sides of duplex contacts to be monitored. Spectrum display shows adjacent channel activity in real-time.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VMS6E	Yupiteru MVT-9000	£336.170	£395.000

## Scanner Aerials

### WSM-88V BNC Mini Mag Mount

Ideal for use with handhelds & scanners. BNC plug to BNC socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JV41U	WSM-88V BNC MagMount	£12.720	£14.950

### WSM-1900 25MHz to 1.9GHz Mobile Gainer Complete Scanner Aerial for Car

Watson

- ★ Dedicated VHF/UHF scanner aerial
- ★ High performance throughout the range
- ★ 400mm whip length
- ★ BNC plug fitted
- ★ 2.75m coax cable

This complete scanner aerial and magnetic mount will greatly improve signal reception. You will hear signals that you have not heard before!



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KN05F	WSM-1900 Mobile Gain	£25.480	£29.950

### 'On-Glass' Scanning Aerial 30MHz to 1.3GHz

Mount your scanning aerial without drilling holes in your car. Special adhesive pad makes firm contact and feeds signals directly through glass to matching box. Amazing performance. Whip unscrews for car wash.

- ★ No holes required
- ★ Whip unscrews



Whip: Black flexi-metal 50cm long  
Cable: Coaxial 50 Ohm 4.5m long  
Termination: BNC Plug

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ76H	TGSP Scanning Aerial	£25.480	£29.950
RJ77J	TG-MKD Remount Kit	£5.910	£6.950

## Sky Scan Antennas SS-Mobile 1300

- ★ 25MHz to 1.3GHz
- ★ Magnetic mount with rubber skirt
- ★ 4m coax with BNC plug
- ★ Superb efficiency

Now you can take your scanner mobile and enjoy base station performance. Reduces noise and enhances signals.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ11M2	SS Mobile-1300	£21.230	£24.950

## Super Scan Mk II - An HF/VHF/UHF Wideband Active Aerial for Scanning Receivers

Fully assembled and ready for use!

### Features

- Indoor or outdoor use
- Wideband HF/VHF/UHF preamplifier
- Low power consumption
- Power supply through coaxial cable
- High gain
- No tuning required
- Surface mount components
- Integral mast clamp

### Applications

- Ideal for scanning receivers
- 160, 80, 40, 20, 15, 10m HF amateur radio bands
- 6, 4 and 2m VHF amateur radio bands
- 70cm and 23cm UHF amateur radio bands
- VHF FM broadcast band
- UHF TV band
- 27MHz and 934MHz CB bands
- VHF/UHF aircraft bands
- VHF and UHF PMR bands
- VHF marine band
- VHF taxi band

### Specifications

Aerial	
Power supply:	+9V to +14V DC
Supply current:	17mA (at +12V)
Frequency Range:	1MHz to 2,000MHz (2GHz)
Gain:	+19dB (maximum)
Impedance:	50Ω
Connector:	N-type
Length:	75cm
Weight:	0.25kg
Mast clamp:	Twin fixing hoops for masts up to 51mm (2in.) diameter

### PSU Interface

Power supply:	+9 to +14V DC
RF insertion loss:	-1dB (500kHz to 1.000MHz)
Impedance:	50Ω
DC input connector:	2.5mm power socket
RF connectors:	N-type and BNC

A radio receiver or scanner will only perform within the operating restrictions of its aerial system. Nearly all scanners are supplied with a small telescopic aerial, whilst adequate for local reception, such aerials are not suitable for reception of long distance (DX) or weaker signals. To achieve best performance an outside aerial, mounted as high as possible, is required.

With the increasing frequency range of modern VHF/UHF scanners, a very broadband aerial is needed. The feeder cable connecting it to the scanner must have good low loss signal characteristics if the advantages of an outdoor aerial are to be fully realised. All cables will have some losses, which increase with feeder length and frequency. To compensate for this the aerial must have signal gain. The best method is to use an aerial with an integral wideband masthead signal

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amplifier, such as the Super Scan Mk II. The DC voltage used to power this amplifier is fed up through the centre core of the coaxial cable, which is introduced by using a PSU interface at the receiver end. The aerial has a weatherproof housing for outdoor use, with four ground radials to aid performance.

The Super Scan Mk II Aerial comes fully assembled and includes the following items:

- 1 Super Scan Mk II active receiving aerial with integral mast clamp
- 1 Super Scan Mk II PSU interface.
- 1 mains adaptor
- 15m (approx) pre-terminated RG58U coaxial cable for interconnection between PSU interface and aerial
- 1m (approx) pre-terminated RG58U coaxial cable for interconnection between receiver and PSU interface
- 1 instruction manual

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AM37S 1	Super Scan Mk II	£68.070	£79.990

### Watson NOMAD Compact Portable Scanning Antenna 25MHz to 1300MHz

Watson



Ideal for portable or indoor use this scanning antenna comes complete with coax and pre-fitted BNC plug, and can be simply suspended from curtain rail, picture hook, etc. Easy-to-use and lightweight this unit can be used permanently outdoor if made waterproof. Model WPN-97 (NV46A) is a passive version, and WAN-97 (NV47B) is an active version with a built-in high gain pre-amp. The active version can be powered by a 9V PP3 Alkaline battery (not supplied) or an external +9V to +12V DC supply via a 2.1mm power plug (centre positive).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV46A	WPN-97A Passive NOMAD	£16.970	£19.950
NV47B 1	PAN-97A Active NOMAD	£29.740	£34.950

### Sky Scan Antennas SS-Desk-Top 1300

- ★ 25MHz to 1.3GHz
- ★ Compact size
- ★ 4m cable with BNC plug
- ★ Needs no adjustment
- ★ Ideal for office or home

Height: 91.4cm (36in.)  
Width: 22.8cm (9in.)



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU10L 3	SS Desk-1300	£21.230	£24.950

### Sky Scan Antennas SS-Base

Discone roof or loft version of above. "N" socket cable not supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KG90X 1	SS Base-1300	£42.510	£49.950

### Scanner Whips 25MHz - 1.9GHz

Watson

Purpose designed whips that will enhance the performance of your scanner. They are specifically designed to provide the widest possible frequency coverage together with signal gain characteristics that will improve the receiving range of your scanner. All models are fitted with BNC plugs.

**W-801 REGULAR GAINER**  
A flexible whip that provides a wide frequency response, and worthwhile improvement in signal strength. Length is 21cm.

**W-889 TELE GAINER**  
A telescopic aerial with base knuckle joint that enables you to adjust its length and angle for optimum reception.

**W-881 SUPER GAINER**  
The ultimate flexible whip for long distance reception. It provides significant gain over normal antennas and will considerably enhance your listening. The flexible design ensures that it cannot be accidentally broken.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BH81C	W-801 Regular Gainer	£11.020	£12.950
BH82D	W-889 Tele Gainer	£12.720	£14.950
BH83E	W-881 Super Gainer	£16.970	£19.950

### Scan King Mobile Aerial 100MHz - 1.3GHz

Magnetic mount, wide frequency range. Height 66cm with 4m of cable terminated with BNC plug.



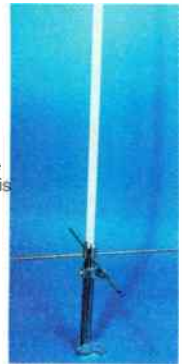
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AB88V 1	Mobile Scan-K	£16.970	£19.950

### Scan King Base Aerial 500kHz - 1300MHz

The one major improvement you can make to your scanner is to install an outside aerial. This will improve your scanner's range tremendously. You will hear distant signals that before were inaudible when using the whip antenna. The Scan King is recommended by us as the ideal answer at a very reasonable price. It is fibreglass encapsulated and supplied with all mounting hardware for masts up to 2in. diameter.

Length: 110cm  
Radials: 4 x 20cm  
Connector: 'N' type



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU06G 2	Scan-K Base	£34.000	£39.950

### SE-1300 Base Discone 25MHz to 1.3GHz

A favourite antenna for those who want the best coverage antenna, in the loft or outside. Comes with mast clamps and fitted with N-type socket (50Ω).  
Height: 1.7m  
Weight: 1kg



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CM09K 3	SE-1300 Discone	£42.510	£49.950

### Scanner Accessories

#### Watson WQ2 Passive Pre-Selector for SW Receivers

Watson



This passive pre-selector for SW receivers provides a big improvement in reception by considerably reducing, or eliminating unwanted signals such as medium wave broadcast, etc. A six position band-pass switch selects the desired band and a tuning control is used to 'peak' the signal for maximum strength. An attenuator switch is included offering a 3dB reduction. Ideal for use with a scanning receiver and older HF receivers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV57M 1	WQ2 Passive Preselect	£38.250	£44.950

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**



## MFJ-956 Scanner Tuner



**NEW LOW PRICE**

The MFJ-956 is a passive device designed to provide a big improvement to the short wave reception of any scanning receiver. It provides front end selectivity and matching that overcomes the shortcomings in all scanner receivers. Simply connect between your wire aerial and scanner for instant improvement.

Frequency: 1-8-30MHz  
Sockets: SO-239  
Size: 82 x 55 x 125mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS70M 1	MFJ-956 Preselector	£34.000	£39.950

## WRP-1300 Wideband Pre-Amp (25MHz to 1300MHz) for Scanners

Watson



**NEW**

For improved reception on those difficult frequencies, this in-line wideband pre-amp, with a minimum of 13dB of gain over the frequency range, is hard to beat. It can be powered from a 9V PP3 Alkaline battery (not included), or an external +9V to +15V DC @ 20mA supply. The 2.1mm power socket requires a positive centre power input. The small metal housing is fitted with a on/off slide switch and BNC connectors. A 0.5m (approx) BNC-BNC patch lead is included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV43W 1	WRP-1300 W/B Preamp	£34.000	£39.950

## SAA20

**NEW LOW PRICE**



If your antenna is mounted on the roof, then weak signals can be lost in the cable between it and the scanner. This amplifier and filter boosts even the weakest signal, along aerial cables up to 50m long, giving you so much more to listen to.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BA10L	SAA20 Antenna Amp	£25.520	£29.990

## Airband Receivers, Aerials & Accessories

### Airband Receivers

#### SAB-11 VHF Airband Monitor

A dedicated civil airband monitor that you can afford to take anywhere. Although the price makes it ideal for youngsters, it is a great little performer in its own right. Now you can listen to the pilots and the ground controllers at your local airport or airshow.

Covers 88 - 136MHz VHF and 540 - 1600kHz medium wave.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AG99H	SAB-11 VHF Monitor	£11.020	£12.950

#### Airband/Marine Broadcast Monitor Receiver SAB-9 MK II

Ideal for those on a budget, this receiver is one of our best sellers. It covers airband, marine, emergency and FM broadcast. You'll be able to tune into all the action. This is a great entry level monitor and is widely used at air displays, etc. Power is from 4 x 'AA' cells (JY48C, not supplied). It has its own speaker and telescopic aerial and an earpiece is provided. SAB-12 is same but with squelch control.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CM33E 1	SAB-9 Monitor Rcvr	£19.530	£22.950
YE83E	SAB-12 Monitor Rcvr+	£22.080	£25.950

## Yupiteru VT225 Professional Airband Monitor Civil & Military

Yupiteru

**NEW LOW PRICE**



This airband receiver covers both military and civil frequencies. Its superb sensitivity and professional design make this the ideal monitor for the enthusiast or professional organisation. It is supplied with Ni-Cds and AC charger.

FM 149 - 160MHz  
AM 108 - 142MHz  
AM 222 - 391MHz  
100 Memories  
10 - 100kHz steps  
AA Ni-cads  
12V Ex: Supply  
Size 59 x 147 x 38mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CM81C 1	VT-225	£203.400	£239.000
RJ02C	Case OP-225	£13.570	£15.950

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**Yupiteru VT125 II Civil Airband Receiver**

Yupiteru

NEW LOW PRICE



- ★ AM 108 - 142MHz
- ★ 30 Memories
- ★ 25kHz steps
- ★ AC PSU
- ★ 3 AA Ni-Cads
- ★ 12V Ext. Supply
- ★ 57 x 127 x 35mm
- ★ Helical aerial

Similar to the VT225 but covers just the civil band. Used extensively at airshows, etc.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CM01B	VT-125	£152.340	£179.040
RJ03D	Case OP-125	£13.570	£15.954

**Airband Aerials**

**Watson W-901 VHF/UHF Air-band Antenna**

Watson

A dedicated VHF/UHF civil and military air-band antenna. It has been resonated for best reception and can be used for up to 10 Watts transmit on the VHF band. Incorporates BNC plug, 50 ohms. A must for any serious air band listener! Weight: 38g Length: 215mm.



RECENTLY INTRODUCED

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VN02C	Watson W-901	£16.970	£19.950

**Watson WSM-225 VHF/UHF Air-band Whip Antenna**

Watson



RECENTLY INTRODUCED

This mobile antenna is dedicated for VHF/UHF military and civil air-band, so there is no longer any need to put up with the compromise of a wide band aerial. Features integral magnetic mount. This antenna is supplied complete with 2.75m of cable pre-terminated with a BNC plug for immediate use. It can even be used for transmit on the VHF air-band for up to 50 watts. Weight: 65g. Length: 725mm. 50 Ohms. Provides up to 8dB gain over helical antennae.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VN03D	Watson WSM-225	£25.480	£29.950

**Airband Accessories**

**WRP-125 Airband Pre-Amp (118MHz to 137MHz)**

Watson



NEW

This in-line pre-amp, which covers the civilian airband, assists with the reception of weak signals, but does not amplify unwanted out of band signals such as FM broadcasts. The pre-amp has a minimum of 15dB of gain over the frequency range. Powered from a 9V PP3 Alkaline battery (not included), or an external +9V to +15V DC @ 20mA supply. The 2.1mm power socket requires a positive centre power input. The small metal housing is fitted with a on/off slide switch and BNC connectors. A 0.5m (approx) BNC-BNC patch lead is included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV44X	WRP-125 Air Preamp	£28.040	£32.950

**WAF-125 Tuneable Airband Filter 85MHz to 175MHz**

Watson



NEW

Receivers can suffer from overload or breakthrough from strong unwanted signals, this passive tuneable antenna filter can greatly reduce this interference, and in some cases completely eliminate it. The filter covers the 85MHz to 175MHz range and is particularly suited for screening out Band II (FM) broadcasts, and VHF paging transmitters. The unit includes a fixed high pass filter which reduces SW and MW interference. Connections to aerial and receiver are via BNCs. Supplied with calibration graph and 0.5m (approx) BNC-BNC patch lead.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV45Y	WAF-125 Notch Filter	£27.190	£31.950

## Steepletone SAK-1 Airband Receiver Accessory Kit

Steepletone



This accessory kit complements the SAB-11 (AG99H), SAB-9 MkII (CM83E), SAB-12 (YE83E), MBR-7 (RU53H) and other airband receivers. The kit includes a pair of neat 4 x 30 binoculars, a pair of mono headphones for personal listening and a very useful aircraft radio frequencies guide book. The book covers both military and civilian airfields and information on many of the most commonly seen civilian aircraft and helicopters.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV41U	SAK-1 Accessory Kit	£8.460	£9.950

### Shortwave Receivers, Aerials & Accessories

### Shortwave Receivers

## LOWE HF-150 Communications Receiver



- ★ Professional Performance
- ★ Coverage 30KHz-30MHz
- ★ Synchronous Detection on AM
- ★ Narrow & Wide Filters
- ★ 60 Memories
- ★ Dual Conversion
- ★ USB/LSB/CW/AM

Now selling across the world, this British design has won glowing reports about its performance. Compact dimensions and solid construction enclose an electronic design that performs better than some receivers costing much more. It is also finding wide applications in the commercial field. Thoroughly recommended for the serious DX listener who demands good sensitivity and the ability to cope with strong adjacent channel signals.

Aerial: 600 ohm/50 ohm/whip  
 Power: 12V DC (AC adaptor inc.) Internal ASA cells  
 Speaker: 8 ohm built-in  
 Size: 185 x 80 x 160mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CM23A4	HF-150 Receiver	£357.400	£419.950

**Business Account Holders**  
**No Delivery Charges for any order**

## AKD Target HF-3 Synthesised Receiver

AKD



A budget priced receiver with quality performance. Coverage: 30kHz to 30MHz USB/AM/LSB. This fully synthesised receiver tunes in 1kHz steps and has a clarity control for SSB  $\pm 800$ Hz. Receiver also features a signal strength meter and a headphone socket. Supplied complete with 230V AC 50Hz mains to 12 volt power supply, long wire antenna and short-wave listening guide.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VN20W	AKD Target HF-3	£136.120	£159.950

## Short Wave Regenerative Receiver Kit - Great Performance



Ideal student or hobbyist project. This amazingly powerful little receiver covers 3.5 - 22MHz. It's complete including vernier dial, all controls and metal cabinet. Receives AM, SSB and CW. Highly sensitive, even on a few feet of wire. Powered by a PP3 battery. Dual headphone outputs. You also get a very comprehensive instruction manual. Ideal for kids from 12 to 100 years!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU62S2	8100W Ready Built	£76.550	£89.950
RU61R3	8100K SW Kit	£59.530	£69.950

## Sony ICF-SW55 Short Wave Receiver AM/SSB



A top performance portable covering 150KHz to 30MHz plus FM broadcast. This is a superb performer with programmable alphanumeric memory display. Features 125 memories, 1KHz display, clock, timer, 230V/110V AC adaptor, soft

case, frequency guide, etc.  
 Power: 4 x 'AA' cells (not supplied).  
 Receiver size: 194 x 127 x 39mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CP23A5	ICF-SW55 Receiver	£255.270	£299.950

## Sony ICF-SW-100E Micro Size AM - SSB



This is a micro miniature short wave receiver that provides full coverage from 150KHz - 30MHz AM and SSB plus FM broadcast. Measuring 110 x 23.5 x 72mm, it will fit into the smallest pocket and is supplied with soft case, stereo phones and retractable wire aerial. Features built-in telescopic antenna, speaker, 50 memories, 1KHz display, scanning, programmable station name display, USB/LSB switch, alarm, world time feature, synchronous detection, programmed SW broadcast bands, etc. An amazing radio!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE44X1	ICF-SW-100E Receiver	£187.190	£219.950

## Roberts R861 Multi-Band Digital PLL RDS World Radio with SSB

Roberts



- ★ Continuous AM coverage 153kHz to 29.999MHz
- ★ RDS auto clock set
- ★ SSB (LSB/USB) 40Hz tuning steps
- ★ Dual conversion IF on SW
- ★ Direct frequency input
- ★ Rotary tuning
- ★ Auto scan
- ★ 307 memory presets
- ★ 29 page SW station name memory

A sophisticated FM-stereo/MW/LW/SW digital RDS radio with a host of features to make using the radio extremely easy. The radio comes with 28 of the 29 available pages of SW memory pre-programmed with the BBC, European and North American stations and many more. A numeric keypad allows direct frequency keying with a priority button for direct access to your favourite station. This compact radio is supplied with a 230V AC mains adaptor, shortwave aerial, earphones and soft carrying pouch. The radio can be operated from 4 x 'AA' alkaline cells (not supplied) providing approximately 16 hours of normal use.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV39N1	R861 RDS World Radio	£170.170	£199.950

**Steepletone MBR-7  
Wideband Receiver**



- ★ 150 - 315kHz
- ★ 525 - 1650kHz
- ★ 2.3 - 22MHz
- ★ 87 - 109MHz
- ★ 107 - 176MHz

This new item is designed for those who want to explore the world of radio and get maximum frequency coverage in one package. In addition to your normal LW/MW and FM stations you'll be able to hear long distance broadcasts from across the world, VHF air-band and marine traffic, emergency services, taxis and much more. Features include direction finder aerial, telescopic whip, S-meter, PA facility, frequency book and carrying strap. Power: 4 x HP2 or 240V AC  
Size: 369 x 273 x 132mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU53H 6	MBR-7 Portable Radio	£59.530	£69.950

**Low SRX50  
Short Wave Receiver**



- ★ Short Wave + Broadcast
- ★ Stereo FM
- ★ Digital Display/Alarm Clock
- ★ 20 Memory Capacity

This compact receiver covers the domestic and major shortwave broadcast bands. Digital display gives precise frequency readout and also doubles as a travel clock and alarm. Now you can wake up in the morning and hear the world news as it happens. Very sensitive and superb value. Ideal for overseas travellers.

Range 153-281/531-1602KHz  
5.9 - 15.5MHz  
87.5 - 108MHz

Power 3 x AA  
Size 180 x 120 x 35mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CP24B 1	SRX-50 SW Receiver	£34.000	£39.950

**Steepletone MBR95 9-Band  
(FM, MW & 7 x SW) Receiver**



- ★ 13m, 16m, 19m, 25m, 31m, 41m, 49m SW bands
  - ★ FM with DX/local switch and MW bands
  - ★ 550mm telescopic aerial
  - ★ AM/FM push button band selection
- A very compact, lightweight 9-band receiver that offers sensitivity and clear reception. Rotary tuning is made easy by a LED which lights when the station is tuned correctly. The receiver requires 2 x 'AA' Alkaline cells (not supplied), or a suitable external DC power supply that is connected via a DC power jack. Complete with 3.5mm headphone jack and strong carrying strap.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV40T	MBR95 World Radio	£11.570	£13.950

**Shortwave Aerials**

**ANT-60 Portable SW Aerial**

Ideal for RC-818 receiver or similar. Unrolls in seconds to approximately 7 metres (23 feet) in length. Supplied with 3.5mm plug.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU83B	ANT-60 Antenna	£12.720	£14.950

**Short Wave Wire Aerial**

**Watson**  
★ 1.5MHz-30MHz  
★ 50m long  
★ Ready to go

The ideal wire system for short wave reception. Its length may be reduced with only a small reduction in low frequency performance. Ready assembled, 50m stranded copper wire, with insulators and 20m of feeder plus nylon support cord.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU52G 2	SWL-DX1 Long Wire	£22.040	£25.950

**Copper Antenna Wire**



Three type available, each in 50m (169ft) lengths  
**ECW (YE58N)** - pre-stretched copper wire 16 gauge (1.6mm dia.) ideal for SW receive aeriels.  
**HDCW (NV59P)** - pre-stretched hard drawn copper wire 16 gauge (1.6mm dia.) ideal for transmit aeriels, strong, will support traps, etc.  
**Flexweave (NV60Q)** - pre-stretched 168 stranded copper wire 14 gauge (2mm dia.) easy to solder and extremely strong, suitable for constructing receive and/or transmit aeriels. It can be tied for a secure termination and will not twist, knit or stretch.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE58N 2	ECW Copper Wire 50m	£11.020	£12.950
NV59P	HDCW Copper Wire 50m	£12.720	£14.950
NV60Q	FLEXWEAVE CU Wire 50m	£21.230	£24.950

**Ribbed Aerial Insulators**

Black, ribbed polypropylene insulators. Ideal for wire transmitting aerial. 8cm long.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS74R	INSUL-8 Insulator	£0.842	£0.990

**Receiver Long Wire Balun**

This balun transforms the high impedance of any random length of wire down to the conventional 50Ω impedance. A shielded 50Ω coaxial feed can be taken back to the receiver thus reducing noise and optimising signal transfer.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE42V	LWB Long Wire Balun	£19.530	£22.950



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## CT400 Antenna Coupling Transformer

Lake



**NEW**

A 'broad-band' inductively-coupled transformer intended for coupling a receiver's 50Ω antenna connector, via a screened coaxial downlead feeder, to a conventional end-fed or long wire antenna. The transformer covers all the HF bands with wire antennas of virtually any length, but ideally between 10m and 30m. It can provide effective screening from radiated pulse (ignition) type interference and so improve weak signal readability.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV48C	CT400 Ant Cpl Xfmr	£6.760	£7.950

## Shortwave Accessories

### Watson WAT2 Antenna Tuning Unit for SW Receivers

Watson



**NEW**

The WAT2 has been designed for 500kHz to 30MHz listening, and will peak an antenna for maximum efficiency. The variable 'Q' control is used to increase the selectivity of the tuner for better interference rejection and cross modulation prevention. The unit can be used with a wide range of aerial types including coaxial feeds, long wires, tuned feeder and loop antennas.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV58N 1	WAT2 SW Antenna Tuner	£46.760	£54.950

### AT-2000 SWL Antenna Tuner



**NEW LOW PRICE**

The most widely used short wave receiver tuner in use today. Used by enthusiasts throughout the world.

Freq: 100KHz to 30MHz  
Antennas: Long wire/coax/twin feed  
Connector: SO239  
Size: 150 x 67 x 146mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CAN0J 2	AT-2000 Tuner	£76.550	£89.950

### Watson WQ2 Passive Pre-Selector for SW Receivers

Watson



**NEW**

This passive pre-selector for SW receivers provides a big improvement in reception by considerably reducing, or eliminating unwanted signals such as medium wave broadcast, etc. A six position band-pass switch selects the desired band and a tuning control is used to 'peak' the signal for maximum strength. An attenuator switch is included offering a 3dB reduction. Ideal for use with a scanning receiver and older HF receivers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV57M 1	WQ2 Passive Preselect	£38.250	£44.950

### MFJ-956 SW Tuner



**NEW LOW PRICE**

The MFJ-956 is a passive device designed to provide a big improvement to the short wave reception of any scanning receiver. It provides front end selectivity and matching that overcomes the shortcomings in all scanner receivers. Simply connect between your wire aerial and scanner for instant improvement.

Frequency: 1.8-30MHz  
Sockets: SO-239  
Size: 82 x 55 x 125mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AST0M 1	MFJ-956 Preselector	£34.000	£39.950

### NRF2 Noise Reduction Filter

Lake



**NEW**

This passive audio filter is intended to enhance the selectivity of a receiver by limiting the audio response at the headphone or loudspeaker stage. Modern receivers tend to have a much wider bandwidth to cater for broadcast stations as well as SSB, FAX and similar utility signals. This filter is excellent at reducing, or removing, noise, sideband splatter and high pitched whistles that can accompany 'narrow band' reception on a 'wide band' receiver. Connection is via 3.5mm mono plug and socket. Supplied with 1/4in to 3.5mm and 3.5mm to 1/4in adaptors.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV48D	NRF2 NR Filter	£15.270	£17.950

## 49MHz 'Licence Free' Transceivers

### 49MHz 'Licence Free' Transceivers

- Low cost
- Ideal for short range use
- Simply purchase, fit batteries and use
- No licence needed in UK
- Typical range 300m to 400m (depending on conditions)

These 49MHz transceivers are ideal for commercial and leisure activities. The low cost and absence of licence requirements makes it ideal for a wide range of uses.

### PC-50 Hand-held 5-channel 49MHz Walkie-Talkie

Maxon



**NEW**

A 5-channel, 49MHz FM 2-way radio with a 1/4mile range (depending on conditions) and designed for security, school, church, team sports or other group related activities. The walkie talkie is portable, lightweight and compact. Can also be used with the detachable headset with boom mic supplied which offers 'hands-free' operation, with a choice of PTT or VOX. Can be clipped to belt or slipped into a backpack, etc. Requires 3 x 'AA' alkaline cells (not supplied). No licence required to own or use.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV62S 1	PC-50 5Ch 49MHz Xcvr	£68.040	£79.950

### 49MHz Belt-pack Transceiver with Hands-free VOX Headset

Maxon



With this transceiver you have a high performance, low-cost, hands-free transceiver. These are often used in restaurants and industrial locations. The single phone headset permits comfortable listening whilst being able to have the other ear free. The boom mic is fully adjustable and the light-weight

single channel transceiver pack, incorporating volume and squelch control, clips onto a belt or pocket. Transmit is either by manual or voice operation. Transceivers are sold individually. Requires 3 x AA Alkaline cells (not included). Dimensions (approx.): 112mm x 64mm x 18mm. This product is due to be reintroduced during the life of this catalogue, please call for availability and price. This description is provisional: actual item may vary in appearance and specification, please check at time of purchase.

Retail Unit Price each (inc. VAT).POA=Price on Application

Order Code	Type	Price each exc. VAT	inc. VAT each
JM34M	MAXON 49-SX	1+ POA	1+ POA

**CB Radios, Aerials & Accessories**

**CB Radios**

**Midland System EZ-8 Complete Mobile Installation**



Everything you need in one package, UK 40 channel 4W mobile measuring 125 x 165 x 38mm, mounting kit, microphone, 12V DC lead, magnetic mounted 600mm aerial and VSWR meter. Simply connect up to your car's 12V DC system and you are ready to go!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YES5K 5	EZ-8 Mobile CB	1+ £76.550	1+ £89.950

**Citizen Band Radio Beta-1100 CB Mobile 40 Channels (MPT 1320) UK**



4W FM output and fitted with all 40 of the UK channels. Features LED channel read-out, emergency 'channel 9' switch, built-in PA, electronic up/down buttons and separate volume and squelch controls. Size is 123 x 165 x 38mm. Includes mobile mounting kit, microphone and 12V DC car lead.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YES3H 3	Beta-1100 CB Mobile	1+ £51.020	1+ £59.950

**All Customers**  
No additional freight charges for heavy items

**Albrecht AE-5280 Mobile CB Transceiver**



- ★ CEPT frequencies
- ★ 40 channels
- ★ 4W FM output

Comes with up/down microphone, mobile mount & DC lead. Features channel change, volume and squelch knobs, scanning and emergency buttons.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JV44X 1	AE-5280 Mobile CB	1+ £85.060	1+ £99.950

**80-channel UK & CEPT Mobile CB**



This compact 80-channel (UK & CEPT frequencies) mobile CB is designed to fit almost anywhere in a car, and is supplied with mounting bracket for easy installation and removal. This rugged CB has an all-metal case and features a large easy-to-read LCD channel indicator, full-range variable squelch control, front mounted quality ergonomically designed mic and a PLL tuner

Dimensions: 129 x 165 x 38mm.

RF Output: 4W

Supply voltage: +13.8V DC

This product is due to be reintroduced during the life of this catalogue, please call for availability and price. This description is provisional: actual item may vary in appearance and specification, please check at time of purchase.

Retail Unit Price each (inc. VAT).POA=Price on Application

Order Code	Type	Price each exc. VAT	inc. VAT each
NV66W	UK+CEPT Mobile CB	1+ POA	1+ POA

**Albrecht AE-2850 Handheld CB Transceiver**



- ★ CEPT frequencies
- ★ 40 channels
- ★ 4W FM output

Complete with helical antenna, belt hook and battery box that takes 10 x AA cells. Socket for external DC or charging. TNC socket for external antenna.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JV45Y 1	AE-2850 Handheld CB	1+ £110.590	1+ £129.950

**Midland 95 Plus 40 Ch UK & 80 Ch UK + CEPT Hand-held CBs**

Midland



This state-of-the-art 40-channel (UK frequencies) compact hand-held CB, with PLL synthesiser circuitry, is designed for a long and trouble-free life. This CB features squelch, a multifunction backlit display, Tx/Rx signal strength, channel scan and up to 4W Tx power. Can be clipped to a belt, or held by supplied carry strap, and includes a rubber duck. Requires 9 x 'AA' Alkaline or NiCd cells (not supplied), or can be externally powered by 13.8V DC supply.

An 80-channel (UK & CEPT frequencies) version (NV65V) is due to be reintroduced during the life of this catalogue, please call for availability and price. The description of the 80-channel version (NV65V) is provisional: actual item may vary in appearance and specification, please check at time of purchase.

Retail Unit Price each (inc. VAT).POA=Price on Application

Order Code	Type	Price each exc. VAT	inc. VAT each
NV64U 1	Midland 95 Plus UKCB	1+ £102.090	1+ £119.950
NV65V	Midland UK+CEPT CB	1+ POA	1+ POA

## CB Aerials

### 27MHz Flexible CB Aerial



A flexible antenna for the 27MHz band, ideal for use with CB radios. Excellent SWR when fitted to handheld equipment and offering small size, virtually unbreakable durability and gain approaching quarter wave. Overall length: 355mm. Terminated in a PL259 UHF plug. For CBs fitted with BNC socket, use adaptor YW04E.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YG41U	27MHz Rubber Duck	1+ 11.160, 10+ 9.040, 25+ 8.230	1+ 13.120

### CB Spring Loaded Aerials

- ★ 27 MHz band
- ★ Magnetic base
- ★ Chrome spring
- ★ Adjustable tuning



These smart antennas can be instantly mounted on your vehicle. W-1400 features short length with centre loading and slimline spring. Model B-202 has longer fibreglass whip with base loading and larger spring.

Length:  
B-202: 101cm (40in.) coax 5m (16ft.)  
W-1400: 66cm (26in.) coax 2.75m (9ft.)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU95D 2	B-202 27MHz Whip	1+ 16.120	1+ 18.950
RU96E 1	W-1400 60cm Whip	1+ 11.020	1+ 12.950

### CB Mobile Aerial Kit Mobile-27

A complete 27MHz CB mobile whip aerial system with magnetic base, whip and 3.7m (12ft.) cable terminated in a PL259 plug.

Ready tuned  
Size: 1.4m (4ft. 7in.)  
Weight: 0.75kg



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CP28F 2	Mobile-27 Aerial Kit	1+ 16.970	1+ 19.950

### MTS-060 9.5mm Magnetic Mount

- ★ 155mm magnet
- ★ 4m cable
- ★ PL-259 plug



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU58N 3	WMM-38 Mag Mount	1+ 9.310	1+ 10.950

### WGM-38 9.5mm Gutter Mount

- ★ 4m cable
- ★ PL-259 plug
- ★ Cast clamp
- ★ Adjustable

Standard CB mounting kit for all CB 9.5mm (3/8 in.) aerial systems.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU57M 1	WGM-38 Gutter Mount	1+ 9.310	1+ 10.950

### Panther Mobile Whip 9.5mm Mount



This highly efficient base loaded mobile aerial will fit the standard 9.5mm (3/8 in.) mounts shown adjacently. Very cost effective yet a higher performer, this has been selected for its performance and value for money.

Length: 1.47m (58in.)  
Max. Power: 500W

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU60Q	Panther Mobile Whip	1+ 8.460	1+ 9.950

### SO-239 to 9.5mm Adaptor

Lets you mount any 9.5mm (3/8 in.) antenna onto the standard ham radio SO-239 socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU55K	PL-58 Adaptor	1+ 3.360	1+ 3.950

### CB GP-127 Base Short Length Aerial



Conforms to the official UK limit put on CB aerials and is also ideal for loft use. Upper element length is 1.3m which comprises a helical winding for efficiency. The three radials are of similar construction and length.

Frequency: 27MHz  
Max. Power: 100W  
Total length: Approx. 2.2m

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU59P 2	GP-127 Base Antenna	1+ 21.230	1+ 24.950

### CB Base Aerial GP 26-28

- ★ 3.9dB Gain
- ★ High Performance

This base station aerial is a half wave omnidirectional aerial that gives a gain equivalent to doubling your transmitter power. Completely self supporting and pre-tuned, absolutely no adjustment is necessary. Can now be used legally in the UK for transmitting.

Height: 4.9m (16ft.)  
Power: 1000 watts  
Fixing: 50mm (2in.) mast  
Base: 50 ohms SO239



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CP25C	GP 26-28 Base Ant	1+ 25.480	1+ 29.950

## CB Accessories

### 'SWR/Power Meter' SWR-12

Ideal for adjusting antennas and checking power output of rig. Designed especially for 27MHz.

Frequency: 1.8 to 30MHz  
Power: 10 Watts  
Size: 85 x 55 x 60mm



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CP27E	SWR-12 SWR/Power Mtr	1+ 10.170	1+ 11.950

**WPL-50 Patch Lead**

Watson

- ★ 50x2
- ★ RG-58 cable (coax)
- ★ PL-259 plug each end



Retail Unit Price each (inc. VAT).

Order Code	Type 12513	Price each exc. VAT 1+	inc. VAT each 1+
JV42V	WPL-50 Patch Lead	£1.690	£1.990

**Short Range Business Radio**

**Motorola Handie-Com Short Range Business Radios (SRBR)**

Motorola



Handie-Com two-way radios are a new range of business radios. Being inexpensive to purchase and simple to operate, they are the ideal solution to many professional communications problems.

- ★ Immediate use after purchase
- ★ Half the cost of previous business radios
- ★ Range of up to one mile with superb voice clarity
- ★ Lightweight and simple to operate with easy channel selection
- ★ Wide range of accessories available
- ★ Nominal licence fee with 'no hassle' application
- ★ 3 channels (UHF)
- ★ 5 CTCSS tones (selectable)

S-200 comes complete with Ni-Cad battery charger and belt clip.

S-240 has the same features as the S-200 plus



hands-free voice activated voice transmit (VOX) operation when used with the optional headset microphone.

Accessories available:

- Extra Ni-Cad
- One Hour Fast Charger
- Carry Case
- Extra Charger
- VOX Headset
- Speaker/Microphone

NB: 3 year licence fee £30, for any number of units. Application form in each radio.

Retail Unit Price each (inc. VAT).

Order Code	Type 12553	Price each exc. VAT 1+	inc. VAT each 1+
JV38R 1	S-200 Handie-Com	£169.000	£198.580
JV37S 1	S-240 Handie-Com	£187.300	£220.080
MH08J	S-200/240 Ni-Cad	£21.230	£24.950
MH12N 1	S-200/240 1h Charger	£42.510	£49.950
MH15R	S-200/240 Carry Case	£13.570	£15.950
MH16S	S-200/240 Extra Chrg	£10.170	£11.950
MH28F 1	S-200/240 VOX H/Set	£42.510	£49.950
MH32K 1	S-200/240 Spk/Mic	£51.020	£59.950

**Marine Radios & Aerials**

**Swiftech M198 Marine Handheld Transceiver**



- ★ Water resistant
- ★ Operates on all marine VHF channels
- ★ Complete with Ni-Cads & charger
- ★ Helical aerial
- ★ Belt clip & carry strap
- ★ 5 Watts output
- ★ Size 200 x 80 x 40mm
- ★ Weight 650g

An improved handheld with everything that you are likely to want, and at a superb low price.

Retail Unit Price each (inc. VAT).

Order Code	Type 12533	Price each exc. VAT 1+	inc. VAT each 1+
JV53H 1	M-198 Marine H/Hand	£170.170	£199.950

**Swiftech M168 Marine Mobile Transceiver**



- ★ Weather resistant
  - ★ Operates on all marine VHF channels
  - ★ 12V DC 25W high/1W low power
- An approved marine mobile that has all of the features of more expensive units.

Retail Unit Price each (inc. VAT).

Order Code	Type 12534	Price each exc. VAT 1+	inc. VAT each 1+
JV52G 1	M-168 Marine Mobile	£170.170	£199.950

**Mariner S-160 Marine Mobile Antenna**

- ★ 5/8 wave glass fibre whip
- ★ 180° adjustable
- ★ SO-239 socket
- ★ Weight 570g

Ideal for use with Swiftech M168 above.



Retail Unit Price each (inc. VAT).

Order Code	Type 12536	Price each exc. VAT 1+	inc. VAT each 1+
JV36P 1	S-160 Marine Antenna	£34.000	£39.950

**Sirio GP3 Marine Base Antenna**

- ★ 8 wave VHF aerial
- ★ Length 1,370mm
- ★ 144-175MHz tunable
- ★ SO-239 socket
- ★ Weight 1,500g
- ★ Well constructed aluminium VHF base station antenna



Retail Unit Price each (inc. VAT).

Order Code	Type 12548	Price each exc. VAT 1+	inc. VAT each 1+
JV35Q 1	GP3 Marine Base Ant	£59.530	£69.950

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## Amateur Radio Transceivers

### Ainco DJ-190E 2m 2W FM Handheld



A compact ham radio handheld for the 2m band. Includes 10 memory channels, Ni-Cads, AC charger and carry strap. Can be used with external 12V DC supply to provide 5W output. Fully complies with UK specification and includes 1750Hz tone. Size 132 x 58 x 33mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KN44X 1	DJ-190 Transceiver	£127.610	£149.950

### Albrecht AE-501 2m FM Hand-held Transceiver

Albrecht



This compact 2m FM hand-held transceiver features an illuminated LCD display and has 10 memories. Tuning is in 5, 10, 12.5, 20 and 25kHz steps. Also has a scan function, dual watch and switchable repeater shift. Supplied complete with dry-cell case. Can also be operated from +12V DC supply.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM86G	Albrecht AE-501	£127.610	£149.950



**Alinco DJ-S41C 70cm UHF FM and DJ-S11 2m VHF FM Transceivers**

**Alinco**  
Miniature size: 55 x 100 x 28mm power output: 340mW Weight: 185g CTCSS built-in Alinco does it again! The DJ-S41C is a complete 70cms handheld. 'C' version now includes 1750Hz tone-burst for accessing repeaters. Just look at the price! For the 2m enthusiasts, then the DJ-S11 VHF FM model is the ideal companion.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JV49D 1	DJ-S41C UHF 70cm FM	£110.590	£129.950
NV54J 1	DJ-S11 VHF 2m FM	£84.250	£99.000

**ADI AT-200/201 and AT-400**

Now with ADI 2-year warranty

ADI



- ★ 2m and 70cm transceivers
- ★ 3 power levels
- ★ 5W max @ 12V
- ★ Receives 130-170MHz (AT-400 420-462MHz)
- ★ 20 memories, 40 memories on AT-201
- ★ DTMF
- ★ Program scanning
- ★ Battery saver
- ★ Auto power off
- ★ Programmable steps
- ★ 1750Hz tone
- ★ Repeater shift

The AT-200 and AT-400 2W amateur radio transceivers are the latest models to come from ADI. They offer exceptional value and are extremely well built and reliable. The LCD readout provides comprehensive information and the keypad permits direct frequency entry and programmable control. Model AT-201 has the added features of 40 memories, full CTCSS, channel number or frequency display and cloning facilities. The top panel has volume, squelch and frequency

selector. The package includes aerial, belt clip, carry strap and manual. Power is from 6 x AA Alkaline cells (not included). Alternatively the optional RPB-072 (CM90X) NiCd pack can be used in conjunction with the CHA-072 (CM91Y) 230V AC mains charger.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BD74R 1	AT-200 2m Tx/Rx	£110.590	£129.950
NV63T 1	ADI AT201	£127.610	£149.950
YE37S 1	AT-400 70cm Tx/Rx	£144.630	£169.950
CM90X	RBP-072 Ni-Cad Pack	£16.970	£19.950
CM91Y	CHA-072 Charger	£8.460	£9.950

**Alinco DJ-G5 2m/70cms Dual Bander**



The very latest design providing up to 5 watts FM output (from external 12V DC) or 2 watts from internal Ni-Cd pack. Full duplex capability is offered on 144 to 146MHz and 430 to 440MHz. Receiver range is 108 to 174MHz and 420 to 470MHz, 800 to 950MHz with switchable AM/FM on VHF. Includes 200 memories, CTCSS, large LCD readout and Channel Scope. Full technical leaflet on request.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE91Y 2	DJ-G5 Dual Bander	£255.270	£299.950

**ADI AT-600 Dual-band FM Hand-held Transceiver**

Now with ADI 2-year warranty

ADI



This best-ever value 2m/70cm dual-band FM hand-held transceiver even comes with a Ni-Cd pack and charger - all at an amazing price! Simultaneous reception on both 2m and 70cm bands. Alpha-

numeric, frequency, channel display. CTCSS encode and decode built-in, battery save and auto power off. Wide band receive including AM air-band. 110/200 memories.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM97F	ADI AT-600	£238.250	£279.950

**ADI AR-446 70cm FM Mobile Transceiver**

With ADI 2-year warranty

ADI



A low-cost 70cm FM 35 Watt mobile transceiver for ham use. Features include 40 memories, DTMF keypad microphone, 1,750Hz tone burst, CTCSS encode and decode built-in, channel or frequency display programmable, band & memory scanning, priority channel, repeater shift and dial lock.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VN09K	ADI AR-446	£229.740	£269.950

**Albrecht AE-550 2m FM Mobile Transceiver**

Albrecht



A no-nonsense low cost 2m FM 25 watt mobile transceiver in a compact size. Tuning is in 5, 10, 12.5, 20 and 25kHz steps and has 10 memories. Features: programmable calling channel, large LCD display and has night-design illumination of all push buttons & rotary knobs. Repeater shift and tone burst are fitted as standard. Dimensions: 140 x 41 x 124mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VN06G	Albrecht AE-550	£170.170	£199.950

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Just complete form at back of catalogue

## ADI AR-146 2m FM 144 to 146MHz Ham Band 50 Watts Output

Now with ADI 2-year warranty



This model from ADI, one of the world's largest manufacturers, features the latest technology at a price many competitors cannot match. Designed for the 2m ham radio band, it also has extended receive capabilities from 140 to 173MHz and optional extended transmit frequency range for export customers.

Includes 40 memories, DTMF keypad microphone, 1750Hz tone access, CTCSS encode and decode built-in, channel or frequency display programmable, band and memory scanning, priority channel, repeater shift, dial lock etc.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB62S 1	AR-146 Mobile Mount	£212.720	£249.950

## ALINCO DR-150E 2m Mobile 50 watt FM Mobile



The most comprehensive mobile we know of. Up to 50 watts output gives excellent coverage and its channel scope enables 5 channels to be visually checked. Fully conforms to UK spec. and includes 1750Hz tone, CTCSS encode, DTMF, VHF airband reception, 100 memories, scanning, etc. Receiver coverage is AM/FM 108 to 174MHz and FM 400 to 480/800 to 950MHz. Full technical leaflet on request.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE89W 4	DR-150E Mobile Tx/Rx	£246.760	£289.950

## Alinco DR-605E 2m/70cms 50/35 Watt FM Mobile



Everything the VHF/UHF operator needs in one small package. Offers full duplex operation on 144 to 146MHz & 430 to 440MHz. Includes CTCSS encode, 100 memories, wideband receiver. Full technical leaflet on request.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JV46A 1	DR-605E FM Mobile	£340.380	£399.950

## Alinco DR-610E 2m/70cms 50/35 Watt FM Mobile Transceiver

Alinco



Everything the VHF/UHF operator needs in one small package. Offers full duplex operation on 144 to 146MHz & 430 to 440MHz. Includes CTCSS encode, 120 memories, wideband AM/FM receiver (including 900MHz), detachable front panel and 11 segment channel scope.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE90X 4	DR-610E Mobile	£485.060	£569.950

## Alinco DX-70 100 Watt HF+6M 1.8MHz to 50MHz SSB - CW - FM - AM



This is the smallest HF transceiver with such a comprehensive specification. It measures just 178 x 58 x 228mm. The detachable front panel makes it even more compact! Includes narrow band filters, wideband receive, noise blanker, IF shift, rf attenuators, channel step option, 100 memories, full break-in on CW, BFO shift, reverse carrier, speech processor, and many programmable features. Wideband transmit modification is available for commercial export orders. Full technical leaflet on request.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE92A 8	Alinco DX-70 Tx/Rx	£592.290	£685.950

## Icom IC-706 MkII HF/2m/6m All-mode Mobile Transceiver

Icom



This very popular HF/2m/6m mobile transceiver operates on all modes (SSB/CW/RTTY/AM/FM), yet measures only 167 x 58 x 200mm. Power output is 100 watts on HF & 6m and 10 watts on 2m. Features 102 alpha-numeric memories, 2 scan edges, 1 call channel and built-in electronic keyer. Requires +13.8 volts DC at 20 amps. This updated version has an enhanced 30kHz to 200MHz broadband receive mode with slots for two optional crystal filters. The band stacking register memorises preamp/attenuator settings and tuner on/off

condition as well as frequency and mode. Output is increased to 20 watts on 2m. The narrow FM deviation has been set for 2.5kHz - ideal for the new 12.5MHz channels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV55K 1	IC-706 Mk II	£1,017.020	£1,195.000

Amateur Radio Transceivers can only be used in the UK with a valid licence.

CB transceivers can be used with a freely available licence

**Aerial Tuners, VSWR Meters, Wavemeters, Frequency Counters & Accessories**

## MFJ-948 ATU 1.8 - 30MHz



The UK's best selling aerial tuner for amateur radio operators. Lets you match your transmitter to balanced feeder, coaxial feed and end fed wires. Includes cross needle VSWR/power meter, PEP readings, 3-way aerial switch and 'through' selector.

Power: 300 Watts  
Frequency: 1.8-30MHz  
Size: 78 x 260 x 172mm

Also available with dummy load built-in, model MFJ-949 (order code KG14Q)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CP38R 4	MFJ-948 Tuner	£110.590	£129.950
KG14Q	MFJ-949E Tuner	£127.610	£149.950

## MFJ-16010 200W Random Wire Tuner

This tuner will match any wire to a 50 ohm transceiver in the range 1.8 - 30MHz. Rated at 200 watts it is ideal for portable work or those on a restricted budget. Just connect between aerial and transceiver.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CP38N 1	MFJ-16010 Wire Tuner	£38.250	£44.950

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**ELECTRONICS**  
and Beyond

the UK's Best Selling  
Electronics Magazine

**MFJ-259 Aerial Analyser and Frequency Counter 1.8 - 170MHz**

**NEW LOW PRICE**



Turns Hours into Minutes and Ideas into Aerials

- ★ **VSWR**
- ★ **Impedance**
- ★ **Resonance**
- ★ **Frequency**
- ★ **Self powered**

Ideal for aerial designers and installers. Just connect it to any coaxial fed system and measure the critical parameters necessary for matching and efficiency. Does in minutes what previously took hours. Battery powered, the unit enables you to adjust your aerials on site without needing to apply power to them. Simple to use, this unit will soon pay for itself in saved time and frustration.

Also doubles as a frequency counter. Use with beams, dipoles, vertical whips, helicals etc

Frequency:	1.8-170MHz
Impedance:	10-500Ω
Gate Times:	4 (0.01-10secs.)
Inputs:	SO-239(Aerial) BNC(Counter)
Power:	8 x AA or 12V ext.

Retail Unit Price each (inc. VAT).

Order Code	Type 4100	Price each exc. VAT	inc. VAT each
CB05F 2	MFJ-259 Analyser	£195.700	£222.950

**Watson VSWR Meters**  
W-220: 1.7 to 200MHz  
W-420: 118 to 530MHz  
W-620: 1.6 - 530MHz

Watson



Three VSWR meters that you'll find hard to beat! Designed for ham radio or professional use, each has a sealed calibrated sensor providing a typical accuracy of 5% and a large analogue meter that makes for quick and easy measurements.

**Specifications:**

Power: 5/20 and 200W FSD

Mode: Average or VSWR  
VSWR: 1:1 to 10:1  
Accuracy: 5%  
Sensitivity: 3W FSD for VSWR  
Connectors: UHF SO-239 type  
Dimensions: 155 x 63 x 103mm

Retail Unit Price each (inc. VAT).

Order Code	Type 11900	Price each exc. VAT	inc. VAT each
MB64U 1	W-220 VSWR Meter	£59.530	£69.950
MB65V 1	W-420 VSWR Meter	£59.530	£69.950
MH73Q 1	W-620 VSWR Meter	£110.590	£129.950

**Diamond VSWR/Power Meters**

Diamond

**NEW LOW PRICE**



A range of professional quality meters that will read VSWR plus forward and reflected power in Watts. They will measure RMS power or approximate PEP power when running SSB. When reading SWR a single adjustment for full scale deflection is needed which is taken care of automatically on SX-2000. Each one measures 155 x 63 x 103mm.

<b>Specification SX-100</b>	<b>SX-200</b>
Range: 1.8 to 60MHz	1.8 to 200MHz
Power: 30W/300W/3kW	5W/20W/200W
Accuracy: ±10%	±7%
FSD: 3W	1W
Connectors: SO-239	SO-239
<b>Specification SX-400</b>	<b>SX-600</b>
Range: S1: 140 to 525MHz	1.8 to 160MHz
S2: N/A	140 to 525MHz
Power: 5W/20W/200W	5W/20W/200W
Accuracy: ±5%	±10%
FSD: 4W	S1: 1W, S2: 4W
Connectors: SO-239	SO-239
<b>Specification SX-1000</b>	<b>SX-2000</b>
Range: S1: 1.8 to 160MHz	1.8 to 200MHz
S2: 430 to 1300MHz	N/A
Power: 5W/20W/200W	5W/20W/200W
Accuracy: ±10%	±7%
FSD: S1: 1W, S2: 2W	1W
Connectors: SO-239 & 'N'	SO-239

Retail Unit Price each (inc. VAT).

Order Code	Type 9963	Price each exc. VAT	inc. VAT each
XP69A 1	SX-100 VSWR Meter	£85.060	£99.950
XP70M 1	SX-200 VSWR Meter	£59.530	£69.950
XP71N 1	SX-400 VSWR Meter	£68.040	£79.950
XP77J 1	SX-600 VSWR Meter	£110.590	£129.950
XP72P 1	SX-100 VSWR Meter	£144.630	£169.950
NV56L 1	SX-2000 VSWR Meter	£85.060	£99.950

**VSWR & Aerial Matcher 140-150 & 430-450MHz**



Measures VSWR and power up to 60W and can be left in circuit continuously. This dual band unit has a built-in antenna tuner for each band and is supplied

with a preset adjusting tool. There are two power ranges, 0 to 15W and 0 to 60W.

Retail Unit Price each (inc. VAT).

Order Code	Type 11799	Price each exc. VAT	inc. VAT each
MB59P 1	SWR-50RM Matcher	£51.320	£59.950

**VHF & UHF Wavemeters**  
WA1 120 - 450MHz  
WA2 50 - 210MHz  
WA3 1.8 - 92MHz



Designed to meet the UK Amateur Radio Licence requirements, these units will measure the presence and frequency bands of RF. DC amplifier is included plus a whip aerial.

Size: 120 x 60 x 45mm  
Power: PP3 Battery

Retail Unit Price each (inc. VAT).

Order Code	Type 728	Price each exc. VAT	inc. VAT each
XP84F	WA-1 RF Wavemeter	£28.930	£34.000
CP41U	WA-2 RF Wavemeter	£28.930	£34.000
CP42V 1	WA-3 HF Wavemeter	£49.740	£58.450

**RF Sniffer Probe Ready Wired 100kHz - 1.2GHz**

Lets you read weak RF signals on your DC test meter. Ideal for servicing and alignment. Comes ready built with test prod clip and 'banana plugs' for meter.



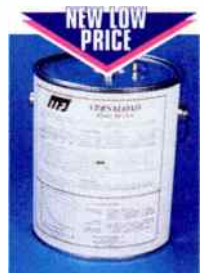
Retail Unit Price each (inc. VAT).

Order Code	Type 993	Price each exc. VAT	inc. VAT each
RU31J	RF-1	£22.080	£25.950

**MFJ-250X 2kW Dummy Load**

Ideal for handling high power. It will withstand 1kW of CW or 2kW of SSB for ten minutes. 3.5 litres of transformer oil (or vegetable oil) is needed.

Frequency: 1.8-400MHz  
Size: 170 x 190mm



Retail Unit Price each (inc. VAT).

Order Code	Type 986	Price each exc. VAT	inc. VAT each
CP31J 1	MFJ-250X Dummy Load	£29.740	£34.950

**All Customers**  
No additional freight charges for heavy items

## RF 50 OHM DUMMY LOADS L-20 (PL-259) L-20N 'N'

Power 15W Continuous  
100W 30 secs.  
Freq. DC - 500MHz  
VSWR 1-15 (worst)



**NEW LOW PRICE**

Retail Unit Price each (inc. VAT).

Order Code	Type 995	Price each exc. VAT	inc. VAT each
ZA10L	L-20 Dummy Load	£16.970	£19.950
ZA05F 1	L-20N Dummy Load	£22.080	£25.950

## Watson WPL-70 High-quality Patch-lead

Watson



**RECENTLY INTRODUCED**

At last a real high-quality low-loss patch lead! This 70cm long lead uses 5D-FB 50 ohm cable and is terminated in 2 x PL-259 plugs. It will handle up to 2kW and has a unique 'stay-put' feature - this lead will stay in the position you put it!

Retail Unit Price each (inc. VAT).

Order Code	Type 13271	Price each exc. VAT	inc. VAT each
VND5F	Watson WPL-70	£5.910	£6.950

## WPL-50 Patch Lead

Watson

- ★ 50Ω
- ★ RG-58 cable (coax)
- ★ PL-259 plug each end

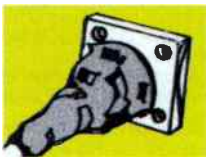


Retail Unit Price each (inc. VAT).

Order Code	Type 13513	Price each exc. VAT	inc. VAT each
JV42V	WPL-50 Patch Lead	£1.690	£1.990

## Coax Sealer

A waterproof, flexible, moldable, covering designed for coax fittings. Stays flexible at any temperature. Sufficient for 9 plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type 9970	Price each exc. VAT	inc. VAT each
YS18U	Coax Seal	£4.210	£4.950

## HP4A TVI Filter

The HP4A is a combined braid breaker and high pass filter. Fully encapsulated and fitted with Belling Lee connectors, it can be plugged directly into the TV receiver. The high measure of



rejection ensures that transmitter RF is prevented from reaching the TV receiver via the coaxial aerial cable.

UHF TV use  
HF rejection 70dB  
VHF rejection (144MHz) 30dB  
Insertion loss 2dB

Retail Unit Price each (inc. VAT).

Order Code	Type 707	Price each exc. VAT	inc. VAT each
ZA11M	HP-4A TVI Filter	£8.460	£9.950

## Ferrite EMC Filters

Cure Radio Interference

One of the easiest ways of curing interference is with these special ferrite rings selected for the purpose. Simply wind a few turns of any hi-fi lead, TV down lead, or mains lead, around the ring. Interfering radio signals are then prevented from travelling into the equipment. As supplied by us to BBC, DTI and TV rental companies etc.



Retail Unit Price each (inc. VAT).

Order Code	Type 7115	Price each exc. VAT	inc. VAT each
AM35Q	Ferrite Filter	1+ £2.540 10+ £2.490 25+ £2.290	1+ £2.990

## MFJ-704 Low Pass Filter

- ★ 1.8 to 30MHz
- ★ 1.5kW
- ★ Low Loss

Dramatically reduces the chance of TV interference from ham radio and CB. Low pass filters are recommended by the DTI.



**NEW LOW PRICE**

Retail Unit Price each (inc. VAT).

Order Code	Type 998	Price each exc. VAT	inc. VAT each
CP29G 1	MFJ-704 LowPass Ftr	£34.000	£39.950

## Optoelectronics Scout Frequency Counter 10MHz to 2.8GHz



The Optoelectronics Scout in complete control of our AOR-8000 scanning receiver listed earlier in this section. Use it alone with its internal ni-cad pack and aerial to lock onto any radio transmission between 10MHz and 1.4GHz. Connect its data port to the AOR-8000 and it instantly tunes the receiver to the same frequency! Typical ranges are between 35m and 61m for handheld radios. The Scout can store up to 400 different frequencies and record the number of repeated 'hits' (250 max.) on the same channel. An internal buzzer or body vibrator alerts the user of a 'hit'. Memories can be

recalled and scrolled through and an internal filter eliminates random noise responses. Unit is supplied with AC charger and aerial.

Retail Unit Price each (inc. VAT).

Order Code	Type 9996	Price each exc. VAT	inc. VAT each
YE57M 2	OPT-400 Freq Counter	£297.820	£349.950

## Opto-M1 10 to 28 Mhz

Optoelectronics



**RECENTLY INTRODUCED**

Similar in style to the 3300 counter but with some additional features including RF signal strength bargraph, noise input filter, 3 memories and data output port.

Retail Unit Price each (inc. VAT).

Order Code	Type 10076	Price each exc. VAT	inc. VAT each
JM39N 2	OPTO-M1	£204.210	£239.950

## Opto-Cub Frequency Counter 1MHz - 2.8GHz



- ★ LCD readouts
- ★ Ranges of 30-60m
- ★ Internal Ni-Cads
- ★ AC chargers
- ★ Helical aeriels
- ★ 50Ω BNC inputs
- ★ Digital filter
- ★ Auto capture

Specification

Sensitivity: <3mV  
Impedance: 50Ω, 1MHz - 2.8GHz  
1MΩ, 1MHz - 20MHz  
Gates: 8 (0.0001 - 10 seconds)  
Resolution: 0.1Hz (1MHz - 250MHz)  
10Hz (250MHz - 2.8GHz)  
Dimensions: 85 x 65 x 29mm

Retail Unit Price each (inc. VAT).

Order Code	Type 12486	Price each exc. VAT	inc. VAT each
JM38R 2	OPT-CUB Counter	£119.100	£139.950

**Watson FC-128 Hand-held Frequency Counter**

Watson



This 1MHz to 2.8GHz coverage hand-held frequency counter is probably the best value ever! Supplied complete with Ni-Cds, charger and telescopic whip. Features 50 ohm input, 10-digit LCD display, 16-segment bar-graph of RF signal strength and a low battery indicator. Low-power consumption means long battery life in operation - 6 hours of normal use.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VN08J	Watson FC-128	£68.040	£79.950

**Aerials & Accessories**

**Flexible Aerial 2m**



A flexible antenna for the 2m band. Excellent SWR when fitted to handheld equipment and offering small size, virtually unbreakable durability and gain approaching quarter wave. Overall length: 175mm. Terminated in a BNC plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YG15R	2m Rubber Duck	£7.720	£9.080

**WHX-7000 2m/70cms Dual Band Rubber Duck Antennas**

Watson

"Boost the power of your handheld"  
2m/70cms dual band rubber duck antenna for use with handheld transceivers.

- ★ BNC plug
- ★ 205mm long
- ★ Weight 36g



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ME90X	WHX-7000 Rubber Duck	£16.970	£19.950

**WSM-270 2m/70cms Mobile Antenna on Micro Mag Mount**

Watson

- ★ 2.75m coax
- ★ 460mm long
- ★ BNC plug
- ★ Weight 60g



This is the answer to those who use a dual-band handheld in the car but need an external antenna for optimum performance.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ME61R	WSM-270 Mobile Ant	£21.230	£24.950

**'On-Glass' Mobile Aerials**



- GM-144**  
Type: 68cm (27in.) 144MHz Halfwave  
Gain: 2.5dB
- GM-270**  
Type: 66cm (26in.) Dual band 2m/70cm  
Gain: 2.6dB/6.3dB

Both models supplied with 4.25m (14ft.) cable, and PL-259 plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU83E	GM-144	£25.480	£29.950
RU84F 1	GM-270	£34.000	£39.950

**Watson Amateur Radio Mobile Aerials**

Watson

**W-285**  
A 2m <sup>5</sup>/<sub>8</sub> whip that costs a lot less than most! Designed for UK market, it features hinged base and has PL-259 fitting.

- Length 1.32m
- Gain 3-4dB

**W-770HB**

A dual band 2m and 70cm whip that has a smart black finish and is fitted with hinged base with PL-259 fitting.

- Length 1.1m
- Gain 3/5-5dB

**W-2LE**

- 2m <sup>1</sup>/<sub>4</sub> wave whip.
- Length 0.49m
- Weight 40g
- Base PL-259



W-285 W-770HB W-2LE

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE40T	W-285 Mobile Aerial	£13.570	£15.950
YE41U	W-770HB Aerial	£21.230	£24.950
RU79L	W-2LE Mobile Whip	£8.460	£9.950

**Watson Mobile Mount**

Watson



W-3CK comprises a 5m 5D 50Ω coaxial cable terminated in a PL-259 plug and SO-239 connector to match the W-3HM. Rated to 13000MHz.

W-3HM is an adjustable hatch mount that easily fits most car boots or hatch doors. Adjustable in two planes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB60Q	W-3CK Cable Kit	£16.120	£18.950
MB61R	W-3HM Mobile Mount	£12.720	£14.950

**Free delivery for all Maplin MPS Business Account Holders!**

(Additional Charge for Guaranteed Next Day Delivery see front of catalogue.)

**Call and Collect**

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## Gutter Mount(SO-239)

W-ECH cable kit is 5m long and fitted with PL-259 and SO-239 bases. W-ECH can be used for direct body mounting.



AML gutter mount in cast alloy with adjustable PL-259 - SO-239. For use as a direct body mount or with gutter mount. Supplied with mounting hardware and sealing cap.

Retail Unit Price each (inc. VAT).

Order Code	Type 4812	Price each exc. VAT	inc. VAT each
XP76H	W-ECH Cable Kit	£11.020	£12.950
ZA02C	AML Gutter Mount	£12.720	£14.950

## Magnetic Bases



Two models available. WMM-7 is the standard unit with SO-239 socket, 4m cable and PL259 plug. KTSM 3.5 is similar but with a thin rubber skirt that provides amazing adhesion, even for the longest whips.

Retail Unit Price each (inc. VAT).

Order Code	Type 4814	Price each exc. VAT	inc. VAT each
RU82D	WMM-7 Mag Mount	£9.310	£10.950
ZA04E 1	KTSM-3.5 Mag Mount	£19.530	£22.950

## Watson Amateur 2m/70cm Dual Band Base Antennas

Watson



These are fibre glass encapsulated with stainless steel fittings and are fully weatherproofed. They have been specifically designed for the UK amateur radio bands and are pretuned for optimum VSWR. All are provided with 50mm mast clamps and SO-239 sockets.

### W-30 Dual Band

Length: 1.15m  
Gain: 3/6dB

### W-50 Dual Band

Length: 1.8m  
Gain: 4.5/7.2dB

### W-300 Dual Band

Length: 3.1m  
Gain: 6.5/9dB

Retail Unit Price each (inc. VAT).

Order Code	Type 9930	Price each exc. VAT	inc. VAT each
YE47B 2	Base Antenna W-30	£34.000	£39.950
YE48C 2	Base Antenna W-50	£46.760	£54.950
YE49D 3	Base Antenna W-300	£59.530	£69.950

## Watson W-2000 Triple Gainer Vertical Base Station Antenna for 6m/2m/70cms

Watson



Fibre-glass encapsulated tri-band aerial with stainless steel fittings.

Gain: 6m/2.15db, 2m 6.2db, 70cms 8.4db  
Length: 2.5m  
Connector: SO-239

Retail Unit Price each (inc. VAT).

Order Code	Type 11579	Price each exc. VAT	inc. VAT each
MER2S 1	W-2000 Triple Gainer	£76.550	£89.950

## Maspro High Quality 2m/70cms Yagi Beams

Maspro aerials are beautifully made high quality beams from Japan and include balun and waterproof SO-239 sockets. Mount horizontally or with the KSB-50 to get true vertical polarisation without distortion.

144-WH5 2m 5 element 6-6dB 0-93m  
144-WH8 2m 8 element 8-6dB 1-79m  
144-WH10 2m 10 element 9-7dB 2-3m  
435-WH8 70cm 8 element 8-8dB 0-8m  
435-W12 70cm 12 element 10-4dB 1-5m  
435-WH15 70cm 15 element 14-2dB 2-2m  
KSB-50 Offset boom vertical mount  
Mas-259 Maspro coax plug to match

Retail Unit Price each (inc. VAT).

Order Code	Type 9982	Price each exc. VAT	inc. VAT each
YE97F 1	144-WH5 Aerial	£22.930	£26.950
YE98G 2	144-WH8 Aerial	£32.290	£37.950
YE99H 3	144-WH10 Aerial	£35.700	£41.950
YS13P 1	435-WH8 Aerial	£25.480	£29.950
YS14Q 2	435-W12 Aerial	£30.590	£35.950
YS15R 2	435-WH15 Aerial	£35.700	£41.950
YS16S 2	KSB-50 Offset Boom	£8.460	£9.950
YS17T	MASPRO PL-259 Plug	£2.510	£2.950

## AR-300XL Aerial Rotator Suitable for VHF Beams



Ideal for VHF ham radio or TV aerials with boom lengths up to 4m. Comprises 240V control box with compass bearings and low voltage rotator. Requires 3-core control

cable and motor accepts mast size 28 - 44mm diameter. Maximum vertical load 220kg.

Retail Unit Price each (inc. VAT).

Order Code	Type 4812	Price each exc. VAT	inc. VAT each
RU72P 8	AR-300XL Rotator	£51.020	£59.950

## Alignment bearing for above

For larger aerial systems.



Retail Unit Price each (inc. VAT).

Order Code	Type 7100	Price each exc. VAT	inc. VAT each
AS79L 1	AR-201 Bearing	£16.970	£19.950

## Delta-C Wire Dipole Kit



Delta-C comprises two high voltage RF insulators (75mm long) and a centre insulator (100mm wide) with replaceable static discharge tube, SO-239 socket and stainless steel fittings.

Retail Unit Price each (inc. VAT).

Order Code	Type 9347	Price each exc. VAT	inc. VAT each
YE43W	Alpha C Dipole Kit	£25.480	£29.950

## Copper Antenna Wire

Watson



Three type available, each in 50m (169ft) lengths  
ECW (YE58N) - pre-stretched copper wire 16 gauge (1.6mm dia.) ideal for SW receive aerials.  
HDCW (NV59P) - pre-stretched hard drawn copper wire 16 gauge (1.6mm dia.) ideal for transmit aerials, strong, will support traps, etc.  
Flexweave (NV60Q) - pre-stretched 168 stranded copper wire 14 gauge (2mm dia.) easy to solder and extremely strong, suitable for constructing receive and/or transmit aerials. It can be tied for a secure termination and will not twist, knit or stretch.

Retail Unit Price each (inc. VAT).

Order Code	Type 99142	Price each exc. VAT	inc. VAT each
YE58N 2	ECW Copper Wire 50m	£11.020	£12.950
NV59P	HDCW Copper Wire 50m	£12.720	£14.950
NV60Q	FLEXWEAVE CuWire 50m	£21.230	£24.950

### B1-2K HF Balun

A 1:1 50 Ohm balun covering 3-5 - 30MHz rated at 2kW. Can be used as centre section of dipole antenna. Fitted SO-239 socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AB84F	B1-2K Balun	£22.080	£25.950

### Ribbed Aerial Insulators

Black, ribbed polypropylene insulators. Ideal for wire transmitting aerial. 8cm long.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS74R	INSUL-8 Insulator	£0.842	£0.990

### Aerial Dipole Centre Insulators

Aerial wire is secured with crimps and/or soldering. DC-50 is for use with coax fed aeriels and has an SO-239 socket. DC-300 is for use with 300 or 450 ohm feeder and has feeder clamp and crimps.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS77J	DC-50 Dipole Ins	£3.820	£4.490
AS80B	DC-300 Dipole Ins	£3.360	£3.950

### RF Duplexers

These units enable a single coaxial cable to carry both an HF-VHF signal and a UHF signal or two aeriels to be connected to similar sources. Order 'D24' if both transceivers are SO239 or 'D24N' if UHF socket is 'N' type.



Pass Band: 1.6-150MHz,400-450MHz  
Impedance: 50 ohms  
Power: 50W CW or 100W PEQ  
Loss: 0-3dB  
VSWR: Less than 1.2  
Isolation: 50dB

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZA08J	D24 Duplexer	£28.040	£32.950
ZA09K	D24N Duplexer	£30.590	£35.950

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

### RF Duplexer

Provides common feed for 2m and 70cms signals. PL-259 plugs, SO 239 socket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS19V	RF Duplexer	£21.230	£24.950

### Coaxial Switches

**CX-201G-N /CX-201-239**  
A robust die-cast 2 way switch for use from DC to 1GHz. Provides 70dB isolation at 200MHz, 50dB at 1GHz. CX-201G has 'N' socket, CX-201 has SO-239 sockets. Insertion loss is less than 0.2dB.



### MFJ401

Similar design to '201' but provides 4 outputs. In addition, the centre position provides an earth position and is fitted with static discharge protector.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CM55K	CX-201N Coax Switch	£18.680	£21.950
CP30H	CX-201 Coax Switch	£14.420	£16.950
CM56L	MFJ-401 Coax Switch	£55.270	£64.950

### RF Amplifiers

### Microset VHF/UHF Amplifiers



These low cost amplifiers are ideal for use with our ham radio handhelds. All feature GaAsFET receiver amplifiers and have built-in RF switching.

R-25	2m	1-4W in/30W out
RV-45	2m	3-15W in/45W out
R-50	2m	1-7W in/50W out
RU-20	70cm	1-6W in/30W out
SR-100	2m	4-25W in/100W out
SR-200	2m	10-50W in/200W out
RU-45	70cm	3-15W in/45W out
RU-432-95		6-12Win/95W out

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CM13P	R-25 Amplifier	£72.290	£84.950
CM14Q	RV-45 Amplifier	£81.650	£95.950
CM15R	R-50 Amplifier	£93.570	£109.950
CM16S	SR-100 Amplifier	£144.630	£169.950
CM17T	SR-200 Amplifier	£297.820	£349.950
CM18U	RU-20 Linear Amp	£102.030	£119.950
CM19V	RU-432-95 Linear Amp	£510.590	£599.950
AH25C	RU-45 Linear Amp	£141.230	£165.950

See Stock Code Index For More Price Breaks

### 2m Mobile 30W Amplifier P-335



- ★ RF sensing
- ★ 1 to 6W input
- ★ Ideal for FM

Here's a way to boost your handheld power so that you can compete with the high power modules. The P335 represents excellent value and is suitable for all 2m handhelds.

Frequency: 144-148MHz  
Mode: FM  
Supply: 13-8V  
Size: 74 x 50 x 24mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RU20W 1	P-335 Amplifier	£51.020	£59.950

### Morse & Packet Radio

### MFJ-411 Morse Trainer

- ★ 5-50 wpm
- ★ 12 Modes
- ★ Random characters
- ★ Random words
- ★ Self contained
- ★ Built-in speaker
- ★ Simulated Ham Radio contacts

Just the thing for learning Morse code quickly. Take it with you, use it for student tuition or club use, this trainer is the most comprehensive we have seen.

You can vary speed, tone, modes, character combinations and even select beginner or advanced options. The LED display and menu system allows instant adjustment of modes as you progress with your learning.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB06G 1	MFJ-411 Morse Train	£68.040	£79.950

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Tel: 01702 554000

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e-mail: Sales@maplin.co.uk

## Watson Hand Made Keys



These morse keys are hand made of brass and natural wood.

- GME Basic straight key weighing 275g.
- GMP Miniature version of GME.
- GMC For regular operation. Weighs 300g.
- GMV Heavy duty with ball race bearings, 400g.
- GMI Twin paddle for conventional or iambic keying.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YES0E 1	Morse Key GMC	£29.740	£34.950
YES1F 1	Morse Key GMV	£38.250	£44.950
YES2G 1	Morse Key GMI	£42.510	£49.950
ME91Y	Morse Key GME	£25.480	£29.950
MF06F	Morse Key GMP	£25.480	£29.950

## MFJ-784 Tuneable DSP Filter



- ★ Bandpass
- ★ Lowpass
- ★ Highpass
- ★ Multi-notch
- ★ Noise reduction
- ★ AGC

This is the latest form of digital signal processor from the USA. It is unique in that it is the only one of its kind that is fully tuneable and has 16 programmable memories for storing your chosen control settings. Analogue signals are digitised, filtered, processed, and then turned back to analogue signals again. This filter has the ability to offer 60dB rejection just 75Hz away from centre frequency. You'll hear signals no other combination can resolve. Simply connect between receiver and speaker or headphone. It's that simple. The built-in 2W amplifier provides more than enough output.

Filter ranges: 200-3,500Hz  
 Bandwidth: 3,500-100Hz  
 Audio out: 2W  
 Sockets: 3-5mm  
 Supply: 12V @ 500mA  
 Size: 230 x 63 x 152mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS89A 1	MFJ-784B Filter	£204.210	£239.950

## Watson Senda Multi-mode Radio Modem

Watson



This multi-mode modem operates 1200bps Packet Radio, 300bps Packet Radio (receive only), FAX, SSTV, RTTY, ASCII, AmTOR, ARO/FEC, CW, NAVTEX and SYNOP. It is compatible with most public domain software. Requires a 286 or better IBM PC compatible computer with an RS232 serial port.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VN11M	Watson Senda	£59.530	£69.950

## MFJ-462B Data Decoder



Simply plug this unit into the headphone output of any short wave receiver to decode CW, RTTY and AmTOR signals. The text comes up on the internal LCD readout. Amazing fun in reading all those mystery signals on short wave. Great value. Requires external 12V DC.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS21X 2	MFJ-462B Data Reader	£153.140	£179.950

## BP-2 Packet Radio Modem Including Software



A completely self contained Packet Radio modem for use on VHF radio. Operates at 1200 Bauds and plugs directly into the RS-232 port of a standard PC; no external power being necessary. Simply connect supplied lead to audio and mic sockets of your VHF transceiver for instant Packet communications.

Software is included on 5 1/4 in. and 3 1/2 in. disk.  
 Connector: RS232  
 Software: Baycom and Baypack  
 Dimensions: 60 x 55 x 18mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB03D 1	BP-2 Packet Modem	£51.020	£59.950

## Headsets, Microphones, Speakers & Mounts

### Lightweight Mono Communications Headphones



These light-weight mono headphones are ideal for use with scanners, SW receivers, portable radios, etc., and come with an adjustable headband and soft padded ear cushions. Supplied with 1.8m of cord fitted with a 3.5mm mono jack. A 3.5mm to 1/4 in. mono adaptor is included.

Impedance: 16Ω  
 Frequency response: 20Hz to 20kHz  
 Power handling: 80mW

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV38R	Mono Comms Headphones	£8.460	£9.950

### Infrared Headphones for Communications or Hi-Fi



Two versions of these cordless headphones are available. One is mono for radio communications, the other for Hi-Fi stereo. Now you have complete freedom to move around without cables getting in the way! Includes 12V AC adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS24B 1	Mono IR Headphones	£25.480	£29.950
YS25C 1	Stereo IR Headphones	£42.510	£49.950

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**Communications Headset**



This lightweight headset is ideal for ham radio, language laboratories, camcorders and any application where hands-free operation is needed. The headband and boom angle are both fully adjustable. Mic lead is terminated in mono 3.5mm jack and phone lead in stereo 3.5mm plug. With suitable mic plug changes these headsets produce superb results on ham base station radio transceivers.

Headphone: 32Ω  
150-8,000Hz  
Microphone: 600Ω dynamic  
Cardioid response 300-7,000Hz  
Weight: 120g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS65V 1	EM-184 Headset	£26.040	£32.950

**Eartalker for Handhelds**

Combined earpiece and microphone that works with most modern amateur radio transceivers. A PTT control is included. Kenwood models require 'K' version.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE34M †	CT-221 Ear-Talker	£25.480	£29.950
YE35Q	CT-221K Ear-Talker	£25.480	£29.950

**WEP-500 Eartalker with Mini-boom Mic**

Watson



A very compact and lightweight, earpiece with a flexible mini-boom mic that can be worn for a considerable length of time with very low fatigue. Supplied with 1.3m approx. of lead with built-in PTT control. Three versions available:

WEP500S (NV50E) - Standard, ICOM, Yaesu, Alinco, ADI  
WEP500K (NV51F) - Kenwood

WEP500M (NV52G) - Motorola, including Handie-Com (JU38R, JU37S)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV50E	WEP-500S MBEartalker	£21.230	£24.950
NV51F	WEP-500K MBEartalker	£21.230	£24.950
NV52G	WEP-500M MBEartalker	£21.230	£24.950

**Watson QS-110 Speaker/Microphone**

Watson



Superb value. Suits radio transceivers from Yaesu, Icom, Alinco, Kenwood and ADI. Includes curly lead and 3.5mm and 2.5mm plugs. Kenwood models require 'K' version (YE59P).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS63T	QS-110 Speaker Mic	£14.420	£16.950
YE59P	QS-110K Kenwood Mic	£14.420	£16.950

**Watson WMN-227 Speaker/Microphone - fits Motorola Handies including Short Range Business Radio**

Watson



Best ever value. Suits Motorola handhelds including SRBR. Complete with connectors and unique 'slow return' curly lead to plug straight in.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JV51F	WMN 227 Spkr/Mic	£16.970	£19.950

**Throat Mic and Earpiece**



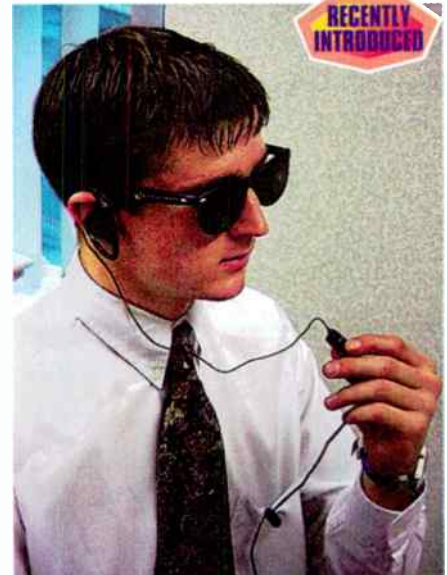
Ideal for use with most handheld transceivers. A separate PTT control is moulded into the output cable. The 'S' version is designed for use with Standard, Yaesu, Icom, Alinco and ADI. The 'K' version is designed for Kenwood. The 'M' version is for Motorola equipment including 'Handie-Com' SRBR (JV38R and JV37S).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE45Y 1	X-07S Standard T.Mic	£34.000	£39.950
YE46A 1	X-07K Kenwood T.Mic	£34.000	£39.950
NV53H 1	X-07M Motorola T.Mic	£34.000	£39.950

**Watson WCT-321 Lapel Talker**

Watson



The Lapel Talker is a professional communications quality low profile lapel microphone with PTT and features a built in, very low fatigue, mono earpiece. Designed for use with modern hand-held transceivers. Lead-length: 1.2m. Weight: 25g. There are three versions depending on the type of transceiver the Lapel Talker is being used with  
WCT-321 (VM99H): ADI/Alinco/Standard/Yaesu/Icom  
WCT-321K (VN00A): Kenwood  
WCT-321M (VN01B): Motorola

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VM99H	Watson WCT-321	£21.230	£24.950
VN00A	Watson WCT-321K	£21.230	£24.950
VN01B	Watson WCT-321M	£21.230	£24.950

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## Monophone Earpiece

Mono earphone designed to fit comfortably to one ear, with the band behind the ear holding it securely in place. 8Ω impedance fitted with 3.5mm plug.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BA58N	KS240 Earpiece	£3.390	£3.050	£2.750	£3.990

## Watson WEP-300 Earpieces

Watson

As supplied to police forces. High quality, fits over the ear for fatigue free monitoring. 8Ω with 1m lead terminated in 3.5mm mono plug on standard version and a 2.5mm mono plug on the "K" version.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RJ88V	WEP-300 Earpiece	£8.460			£9.950
MB63T	WEP-300K Earpiece	£8.460			£9.950

## Watson WEP-400 Deluxe Earphone

Watson

8Ω professional ear piece, 3.5mm mono L type jack plug. 1.15m lead. Fits either ear and vertically adjustable.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JV40T	WEP-400 Deluxe	£12.720			£14.950

## SM-2 Clip-on 'Lapel Speaker'

Ideal for handheld scanners and transceivers. Lets you put the microphone on your lapel with unique rotating clip. Curly lead fitted with 3.5mm plug matches all our scanners.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AS62S	20-009 Lapel Speaker	£8.460			£9.950

## Watson Mobile Speakers

Watson

These high quality speakers match all modern ham radio and CB transceivers. Standard 8 ohm units rated at 5 watts max. and terminated in a 3.5mm mono jack plug.



### SP-140 (RU73Q)

Size: 75 x 60mm approx. Complete with mobile mounting bracket for permanent fixing.

### SP-150 (MF06G)

Size: 73 x 67mm approx. Slimmer version of above, stylish modern rounded design. Includes magnetic fixing bracket (can also be permanently fitted).

Retail Unit Price each (inc. VAT).

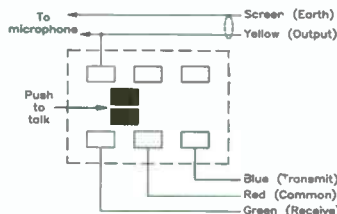
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RU73Q	SP-140 Mobile Spkr	£8.460			£9.950
MF06G	SP-150 Slim Mob Spkr	£8.460			£9.950

## Standard Mic



A hand-held communications type microphone with integral push-to-talk switch. Supplied with 1.5m of coiled black cable and a screw-on bracket so that the microphone can be hung up when not in use. Lead is supplied with prepared ends for connection of plug to suit your equipment. Yellow lead is the microphone signal wire and its screen is the earth. The push-to-talk switch is a change-over type where the red wire is connected to the green while in the 'normal' position; or the red is connected to the blue in the 'closed' position.

Impedance 600Ω, dynamic.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
WF05F †	Communications Mic	£12.750	£9.350	£8.300	£14.990

## Hand-Held Power Microphone with Compressor



The output signal is carried on the yellow wire, with the screen as earth. The push-to-talk switch connects the red or common wire to the green wire in the 'normal' position, or the blue wire in the 'transmit' position. The internal 9V supply is only switched on when transmitting.

### Specification

Output Level: -40dB (10mV)  
 Impedance: 1kΩ  
 Cable: 1.8m (6ft) 4 core screened lead  
 Dimensions: 95 x 65 x 45mm  
 Weight: 155gms with battery  
 Supplied with connecting diagram.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RK04E †	Power Mic	£19.560	£16.750	£15.650	£22.990

## Base Microphone

- ★ High quality - low noise
- ★ Amplifier built-in
- ★ Electret condenser
- ★ Flexible gooseneck
- ★ FM/SSB filter
- ★ Up/down button
- ★ Suits any rig
- ★ 100 x 155 x 35mm
- ★ Weight 450g
- ★ Needs mic plug



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JV55K †	Base Microphone	£51.020			£59.950

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**WSC-1 'Police Style' Body Holster**



This body holster is ideal for use with all kinds of portable radio equipment – the elastic self-adjusting panels accommodate most popular handhelds. Made of tough, weather resistant material, the holster can be belt mounted, and is supplied with a quick release body harness that can be easily adjusted. The WSC-1 is now being supplied to several police forces and security agencies.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MBS6N	WSC1 Body Holster	1+ £16.970	1+ £19.970

**WSC-2 Belt Holster**

Watson

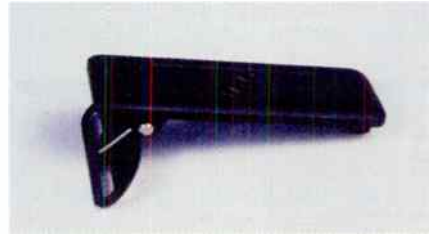


A strong, durable belt holster that will accept a wide range of handheld scanners, transceivers, GPS receivers and mobile phones. The holster has a robust metal clip for fitting over a belt, or a belt can be slipped through the strong webbing loop. The scanner, etc., is held in the holster by two elasticated straps, that are secured by a large Velcro tab.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NV42V	WSC-2 Belt Holster	1+ £11.020	1+ £12.950

**Belt Clip**



Replacement belt clip for any radio. Quick release and non-slip for ease of use. No more trapped fingers trying to release your radio!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JV39N	WHB-1 Belt Clip	1+ £5.910	1+ £6.950

**QS-300 Desk Mount**



Ideal for desk mounting handheld radios and scanners. Fitted with SO 239 socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AB89W	QS-300 Base Unit	1+ £16.970	1+ £19.950

**QS-200 Dashboard Mount**



★ Ideal for All Models  
★ Suits Modern Cards  
★ Mounts in Seconds  
The QS-200 snaps onto any louvred grill and holds your handheld securely. Ideal for scanners and ham radio portables.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ07H	QS-200 Dash Mount	1+ £4.210	1+ £4.950

**Watson QS-400 Mobile Mount**

Watson



This mobile mount will fit virtually any hand-held transceiver or portable telephone between 43mm and 71mm wide. Spring clamps attach your phone or radio to the mount and this then clips over the air vent on your vehicle's dashboard - so simple to fit and easy to use!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VN12N	Watson WS-400	1+ £8.460	1+ £9.950

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## Power Supplies

### Watson High Current Radio Communications Power Supplies

Watson



Widely used for powering 12V DC transmitting equipment and power amplifiers. Ideal for ham radio transceivers and the like. Supply voltage 230V AC 50Hz (nominal). Power supplies are fully protected. Variable outputs and meters are available on some models.

These products are due to be re-introduced during the life of this catalogue, please call to check availability.

#### W-30 AM - 30A Fan Cooled Variable Voltage PSU (AS75S)

Output: +3V to +15V @ 30A (35A peak)  
 Regulation: Better than 1% at rated output  
 Ripple: Better than 1mV at rated output  
 Connections: Binding posts, spring clips & cigar socket  
 Meters: 1 x current & 1 x voltage  
 Protection: Over-voltage/current & short-circuit  
 Size: 240 x 155 x 245mm  
 Weight: 8.7kg

#### W-20 AM - 20A Variable Voltage PSU (RU99H)

Output: +3V to +15V @ 20A (25A peak)  
 Regulation: Better than 1% at rated output  
 Ripple: Better than 1mV at rated output  
 Connections: Binding posts, spring clips & cigar socket  
 Meters: 1 x current & 1 x voltage  
 Protection: Over-voltage/current & short-circuit  
 Size: 250 x 155 x 245mm  
 Weight: 7.8kg

#### W-10 AM - 10A Variable Voltage PSU (YE56L)

Output: +3V to +15V @ 10A (12A peak)  
 Regulation: Better than 1% at rated output  
 Ripple: Better than 1mV at rated output  
 Connections: Binding posts & spring clips  
 Meters: Combined current/voltage  
 Protection: Over-voltage/current & short-circuit  
 Size: 195 x 125 x 225mm  
 Weight: 5.5kg

#### W-10A - 10A Fixed Voltage PSU (MB66W)

Output: +13.8V @ 10A (12A peak)  
 Regulation: Better than 1% at rated output  
 Ripple: Better than 1mV at rated output  
 Connections: Binding posts  
 Protection: Over-voltage/current & short-circuit  
 Size: 195 x 125 x 225mm  
 Weight: 5.3kg

#### W-5A - 5A Fixed Voltage PSU (MB67X)

Output: +13.8V @ 5A (7A peak)  
 Regulation: Better than 2% at rated output  
 Ripple: Better than 3mV at rated output  
 Connections: Binding posts  
 Size: 140 x 88 x 180mm  
 Protection: Over-current & short-circuit  
 Weight: 3.0kg

#### W-3A - 3A Fixed Voltage PSU (MB68Y)

Output: +13.8V @ 3A (5A peak)  
 Regulation: Better than 2% at rated output  
 Ripple: Better than 3mV at rated output

Connections: Binding posts  
 Protection: Over-current & short-circuit  
 Size: 140 x 88 x 165mm  
 Weight: 2.2kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE56L	W-10AM Power Supply	£51.020	£58.950
RU99H	W-20AM Power Supply	£76.550	£89.950
AS75S	W-30AM Power Supply	£102.080	£119.950
MB66Y	W-3A Power Supply	£19.530	£22.950
MB67X	W-5A Power Supply	£25.480	£29.950
MB66W	W-10A Power Supply	£42.510	£49.950

### PS-200 12V DC Portable Power Supply

Runs a 100W rig!

- ★ Will deliver 50A peak
- ★ Charges from AC mains or trickle charge from car cigar lighter - lead supplied
- ★ Mains charger also supplied
- ★ 12Ah sealed lead-acid battery



A portable 12 volt power supply. So convenient to use anywhere. This unit will operate a 100 Watt HF rig under normal conditions for about four hours. Also has 3/6/9 volt adapter built in.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ME04E	PS-200 Portable PSU	£42.510	£49.950

### 12V Distribution Board

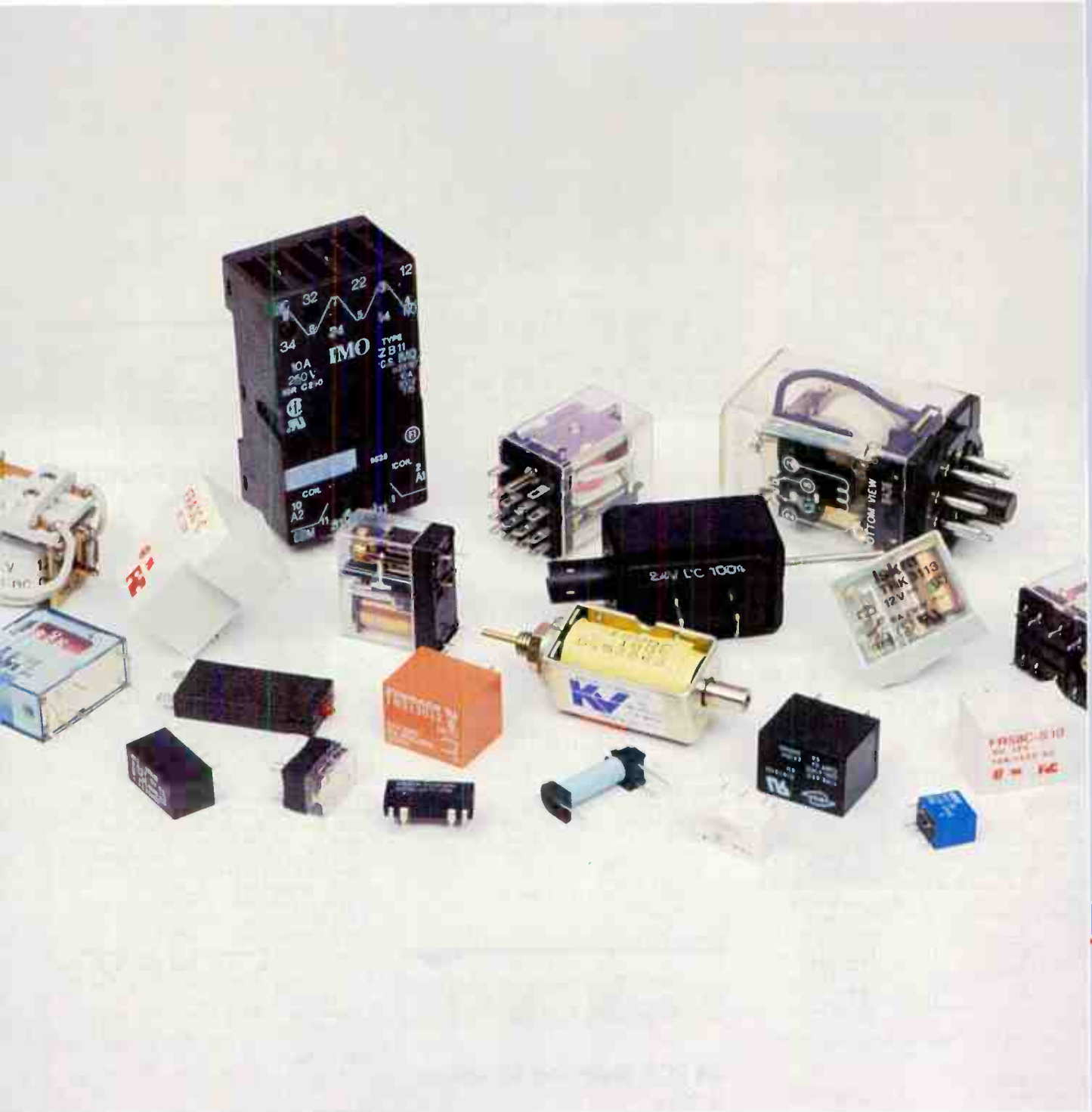


Designed for bench and ham radio use. This provides a convenient method of providing handy outlets for testing and distribution purposes. 6 outlets are provided and the unit is designed to handle 15A at 12V continuously. Mounting flanges are provided and cable feed is 1.7m long.

Size: 340 x 70 x 55mm (inc. terminals)  
 Weight: 550g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS78K	MFJ-112 15A DC Box	£31.440	£36.950



## Section Contents

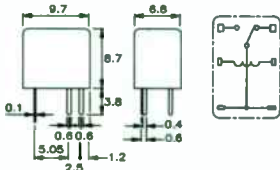
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Plug in Relays	837	Solenoids	840		

## RELAYS

### MINIATURE RELAYS

#### Micro Miniature Relay

This micro miniature relay which is only a little larger than a TO5 transistor package is designed for direct PCB mounting. Available in single-pole change-over style only with silver contacts. Dimensions: 9.7 x 6.8 x 8.7mm high excluding pins. Pin length: 3.8mm.



#### Contact details:

Max current: 2A DC, 2A AC resistive  
1A AC inductive  
Max voltage: 2V DC, 100V AC  
Life: >100,000 operations  
Max contact resistance: 50mΩ  
Operate time: 3-5ms  
Release time: 1-8ms

#### Coil details:

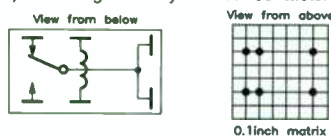
Nominal voltage:	6V DC	12V DC	24V DC
Coil resistance:	80Ω	320Ω	1000Ω
Operate voltage range:	4.8V to 7.2V	9.6V to 14.4V	19.2V to 28.8V
Must release voltage:	>0.6V	>1.2V	>2.4V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FM89W	Micro-Min Relay 6V	£1.540	£1.170	£1.040	£1.810
BK47B	Micro-Min Relay 12V	£1.540	£1.170	£1.040	£1.810

#### Ultra Miniature Relay

An ultra miniature relay designed for direct printed circuit mounting. The relay is fully enclosed on the top and sides and there is an insulation sheet on the bottom. Available in single-pole changeover style. Silver contacts.



Dimensions: 14.8 x 9.8 x 10mm high excluding pins. Pin length: 3.5mm.

#### Contact details:

Max current: 2A DC, 2A AC resistive  
1A AC inductive  
Max voltage: 24V DC 120V AC  
Life: >100,000 operations  
Max contact resistance: 50mΩ  
Operate time: 4ms  
Release time: 1.5ms

#### Coil details:

Nominal voltage:	6V DC	12V DC	24V DC
Coil resistance:	100Ω	400Ω	1600Ω
Operate voltage range:	4.5V - 7.8V	9V - 15.6V	18V - 31.2V
Must release voltage:	>0.6V	>1.2V	>2.4V

Retail Unit Price each (inc. VAT).

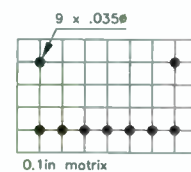
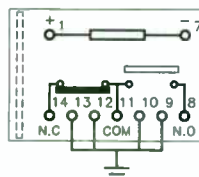
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FM91Y	UR-Min Relay 6V SPDT	£1.020	£0.749	£0.612	£1.200
YX94C	UR-Min Relay 12V SPDT	£1.020	£0.749	£0.612	£1.200
FM92A	UR-Min Relay 24V SPDT	£1.020	£0.749	£0.612	£1.200

#### High Frequency SPCO Relay

Matsushita



A highly sensitive, sealed SPCO relay with excellent high frequency characteristics, offering >60dB isolation loss at 1.5GHz, and <0.3dB insertion loss at 900MHz. The relay is designed for PCB mounting and has gold on silver contacts, offering a long electrical and mechanical life. Ideal for a wide range of applications in a/v equipment, satellite tuners, VCRs, TVS, communications equipment and instrumentation test equipment.



#### Specification

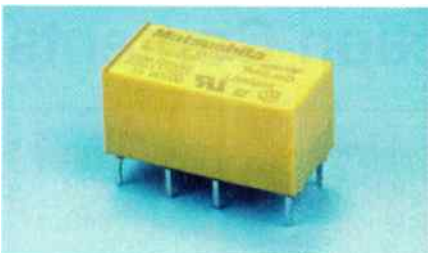
Nominal coil voltage: 12V DC (13.2V max.)  
Nominal coil current: 17mA  
Coil resistance: 720Ω  
Nominal operating power: 200mW  
Contact resistance: 100mΩ  
Switching power: 10W max.  
Switching voltage: 30V DC max.  
Switching current: 10mA max.  
Nominal switching capacity: 10mA at 24V DC (10W at 1.2GHz, 50W system)  
Dimensions: 20.2 x 11.2 x 9.1mm (excluding pins)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
GU38R	High Frequency 1P C/O	£4.540	£3.320	£2.900	£5.340

#### 2A PCB Mounting Miniature Relays

Matsushita

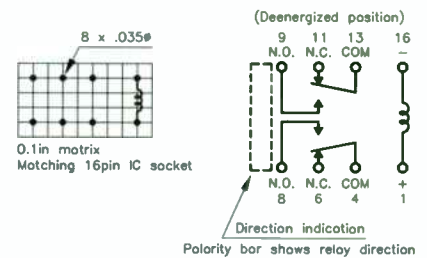


A sealed PCB mounting 2-pole C/O miniature relay with a nominal operating power of 200mW, designed to fit a standard 16-pin DIP socket. Available with 5V, 12V and 24V DC coils.

#### Specification

Switching voltage: 220V DC, 250V AC max.  
Switching current: 2A max.  
Carrying current: 3A max.  
Switching power: 60W max.  
Contact resistance: 50mΩ

Contact material: gold plated silver  
FCC surge voltage: 1500V (contacts/coils)  
Dimensions: 20 x 9.9 x 9.3mm (excl. pins)



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
GU35Q	Mini 2P C/O 5V	£1.880	£1.790	£1.700	£2.220
GU36P	Mini 2P C/O 12V	£1.880	£1.790	£1.700	£2.220
GU37S	Mini 2P C/O 24V	£1.960	£1.870	£1.770	£2.310

#### 1A PCB Mounting Polarized Relays - TQ2 Series

Matsushita



Sub-miniature polarized PCB mounting 2 pole changeover relays incorporating Gold clad Silver contacts ensuring maximum reliability in all switching conditions. These relays have very low power consumption and have applications from telecommunications to instrumentation switching.

Contact arrangement: DPCO  
Max switching voltage: 110Vdc, 125Vac  
Max switching current: 1A  
Max switching power: 30W, 62.5VA

	Monostable			Latching		
	5V	12V	24V	5V	12V	24V
Max coil voltage	7.5V	13.5V	36V	7.5V	13.5V	28.8V
Nom. operating current (mA)	28.1	11.7	8.3	40	16.7	12.5
Coil resistance (Ω)	178	1028	2880	125	720	1920
Nom operating power (mW)	140	140	200	200	200	300

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GU46A	Lo Prof 2P C/O 5V	£2.300	£2.190	£2.070	£2.710
GU47B	Lo Prof 2P C/O 12V	£2.300	£2.190	£2.070	£2.710
GU48C	Lo Prof 2P C/O 24V	£2.660	£2.520	£2.390	£3.130
SD91Y	Lo Prof 2P Lat 5V	£2.890	£2.740	£2.600	£3.400
SD92A	Lo Prof 2P Lat 12V	£2.890	£2.740	£2.600	£3.400
SD93B	Lo Prof 2P Lat 24V	£3.080	£2.930	£2.780	£3.630

## Order £30 or above?

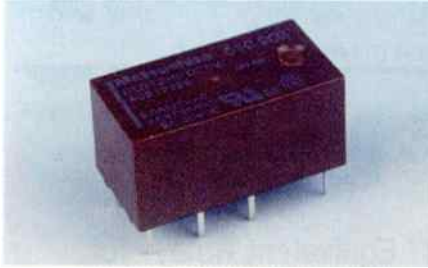
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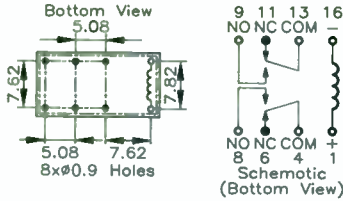


## BABT Approved Relay

Matsushita



A 5V miniature relay designed with reinforced insulation between coil and contacts giving a breakdown voltage of 4kV. This relay is UL, CSA and BABT approved (BABT CR No. 0104)



### Specification

Nominal switching capacity: 2A, 30Vdc  
 Max switching voltage: 220Vdc, 250Vac  
 Max switching current: 2A  
 Max switching power: 60W, 125VA  
 Coil resistance: 69.5mΩ  
 Contact material: Gold clad silver

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
SD84F	BABT Aprvd Telcom 5V	£6.680	£7.860

## PCB Mounting Miniature 4 Pole Changeover Relay

Meisler

An enclosed miniature low profile PCB mounting 12v relay. This 4 pole changeover device is designed for low level signal switching with significant savings on board space and is fully sealed for board washing.



### Specification

Switching Voltage: 220VDC/250VAC  
 Switching Current: 2A DC/AC  
 Switching Power: 60WDC/120VAC  
 Contact Resistance: 100mOhm  
 Contact Material: Gold plated Silver  
 FCC Surge Voltage: 1500V  
 Dimensions mm: 30 x 24 x 11.3 (excl pins)

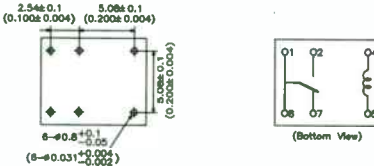
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CL77J	4P C/O 12V Relay	£4.920	£5.790

## 1A Microminiature Low-Power PCB Relay

Fujitsu

Fully enclosed microminiature PCB mounting relays that have a typical power consumption of less than 200mW. The relays have gold over silver palladium, single-pole contacts, and have a minimum life of 100,000 operations.



### Specification

Maximum current: 0.5 AC or 1A DC  
 Maximum voltage: 28V DC, 120V AC  
 Life: >100,000  
 Maximum contact resistance: 100mΩ  
 Operate time: 5ms maximum  
 Release time: 3ms maximum  
 Pickup voltage: 75% max. of rated coil voltage  
 Drop-out voltage: 10% min. of rated coil voltage  
 Dimensions: 7.6(W)mm, 10(L) x 10(H) x 1.7g approx.

Manufacturer's Code	Coil voltage V DC	Coil resistance Ω	Rated current approx. mA
FBR21H05	5	125	40
FBR21H12	12	720	17

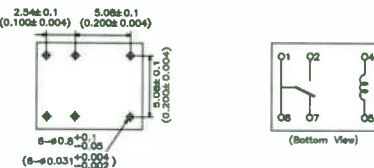
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DC51F	5V Mic-Min 1A 200mW	£2.130	£2.510
DC52G	12V Mic-Min 1A 200mW	£2.130	£2.510

## 1A Microminiature PCB Relay

Fujitsu

A fully enclosed microminiature PCB mounting relays that are capable of switching currents up to 1A DC and AC (resistive load). The relay has gold over silver palladium, single-pole, contacts with a minimum life of 100,000 operations.



### Specification

Maximum current: 0.5 AC or 1A DC  
 Maximum voltage: 28V DC, 120V AC  
 Life: >100,000  
 Maximum contact resistance: 100mΩ  
 Operate time: 5ms maximum  
 Release time: 5ms maximum  
 Pickup voltage: 80% max. of rated coil voltage  
 Drop-out voltage: 5% min. of rated coil voltage  
 Dimensions: 10(L) x 10(H) x 7.6(W)mm, 1.7g approx.

Manufacturer's Code	Coil voltage V DC	Coil resistance Ω	Rated current approx. mA
FBR21D12	12	480	25

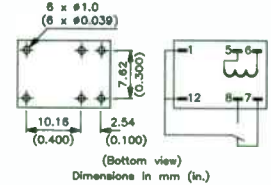
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DC48C	12V Mic-Min 1A	£1.770	£2.080

## S1A PCB Mounting Relay

Fujitsu

A range of enclosed PCB mounting relays that are capable of switching currents up to 2A DC and AC (resistive load). The relays are available with either gold on silver (Ag/Au) or gold on silver palladium (Ag/Au/Pd) contacts. The relays are only available with single-pole double-throw contacts.



### Specification

Maximum current: 0.5 AC or 1A DC  
 Maximum voltage: 28V DC, 120V AC  
 Life: >100,000  
 Maximum contact resistance: 100mΩ  
 Operate time: 5ms maximum  
 Release time: 3ms maximum  
 Pickup voltage: 70% max. of rated coil voltage  
 Drop-out voltage: 10% min. of rated coil voltage  
 Dimensions: 15.6(L) x 11(H) x 10.6(W)mm, 4g approx.

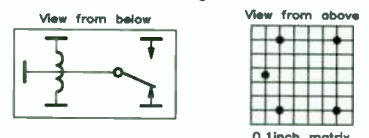
Manufacturer's Code	Contacts	Coil voltage V DC	Coil resistance Ω	Rated current approx. mA
FBR211SBD005M	Ag/Au 5	5	56	89
FBR211SBD005P	Ag/Au/Pd 5	5	56	89
FBR211SBD012M	Ag/Au 12	12	320	38
FBR211SBD012P	Ag/Au/Pd 12	12	320	38
FBR211SBD024M	Ag/Au 24	24	1280	19
FBR211SBD024P	Ag/Au/Pd 24	24	1280	19

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DC39N	5V Ag/Au 1A	£1.420	£1.670
DC40T	5V Ag/Au/Pd 1A	£1.420	£1.670
DC41U	12V Ag/Au 1A	£1.420	£1.670
DC42V	12V Ag/Au/Pd 1A	£1.420	£1.670
DC43W	24V Ag/Au 1A	£1.420	£1.670
DC44X	24V Ag/Au/Pd 1A	£1.420	£1.670

## 3 Amp Miniature Relay

A sub-miniature relay with silver contacts capable of switching up to 3A DC and AC (resistive). The relay is fully enclosed on the top and sides and there is an insulation sheet on the bottom. Available with a single-pole changeover silver contact. Designed for direct printed circuit mounting.



Dimensions: 19.3 x 15.6 x 19mm high excluding pins. Pin length: 3.5mm.

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**Contact Details:**

Max current: 3A DC, 3A AC resistive  
1.5A AC inductive  
Max voltage: 24V DC, 120V AC  
Life: >100,000 operations  
Max contact resistance: 50mΩ  
Operate time: 7ms  
Release time: 2ms

**Coil Details:**

Nominal voltage: 12V DC  
Coil resistance: 400Ω  
Operate voltage range: 9V to 16.8V  
Must release voltage: >1.2V

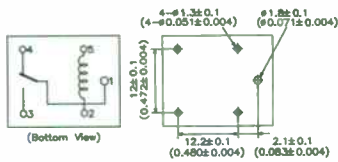
Retail Unit Price each (inc. VAT).

Order Code	Type 2004	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YX96E	3A Min Relay	£1.710	£1.270	£1.080	£2.010

## 3A PCB Mounting Relay

Fujitsu

A range of fully enclosed PCB mounting relays that are capable of switching currents up to 3A DC and AC (resistive load). These single-pole, changeover relays have silver contacts, and a minimum life of 100,000 operations. Conforms to UL and CSA standards.



**Specification**

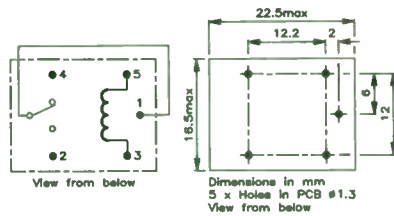
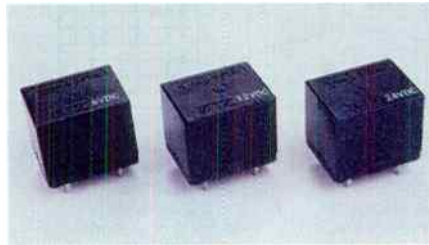
Maximum current: 3A AC or DC resistive load  
Maximum voltage: 28V DC, 120V AC  
Life: >100,000  
Maximum contact resistance: 100mΩ  
Operate time: 20ms maximum  
Release time: 10ms maximum  
Pickup voltage: 80% max. of rated coil voltage  
Drop-out voltage: 10% min. of rated coil voltage  
Dimensions: 21.5(L) x 23.5(H) x 17(W)mm, excluding pins  
Weight: 15g approx.

Manufacturer's Code	Coil voltage V DC	Coil resistance Ω	Rated current approx. mA
FBR111CD006	6	100	60
FBR111CD012	12	400	30
FBR111CD024	24	1600	15

Retail Unit Price each (inc. VAT).

Order Code	Type 2005	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DC36P	3A Relay 6V	£1.190	£1.070	£1.000	£1.400
DC37S	3A Relay 12V	£1.190	£1.070	£1.000	£1.400
DC38R	3A Relay 24V	£1.190	£1.070	£1.000	£1.400

## 5A and 10A Miniature Relay



A PCB mounting miniature relay with single pole change over contacts rated at either 5A at 240V AC/24V DC or 10A at 110V AC/24V DC, coil voltages 6V, 12V or 24V. The relay is fully enclosed and contacts are silver.

**Coil details (5A contact rating)**

Nominal voltage:	6V	12V	24V
Coil resistance:	100Ω	400Ω	1600Ω
Operating voltage range:	4.5V - 7.8V	9V - 15.6V	18V - 31.2V
Must release voltage:	>0.6V	>1.2V	>2.4V

**Coil details (10A contact rating)**

Nominal voltage:	6V	12V	24V
Coil resistance:	80Ω	320Ω	1680Ω
Operating voltage range:	4.5V - 7.8V	9V - 15.6V	18V - 31.2V
Must release voltage:	>0.6V	>1.2V	>2.4V

**Contact details**

Max current (5A): 5A AC/DC 240V AC/24V DC  
Max current (10A): 10A AC/DC 110V AC/24V DC  
Max voltage: 250V AC/60V DC  
Contact resistance: 50mΩ  
Operate time: 10ms (max)  
Release time: 10ms (max)  
Dimensions: 16 x 21 x 17mm (excluding pins)  
Pin length: 4mm

Retail Unit Price each (inc. VAT).

Order Code	Type 2012	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JM17T	6V/5A Min Relay	£1.190	£0.918	£0.816	£1.400
JM18U	12V/5A Min Relay	£1.190	£0.918	£0.816	£1.400
JM19V	24V/5A Min Relay	£1.190	£0.918	£0.816	£1.400
JM66W	6V/10A Min Relay	£1.270	£1.000	£0.878	£1.500
JM67X	12V/10A Min Relay	£1.270	£1.000	£0.878	£1.500
JM68Y	24V/10A Min Relay	£1.270	£1.000	£0.878	£1.500

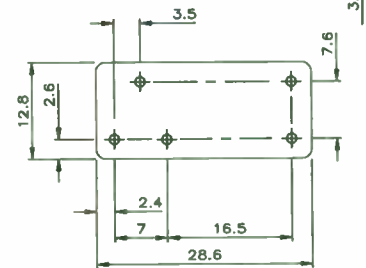
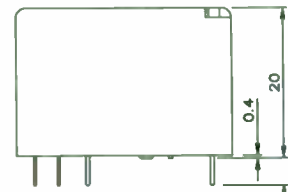
## 10A Compact PCB Power Relays - JW1 Series

Matsushita



Compact PCB mounting relays offering high switching capacity, 10A, coupled to a high surge protection, minimum 10kV (between coil and contact).

Typical applications are in home appliances (TVs, VCRs and microwave ovens), office machinery and industrial equipment (NC machines, robots, temperature controllers etc)



**Specification**

Max switching voltage 250Vac, 100Vdc  
Nominal switching current 10A, 250Vac; 10A, 30Vdc  
Max switching power 2550VA, 300W  
Coil operating power (material) 530mW  
Contact material Silver alloy  
Dims (excl pins) 28.6x12.8x20.4mm

Retail Unit Price each (inc. VAT).

Order Code	Type 13792	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
SD97F	Seal'd MiniPwr 5V	£1.710	£1.620	£1.530	£2.010
SD98G	Seal'd MiniPwr 12V	£1.710	£1.620	£1.530	£2.010
SD99H	Seal'd MiniPwr 24V	£1.770	£1.680	£1.590	£2.080

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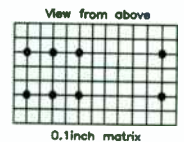
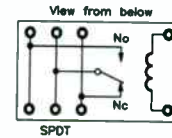
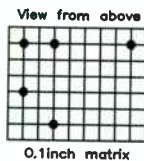
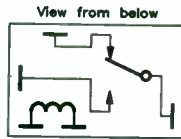
## 10A Ultra-Miniature Power Relays - JS1 Series

Matsushita

**RECENTLY INTRODUCED**



Ultra-miniature, high power, general purpose PCB mounting relays with excellent shock (10G) and vibration resistance (10-55Hz @ double amplitude of 1.6mm). The relays offer high contact capacity, 10A whilst being housed in an ultra-miniature case utilising a universal terminal footprint.



**Max current:** 10A DC, 10A AC resistive  
3A AC inductive  
**Max voltage:** 30V DC, 240V AC  
**Life at 120V AC:** >150,000 operations  
**Life at 240V AC:** >75,000 operations  
**Max contact resistance:** 50mΩ  
**Operate time:** 6ms  
**Release time:** 2ms

**Coil Details:**  
**Nominal voltage:** 12V DC  
**Coil resistance:** 320Ω  
**Operate voltage range:** 9V to 19.2V  
**Must release voltage:** >1.2V

Retail Unit Price each (inc. VAT).

Order Code	Type 2516	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YX97F	10A Mains Relay	£1.270	£0.948	£0.766	£1.500

**Contact Details:**  
**Max current:**

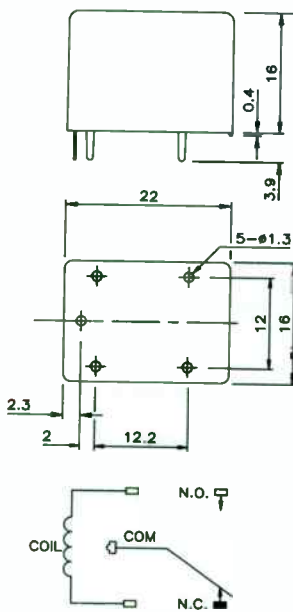
20A AC, 16A DC (make contact), resistive or inductive; 10A AC, 5A DC (break contact), resistive or inductive.

**Max voltage:** 240V AC, 28V DC  
**Life:** >100,000 operations  
**Operate time:** 15ms  
**Release time:** 10ms max.

**Coil Details:**  
**Nominal voltage:** 12V DC  
**Coil resistance:** 270Ω  
**Operate voltage range:** 9V to 14.4V

Retail Unit Price each (inc. VAT).

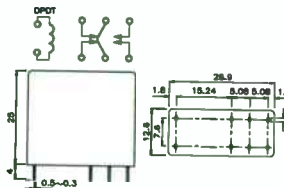
Order Code	Type 2522	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YX99H	12V 16A Relay	£2.220	£1.740	£1.500	£2.620



## Miniature Double Pole Mains Relay

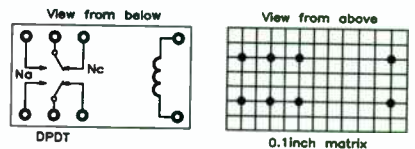
Mors Components

A miniature relay with contacts capable of switching 5A at 240V AC resistive. The relay is fully enclosed and designed for direct printed circuit mounting. Contacts are silver cadmium oxide. Dimensions: 28.9 x 12.6 x 25mm high excluding pins. Pin length: 4mm.



## 6 and 12V 6A Miniature Relays

Double pole double throw changeover relays with either 6V or 12V coils, and which are also used in our PWM Motor Drive Module. Construction is similar to 12V 16A relay above. Dimensions: 30 x 13 x 27mm high excluding pins. Pin length: 3.5mm.



**Contact Details:**

**Max current:** 6A AC/DC max  
**Max voltage:** 250V AC, 30V DC

**Coil details:**  
**Nominal voltage:** 6V DC 12V DC  
**Coil resistance:** 70Ω 250Ω  
**Operate voltage range:** 4-7 to 10.8V 8-6 to 20.5V

Retail Unit Price each (inc. VAT).

Order Code	Type 2525	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FJ42V	Min 6V 6A Relay	£2.480	£1.940	£1.740	£2.920
FJ43W	Min 12V 6A Relay	£2.480	£1.940	£1.740	£2.920

21 Typical applications include automotive equipment (windows, aerials, locks etc), office machines, vending machines and home appliances.

### Specification

**Max switching voltage:** 125Vac, 24Vdc  
**Max switching current:** 10Aac, 5Adc  
**Max switching power:** 1660VA  
**Coil operating power (nom):** 360mW  
**Contact material:** Silver alloy  
**Dims (excl pins):** 22x16x16.4mm

Retail Unit Price each (inc. VAT).

Order Code	Type 13787	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
SD94C	Seal'd CmpctPwr 5V	£1.080	£1.030	£0.981	£1.280
SD95D	Seal'd CmpctPwr 12V	£1.080	£1.030	£0.981	£1.280
SD96E	Seal'd CmpctPwr 24V	£1.100	£1.050	£0.999	£1.300

## Ultra Miniature High Power Mains Relay

An ultra-miniature relay capable of switching 10A resistive at 240V AC. The relay is fully enclosed and is designed for direct printed circuit mounting. Available with a single-pole changeover silver cadmium oxide contact. Dimensions: 22 x 17.4 x 11.6mm high excluding pins. Pin length: 3mm.



**Contact Details:**

## 12V DC 16A Miniature Relay

A miniature relay especially suitable for use in automobile applications. It can switch 16A at 12V DC. The relay is enclosed in a plastic case and may be directly mounted on a PCB. Contacts are SPDT silver cadmium oxide. Dimensions: 30 x 13 x 27mm high excluding pins. Pin length: 3.5mm.



Order Code	Type 2520	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YX98G	5A Mains Relay	£2.220	£1.740	£1.500	£2.620

Retail Unit Price each (inc. VAT).

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Tel: **01702 554000**

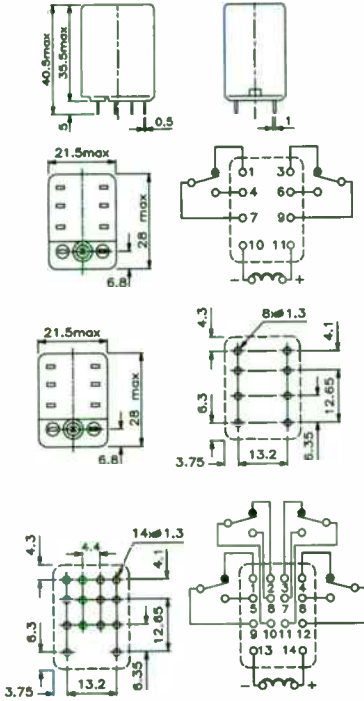
Fax: **01702 554001**

e-mail: **Sales@maplin.co.uk**

### 5A Miniature Relay

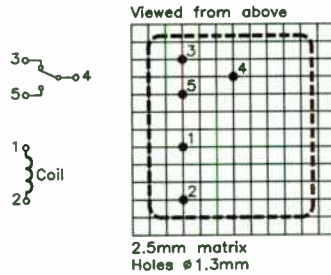


A fully enclosed relay capable of carrying 5A and having pins for direct pcb mounting or for use with socket available separately. The relay is available with double-pole or 4-pole changeover contacts, with 6V DC, 12V DC or 24V DC coils.



### 8A Relay

A printed circuit mounting power relay with one changeover contact with cadmium oxide flashed silver contacts. The relay is fully enclosed in a plastic case suitable for electrical devices in control systems e.g. heating controls, servo motors solenoid valves etc. Size: 28.0 x 24.7 x 11.0mm + 3.3mm pin length.



**Contact Details:**  
 Max current: 8A (resistive load)  
 5A (inductive load)  
 Max voltage: 250V AC, 18-5V DC  
 Max contact resistance: 30mΩ  
 Life: >100,000 operations at 8A  
 Operating time: 8ms  
 Release time: 4ms

**Coil Details:**  
 Nominal voltage: 12V DC  
 Coil resistance: 330Ω

Retail Unit Price each (inc. VAT).

Order Code	Type 2546	Price each exc. VAT		inc. VAT each
		1+	25+	100+
HY20W	Relay Flat 12V	£2.400	£1.840	£1.650
				£2.820

### 8A PCB Mounting IC Driveable Relays- ST1 Series

Matsushita



Sub-miniature, high power, general purpose PCB mounting relays with excellent shock (20G) and vibration resistance (10-55Hz double amplitude of 2mm). The relays feature one NO and one NC contact and are ideally suited for car alarms, security systems etc.

12V version also available in 2 coil latching format.  
 Max switching voltage: 380Vac  
 Max switching current: 8A  
 Max switching power: 200VA, 150W  
 Contact material: Gold flash over Silver alloy  
 Dims (excl pins): 31x14x11.3mm  
 Monostable

Max coil voltage	5V	12V	24V	12V
Nom. operating current (mA)	47.6	18.8	10.0	18.8
Coil resistance (Ω)	105	600	2400	640

Retail Unit Price each (inc. VAT).

Order Code	Type 13790	Price each exc. VAT		inc. VAT each
		1+	5+	10+
GU43W	PCB Power 5V	£6.340	£6.020	£5.700
GU44X	PCB Power 12V	£6.340	£6.020	£5.700
GU45Y	PCB Power 24V	£6.340	£6.020	£5.700
SD82D	Latching Auto Secy	£6.970	£6.620	£6.270

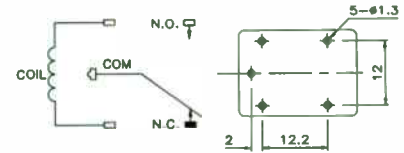
### AUTOMOTIVE RELAYS

#### Automotive Ultra-Miniature Power Relay

Matsushita



A sealed construction low pick-up voltage power relay for use in electric windows, car aerials, central locking, electric sunroofs etc. Although housed in an ultra-miniature package with a universal footprint this relay offers a high switching current of 15A and can be used in high temperature environments.



#### Specification

Max switching voltage	16Vdc
Max switching current	15A (inrush 50A)
Max switching power	240W
Initial contact resistance, max	100mW
Ambient temperature	-40°C to +85°C
Contact material	Silver alloy
Dimensions	22x16x16mm

Retail Unit Price each (inc. VAT).

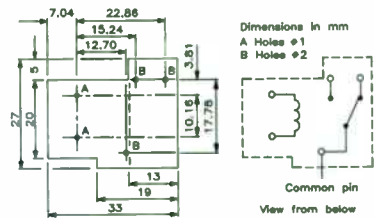
Order Code	Type 13794	Price each exc. VAT		inc. VAT each
		1+	5+	10+
SD83E	Auto Accessory	£1.230	£1.160	£1.100
				£1.450

### 16A Relay for Automotive Applications

A PCB mounting heavy duty relay primarily intended for automotive applications e.g. switching horns, lights etc. The contacts are rated at 16A at 125V AC/24V DC. Contact configuration is single pole change over. Coil is rated at 12V.



Overall dimensions: 32 x 27 x 20mm (excluding pins). Pin length: 3mm.



#### Contact details

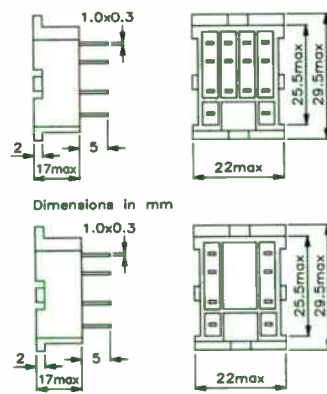
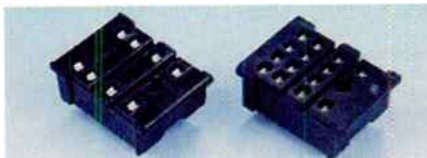
Max current:	16A 125V AC/24V DC
Max Voltage:	125V AC/24V DC

#### Coil Details

Nominal voltage:	12V
Coil resistance:	170Ω
Operating voltage:	9V to 15-6V

Retail Unit Price each (inc. VAT).

Order Code	Type 2528	Price each exc. VAT		inc. VAT each
		1+	25+	100+
JM26D	16A/12V Car Relay	£1.270	£1.000	£0.868
				£1.500



Retail Unit Price each (inc. VAT).

Order Code	Type 2538	Price each exc. VAT		inc. VAT each
		1+	25+	100+
JG65V	5A Relay 6VDC DPDT	£3.170	£2.390	£2.140
JG66W	5A Relay 12VDC DPDT	£3.170	£2.390	£2.140
JG67X	5A Relay 24VDC DPDT	£3.170	£2.390	£2.140
JG68Y	5A Relay 6VDC 4PDT	£4.200	£3.160	£2.790
JG69A	5A Relay 12VDC 4PDT	£4.200	£3.160	£2.790
JG70M	5A Relay 24VDC 4PDT	£4.030	£3.160	£2.790
JG52G	Rly Slt 5A 8-Pin	£0.936	£0.846	£0.684
JG51F	Rly Slt 5A 14-Pin	£1.100	£0.948	£0.776
				£1.300

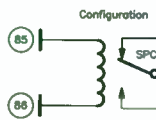
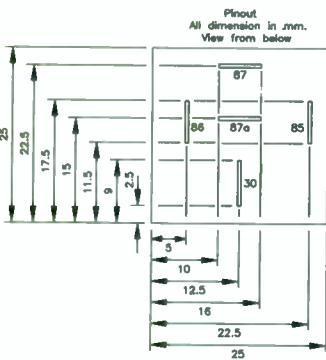
## 40A Relay for Automotive Applications

Designed with automotive applications in mind, this high power relay is capable of switching loads up to 40A at 12V. Suitable for controlling spotlights, heater systems, wiper motors, compressor driven air horns, tailgate lifts etc. Electrical contact is made with push on 6-35mm (1/4in.) blade connectors. The relay configuration is SPCO, with silvered contacts.



### Specification

Coil details	
Nominal voltage:	12V
Coil resistance:	90Ω ±9Ω
Coil current:	133mA ±12mA (at 12V)
Operating voltage:	7.2 to 20.5V DC
Contact details	
Maximum current:	40A
Maximum voltage:	24V DC
Approximate weight:	30g
Nominal power cons.:	1.6W



## Trailflash Relay

Make sure that your caravan or trailer's indicators flash when they should with this top quality trailflash relay. The trailflash will provide a visible warning of inoperative trailer indicators if used in conjunction with a warning lamp (not supplied). Compatible with all 12V negative earth vehicles, full wiring instructions included. Supplied with ready wired cables.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD82D	Trailflash Relay	£9.540	£11.210

## Combi Master Split Charge/Fridge Relay



The Combi Master is a combination relay that manages the power supply for a fridge and the charging of an auxiliary battery, while on the move. The Combi Master is suitable for all 12V negative and positive earth vehicles. The pack contains the Combi Master unit, blade fuse holder with fuse, cables and connectors and easy to follow fitting instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD23A	Split/Fridge Relay	£13.010	£15.290

## Relay Master



The Relay Master is the comprehensive three-in-one answer to towing electrics for all negative earth vehicles. A simple to install unit that provides all of the following features:

Electronic towing relay giving an audible signal that the trailer indicators are working, whilst towing (there is an additional output for a warning lamp if preferred).

A fridge power supply relay, and a split charge relay.

The pack contains the Relay Master unit, blade fuse holder and fuse, cables and connectors, and easy to follow fitting instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD25C	Relay Master	£17.350	£20.390

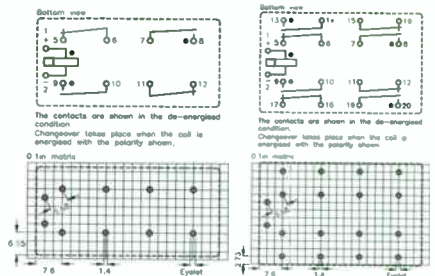
## SAFETY RELAYS

### Forced Operation Safety Relays

Matsushita



A range of polarised, monostable, PCB mounting safety relays with forced operation' technology, (complies with safety specification ZH 1/457) to meet the demanding requirements of industrial machine safety. Forced operation means that in the case of welding of one of the contacts, an associated open contact cannot close. Additionally, in the case of the 4-pole (8 relay contacts) type it is not only possible to recognise a fault, but also to determine the type of fault and to identify the location of the fault. Suitable applications include machine guards, emergency lighting, signalling equipment etc. Available with 12V or 24V DC coils with either 2-pairs of NO/NC contacts or 4-pairs, each pair with NO/NC contacts.



### Specification

Switching voltage: 440V max.  
Switched load: 150W resistive max.  
Maximum current make: 20A  
rated: 6A 4-pairs, 10A 2-pairs  
break current: 6A  
Switching frequency: 10Hz max.  
Coil resistance  
12V: 288Ω  
24V: 1152Ω  
Coil inductance  
12V: 240mH  
24V: 1000mH

### Dimensions

2-pairs: 53 x 25 x 16.5mm (excl. pins)  
4-pairs: 53 x 33 x 16.5mm (excl. pins)

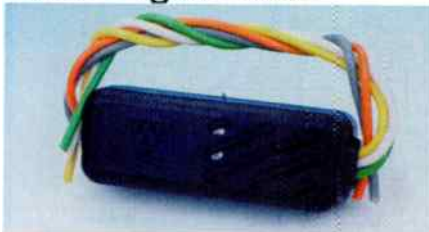
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GLJ39N	Safety 2P C/O 12V	£14.280	£16.790
GLJ40T	Safety 2P C/O 24V	£14.280	£16.790
GLJ41U	Safety 4P C/O 12V	£17.880	£21.020
GLJ42V	Safety 4P C/O 24V	£17.880	£21.020

27 Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AR32K	12V 40A Car Relay	£4.710	£5.540

## Audible Signal Master



The Signal Master is an electronic warning relay designed to give the driver an audible (buzzer) signal that the trailer indicators are operating, whilst towing. Suitable for all 12V negative earth vehicles with a single flasher relay for both hazard and indicator lamps (there is no need to replace existing flasher units).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WD24B	Audible Signal Ind	£7.800	£9.170



## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## SOLID STATE RELAYS

### Single Phase AC - G Series

Crouzet



A range of surface mounting, optically coupled solid state relays in the industry standard "hockey puck" housing.

These relays have a sealed construction, with no moving parts, giving a long life and high reliability. The switching is silent and is not affected by vibration. The relays have a N/O output circuit and can be used for switching single phase resistive loads or motors where the power factor is greater than 0.7.

These relays must be mounted on an adequate heat sink to dissipate the heat generated within the relay, caused by internal volt drop across the output circuit. A cut out thermal pad (MG42V) is available to interface between the relay and heatsink to help dissipate excess heat

- Features**
- ★ Surface mounting
  - ★ Protection by RC filter
  - ★ Zero volt switching
  - ★ Back to Back Thyristor
  - ★ UL and CSA approved

Specification	840 60_31	840 60_41
Input circuit	3-32Vdc	4-32Vdc
Max current	34mA	34mA
Resistance	1000Ω	1000Ω
Term screw torque	1Nm max	1Nm max
<b>Output circuit</b>		
Voltage range	24-280Vac	36-530Vac
Peak voltage	600V	1200V
Min current	100mA	100mA
Max off state leakage	15mA	15mA
On state volt drop @ I <sub>max</sub>	1.6V	1.6V
Switching frequency	47-80Hz	47-80Hz
Term screw torque	2Nm max	2Nm max

**General**

I/P to O/P insulation 4000V  
 I/P to O/P capacitance 8pF  
 Operating temperature -20°C to +80°C  
 Weight 100g  
 Mounting screw torque 1.1 - 1.3Nm  
**Note: Watts = I(max) x 1.6volts**

Maplin Stock Code	Crouzet Part No.	I(max)
MG35Q	84 060 231	10A
MG36P	84 060 431	25A
MG37S	84 060 631	45A
MG38R	84 060 741	50A
MG39N	84 060 841	75A
MG40T	84 060 841	90A

Retail Unit Price each (inc. VAT).

Order Code	Type 17550	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MG35Q	S/S Relay 10A	£13.650	£12.970	£12.290	£16.050
MG36P	S/S Relay 25A	£15.240	£14.480	£13.720	£17.510
MG37S	S/S Relay 45A	£19.420	£18.450	£17.480	£22.630
MG38R	S/S Relay 50A	£24.290	£23.080	£21.870	£28.550
MG39N	S/S Relay 75A	£40.770	£38.740	£36.700	£47.910
MG40T	S/S Relay 90A	£42.500	£40.380	£38.250	£49.940
MG42V	Thermal Joint	£1.000	£0.800	£0.650	£1.180

† This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## PLUG IN RELAYS

### High Current Relays

Fujitsu

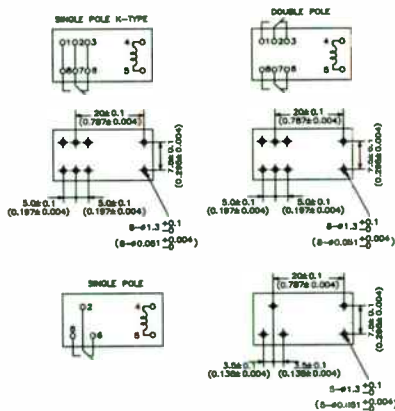
A range of high quality, high switching current relays that are available with either single- or double-pole contacts. The single-pole version is available with a choice of contact arrangement (see drawing).

The relays are capable of switching 240V AC 10A (5A double-pole version), and have a minimum life of 100,000 operations. Single-pole relays with a suffix K are BT approved. Conform to UL-508 and CSA standards.



**Specification**

Maximum current single-pole: 10A AC or DC resistive load  
 double-pole: 5A AC or DC resistive load  
 Maximum voltage: 30V DC, 240V AC  
 Life: >100,000  
 Maximum contact resistance: 100mΩ  
 Operate time: 15ms maximum  
 Release time: 5ms maximum  
 Pickup voltage: 70% max. of rated coil voltage  
 Drop-out voltage: 10% min. of rated coil voltage  
 Dimensions: 29(L) x 25(H) x 13(W)mm excluding pins  
 Weight: 16g approx.



Coil current Manufacturer's Code	Contacts	Rated		Coil approx. mA
		voltage V DC	resistance Ω	
FBR611D006	SP	6	72	83
FBR611D012	SP	12	285	42
FBR611D024	SP	24	1,150	21
FBR621D012	DP	12	285	42
FBR621D024	DP	24	1,150	21

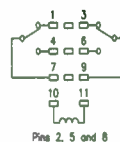
Retail Unit Price each (inc. VAT).

Order Code	Type 2554	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
DC54J	6V SP HI-Curr Relay	£1.890	£1.740	£1.590	£2.230
DC55K	12V SP HI-Curr Relay	£1.890	£1.740	£1.590	£2.230
DC56L	24V SP HI-Curr Relay	£1.890	£1.740	£1.590	£2.230
DC58N	12V DP HI-Curr Relay	£2.220	£1.790	£1.620	£2.620
DC59P	24V DP HI-Curr Relay	£2.220	£1.790	£1.620	£2.620

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## Power Relay

Open construction relay with two-pole changeover pure silver contacts.



**Contact Details:**

Max ratings: 7.5A at 250V AC  
 3A at 440V AC  
 7.5A at 6V DC  
 7A at 12V DC  
 4.5A at 24V DC  
 1.5A at 48V DC  
 0.3A at 100V DC  
 0.15A at 200V DC  
 Life: >20 million operations  
 Operate and release time: 10 to 20ms

**Coil Details:**

Nominal coil voltage	Operate voltage range	Coil resistance
12V DC	9.6 to 13.2V	120Ω
230V AC	184 to 253V	7300Ω

Retail Unit Price each (inc. VAT).

Order Code	Type 2557	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FX48C	Power Relay 12V	£4.280	£3.260	£2.910	£5.040
FX49D	Power Relay 230V AC	£4.620	£3.730	£3.060	£5.440

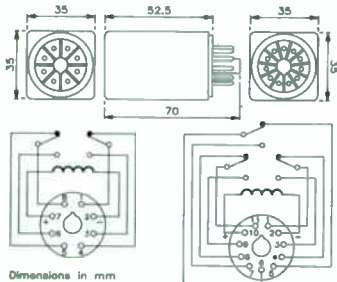
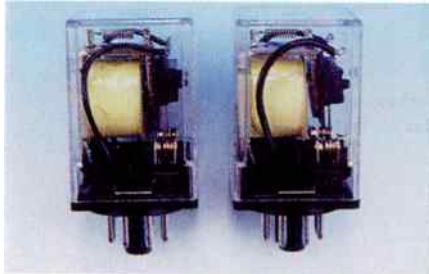


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## Round-base Relays

High power standard industrial relays with DPDT contacts on an octal base and 3PDT contacts on an 11-pin base. The relay is fully enclosed and will plug in to any standard 8-pin or 11-pin round base. It is a direct replacement for all standard industry types. It is available in both double-pole and 3-pole with a choice of three coil voltages: 12V, 24V DC, and 240V AC.



### Contact details

Max current: 10A  
 Max voltage: 240V AC, 28V DC  
 Max switching power: 2400V A resistive 280W resistive  
 Contact resistance: <math><50\text{m}\Omega</math>  
 Operate time: 15ms max  
 Release time: 15ms max  
 Insulation resistance: 100M $\Omega$  at 500V DC  
 Mechanical life: >10 million operations  
 Electrical life: >100,000 operations at full load

### Contact material:

Silver cadmium oxide

### Coil details

Nominal voltage	Operate range (V)	Coil resistance	Current at nominal voltage
12V DC	9.6 to 13.2	120 $\Omega$ $\pm$ 5%	100mA
24V DC	19.2 to 26.4	472 $\Omega$ $\pm$ 5%	51mA
240 AC	192 to 264	9110 $\Omega$ $\pm$ 5%	9mA

Size of base: 35 x 35mm  
 Height of body: 52.5mm  
 Overall height: 70mm

Sockets are available which will clip onto 35mm DIN rail and have a screwdriver-operated quick-release clip. Connections are now made to the relays via screw-terminals. Screws are in recesses 7mm wide.

Size of base: 51 x 40mm (8-pin)  
 51 x 43mm (11-pin)  
 Height: 21mm (8-pin)  
 30mm (11-pin)  
 Fixing centres: 33mm x 4mm clear (8-pin)  
 34mm x 4.5mm clear (11-pin)



Retail Unit Price each (inc. VAT).

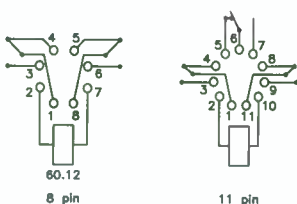
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JG58N	Power Rly 12VDC DPDT	£4.540	£3.830	£3.460	£5.340
JG59P	Power Rly 24VDC DPDT	£4.540	£3.830	£3.460	£5.340
JG60Q	Power Rly 240VAC 3PDT	£4.540	£3.830	£3.460	£5.340
JG62S	Power Rly 12VDC 3PDT	£5.140	£3.900	£3.630	£6.050
JG63T	Power Rly 24VDC 3PDT	£5.140	£3.900	£3.630	£6.050
JG64U	Power Rly 240VAC 3PDT	£5.140	£3.900	£3.630	£6.050
JG54J	Rly Skt 10A 8-Pin	£2.130	£1.590	£1.360	£2.510
JG53H	Rly Skt 10A 11-Pin	£2.400	£1.840	£1.640	£2.820

## Plug-in Power Relays

IMO



A range of high power, two or three pole, plug-in relays with a 10A switching capacity at 24V DC. The 2-pole type has an 8-pin base, and the 3-pole type has an 11-pin base. The relays feature a manual test push-button and a 'flag indicator', which appears when the relay is operated. The relays are available with either AC or DC rated coils, and have BS, CSA, VDE, UL and SEMKO approvals.



### Specification

Contact material: Gold/Nickel  
 Rated load: 10A @ 250V AC or 24V DC  
 (resistive)  
 Rated current: 10A  
 Maximum switching voltage: 250V AC/125V DC  
 Maximum switching capacity: 240W @ 24V DC, 50W @ 125V DC (resistive)  
 Contact resistance: 30m $\Omega$   
 Operate time: 20ms  
 Release time: 20ms  
 Voltage range: 80% to 110%  
 Dimensions: 51 x 38.2 x 32.5mm (excluding pins)  
 64.2 x 38.2 x 32.5mm (including pins)

### Manufacturer's

Code	Type	Rated voltage V	Rated coil current mA	Rated coil resistance $\Omega$
60-12-0040-12VDC	2-pole	12V DC	108	111
60-12-0040-24VAC	2-pole	24V AC	92	75
60-12-0040-110VAC	2-pole	110V AC	20	1800
60-12-0040-240VAC	2-pole	240V AC	9	8500
60-13-0040-12VDC	3-pole	12V DC	108	111
60-13-0040-24VAC	3-pole	24V AC	92	75
60-13-0040-110VAC	3-pole	110V AC	20	1800

Retail Unit Price each (inc. VAT).

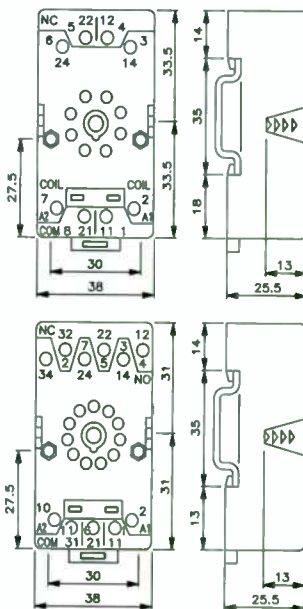
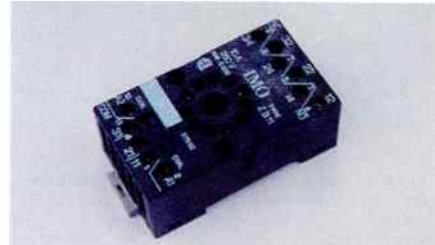
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DE03D	12VDC 2P Power Relay	£4.950	£4.200	£3.940	£5.820
DE05F	24VAC 2P Power Relay	£4.950	£4.200	£3.940	£5.820
DE06G	110VAC 2P Power Relay	£4.950	£4.200	£3.940	£5.820
DE07H	240VAC 2P Power Relay	£5.150	£4.390	£4.110	£6.060
DE08J	12VDC 3P Power Relay	£5.500	£4.680	£4.370	£6.470
DE10L	24VAC 3P Power Relay	£5.500	£4.680	£4.370	£6.470
DE11M	110VAC 3P Power Relay	£5.500	£4.680	£4.370	£6.470

**MAPLIN**  
 on the Net  
<http://www.maplin.co.uk>

## Relay Sockets with Terminal Screw Connections for Plug-in Relays

IMO

Suitable sockets for either 8-pin (octal) or 11-pin base plug-in relays described on this page. The bases feature finger-proof, 'box style' terminals fitted with captive Posidrive/slotted screws.



### Specification

Rating: 10A 250V  
 Cable size  
 rigid: 1 x 4mm<sup>2</sup> or 2 x 2.5mm<sup>2</sup>  
 flexible: 1 x 2.5mm<sup>2</sup> or 2 x 1.5mm<sup>2</sup>  
 Moulding material: Self-extinguishing NORYL GFN2 SE1  
 Terminal material: Nickelled CuZn37  
 A suitable relay retaining clip is also available.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DE13P	8 Pin Base	£1.770	£1.560	£1.450	£2.080
DE14Q	11 Pin Base	£2.060	£1.800	£1.700	£2.430
DE15R	Relay Clip	£0.093	£0.092	£0.089	£0.110



**FOR SAME DAY DESPATCH**

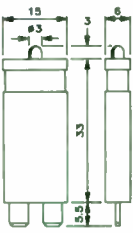
Tel: 01702 554000

Fax: 01702 554001

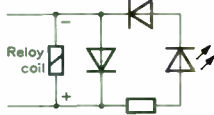
e-mail: Sales@maplin.co.uk

### Relay Status Module with Noise Immunity Diode

IMO



A small compact module that has 'quick' connect terminals and is designed to be inserted into the screw terminal socket, in parallel with the coil leads. The module has an LED indicator and a noise immunity diode. The LED is useful for checking relay operation and detecting any problems quickly. Suitable for use with 24V DC relays only.



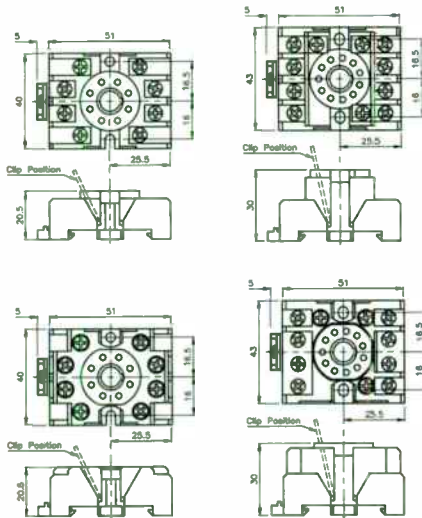
Retail Unit Price each (inc. VAT).

Order Code	Type 1503	Price each exc. VAT	inc. VAT each
DE16S	Relay Status Module	1+ £1.170 25+ £1.030 100+ £0.960	1+ £1.384

### 8 & 11 PIN RELAY SOCKETS

Camden

Compact 35mm DIN Rail/Chassis mount sockets for use with all industry standard 8 pin (octal) and 11 pin relays and timers. Available in standard and finger protected (IP20) versions. Connection is via screw terminals. Relay retention clips are supplied with all socket types.



Current rating 10A, 380Vac  
Dielectric strength >2kV  
Working temperature 110°C  
Material UL94-V1 self extinguishing glass filled PPO

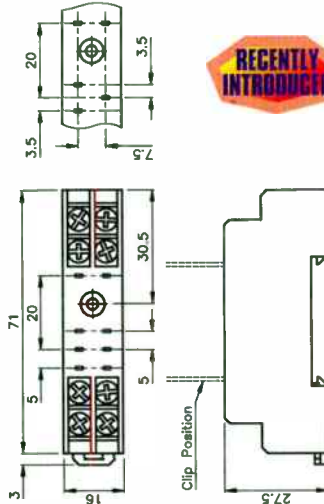
Retail Unit Price each (inc. VAT).

Order Code	Type 13623	Price each exc. VAT	inc. VAT each
SD75S	DIN 8 Pin Skt Open	1+ £1.140 5+ £1.090 10+ £1.040	1+ £1.350
SD76H	DIN 8 Pin Skt Tpr	1+ £1.290 5+ £1.230 10+ £1.160	1+ £1.520
SD77J	DIN 11 Pin Skt Open	1+ £1.500 5+ £1.430 10+ £1.360	1+ £1.770
SD78K	DIN 11 Pin Skt Tpr	1+ £1.550 5+ £1.480 10+ £1.400	1+ £1.830

### 3.5/5mm DIN RAIL SOCKETS FOR PCB RELAYS

Camden

Din rail EN50 022 or single bolt chassis fixing relay sockets for 2 and 3 pole PCB type power relays. Connections is by screw terminals with self rising washers which accept 2 x 1.5mm cables.



RECENTLY INTRODUCED

The sockets feature a screw driver release clip for rail mounting and provision for chassis mounting by one M3 screw. Rated at 10A, 380Vac the sockets are made from UL94 V1 flame retardant material with insulated relay retention clip.

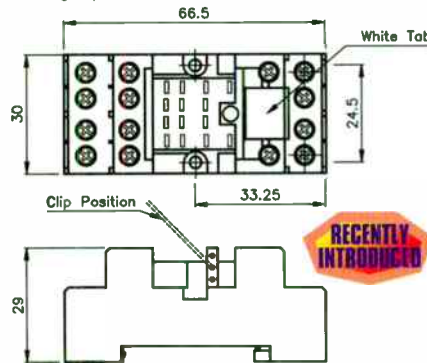
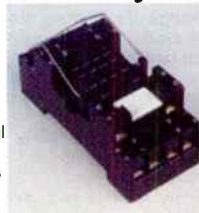
Retail Unit Price each (inc. VAT).

Order Code	Type 13622	Price each exc. VAT	inc. VAT each
SD79L	DIN 3.5mm 1P Skt	1+ £1.290 5+ £1.230 10+ £1.160	1+ £1.520
SD80B	DIN 5mm 1&2P Skt	1+ £1.630 5+ £1.550 10+ £1.470	1+ £1.920

### 4 Pole (14-Pin) DIN Relay Socket

Camden

Compact 14 pin relay socket for 2.2/2.6 mm blade terminal 4 pole relays. Suitable for DIN rail or chassis moulded with rising clamp type terminals and moulded in UL94 V1 self extinguishing PA6 with contacts rated at 7A, 300Vac. The socket terminals are finger proof to IP20.



RECENTLY INTRODUCED

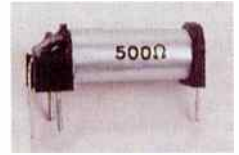
Retail Unit Price each (inc. VAT).

Order Code	Type 13621	Price each exc. VAT	inc. VAT each
SD81C	DIN 14 Pin 4P Skt	1+ £2.220 5+ £2.120 10+ £2.010	1+ £2.620

### REED RELAYS

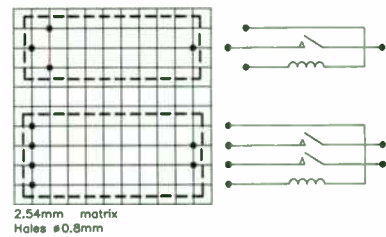
#### Sealed Reed Relays

A sealed reed relay suitable for use at voltages from 3-8V to 22V with single-pole make or double-pole make actions. The high resistance coil enables the relay to be driven directly by 74 series ICs and most logic buffers. At the same time the relay can switch up to 10VA.



Contact Details (per contact)

Max current: 1A  
Max voltage: 100V  
Max switching power: 10VA  
Contact resistance: 150mΩ max  
Operate time: 1ms max including bounce time  
Release time: 0.5ms max including bounce time  
Life: >1 million operations at full load



Coil details	Nominal voltage	Operate range(V)	Coil resistance	Current at nominal voltage
5V DC	3-8 to 11	500Ω ±10%	10mA	
12V DC	8-8 to 22	1050Ω ±10%	11.4mA	

Coil temperature rise:

30°C max  
Insulation resistance: >100MΩ at 500V DC between coil and contact  
Size SPST: 24 x 8 x 9mm high  
DPST: 25 x 11 x 9mm high  
Pin length: 4mm

Retail Unit Price each (inc. VAT).

Order Code	Type 2605	Price each exc. VAT	inc. VAT each
JH12N	Reed Relay 5V SPST	1+ £1.370 25+ £0.888 100+ £0.754	1+ £1.610
JH13P	Reed Relay 12V SPST	1+ £1.370 25+ £0.888 100+ £0.754	1+ £1.610
JH15R	Reed Relay 5V DPST	1+ £1.710 25+ £1.220 100+ £1.070	1+ £2.010
JH16S	Reed Relay 12V DPST	1+ £1.710 25+ £1.220 100+ £1.070	1+ £2.010

**MPS**  
MAPLIN PROFESSIONAL

We will deliver your order with no postal charge!

Every order £30 or above will be sent with carriage paid.

Approved business account holders are not charged carriage for any order but still pay guaranteed next day delivery. (Guaranteed next day delivery charges as stated in our Terms & Conditions at the back of the catalogue)

## SIP Relays

CP Clare

A range of miniature single-pole relays in an epoxy moulded single-in-line package. The relays can be immersed during board cleaning operations, and are available with optional internal suppression diode.

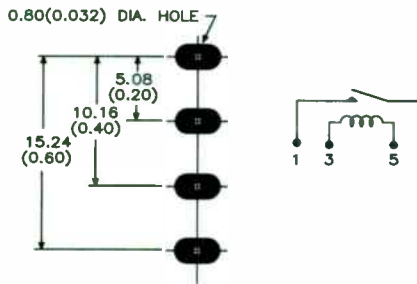


The diode cathode is connected to pin 3.

### Specification

Maximum contact rating  
 switching power: 10VA  
 switching voltage: 100V DC or peak AC  
 switching current: 0.5A  
 carry current: 1A  
 Contact material: Ruthenium  
 Contact resistance: 150mΩ maximum  
 Operate time: 0.5ms  
 Release time: 0.5ms  
 Dimensions: 19(L) x 7.62(H) x 5(W)mm, excluding pins

Manufacturer's Code	Nominal voltage and power	Coil resistance Ω	Min. operate voltage V DC	Max. release voltage V DC
DSS41A05	5V DC 50mW	500	3.75	0.8
DSS41A05B	5V DC 50mW (with diode)	500	3.75	0.8
DSS41A12	12 144mW	1000	8.60	1.5
DSS41A12B	12 144mW (with diode)	1000	8.60	1.5



Retail Unit Price each (inc. VAT).

Order Code	Type 2010	Price each exc. VAT	inc. VAT each
DC86T	5V SIP Relay	£1.870	£2.200
DC87U	5V+D SIP Relay	£2.400	£2.820
DC88V	12V SIP Relay	£1.870	£2.200

## DIL Reed Relays

A reed relay with single pole or double pole make contacts moulded in a standard 14-pin dual-in-line package.



### Contact Details:

	1 pole make	2 pole make
Max power	10W	3W
Max current	0.5A	0.11A
Max voltage	100V	28V
Contact capacitance	2pF	2pF
Max contact resistance	100mΩ	100mΩ
Life (millions of operations)	100	100
Operate time	0.25ms	0.25ms
Release time	0.15ms	0.15ms
Insulation resistance	10 <sup>9</sup> Ω	10 <sup>9</sup> Ω

### Coil Details:

Type	Nominal coil voltage	Operate voltage range	Must release voltage	Coil resistance
1 pole make	5V DC	3.7-7.5V	0.5V	500Ω
2 pole make	5V DC	3.7-7.5V	0.5V	200Ω

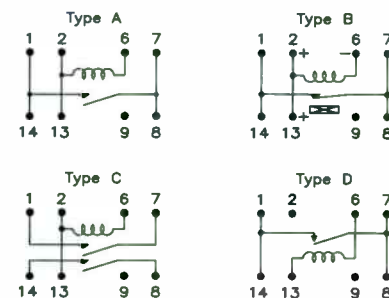
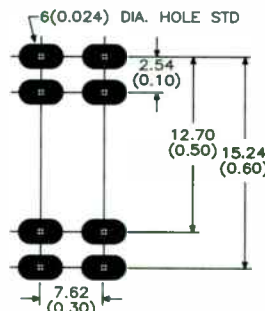
2 pole type has an internal diode connected across the coil to protect the driver. The 5V type may be driven directly from TTL.

Retail Unit Price each (inc. VAT).

Order Code	Type 2013	Price each exc. VAT	inc. VAT each
FX88V	DIL Reed Relay 1p 5V	£1.790	£2.110
FX90X	DIL Reed Relay 2p 5V	£4.800	£5.650

## 14-Pin DIL Reed Relays

CP Clare



A range of miniature, moulded DIL reed relays that are available in various contact arrangements, and with optional internal suppression diode.

Manufacturer's Code	Nominal coil voltage V DC	Contact arrangement	MPS Code
PRMA1A05	5	A	DC90X
PRMA1A05B	5 (with diode)	A	DC91Y
PRMA1A12	12	A	DC92A
PRMA1A12B	12 (with diode)	A	DC93B
PRMA1A24	24	A	DC94C
PRMA1A24B	24 (with diode)	A	DC95D
PRMA1B05	5	B	DC96E
PRMA1B12	12	B	DC97F
PRMA1B24	24	B	DC98G
PRMA2A12	12	C	DC99H
PRME15002	12	D	DE00A
PRME15003	24	D	DE01B
PRME15005B	5 (with diode)	D	DE02C

DC91Y, DC93B, DC95D have the diode across pins 2/13 and 6. Cathode on pin 2.  
 DE02C has the diode across pins 6 and 9. Cathode on pin 6.

Manufacturer's Code	Coil power mW	Coil resistance Ω	Min. operate voltage V DC	Max. release voltage V DC
PRMA1A05	50	500	3.75	0.8
PRMA1A05B	50	500	3.75	0.8
PRMA1A12	144	1000	9.0	1.0
PRMA1A12B	144	1000	9.0	1.0
PRMA1A24	268	2150	18.0	2.0
PRMA1A24B	268	2150	18.0	2.0
PRMA1B05	50	500	3.75	0.8
PRMA1B12	144	1000	9.0	1.0
PRMA1B24	268	2150	18.0	2.0
PRMA2A12	144	500	9.0	1.0

PRME15002	271	530	8.0	1.0
PRME15003	288	2000	16.0	2.0
PRME15005B66	380	380	3.5	1.0

Retail Unit Price each (inc. VAT).

Order Code	Type 2017	Price each exc. VAT	inc. VAT each
DC90X	A5V Reed Relay	£2.130	£2.510
DC91Y	A5V+D Reed Relay	£2.310	£2.720
DC92A	A12V Reed Relay	£2.130	£2.510
DC93B	A12V+D Reed Relay	£2.310	£2.720
DC94C	A24V Reed Relay	£2.130	£2.510
DC95D	A24V+D Reed Relay	£2.310	£2.720
DC96E	B5V Reed Relay	£3.230	£3.800
DC98G	B24V Reed Relay	£3.230	£3.800
DE00A	D12V Reed Relay	£2.310	£2.720
DE01B	D24V Reed Relay	£2.310	£2.720
DE02C	D5V+D Reed Relay	£2.310	£2.720

## SOLENOIDS

### Miniature 12V Solenoid

A miniature 12V DC solenoid suitable for light high-speed duty and capable of operating in excess of 300 cycles per minute (5Hz). The plunger has a maximum stroke of 16mm, 5.5mm dia. and the end is 6BA tapped. The hard brass push-rod has a diameter of 1.8mm diameter and an effective maximum stroke of 12.7mm. Single hole fixing, 6.35mm panel cut-out. With 300mm flying leads.



### Specification

Dimensions of body 38.5 x 18 x 16mm  
 Pull force at 10mm 28g  
 Pull force at 3mm 56g  
 Nominal coil voltage 12V DC

Retail Unit Price each (inc. VAT).

Order Code	Type 2011	Price each exc. VAT	inc. VAT each
YR88V	Solenoid 12V	£11.160	£13.120

# ORDER BEFORE 5PM FOR SAME DAY DESPATCH

Tel: 01702 554000

Fax: 01702 554001

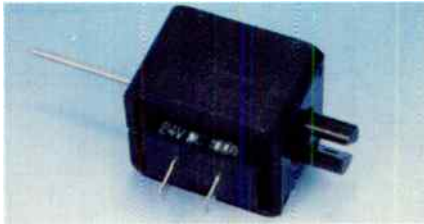
e-mail: Sales@maplin.co.uk



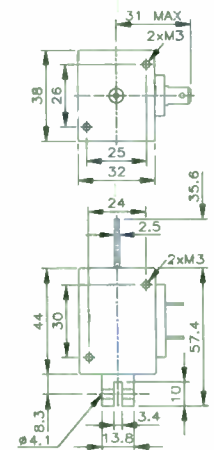
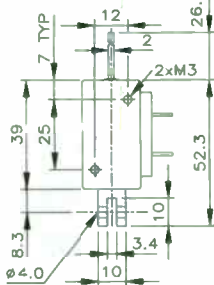
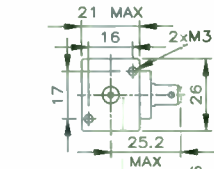
**D3 and D5 Solenoids**



A range of DC and AC solenoids for industrial and mechanical systems. The D3 series are capable of producing a magnet force in excess of 15N with a maximum plunger stroke of 18mm, while the D5 series can exceed 40N with a stroke of 24mm. Available in a variety of voltages to suit most requirements.



Part Number	Voltage	Order Code
SD133A4P6	12V DC	BN81C
SD133A4P5	24V DC	BN82D
SD133A2P1	230V AC 50Hz	BN83E
SD135A4P6	12V DC	BN84F
SD135A4P5	24V DC	BN85G
SD135A2P1	230V AC 50Hz	BN86T



**Holding Magnets**



Two low voltage holding magnets with armature plates. Used for holding doors open, e.g., hospitals. The armature plate is fixed to the door and the solenoid fitted to the floor or other area next to the armature. It is very easy to secure the door in an emergency or when the door is required as a safety barrier such as in case of a fire. Electroplated Nickel finish. Armature plates for each magnet are available separately. Phone for details. Coils rated at 24VDC.

Retail Unit Price each (inc. VAT).

Order Code	Type <sup>11938</sup>	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
KE07H	Holding Mag 64mm	£25.770	£20.770	£16.620	£30.290
KE06J	Holding Mag 35mm	£20.620	£16.790	£15.150	£24.230

Retail Unit Price each (inc. VAT).

Order Code	Type <sup>10336</sup>	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BN81C	Solenoid 12V	£12.880	£11.320	£10.720	£15.140
BN82D	Solenoid 24V	£12.880	£11.320	£10.720	£15.140
BN83E	Solenoid 240V	£12.880	£11.320	£10.720	£15.140
BN84F	Solenoid 12V	£17.180	£15.000	£14.180	£20.190
BN85G	Solenoid 24V	£17.180	£15.000	£14.180	£20.190
BN86T	Solenoid 240V	£17.180	£15.000	£14.180	£20.190

## The Decibel (dB)

$$\text{dB} = 10 \log (P2/P1)$$

where P = Power

dB	P1/P2	dB	P1/P2
+100	1.0 x 10 <sup>10</sup>	0.0	1
+90	1.0 x 10 <sup>9</sup>	-0.2	0.955
+80	1.0 x 10 <sup>8</sup>	-0.4	0.912
+70	1.0 x 10 <sup>7</sup>	-0.6	0.871
+60	1.0 x 10 <sup>6</sup>	-0.8	0.832
+50	1.0 x 10 <sup>5</sup>	-1.0	0.794
+40	1.0 x 10 <sup>4</sup>	-1.2	0.759
+30	1000	-1.4	0.724
+25	316	-1.6	0.692
+20	100	-1.8	0.661
+15	31.6	-2.0	0.631
+10	10	-2.5	0.562
+05	3.16	-3.0	0.501
+4.5	2.82	-3.5	0.447
+4.0	2.51	-4.0	0.398
+3.5	2.24	-4.5	0.355
+3.0	1.995	-5.0	0.316
+2.5	1.778	-10	0.100
+2.0	1.585	-15	0.0316
+1.8	1.514	-20	0.0100
+1.6	1.445	-25	0.00316
+1.4	1.38	-30	1.0 x 10 <sup>-3</sup>
+1.2	1.318	-40	1.0 x 10 <sup>-4</sup>
+1.0	1.259	-50	1.0 x 10 <sup>-5</sup>
+0.8	1.202	-60	1.0 x 10 <sup>-6</sup>
+0.6	1.148	-70	1.0 x 10 <sup>-7</sup>
+0.4	1.096	-80	1.0 x 10 <sup>-8</sup>
+0.2	1.047	-90	1.0 x 10 <sup>-9</sup>
0.0	1	-100	1.0 x 10 <sup>-10</sup>



## Section Contents

Carbon Resistors	845	Loudspeaker Volume		Silicone Coated Resistors	846
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## Resistors

### Resistor Colour Code

#### Resistor Colour Codes

Note: On all of the colour-coded resistors, the band at one end will be spaced further apart than the others; the resistor should be viewed with this band to the right to correspond with the chart and examples.

#### 4-band codes

Reading from the left, bands 1 & 2 are the significant digits [1st green = 5, 2nd blue = 6].

Band 3 is the multiplier [orange = x1000].

Therefore the value of our example is 56 x 1000 ohms or 56k.

The 4th band indicates the Tolerance [gold = ±5%].

#### 5-band codes

Reading from the left, bands 1, 2 & 3 are the significant digits [1st yellow = 4, 2nd violet = 7, 3rd black = 0].

Band 4 is the multiplier [red = x100].

Therefore the value of our example is 470 x 100 ohms or 47k.

The 5th band indicates the Tolerance [brown = ±1%].

Please note that our Min Res resistors are usually supplied with the 4-Band Code, but with an additional red band to indicate the 50ppm temperature coefficient after the brown 1% tolerance band. This additional band prevents the code being read backwards accidentally, since no value begins red, brown (21→), in the event that the extra large space between the third and fourth bands is hard to identify.

### How To Order Resistors (use only if ordering via "Keycall" tone dial system)

To each range of resistors we stock, we have allocated a code letter and in addition for use with the MPS key call system a special five digit code for any type or value of fixed resistor is determined from the following tables. Table 1 gives the two digit code that determines the type of resistor being ordered. Table 2 selects the three digit number that indicates the value of the resistor in ohms.

NOTE: All Starter Packs are ordered by standard order codes.

Table 1  
Type

Type	Description	Code Letter	Digit Code
Carbon Film 1/8 Watt	Micro Res	U	80
Carbon Film 1/3 Watt	Econ Res	B	81
Metal Film 0.6 Watt	Min Res	M	82
Metal Film 2 Watt	2W Res	D	91
Carbon Film 1 Watt	W Res	C	84
Wirewound 2.5 Watt	2.5W W/W	S	92
Wirewound 3 Watt	W/W Min	W	85
Wirewound 7 Watt	7W W/W	L	86
Wirewound 10 Watt	10W W/W	H	87
Wirewound 25 Watt	25W W/W	P	88
High Voltage Resistor	HV Res	V	89

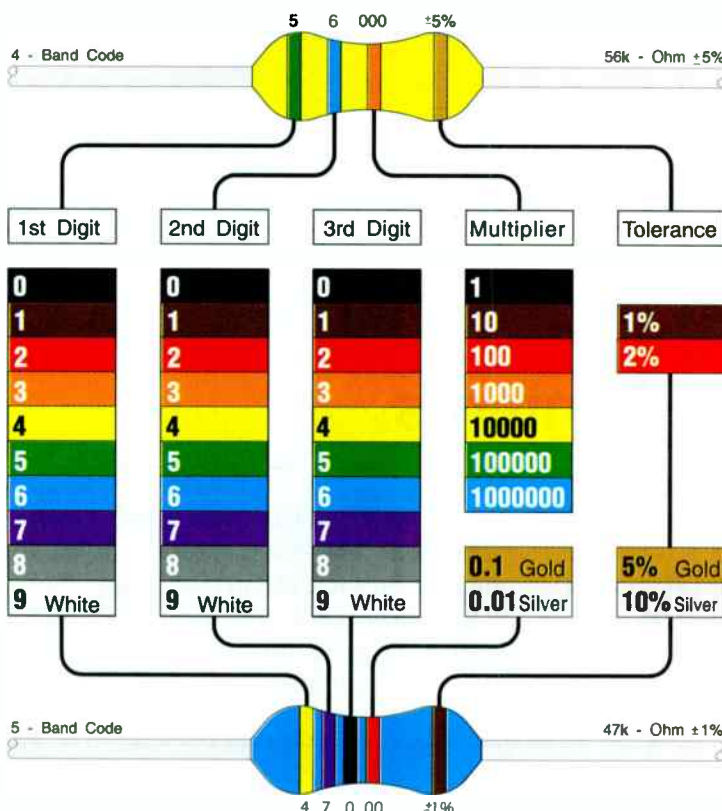
NOTE: All resistor Starter Packs are coded as standard order codes.

Table 2.

Value	Code	Value	Code	Value	Code
0-1Ω	100	11Ω	125	120Ω	150
0-1.2Ω	101	12Ω	126	130Ω	151
0-1.5Ω	102	13Ω	127	150Ω	152
0-1.8Ω	103	15Ω	128	160Ω	153
0-2.2Ω	104	16Ω	129	180Ω	154
0-2.7Ω	105	18Ω	130	200Ω	155
0-3.3Ω	106	20Ω	131	220Ω	156
0-3.9Ω	107	22Ω	132	240Ω	157
0-4.7Ω	108	24Ω	133	270Ω	158
0-5.6Ω	109	27Ω	134	300Ω	159
0-6.8Ω	110	30Ω	135	330Ω	160
0-8.2Ω	111	33Ω	136	360Ω	161
1Ω	112	36Ω	137	390Ω	162
1-2Ω	113	39Ω	138	430Ω	163
1-5Ω	114	43Ω	139	470Ω	164
1-8Ω	115	47Ω	140	510Ω	165
2-2Ω	116	51Ω	141	560Ω	166
				1.3kΩ	175
				1.5kΩ	176
				1.6kΩ	177
				1.8kΩ	178
				2kΩ	179
				2.2kΩ	180
				2.4kΩ	181
				2.7kΩ	182
				3kΩ	183
				3.3kΩ	184
				3.6kΩ	185
				3.9kΩ	186
				4.3kΩ	187
				4.7kΩ	188
				5.1kΩ	189
				5.6kΩ	190
				6.2kΩ	191

### Resistor Colour Code

## RESISTOR COLOUR CODE



2-7Ω	117	56Ω	142	620Ω	167	6-8kΩ	192
3-3Ω	118	62Ω	143	680Ω	168	7-5kΩ	193
3-9Ω	119	68Ω	144	750Ω	169	8-2kΩ	194
4-7Ω	120	75Ω	145	820Ω	170	9-1kΩ	195
5-6Ω	121	82Ω	146	910Ω	171	10kΩ	196
6-8Ω	122	91Ω	147	1kΩ	172	11kΩ	197
8-2Ω	123	100Ω	148	1.1kΩ	173	12kΩ	198
10Ω	124	110Ω	149	1.2kΩ	174	13kΩ	199
15kΩ	200	62kΩ	215	270kΩ	230	1-2MΩ	245
16kΩ	201	68kΩ	216	300kΩ	231	1-5MΩ	246
18kΩ	202	75kΩ	217	330kΩ	232	1-8MΩ	247
20kΩ	203	82kΩ	218	360kΩ	233	2-2MΩ	248
22kΩ	204	91kΩ	219	390kΩ	234	2-7MΩ	249
24kΩ	205	100kΩ	220	430kΩ	235	3-3MΩ	250
27kΩ	206	110kΩ	221	470kΩ	236	3-9MΩ	251
30kΩ	207	120kΩ	222	510kΩ	237	4-7MΩ	252
33kΩ	208	130kΩ	223	560kΩ	238	5-6MΩ	253
36kΩ	209	150kΩ	224	620kΩ	239	6-8MΩ	254
39kΩ	210	160kΩ	225	680kΩ	240	8-2MΩ	255
43kΩ	211	180kΩ	226	750kΩ	241	10MΩ	256
47kΩ	212	200kΩ	227	820kΩ	242		
51kΩ	213	220kΩ	228	910kΩ	243		
56kΩ	214	240kΩ	229	1MΩ	244		

To order a particular resistor simply write the code letter followed by the value, or if using the MPS key call system use the digit codes.

#### Examples:

Type	Value	Code	Digit Code
Min Res	4.7Ω	M4R7	82 120
Min Res	47kΩ	M47K	82 212
Min Res	4.7MΩ	M4M7	82 252
Wirewound 7W	0.47Ω	L0-47	86 108

### Surface Mount Resistors



A range of surface mounted resistors that are packaged in the industry standard 1206 format (3-1 x 1.55 x 0.55mm). These high quality resistors are marked with the normal 3-digit resistance code.

Sold in packs of 25 (price per 25).

#### Specification:

Power rating: 0-25W at 70°C  
 Operating voltage: 200V max  
 Resistance tolerance: ±5%  
 Temperature coefficient: ±200ppm/°C  
 Operating temperature range: -55°C to +155°C

The following values are available:

10Ω	100Ω	1k	10k	100k	1MΩ
22Ω	220Ω	2k2	22k	220k	
33Ω	330Ω	3k3	33k	330k	
47Ω	470Ω	4k7	47k	470k	
68Ω	680Ω	6k8	68k	680k	

Price each is shown. Order quantities less than 4 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			Inc. VAT each
		4+	40+	200+	1+
DJ02C	Surf Mount Res 10R	£0.390	£0.290	£0.150	£0.490
DJ03D	Surf Mount Res 22R	£0.390	£0.290	£0.150	£0.490
DJ04E	Surf Mount Res 33R	£0.390	£0.290	£0.150	£0.490
DJ06G	Surf Mount Res 47R	£0.390	£0.290	£0.150	£0.490
DJ05F	Surf Mount Res 47R	£0.390	£0.290	£0.150	£0.490
DJ07H	Surf Mount Res 100R	£0.390	£0.290	£0.150	£0.490
DJ08J	Surf Mount Res 220R	£0.390	£0.290	£0.150	£0.490
DJ09K	Surf Mount Res 330R	£0.390	£0.290	£0.150	£0.490
DJ10L	Surf Mount Res 470R	£0.390	£0.290	£0.150	£0.490
DJ11M	Surf Mount Res 680R	£0.390	£0.290	£0.150	£0.490
DJ12N	Surf Mount Res 1k	£0.390	£0.290	£0.150	£0.490
DJ13P	Surf Mount Res 2k2	£0.390	£0.290	£0.150	£0.490
DJ14Q	Surf Mount Res 3k3	£0.390	£0.290	£0.150	£0.490
DJ15R	Surf Mount Res 4k7	£0.390	£0.290	£0.150	£0.490
DJ16S	Surf Mount Res 6k8	£0.390	£0.290	£0.150	£0.490
DJ17T	Surf Mount Res 10k	£0.390	£0.290	£0.150	£0.490
DJ18U	Surf Mount Res 22k	£0.390	£0.290	£0.150	£0.490
DJ19V	Surf Mount Res 33k	£0.390	£0.290	£0.150	£0.490
DJ20W	Surf Mount Res 47k	£0.390	£0.290	£0.150	£0.490
DJ21X	Surf Mount Res 68k	£0.390	£0.290	£0.150	£0.490
DJ22Y	Surf Mount Res 100k	£0.390	£0.290	£0.150	£0.490
DJ23A	Surf Mount Res 220k	£0.390	£0.290	£0.150	£0.490
DJ24B	Surf Mount Res 330k	£0.390	£0.290	£0.150	£0.490
DJ25C	Surf Mount Res 470k	£0.390	£0.290	£0.150	£0.490
DJ26D	Surf Mount Res 680k	£0.390	£0.290	£0.150	£0.490

## Carbon & Film

### Carbon Film 1/8W



High Stability, Low Noise  
Working Voltage (max): 150V  
Tolerance: ±5%  
Power Rating: 1/8W at 70°C  
Temperature coefficient: -300ppm/°C up to 100kΩ rising to -500ppm/°C at 1MΩ  
Noise Level: <0.5µV/V  
Dimensions of body: 4.1mm long, 1.8mm dia.

The following values (Ω) only are available:

10Ω	100Ω	1k	10k	100k	1M
15Ω	150Ω	1k5	15k	150k	
2.2Ω	22Ω	220Ω	2k2	22k	220k
3.3Ω	33Ω	330Ω	3k3	33k	330k
4.7Ω	47Ω	470Ω	4k7	47k	470k
6.8Ω	68Ω	680Ω	6k8	68k	680k

To order write 'U' and then the value.

E.g. U4R7, U15R, U330R, U1K, U22K, U680K, etc.

Price each is shown. Order quantities less than 100 will be sold at the one off inc. VAT price.

Order Code	Type 2185	Price each exc. VAT	inc. VAT each
U+Value	1/8W Res	£0.042 £0.022 £0.015	£0.070

### Low Cost Metal Film 0.25W Resistors



High stability, low noise. This range of resistors is ideal for use in manufacturing of electronic products where ±5% tolerance is sufficient.

**Specification:**  
Working Voltage (max.): 250V  
Tolerance: ±5%  
Power Rating: 0.25W @ 70°C  
Temperature Coefficient: ±200ppm/°C  
Dimensions of body: 6.8mm long x 2.5mm dia.

The following values (Ω) only are available:

1Ω	10Ω	100Ω	1k0	10k	100k	1M
1.2Ω	11Ω	110Ω	1k1	11k	110k	
1.5Ω	12Ω	120Ω	1k2	12k	120k	
	13Ω	130Ω	1k3	13k	130k	
1.8Ω	15Ω	150Ω	1k5	15k	150k	
	16Ω	160Ω	1k6	16k	160k	
2.2Ω	18Ω	180Ω	1k8	18k	180k	
	20Ω	200Ω	2k0	20k	200k	
2.7Ω	22Ω	220Ω	2k2	22k	220k	
	24Ω	240Ω	2k4	24k	240k	
3.3Ω	27Ω	270Ω	2k7	27k	270k	
	30Ω	300Ω	3k0	30k	300k	
3.9Ω	33Ω	330Ω	3k3	33k	330k	
	36Ω	360Ω	3k6	36k	360k	
4.7Ω	39Ω	390Ω	3k9	39k	390k	
	43Ω	430Ω	4k3	43k	430k	
5.6Ω	47Ω	470Ω	4k7	47k	470k	
	51Ω	510Ω	5k1	51k	510k	
6.8Ω	56Ω	560Ω	5k6	56k	560k	
	62Ω	620Ω	6k2	62k	620k	
8.2Ω	68Ω	680Ω	6k8	68k	680k	
	75Ω	750Ω	7k5	75k	750k	
	82Ω	820Ω	8k2	82k	820k	
	91Ω	910Ω	9k1	91k	910k	

To order write 'G' and then the value.

E.g. G1R2, G12R, G1K2, G12K, G120K, G1M, etc.

Price each is shown. Order quantities less than 100 will be sold at the one off inc. VAT price.

Order Code	Type 2185	Price each exc. VAT	inc. VAT each
G+Value	MF 1/4W Res	£0.015 £0.007 £0.006	£0.060

### Metal Film 0.6W



A 'Universal Resistor' with a superb specification. It may be used as a superior replacement wherever carbon film 1/4W, 1/3W or 1/2W are specified since

its size is the same as 1/4W types, yet it can be run continuously at 0.6W with ambient temperatures up to 70°C, thanks to the highly even thermal characteristics of the ceramic substrate. It is also a superior replacement to most metal oxide and thick film resistors due to its very tight tolerance, ±1%, and its low temperature coefficient, only 50ppm.

Working voltage max: 250V  
Tolerance: ±1%  
Power rating: 0.6W at 70°C  
Temperature coefficient: 50ppm/°C  
Noise level: Typically 0.01µV/V  
Dimensions of body: 6.5mm long, 2.5mm diameter

Note that to make up 'odd' values not stocked, resistor networks may be built and if all the resistors in the network have a 1% tolerance, then the tolerance of the whole network will still be 1% tolerance.

The following values (Ω) only are available:

1Ω	10Ω	100Ω	1k0	10k	100k	1M
	11Ω	110Ω	1k1	11k	110k	
1.2Ω	12Ω	120Ω	1k2	12k	120k	1M2
	13Ω	130Ω	1k3	13k	130k	
1.5Ω	15Ω	150Ω	1k5	15k	150k	1M5
	16Ω	160Ω	1k6	16k	160k	
1.8Ω	18Ω	180Ω	1k8	18k	180k	1M8
	20Ω	200Ω	2k0	20k	200k	
2.2Ω	22Ω	220Ω	2k2	22k	220k	2M2
	24Ω	240Ω	2k4	24k	240k	
2.7Ω	27Ω	270Ω	2k7	27k	270k	2M7
	30Ω	300Ω	3k0	30k	300k	
3.3Ω	33Ω	330Ω	3k3	33k	330k	3M3
	36Ω	360Ω	3k6	36k	360k	
3.9Ω	39Ω	390Ω	3k9	39k	390k	3M9
	43Ω	430Ω	4k3	43k	430k	
4.7Ω	47Ω	470Ω	4k7	47k	470k	4M7
	51Ω	510Ω	5k1	51k	510k	
5.6Ω	56Ω	560Ω	5k6	56k	560k	5M6
	62Ω	620Ω	6k2	62k	620k	
6.8Ω	68Ω	680Ω	6k8	68k	680k	6M8
	75Ω	750Ω	7k5	75k	750k	
8.2Ω	82Ω	820Ω	8k2	82k	820k	8M2
	91Ω	910Ω	9k1	91k	910k	10M

To order write 'M' and then the value.

E.g. M1R2, M15R, M180R, M2K2, M27K, M330K, M3M9, etc.

Price each is shown. Order quantities less than 100 will be sold at the one off inc. VAT price.

Order Code	Type 2185	Price each exc. VAT	inc. VAT each
M+Value	M1R-M2M2	£0.034 £0.010 £0.008	£0.070
M+Value	M3R3-M6M8	£0.040 £0.022 £0.015	£0.160
M+Value	M8R2-M10M	£0.090 £0.080 £0.070	£0.275

### Starter Pack E12

A development pack of Min Resistors containing ten of each of the following values: 10, 12, 15, 18, 22, 27, 33, 39, 47, 56, 68 and 82Ω, plus all the decades up to 1MΩ. 610 resistors in all.

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 2185	Price each exc. VAT	inc. VAT each
FA08J	E12 Resistor Pack	£8.600 £5.990 £4.860	£12.990

### Starter Pack E24

A development pack of Min Resistors containing ten of each of the values 1Ω to 1MΩ as shown in the 'Min Res' table left. 1330 resistors in all.

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 2184	Price each exc. VAT	inc. VAT each
FA09K	E24 Resistor Pack	£14.990 £11.990 £9.990	£27.990

### Starter Pack MΩ Values

A pack of Min Resistors containing ten of each of the following values: 1.2M, 1.5M, 1.8M, 2.2M, 2.7M, 3.3M, 3.9M, 4.7M, 5.6M, 6.8M, 8.2M and 10MΩ. 120 resistors in all.

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 2185	Price each exc. VAT	inc. VAT each
FA10L	Mega Resistor Pack	£4.990 £4.490 £3.990	£7.990

### GCSE Component Pack



An assortment of electronic components housed in a quality storage box intended for students following the GCSE courses in Electronics. The pack includes a wide selection of capacitors, resistors, transistors, diodes ICs, LEDs and a stripboard for assembling projects. It is also suitable for any beginner to electronics who requires a good selection of components, as the pack represent excellent value, offering a considerable saving over individual prices.

#### Contents

Parts organiser box	1	BN76H
BC108	2	QB32K
BC548	2	QB73Q
1N4148	4	QL80B
1N4001	4	QL73Q
555 Timer IC	2	QH66W
741 Op-amp	2	QL22Y
Red LED	2	WL27E
Green LED	2	WL28F
Stripboard 3939	1	JP49D
Buzzer 6V	1	FL39N
10k Pot	1	FW02C
8-pin DIL Socket	2	BL17T
100pF Ceramic	4	WX56L
470pF Ceramic	4	WX64U
1nF Polyester Film	4	DT92A
2.2nF Polyester Film	4	DT93B
4.7nF Polyester Film	4	DT94C
10nF Polyester Film	4	DT95D
22nF Polyester Film	4	DT96E
47nF Polyester Film	4	DT97F
100nF Polyester Film	4	DT98G
220nF Polyester Film	4	DT99H
470nF Polyester Film	4	DS80B
1µF Radial Electrolytic	4	VH16S
4.7µF Radial Electrolytic	4	VH19V
10µF Radial Electrolytic	4	VH22Y
47µF Radial Electrolytic	4	VH32K
100µF Radial Electrolytic	4	VH37S
220µF Radial Electrolytic	4	VH41U
470µF Radial Electrolytic	4	VH46A

Resistors - 10 of each of the following values:

10	47			
100	220	330	470	680
1k	2k2	3k3	4k7	6k8
10k	22k	33k	47k	68k
100k	22k	33k	470k	680k
1M				

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 13487	Price each exc. VAT	inc. VAT each
GT66W	GCSE Component Kit	£18.720 £17.190 £15.970	£23.490

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## Carbon Film 1W



High stability, low noise.

**Specification:**

Working voltage: 500V maximum  
 Tolerance:  $\pm 5\%$   
 Power rating: 1W at 70°C  
 Temperature coefficient:  $-180$  to  $-300$ ppm/°C  
 Noise level:  $<0.3\mu V/V$   
 Dimensions of body: 16mm long x 5.5mm dia.  
 The following values ( $\Omega$ ) only are available:  
 10, 22, 27, 33, 47.

To order write 'C' and then the value.  
 E.g. C22R, C47R, etc.

Price each is shown. Order quantities less than 100 will be sold at the one off inc. VAT price.

Order Code	Type 2165	Price each exc. VAT			inc. VAT each
C+Value	1W Res	10+	50+	2000+	1+
		£0.048	£0.040	£0.035	£0.080

## Metal Film 2W



A very high quality metal film resistor that is physically the same size as the 1W resistor, yet has a superior specification.

**Specification:**

Working voltage: 500V  
 Tolerance:  $\pm 1\%$   
 Power rating: 2W at 70°C  
 Temperature coefficient:  $\pm 50$ ppm/°C  
 Noise level: Typically 0.01 $\mu V/V$   
 Dimensions of body: 16mm long, 5.5mm dia.

The following values ( $\Omega$ ) only are available:

100 $\Omega$	1k	10k	100k	1M
120 $\Omega$		12k	120k	
150 $\Omega$	1k5			
180 $\Omega$				
220 $\Omega$	2k2	22k	220k	
270 $\Omega$				
330 $\Omega$				
390 $\Omega$		39k		
470 $\Omega$	4k7	47k	470k	
68 $\Omega$	680 $\Omega$			
82 $\Omega$				

To order write 'D' and then the value.

E.g. D68R, D120R, D1K5, D12K, D470K, D1M, etc

Price each is shown. Order quantities less than 100 will be sold at the one off inc. VAT price.

Order Code	Type 2165	Price each exc. VAT			inc. VAT each
D+Value	2W Res	10+	50+	1000+	1+
		£0.119	£0.077	£0.060	£0.160

## High Voltage Resistor



High stability, low noise metal film resistors.

Working voltage 1M to 33M: 2500V AC, 3500V DC  
 Working voltage 1M to 47M: 7000V AC, 10,000V DC

Tolerance:  $\pm 5\%$   
 Power rating 1M to 33M: 1/2W at 70°C  
 47M: 1W at 70°C  
 Temperature coefficient:  $\pm 200$ ppm/°C  
 Noise level:  $<0.5\mu V/V$   
 Dimensions of body,  
 1M to 33M: 10mm long x 3.7mm dia.  
 47M: 18mm long x 6.8mm dia.

The following values ( $\Omega$ ) only are available:

1M	2M2	4M7
10M	15M	22M
33M	47M	

To order write 'V' and then the value.  
 E.g. V1M, V4M7, V22M, V47M, etc.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2165	Price each exc. VAT			inc. VAT each
V+Value	V1M-V33M	25+	100+	1000+	1+
		£0.155	£0.145	£0.120	£0.370
	V+Value V47M	£0.360	£0.325	£0.285	£0.490

## Resistor Colour-Code Calculator



Simply set the three colours on the calculator in the same order as on the resistor and read the value directly. The calculator can be used with any colour-coded resistor and full instructions for use are printed on the reverse of the calculator.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2171	Price each exc. VAT			inc. VAT each
XL05F	Colour Calculator	10+	25+	100+	1+
		£0.790	£0.740	£0.690	£1.190

## High Power Resistors

### 2.5 Watt Silicone Coated

Meggit



A very rugged and high quality wire wound resistor with ceramic former and non-flammable silicone cement coating. Ruggedised welded cap and lead method of construction ensure a high resistance to damage. Meggit ER74 series.

**Specification:**

Power rating at 70°C: 2.5W (3W at 20°C)  
 Resistance tolerance:  $\pm 5\%$   
 Temperature coefficient: 200ppm/°C (max.)  
 Maximum element voltage: 100V  
 Ambient temperature range:  $-55^\circ\text{C}$  to  $+200^\circ\text{C}$

The following values ( $\Omega$ ) are available:

0.1 $\Omega$	1 $\Omega$	10 $\Omega$	100 $\Omega$
0.22 $\Omega$	2.2 $\Omega$	22 $\Omega$	
0.27 $\Omega$			
0.33 $\Omega$			
	3.9 $\Omega$		
0.47 $\Omega$	4.7 $\Omega$	47 $\Omega$	
0.05 $\Omega$			

6.8 $\Omega$	8.2 $\Omega$
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To order write 'S' and then the value.

E.g. S0R03, S0R47, S2R2, S100R, etc.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2165	Price each exc. VAT			inc. VAT each
S+Value	2.5W Sil Res	25+	100+	250+	1+
		£0.350	£0.310	£0.290	£0.690

### 3 Watt



A range of high quality wirewound resistors sealed in a high insulation cement box. The box is heat and moisture resistant and non-flammable. The resistors

are low noise, very stable and have an overload capability of ten times the rated power for 5 seconds. Values over 500 $\Omega$  are metal oxide film and these have an overload capability of five times the rated power for 5 seconds.

Power rating: 3W @ 70°C  
 Tolerance:  $\pm 5\%$   
 Temperature coefficient:  $\pm 300$ ppm/°C  
 Working voltage: 200V (400V peak)  
 Dimensions of body: 22 x 9 x 10mm (max)

The following values ( $\Omega$ ) are available:

0.1 $\Omega$	1 $\Omega$	10 $\Omega$	100 $\Omega$	1k	10k
		15 $\Omega$	150 $\Omega$	1k5	15k
		18 $\Omega$	180 $\Omega$		
0.22 $\Omega$	2.2 $\Omega$	22 $\Omega$	220 $\Omega$	2k2	22k
0.27 $\Omega$	2.7 $\Omega$	27 $\Omega$			
0.33 $\Omega$	3.3 $\Omega$	33 $\Omega$	330 $\Omega$	3k3	
	3.9 $\Omega$				
0.47 $\Omega$	4.7 $\Omega$	47 $\Omega$	470 $\Omega$	4k7	
0.68 $\Omega$	6.8 $\Omega$	68 $\Omega$			
	8.2 $\Omega$				

To order write 'W' and then the value.  
 E.g. W0.47, W8.2R, W10R, W100R, etc.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2165	Price each exc. VAT			inc. VAT each
W+Value	WW Min	25+	100+	1000+	1+
		£0.165	£0.145	£0.110	£0.370

### 7 Watt



A range of high quality wirewound resistors sealed in a high insulation cement box. The box is heat and moisture resistant and non-flammable. The resistors are low noise, very stable and have an overload capability of ten times the rated power for 5 seconds.

Power rating: 7W @ 70°C  
 Tolerance:  $\pm 5\%$   
 Temperature coefficient:  $\pm 300$ ppm/°C  
 Working voltage: 350V (700V peak)  
 Dimensions of body: 35 x 10 x 9mm

The following values ( $\Omega$ ) are available:

0.1 $\Omega$	1 $\Omega$	10 $\Omega$	100 $\Omega$	1k
		15 $\Omega$		
0.22 $\Omega$	2.2 $\Omega$	22 $\Omega$	220 $\Omega$	
0.27 $\Omega$				
0.33 $\Omega$				
	3.9 $\Omega$			
0.47 $\Omega$	4.7 $\Omega$	47 $\Omega$	470 $\Omega$	
	5.6 $\Omega$			
0.68 $\Omega$	6.8 $\Omega$			
	8.2 $\Omega$			

To order write 'L' and then the value.

E.g. L0.47, L8R2, L10R, L100R, etc.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2165	Price each exc. VAT			inc. VAT each
L+Value	7W WW	25+	100+	1000+	1+
		£0.215	£0.185	£0.125	£0.370

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## 10 Watt

A range of high quality wirewound resistors sealed in a high insulation ceramic block. The block is heat and moisture resistant and non-flammable. The resistors are low noise, very stable and have an overload capability of ten times the rated power for 5 seconds. Value 4k7 is metal oxide film and has an overload capability of five times the rated power for 5 seconds.



Power rating: 10W @ 70°C  
Tolerance: ±5%  
Temperature coefficient: ±300ppm/°C  
Working voltage: 500V (1kV peak)  
Dimensions of body: 49 x 10 x 9mm

The following values (Ω) are available:

0.1Ω	1Ω	10Ω	100Ω	1k
		15Ω		
0.22Ω	2.2Ω	22Ω		
	3.3Ω	33Ω		
	3.9Ω			
0.47Ω	4.7Ω	47Ω	470Ω	4k7
0.56Ω	5.6Ω			
	6.8Ω	68Ω		
	8.2Ω			

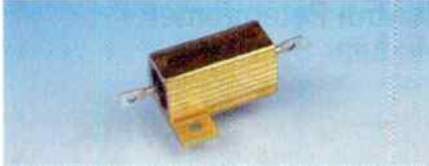
To order write 'H' and then the value.  
E.g. H0.47, H8.2R, H10R, H100R, etc.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2165	Price each exc. VAT			inc. VAT each
H+Value	10W WW	25+	100+	1000+	1+
		£0.265	£0.230	£0.160	£0.460

## 25 Watt Wirewound

ArcoI



A range of high quality, high stability aluminium housed wirewound resistors designed for direct heatsink attachment. The resistive element is wound onto high thermal conductivity ceramic formers ground to a close tolerance finish ensuring maximum contact for rapid heat transfer.

**Specification**  
Power rating: 25W at 25°C  
Working voltage: 550V max. (DC/AC rms)  
Tolerance: ±5%  
Temperature coefficient  
<1Ω: 100ppm/°C  
1Ω to 50Ω: 50ppm/°C  
>50Ω: 25ppm/°C  
Operating temperature: -55°C to +200°C  
Dimensions  
L x W x D: 27.3 x 28 x 14.6mm  
fixing centres: 18.3 x 19.8mm  
hole diameter: 3.2mm  
Weight: 14g

The following values (Ω) are available:

0.1Ω	1Ω	10Ω	100Ω	1kΩ
0.22Ω	2.2Ω	22Ω	220Ω	
		33Ω	330Ω	
	3.9Ω	39Ω		
0.47Ω	4.7Ω	47Ω	470Ω	
		50Ω		
		68Ω	680Ω	
	8.2Ω	82Ω	820Ω	

To order write 'T' and then the value.  
E.g. T0R1, T2R2, T47R, T330R, etc.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2165	Price each exc. VAT			inc. VAT each
T+Value	25W WW	25+	100+	1000+	1+
		£1.120	£0.950		£1.790

## 25 Watt Wirewound

Meggitt

A high quality, high power, wirewound resistor in an aluminium case to aid dissipation, and can be screwed to a chassis or heatsink.



**Tolerance:** ±5%  
**Power rating at 70°C:** 25W  
**Power rating without heatsink:** 12.5W  
**Minimum heatsink for 25W at 25°C:** 4.5°C/W  
**Working voltage (max):** 550V AC/DC  
**Temperature coefficient**  
0.47Ω: 90ppm/°C  
coefficient 1Ω to 47Ω: 50ppm/°C  
coefficient 100Ω: 25ppm/°C  
**Dimensions:** Length: 28mm  
Width: 28mm  
Height: 14.5mm  
Fixing centres: 18.3 x 19.8mm

x 6BA (M3) (2 holes)

The following values (Ω) are available:

0.47Ω	1Ω	10Ω	100Ω
	2.2Ω		
	3.9Ω		
	4.7Ω	47Ω	
	8.2Ω		

(3.9Ω and 8.2Ω are stocked for use as dummy load resistors to replace supplement loudspeakers in 4Ω and 8Ω systems. They may be built up in series/parallel networks to suit any power system.)

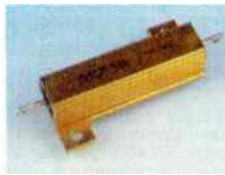
To order write 'P' and then the value.  
E.g. P0.47, P8.2R, P10R, P100R, etc.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2165	Price each exc. VAT			inc. VAT each
P+Value	25W WW	25+	100+	1000+	1+
		£1.290	£1.210	£1.080	£1.990

## 50 Watt Wirewound

ArcoI



A range of high quality, high stability aluminium housed wirewound resistors designed for direct heatsink attachment. The resistive element is wound onto high thermal conductivity ceramic formers ground to a close tolerance finish ensuring maximum contact for rapid heat transfer.

**Specification**  
Power rating: 50W at 25°C  
Working voltage: 1250V max. (DC/AC rms)  
Tolerance: ±5%  
Temperature coefficient  
<1Ω: 100ppm/°C  
1Ω to 50Ω: 50ppm/°C  
>50Ω: 25ppm/°C  
Operating temperature: -55°C to +200°C  
Dimensions  
L x W x D: 49.1 x 29.3 x 14.8mm  
fixing centres: 39.7 x 21.4mm  
hole diameter: 3.2mm  
Weight: 32g

The following values (Ω) are available:

0.1Ω	1Ω	10Ω	100Ω	1kΩ
0.22Ω	2.2Ω	22Ω	220Ω	
		33Ω	330Ω	
	3.9Ω	39Ω		
0.47Ω	4.7Ω	47Ω	470Ω	
		50Ω		
		68Ω	680Ω	
	8.2Ω	82Ω	820Ω	

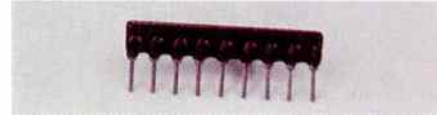
To order write 'X' and then the value.  
E.g. X0R1, X4R7, X47R, X470R etc.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2165	Price each exc. VAT			inc. VAT each
X+Value	50W WW	25+	100+	1000+	1+
		£1.420	£1.210		£1.990

## Resistor Networks

### SIL Arrays



Eight equal value, discrete thick film resistors in a narrow Single in-Line package, with 9 pins spaced at 2.54mm (0.1in.). Ideal for use as pull-up/pull-down arrays for a parallel 8-way data bus etc, or anywhere where several commoned resistors are required, but must fit in a very confined PCB layout.  
Dimensions of package: 23mm long x 2.5mm thick

Height from PCB: 5.1mm  
Working voltage: 100V max  
Tolerance: ±2%  
Temperature coefficient: ±200ppm/°C  
Power rating (one resistor): 125mW @ 70°C (whole Package): 1W

The following values are available:

220Ω, 330Ω, 470Ω, 1k, 2k2, 4k7, 10k, 47k, 100k.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2166	Price each exc. VAT			inc. VAT each
RA+Value	SIL Resistor	25+	100+	500+	1+
RA24B	SIL Resistor 220R	£0.090	£0.085	£0.080	£0.190
RA25C	SIL Resistor 330R	£0.090	£0.085	£0.080	£0.190
RA26D	SIL Resistor 470R	£0.090	£0.085	£0.080	£0.190
RA27E	SIL Resistor 1k	£0.090	£0.085	£0.080	£0.190
RA28F	SIL Resistor 2k2	£0.090	£0.085	£0.080	£0.190
RA29G	SIL Resistor 4k7	£0.090	£0.085	£0.080	£0.190
RA30H	SIL Resistor 10k	£0.090	£0.085	£0.080	£0.190
RA31J	SIL Resistor 47k	£0.090	£0.085	£0.080	£0.190
RA32K	SIL Resistor 100k	£0.090	£0.085	£0.080	£0.190

## In-Line Bussed Resistors

BI Technologies

A range of thick film resistor networks that are available with eight resistors, of the same value, in an in-line package. The resistor bus is connected to pin 1 of the package (indicated by a dot on the body), and the pins are a standard 2.54mm (0.1in.) spacing for PCB mounting etc.

**Specification:**  
Tolerance at 25°C: ±2Ω up to 100Ω (max ±5%), ±2% above 100Ω  
Operating temperature range: -55°C to +125°C  
Temperature coefficient of resistance  
33Ω to 100Ω: ±250ppm/°C  
100Ω to 100kΩ: ±100ppm/°C  
Resistor voltage rating: 50V  
Maximum power rating (per resistor): 0.18W (up to 25°C)  
Size: 22.61mm long x 2.413mm thick  
Height from PCB: 5.50mm

The following values are available:  
47Ω, 100Ω, 220Ω, 330Ω, 470Ω, 1k, 3k3, 4k7, 10k, 22k, 47k, 100k.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2160	Price each exc. VAT			inc. VAT each
DL+Value	8Res SIL	25+	100+	500+	1+
DL57M	8Res SIL 47R	£0.150	£0.140	£0.120	£0.260
DL58N	8Res SIL 100R	£0.150	£0.140	£0.120	£0.260
DL59P	8Res SIL 220R	£0.150	£0.140	£0.120	£0.260
DL60Q	8Res SIL 330R	£0.150	£0.140	£0.120	£0.260
DL61R	8Res SIL 470R	£0.150	£0.140	£0.120	£0.260
DL62S	8Res SIL 1k	£0.150	£0.140	£0.120	£0.260
DL63T	8Res SIL 3k3	£0.150	£0.140	£0.120	£0.260
DL64U	8Res SIL 4k7	£0.150	£0.140	£0.120	£0.260
DL65V	8Res SIL 10k	£0.150	£0.140	£0.120	£0.260
DL66W	8Res SIL 22k	£0.150	£0.140	£0.120	£0.260
DL67X	8Res SIL 47k	£0.150	£0.140	£0.120	£0.260
DL68Y	8Res SIL 100k	£0.150	£0.140	£0.120	£0.260

## In-Line Isolated Resistors

BI Technologies



A range of thick film single in-line resistor networks that contain four isolated resistors, of the same value, in an 8-pin package. The pins are a standard 2.54mm (0.1in.) spacing for PCB mounting etc. Configured with the first resistor connected to pins 1 and 2, the second to pins 3 and 4, etc. Pin 1 is indicated by a dot on the body.

### Specification:

Tolerance at 25°C: ±2% up to 100kΩ (max ±5%), ±2% above 100kΩ

Operating temperature range: -55°C to +125°C

Temperature coefficient of resistance

33kΩ to 100kΩ: ±250ppm/°C

100kΩ to 1kΩ: ±100ppm/°C

Resistor voltage rating: 50V

Maximum power rating

per resistor: 0.200W (up to 25°C)

Size: 20.07mm long x 2.413mm thick

Height from PCB: 5.50mm

### The following values are available:

33kΩ, 100kΩ, 220kΩ, 330kΩ, 470kΩ, 1k, 2k2, 3k3, 4k7, 10k, 22k, 47k, 100k.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2188	Price each exc. VAT				inc. VAT each
		25+	100+	500+	1+	
DK98G	4Res SIL 100R	£0.130	£0.120	£0.110	£0.240	
DL00A	4Res SIL 330R	£0.130	£0.120	£0.110	£0.240	
DL01B	4Res SIL 470R	£0.130	£0.120	£0.110	£0.240	
DL04E	4Res SIL 3k3	£0.130	£0.120	£0.110	£0.240	
DL05F	4Res SIL 4k7	£0.130	£0.120	£0.110	£0.240	
DK97F	4Res SIL 47R	£0.130	£0.120	£0.110	£0.240	
DA96E	4Res SIL 33R	£0.130	£0.120	£0.110	£0.240	
DK99H	4Res SIL 220R	£0.130	£0.120	£0.110	£0.240	
DL02C	4Res SIL 1k	£0.130	£0.120	£0.110	£0.240	
DL03D	4Res SIL 2k2	£0.130	£0.120	£0.110	£0.240	
DL06G	4Res SIL 10k	£0.130	£0.120	£0.110	£0.240	
DL07H	4Res SIL 22k	£0.130	£0.120	£0.110	£0.240	
DL08J	4Res SIL 47k	£0.130	£0.120	£0.110	£0.240	
DL09K	4Res SIL 100k	£0.150	£0.140	£0.110	£0.240	

## Dual In-Line Isolated Resistors

BI Technologies

A range of thick film resistor networks that are available in a 16-pin DIL package. The first of the 8 resistors is connected to pins 1 and 16. The second resistor to pins 2 and 15, and so on.



### Specification:

Tolerance at 25°C: ±2% up to 100kΩ (max ±5%), ±2% above 100kΩ

Operating temperature range: -55°C to +125°C

Temperature coefficient of resistance

33kΩ to 100kΩ: ±250ppm/°C

100kΩ to 100kΩ: ±100ppm/°C

Maximum operating voltage: 100V DC or √PR

Power rating per resistor: 0.250W at 70°C

Manufacturer's Number of pins

898-3 16

Number of resistors 8

### The following values are available in the 898-3 Series:

33kΩ, 47kΩ, 100kΩ, 220kΩ, 470kΩ, 1k, 2k2, 3k3, 4k7, 10k, 22k, 47k, 100k.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2192	Price each exc. VAT				inc. VAT each
		25+	100+	500+	1+	
DK71N	7Res DIL 150R	£0.390	£0.350	£0.290	£0.740	
DK72P	7Res DIL 270R	£0.390	£0.350	£0.290	£0.740	
DB00A	8Res DIL 33R	£0.390	£0.350	£0.290	£0.740	
DL82D	8Res DIL 47R	£0.390	£0.350	£0.290	£0.740	
DL83E	8Res DIL 100R	£0.390	£0.350	£0.290	£0.740	
DL84F	8Res DIL 220R	£0.390	£0.350	£0.290	£0.740	
DL85G	8Res DIL 470R	£0.390	£0.350	£0.290	£0.740	
DL86T	8Res DIL 1k	£0.390	£0.350	£0.290	£0.740	
DL87U	8Res DIL 2k2	£0.390	£0.350	£0.290	£0.740	
DL88V	8Res DIL 3k3	£0.390	£0.350	£0.290	£0.740	
DL89W	8Res DIL 4k7	£0.390	£0.350	£0.290	£0.740	
DL90X	8Res DIL 10k	£0.390	£0.350	£0.290	£0.740	
DL91Y	8Res DIL 22k	£0.390	£0.350	£0.290	£0.740	
DL92A	8Res DIL 47k	£0.390	£0.350	£0.290	£0.740	
DL93B	8Res DIL 100k	£0.390	£0.350	£0.290	£0.740	

## Resistance Wire

### 28swg Resistance Wire

A 28.35g (1oz.) reel of 28swg Constantan (55-60% copper, 45-40% nickel) wire suitable for making rheostats etc. Can be used as a thermocouple when twisted with copper wire. A temperature difference between the wires of approx 25°C gives around 1mV with temperatures in the range 0°C to 50°C. Resistance: 4-2Ω per metre.



Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

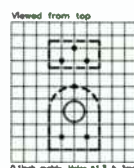
Order Code	Type 2196	Price each exc. VAT			
		10+	25+	100+	1+
BL64U	Constantan 28 Swg	£2.990	£2.690	£2.490	£3.990

## PRESET RESISTORS

### Preset Pots

## Sub-Miniature Fully Enclosed Carbon Presets

Meggit



A new range of sub-miniature horizontal and vertical mounting linear track presets fully enclosed in a flame retardant plastic housing. The insulated

slider can be adjusted from either side by tool with blade 1 to 2.3mm wide. Power rating 0.15W at 40°C. Tolerance ±20% (±30% 2.2MΩ and 4.7MΩ). Enclosure is dust and splash proof. Dimensions 10 x 10.3 x 4.5mm. Vertical type fits flush to PCB (12.1mm overall height from PCB), horizontal type sits 1.5mm proud of PCB (6mm overall height from PCB). Pins require 1.3mm dia. PCB holes. Pin length 4.5mm.

The following values are available in horizontal types:

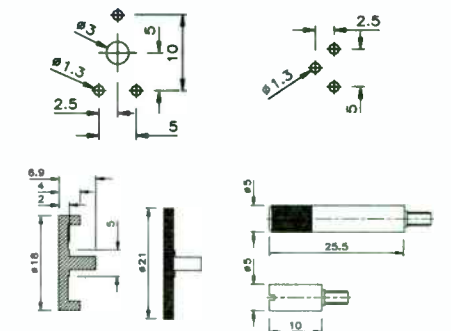
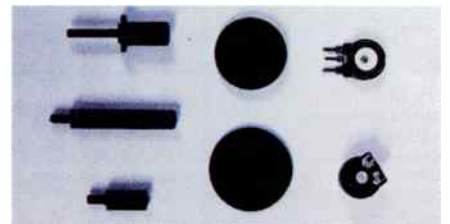
100kΩ, 220kΩ, 470kΩ, 1k, 2k2, 4k7, 10k, 22k, 47k, 100k, 220k, 470k, 1M, 2M2, 4M7.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 6498	Price each exc. VAT			
		25+	100+	500+	1+
UF97F	Hor End Preset 100R	£0.120	£0.100	£0.090	£0.250
UF98G	Hor End Preset 220R	£0.120	£0.100	£0.090	£0.250
UF99H	Hor End Preset 470R	£0.120	£0.100	£0.090	£0.250
UH00A	Hor End Preset 1k	£0.120	£0.100	£0.090	£0.250
UH01B	Hor End Preset 2k2	£0.120	£0.100	£0.090	£0.250
UH02C	Hor End Preset 4k7	£0.120	£0.100	£0.090	£0.250
UH03D	Hor End Preset 10k	£0.120	£0.100	£0.090	£0.250
UH04E	Hor End Preset 22k	£0.120	£0.100	£0.090	£0.250
UH05F	Hor End Preset 47k	£0.120	£0.100	£0.090	£0.250
UH06G	Hor End Preset 100k	£0.120	£0.100	£0.090	£0.250
UH07H	Hor End Preset 220k	£0.120	£0.100	£0.090	£0.250
UH08J	Hor End Preset 470k	£0.120	£0.100	£0.090	£0.250
UH09K	Hor End Preset 1M	£0.120	£0.100	£0.090	£0.250
UH10L	Hor End Preset 2M2	£0.120	£0.100	£0.090	£0.250
UH11M	Hor End Preset 4M7	£0.120	£0.100	£0.090	£0.250
UH12N	Vrt End Preset 470R	£0.120	£0.100	£0.090	£0.250
UH13P	Vrt End Preset 1k	£0.120	£0.100	£0.090	£0.250
UH14Q	Vrt End Preset 2k2	£0.120	£0.100	£0.090	£0.250
UH15R	Vrt End Preset 4k7	£0.120	£0.100	£0.090	£0.250
UH16S	Vrt End Preset 10k	£0.120	£0.100	£0.090	£0.250
UH17T	Vrt End Preset 22k	£0.120	£0.100	£0.090	£0.250
UH18U	Vrt End Preset 47k	£0.120	£0.100	£0.090	£0.250
UH19V	Vrt End Preset 100k	£0.120	£0.100	£0.090	£0.250
UH20W	Vrt End Preset 220k	£0.120	£0.100	£0.090	£0.250
UH21X	Vrt End Preset 470k	£0.120	£0.100	£0.090	£0.250
UH22Y	Vrt End Preset 1M	£0.120	£0.100	£0.090	£0.250

## Control Potentiometer Modular System

Meggit



A range of horizontal or vertical 10mm carbon control potentiometers featuring plug-in accessories for additional flexibility. Top, bottom or side actuation with edgewise operation and stereo (dual) units can be assembled. The carbon on polyester technology ensures stability and durability with a life of 10,000 track operations.

### Specification

Resistive element:	Carbon on polyester
Power rating:	0.15W at 40°C
Maximum voltage:	200V DC
Resistance tolerance:	±20%
Contact resistance variation:	5% or 3Ω



whichever is greater

Nominal rotation electrical: 2200  
mechanical: 2350  
Rotational life: 10,000 operations  
Operating temperature: -250C to +700C  
Dimensions (w x d x h)  
vertical type: 10.3 x 10 x 4.5mm  
horizontal type: 10.3 x 4.5 x 12.1mm  
Vertical Top adjust Horizontal Side Adjust

**Available in the following values**  
vertical: 1k, 2.2k, 4.7k, 10k, 47k, 1M  
horizontal: 1k, 2.2k, 4.7k, 10k, 22k, 100k

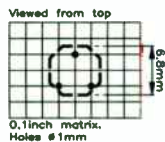
**Accessories available** Order Code  
long shaft DT47B  
short shaft DT48C  
dual gang DT49D  
18mm edgewise DT50E  
21mm edgewise DT51F

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 1196E	Price each exc. VAT			inc. VAT each 1+
		25+	100+	500+	
DT35Q	Modular Preset V 1k	£0.130	£0.115	£0.090	£0.290
DT36P	Modular Preset V 2k2	£0.130	£0.115	£0.090	£0.290
DT37S	Modular Preset V 4k7	£0.130	£0.115	£0.090	£0.290
DT38R	Modular Preset V 10k	£0.130	£0.115	£0.090	£0.290
DT39N	Modular Preset V 47k	£0.130	£0.115	£0.090	£0.290
DT40T	Modular Preset V 1M	£0.130	£0.115	£0.090	£0.290
DT41U	Modular Preset H 1k	£0.130	£0.115	£0.090	£0.290
DT42V	Modular Preset H 2k2	£0.130	£0.115	£0.090	£0.290
DT43W	Modular Preset H 4k7	£0.130	£0.115	£0.090	£0.290
DT44X	Modular Preset H 10k	£0.130	£0.115	£0.090	£0.290
DT45Y	Modular Preset H 22k	£0.130	£0.115	£0.090	£0.290
DT46A	Modular Preset H100k	£0.130	£0.115	£0.090	£0.290
DT47B	Long Shaft	£0.120	£0.110	£0.090	£0.180
DT48C	Short Shaft	£0.120	£0.110	£0.090	£0.180
DT49D	Dual Gang Shaft	£0.100	£0.090	£0.085	£0.240
DT50E	18mm Edgewise	£0.190	£0.180	£0.170	£0.240
DT51F	21mm Edgewise	£0.220	£0.180	£0.090	£0.410

## Cermet Preset

Meggit



A miniature horizontal mounting cermet preset featuring high stability and excellent resolution. It has an integral dust cover, fits 2.54mm (0.1in.) matrix directly, and may be adjusted by a screwdriver from either side. Linear track only. Tolerance: ±20%. Power rating: 0.3W at 70°C. Max volt: 100V DC or AC. Temperature coefficient: ±200ppm/°C. Dimensions 7.8mm diameter, stands 7.4mm high from PCB. Value is marked on case as shown in brackets.

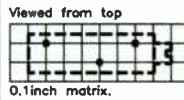
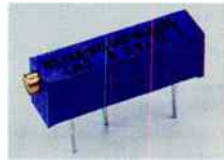
**The following values are available:**  
100Ω (101), 500Ω (501), 1k (102), 5k (502), 10k (103), 50k (503), 100k (104), 1M (105).

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2201	Price each exc. VAT			inc. VAT each 1+
		25+	100+	500+	
WR38R	Cermet 100R	£0.290	£0.270	£0.240	£1.540
WR39N	Cermet 500R	£0.290	£0.270	£0.240	£1.540
WR40T	Cermet 1k	£0.290	£0.270	£0.240	£1.540
WR41U	Cermet 5k	£0.290	£0.270	£0.240	£1.540
WR42V	Cermet 10k	£0.290	£0.270	£0.240	£1.540
WR43W	Cermet 50k	£0.290	£0.270	£0.240	£1.540
WR44X	Cermet 100k	£0.290	£0.270	£0.240	£1.540
WR45Y	Cermet 1M	£0.290	£0.270	£0.240	£1.540

## 18-Turn Cermet Preset

Meggit



An 18-turn cermet preset with slipping clutch (23 mechanical turns), end stops and infinite electrical resolution. Power rating 0.75W at 70°C. Max working voltage 315V. Tolerance: ±10%. Temperature coefficient: ±100ppm/°C max.

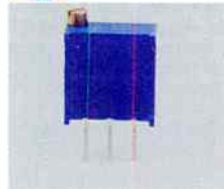
**Values available:**  
500Ω, 1k, 5k, 10k, 50k, 100k, 1M.  
The dustproof and immersion-proof case measures 19.3 x 5 x 6.6mm high and the terminal pins are at 7.62mm (0.3in.) and 5.08mm (0.2in.) spacing, the centre pin being offset by 2.54mm (0.1in.).

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2201	Price each exc. VAT			inc. VAT each 1+
		25+	100+	500+	
WR46A	18-Turn Cermet 500R	£0.480	£0.420	£0.390	£0.890
WR47B	18-Turn Cermet 1k	£0.480	£0.420	£0.390	£0.890
WR48C	18-Turn Cermet 5k	£0.480	£0.420	£0.390	£0.890
WR49D	18-Turn Cermet 10k	£0.480	£0.420	£0.390	£0.890
WR50E	18-Turn Cermet 50k	£0.480	£0.420	£0.390	£0.890
WR51F	18-Turn Cermet 100k	£0.480	£0.420	£0.390	£0.890
UH29G	18-Turn Cermet 1M	£0.490	£0.390	£0.350	£0.890

## 9.5mm (3/8in.) Square 22-Turn Cermet Preset

Meggit



A 22-turn cermet preset with slipping clutch (25 mechanical turns) and an audible click at each end of travel to define the ends. This professional quality trimmer is designed for applications where reliability and small size are major considerations. Infinite electrical resolution. Power rating 0.5W at 70°C. Tolerance ±10%. Max working voltage 300V. Temperature coefficient: ±100ppm/°C max.

**Values available:**  
1k, 5k, 10k, 50k, 100k, 1M.  
The dustproof and immersion-proof case measures 9.6 x 4.8 x 10mm high. Drive head stands a further 1.5mm high. Lead length 6.2mm. Pins are in-line on 2.54mm (0.1in.) centres.

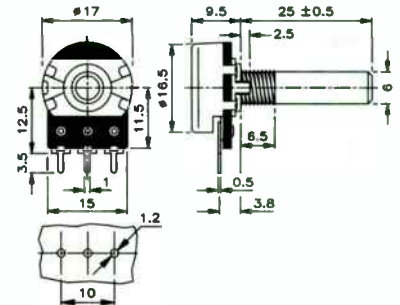
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2202	Price each exc. VAT			inc. VAT each 1+
		25+	100+	500+	
UH23A	22-Turn Cermet 1k	£0.730	£0.690	£0.490	£1.190
UH24B	22-Turn Cermet 5k	£0.730	£0.690	£0.490	£1.190
UH25C	22-Turn Cermet 10k	£0.730	£0.690	£0.490	£1.190
UH26D	22-Turn Cermet 50k	£0.730	£0.690	£0.490	£1.190
UH27E	22-Turn Cermet 100k	£0.730	£0.690	£0.490	£1.190
UH28F	22-Turn Cermet 1M	£0.730	£0.690	£0.490	£1.190

## POTENTIOMETERS

### ROTARY

#### Miniature Type



A range of miniature rotary carbon track potentiometers with printed circuit board mounting terminals.

Fixing hole required: 7mm. Power rating: 0.2W linear, 0.1W log. Max voltage: 200V linear, 150V log. Overall shaft length 25mm.

Linear types are marked 'B' and log types are marked 'A'.

**The following values are available with a linear track:**

1k, 4k7, 10k, 22k, 47k, 100k, 470k, 1M

**The following values are available with a logarithmic track:**

10k, 47k, 100k, 1M

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2203	Price each exc. VAT			inc. VAT each 1+
		25+	100+	500+	
JM68A	Min Pot Lin 1k	£0.375	£0.280	£0.250	£0.990
JM70M	Min Pot Lin 4k7	£0.395	£0.295	£0.250	£0.990
JM71N	Min Pot Lin 10k	£0.550	£0.380	£0.370	£0.990
JM72P	Min Pot Lin 22k	£0.395	£0.380	£0.370	£0.990
JM73Q	Min Pot Lin 47k	£0.395	£0.380	£0.370	£0.990
JM74R	Min Pot Lin 100k	£0.395	£0.380	£0.370	£0.990
JM75S	Min Pot Lin 470k	£0.395	£0.380	£0.370	£0.990
JM76H	Min Pot Lin 1M	£0.395	£0.380	£0.370	£0.990
JM77J	Min Pot Log 10k	£0.395	£0.380	£0.370	£0.990
JM78K	Min Pot Log 47k	£0.395	£0.380	£0.370	£0.990
JM79L	Min Pot Log 100k	£0.395	£0.380	£0.370	£0.990
JM80B	Min Pot Log 1M	£0.395	£0.380	£0.370	£0.990

† This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

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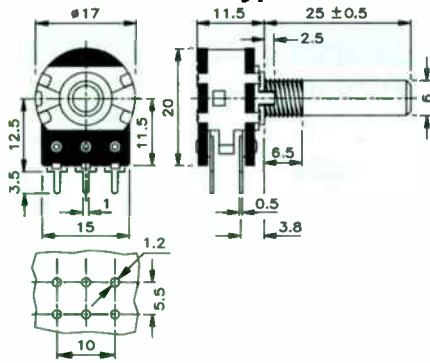
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Fax: 01702 554001

e-mail: Sales@maplin.co.uk

## Dual Miniature Type



A range of dual miniature rotary carbon track potentiometers with printed circuit board mounting terminals. Fixing hole required: 7mm. Power rating: 0-125W linear, 0-06W log. Max voltage: 200V linear, 150V log. Overall shaft length 20mm. Linear types are marked 'B' and log types are marked 'A'.



The following values are available with a linear track:

10k, 100k

The following values are available with a logarithmic track:

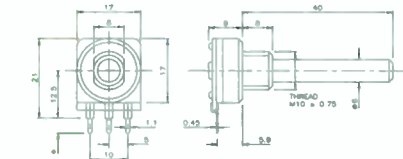
10k, 100k

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2254	Price each exc. VAT			inc. VAT each
		25+	100+	500+	
JM81C	Min Dual Pot Lin 10k	£0.690	£0.590	£0.520	£1.290
JM82D	Min Dual Pot Lin 100k	£0.690	£0.590	£0.520	£1.290
JM83E	Min Dual Pot Log 10k	£0.690	£0.590	£0.520	£1.490
JM84F	Min Dual Pot Log 100k	£0.690	£0.590	£0.520	£1.290

## Conductive Polymer Track Type

Omeg



The 'Eco' range of 16mm conductive polymer track potentiometers feature a semi-sealed plastic housing, and offer lower noise compared to standard carbon track types. The potentiometers feature a 40mm long x 6mm diameter shaft with a 300° rotation.

**Specification**  
 Rotation angle: 300°  
 Rated dissipation @ 40°C  
 linear: 0.25W  
 log: 0.12W  
 Limiting element voltage: 350V DC  
 Insulating voltage: 500V AC  
 Insulating resistance: ≥4GΩ  
 Tolerance: 20%  
 Noise (ENR)  
 linear: 2%  
 log: 2%

Values Available

## Linear Track

100Ω 1kΩ 10kΩ 100kΩ 1MΩ  
 220Ω 22kΩ  
 470Ω 4k7Ω 47kΩ 470kΩ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 12701	Price each exc. VAT			inc. VAT each
		25+	100+	500+	
VP93B	1K Lin 16mm ECO	£0.550	£0.450	£0.390	£0.890
VP94C	4K7 Lin 16mm ECO	£0.550	£0.450	£0.390	£0.890
VP95D	10K Lin 16mm ECO	£0.550	£0.450	£0.390	£0.890
VP96E	22K Lin 16mm ECO	£0.550	£0.450	£0.390	£0.890
VP97F	47K Lin 16mm ECO	£0.550	£0.450	£0.390	£0.890
VP98G	100K Lin 16mm ECO	£0.550	£0.450	£0.390	£0.890
VP99H	470K Lin ECO	£0.550	£0.450	£0.390	£0.890
VQ00A	1M Lin 16mm ECO	£0.550	£0.450	£0.390	£0.890
VQ01B	4K7 Log 16mm ECO	£0.580	£0.490	£0.440	£0.950
VQ02C	10K Log 16mm ECO	£0.580	£0.490	£0.440	£0.950
VQ03D	47K Log 16mm ECO	£0.580	£0.490	£0.440	£0.950
VQ04E	100K Log 16mm ECO	£0.580	£0.490	£0.440	£0.950
VQ05F	470K Log 16mm ECO	£0.580	£0.490	£0.440	£0.950
VQ06G	1M Log 16mm ECO	£0.580	£0.490	£0.440	£0.950

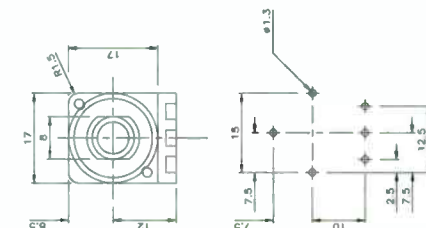
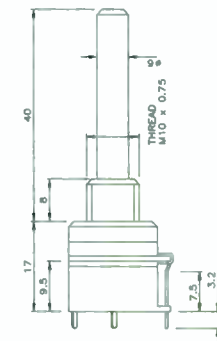
## 16mm Conductive Polymer With Push Switch

Omeg



A range of Eco potentiometers with a SPDT push switch primarily intended for vertical PCB mounting. The 16mm conductive polymer track potentiometers feature a semi-sealed plastic housing, and offer lower noise compared to standard carbon track types. The potentiometers feature a 40mm long x 6mm diameter shaft with a 5 x 10mm flat and 300° rotation.

**Specification**  
 Rotation angle: 300°  
 Rated dissipation @ 40°C: 0.25W  
 Limiting element voltage: 350V DC  
 Insulating voltage: 500V AC  
 Insulating resistance: ≥4GΩ  
 Tolerance: 20%  
 Noise (ENR): 2%  
 Switch rating: 250V AC 10A resistive  
 Switch travel: 3mm linear



Values Available  
 Linear Track Only

10kΩ 100kΩ  
 4k7Ω 47kΩ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 12739	Price each exc. VAT			inc. VAT each
		25+	100+	500+	
VQ07H	4K7 Lin ECO 1P C/O	£1.490	£1.240	£1.090	£2.390
VQ08J	10K Lin ECO 1P C/O	£1.490	£1.240	£1.090	£2.390
VQ09K	47K Lin ECO 1P C/O	£1.490	£1.240	£1.090	£2.390
VQ10L	100K Lin ECO 1P C/O	£1.490	£1.240	£1.090	£2.390

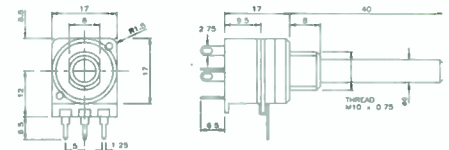
## 16mm Conductive Polymer Track With Rotary Switch

Omeg



An 'Eco' range of 16mm conductive polymer track potentiometers with DP C/O rotary switch and featuring a semi-sealed plastic housing, which offers lower noise compared to standard carbon track types. The potentiometers feature a 40mm long x 6mm diameter shaft with a 300° rotation.

**Specification**  
 Rotation angle: 300°  
 Rated dissipation @ 40°C  
 linear: 0.25W  
 log: 0.12W  
 Limiting element voltage: 350V DC  
 Insulating voltage: 500V AC  
 Insulating resistance: ≥4GΩ  
 Tolerance: 20%  
 Noise (ENR)  
 linear: 2%  
 log: 2%  
 Switch Rating: 250V AC 4A  
 12V DC 10A  
 3kV min.  
 Proof voltage: silver cadmium oxide  
 Contacts: 10,000  
 Life: 20mΩ  
 Contact resistance:



Values Available

Linear Track  
 1kΩ 10kΩ 100kΩ 1MΩ  
 22kΩ  
 4k7Ω 47kΩ 470kΩ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 12740	Price each exc. VAT			inc. VAT each
		25+	100+	500+	
VQ11M	1K Lin ECO 2PST	£1.490	£1.240	£1.090	£2.390
VQ12N	4K7 Lin ECO 2PST	£1.490	£1.240	£1.090	£2.390
VQ13P	10K Lin ECO 2PST	£1.490	£1.240	£1.090	£2.390
VQ14Q	22K Lin ECO 2PST	£1.490	£1.240	£1.090	£2.390
VQ15R	47K Lin ECO 2PST	£1.490	£1.240	£1.090	£2.390
VQ16S	100K Lin ECO 2PST	£1.490	£1.240	£1.090	£2.390
VQ17T	470K Lin ECO 2PST	£1.490	£1.240	£1.090	£2.390
VQ18U	1M Lin ECO 2PST	£1.490	£1.240	£1.090	£2.390
VQ19V	4K7 Log ECO 2PST	£1.690	£1.490	£1.090	£2.490
VQ20W	10K Log ECO 2PST	£1.690	£1.490	£1.090	£2.490
VQ21X	47K Log ECO 2PST	£1.690	£1.490	£1.090	£2.490

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## 16mm Dual-Gang Conductive Polymer Track

Omeg

**RECENTLY INTRODUCED**



This 'Eco' range of dual-gang 16mm conductive polymer track potentiometers features a semi-sealed plastic housing, and offers lower noise compared to standard carbon track types. The potentiometers feature a 40mm long x 6mm diameter shaft with a 300° rotation.

### Specification

Rotation angle:	300°
Rated dissipation @ 40°C	
linear:	0.25W
log:	0.12W
Limiting element voltage:	350V DC
Insulating voltage:	500V AC
Insulating resistance:	≥4GΩ
Tolerance:	20%
Matching tolerance	
linear:	3dB
log:	2dB
Noise (ENR)	
linear:	2%
log:	2%

### Values Available

#### Linear Track

10kΩ	100kΩ	1MΩ
22kΩ	220kΩ	
4k7Ω	47kΩ	

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

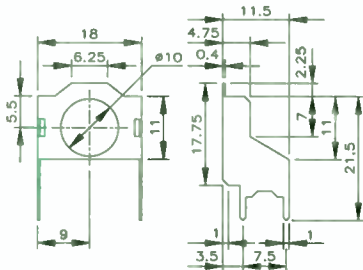
Order Code	Type 12753	Price each exc. VAT			inc. VAT each
		25+	100+	250+	
VQ24B	4K7 Lin Di 16mm ECO	£1.390	£1.270	£0.990	£2.290
VQ25C	10K Lin Di 16mm ECO	£1.390	£1.270	£0.990	£2.290
VQ26D	22K Lin Di 16mm ECO	£1.390	£1.270	£0.990	£2.290
VQ27E	47K Lin Di 16mm ECO	£1.390	£1.270	£0.990	£2.290
VQ28F	100K Lin Di 16mm ECO	£1.390	£1.270	£0.990	£2.290
VQ29G	220K Lin Di 16mm ECO	£1.390	£1.270	£0.990	£2.290
VQ30H	470K Lin Di 16mm ECO	£1.390	£1.270	£0.990	£2.290
VQ31J	1M Lin Di 16mm ECO	£1.490	£1.390	£1.090	£2.290
VQ32K	4K7 Log Di 16mm ECO	£1.490	£1.390	£1.090	£2.290
VQ33L	10K Log Di 16mm ECO	£1.490	£1.390	£1.090	£2.290
VQ34M	22K Log Di 16mm ECO	£1.490	£1.390	£1.090	£2.290
VQ35O	47K Log Di 16mm ECO	£1.490	£1.390	£1.090	£2.290
VQ36P	100K Log Di 16mm ECO	£1.490	£1.390	£1.090	£2.290
VQ37S	220K Log Di 16mm ECO	£1.490	£1.390	£1.090	£2.290
VQ38R	470K Log Di 16mm ECO	£1.490	£1.390	£1.090	£2.290

## Soldering Bracket for Eco Range

Omeg

**RECENTLY INTRODUCED**

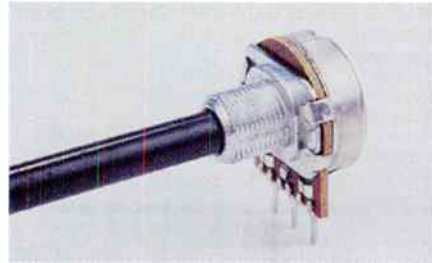
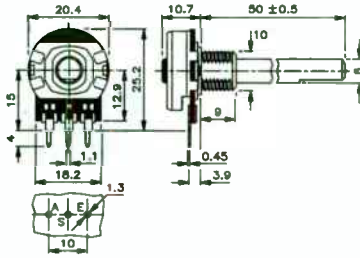
A pre-formed solderable support bracket for the Eco range of potentiometers allowing rigid PCB mounting.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 13025	Price each exc. VAT			inc. VAT each
		25+	100+	250+	
VQ39N	P16 Solder Brkt 10mm	£0.070	£0.060	£0.050	£0.090

## Standard Type



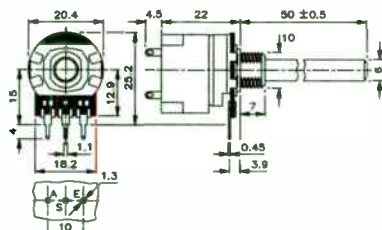
A range of carbon track potentiometers with printed circuit board mounting terminals. Fixing hole required: 10.5mm (13/32in.). Power rating: 0.4W linear, 0.2W log. Max. volt: 500V DC. Tolerance: ±20%. Overall shaft length 50mm.

The following values are available with a linear track: 1k, 4k7, 10k, 22k, 47k, 100k, 220k, 470k, 1M, 2M2

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2205	Price each exc. VAT			
		25+	100+	500+	1+
FW00A	Pot Lin 1k	£0.490	£0.390	£0.340	£0.840
FW01B	Pot Lin 4k7	£0.500	£0.360	£0.330	£0.990
FW02C	Pot Lin 10k	£0.490	£0.390	£0.360	£0.890
FW03D	Pot Lin 22k	£0.490	£0.390	£0.360	£0.890
FW04E	Pot Lin 47k	£0.520	£0.380	£0.330	£0.990
FW05F	Pot Lin 100k	£0.490	£0.390	£0.360	£0.890
FW06G	Pot Lin 220k	£0.490	£0.390	£0.360	£0.890
FW07H	Pot Lin 470k	£0.490	£0.390	£0.360	£0.890
FW08J	Pot Lin 1M	£0.490	£0.390	£0.360	£0.890
FW09K	Pot Lin 2M2	£0.490	£0.390	£0.360	£0.890
FW21X	Pot Log 4k7	£0.490	£0.390	£0.360	£0.890
FW22Y	Pot Log 10k	£0.520	£0.380	£0.360	£0.990
FW23A	Pot Log 22k	£0.520	£0.380	£0.360	£0.940
FW24B	Pot Log 47k	£0.520	£0.380	£0.360	£0.940
FW25C	Pot Log 100k	£0.520	£0.380	£0.360	£0.940
FW26D	Pot Log 220k	£0.520	£0.380	£0.360	£0.940
FW27E	Pot Log 470k	£0.520	£0.380	£0.360	£0.940
FW28F	Pot Log 1M	£0.520	£0.380	£0.360	£0.940
FW29G	Pot Log 2M2	£0.520	£0.380	£0.360	£0.940

## Standard Type with Switch



A range of rotary carbon track potentiometers with DPST switch. The potentiometer has printed circuit mounting terminals. Fixing hole required: 10.5mm (13/32in.). Power rating: 0.4W linear, 0.2W log. Max. voltage: 500V DC. Tolerance: ±20%. Switch rating:

4A at 250V AC. Overall shaft length 50mm.

The following values are available with a linear track: 4k7, 1k, 10k, 22k, 47k, 100k, 220k, 470k, 1M

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2208	Price each exc. VAT			inc. VAT each
		25+	100+	250+	
FW41U	Sw Pot Lin 4k7	£1.440	£1.200	£1.090	£2.290
KJ91Y	Sw Pot Lin 1k	£1.440	£1.270	£1.090	£2.290
FW42V	Sw Pot Lin 10k	£1.440	£1.200	£1.090	£2.290
FW43W	Sw Pot Lin 22k	£1.440	£1.200	£1.090	£2.290
FW44X	Sw Pot Lin 47k	£1.440	£1.200	£1.090	£2.290
FW45Y	Sw Pot Lin 100k	£1.440	£1.200	£1.090	£2.290
FW46A	Sw Pot Lin 220k	£1.440	£1.200	£1.090	£2.290
FW47B	Sw Pot Lin 470k	£1.440	£1.200	£1.090	£2.290
FW48C	Sw Pot Lin 1M	£1.440	£1.200	£1.090	£2.290
FW62S	Sw Pot Log 4k7	£1.440	£1.390	£1.090	£2.290
FW63T	Sw Pot Log 10k	£1.440	£1.390	£1.090	£2.290
FW65V	Sw Pot Log 47k	£1.440	£1.390	£1.090	£2.290

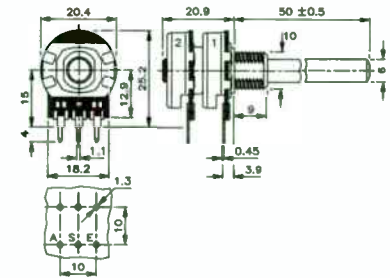
## Spare Nuts and Washers

Spare nuts and washers to suit the above rotary potentiometers. Available in packs of 10. Size M10

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2209	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
FP06G	M10 Pot Nut 10 Pk	£0.390	£0.340	£0.330	£0.790
FP07H	M10 Pot Washer 10 Pk	£0.390	£0.340	£0.330	£0.790

## Standard Dual-Gang Type



A range of rotary dual-gang carbon track potentiometers with printed circuit mounting terminals. Fixing hole required: 10.5mm (13/32in.). Power rating: 0.4W linear, 0.2W log. Max. voltage: 500V DC. Tolerance: ±20%. Overall shaft length 50mm.

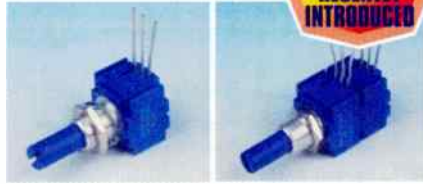
The following values are available with a linear track: 4k7, 10k, 22k, 47k, 100k, 220k, 470k, 1M, 2M2

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2207	Price each exc. VAT			inc. VAT each
		25+	100+	250+	
FW84F	Dual Pot Lin 4k7	£1.240	£1.050	£0.990	£1.990
FW85G	Dual Pot Lin 10k	£1.240	£1.050	£0.990	£1.990
FW86T	Dual Pot Lin 22k	£1.240	£1.050	£0.990	£1.990
FW87U	Dual Pot Lin 47k	£1.240	£1.050	£0.990	£1.990
FW88V	Dual Pot Lin 100k	£1.240	£1.050	£0.990	£1.990
FW89W	Dual Pot Lin 220k	£1.240	£1.050	£0.990	£1.990
FW90X	Dual Pot Lin 470k	£1.240	£1.050	£0.990	£1.990
FW91Y	Dual Pot Lin 1M	£1.240	£1.050	£0.990	£1.990
FW92A	Dual Pot Lin 2M2	£1.240	£1.050	£0.990	£1.990
FX08J	Dual Pot Log 4k7	£1.300	£1.190	£1.030	£2.290
FX09K	Dual Pot Log 10k	£1.300	£1.190	£1.030	£2.290
FX10L	Dual Pot Log 22k	£1.300	£1.190	£1.030	£2.290
FX11M	Dual Pot Log 47k	£1.300	£1.190	£1.030	£2.290
FX12N	Dual Pot Log 100k	£1.300	£1.190	£1.030	£2.290
FX13P	Dual Pot Log 220k	£1.300	£1.190	£1.030	£2.290
FX14Q	Dual Pot Log 470k	£1.300	£1.190	£1.030	£2.290

## 16mm Modular Conductive Plastic - 91 Series

Bourns

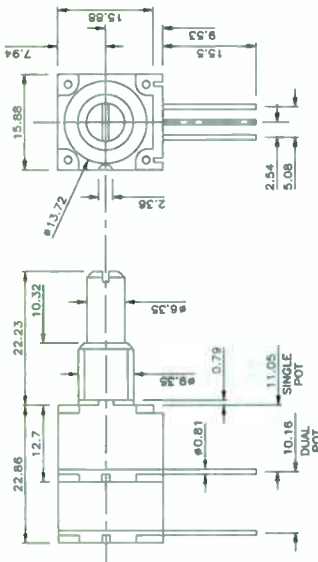


RECENTLY INTRODUCED

A range of 16mm modular potentiometers featuring a one-piece moulded plastic shaft and rotor, and a conductive plastic track. This form of construction results in virtually infinite electrical circuit isolation. Connections are by 0.81mm diameter pins on 2.54mm spacing. 100,000 cycle life (no load).

### Specification

Angle of rotation: 300°  
 Tolerance: ±20%  
 Linearity: ±5%  
 Power rating single: 1W (lin), 0.5W (log)  
 dual (per section): 0.5W (lin), 0.25W (log)  
 Insulation resistance: 1000MΩ min.



The following values are available with a linear track - single:

1k, 5k, 10k, 50k, 100k

The following values are available with a logarithmic track - single:

1k, 10k, 50k, 100k

The following values are available with a linear track - dual:

1k, 5k, 10k, 50k, 100k

The following values are available with a logarithmic track - dual:

1k, 10k, 50k, 100k

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 12715	Price each exc. VAT			inc. VAT each
		10+	50+	100+	
VP76H	1K Lin CP PC Mt	£2.230	£2.060	£1.910	£3.690
VP77J	5K Lin CP PC Mt	£2.230	£2.060	£1.910	£3.690
VP78K	10K Lin CP PC Mt	£2.230	£2.060	£1.910	£3.690
VP79L	50K Lin CP PC Mt	£2.230	£2.060	£1.910	£3.690
VP80B	100K Lin CP PC Mt	£2.230	£2.060	£1.910	£3.690
VP81C	1K Log CP PC Mt	£2.550	£2.350	£2.180	£4.190
VP82D	10K Log CP PC Mt	£2.550	£2.350	£2.180	£4.190
VP83E	50K Log CP PC Mt	£2.550	£2.350	£2.180	£4.190
VP84F	100K Log CP PC Mt	£2.550	£2.350	£2.180	£4.190
VP85G	1K Lin Di CP PC Mt	£3.830	£3.530	£3.280	£6.990
VP86T	5K Lin Di CP PC Mt	£3.830	£3.530	£3.280	£6.990
VP87U	10K Lin Di CP PC Mt	£3.830	£3.530	£3.280	£6.990
VP88V	50K Lin Di CP PC Mt	£3.830	£3.530	£3.280	£6.990
VP89W	100K Lin Di CP PC Mt	£4.330	£4.000	£3.710	£7.290
VP90X	10K Log Di CP PC Mt	£4.330	£4.000	£3.710	£7.290
VP91Y	50K Log Di CP PC Mt	£4.330	£4.000	£3.710	£7.290
VP92A	100K Log Di CP PC Mt	£4.330	£4.000	£3.710	£7.290

## HIGH POWER

### 10-Turn Wirewound Potentiometers

Spectrol

A range of precision 10-turn wire wound potentiometers that feature excellent linearity and a resistance tolerance of ±5%. The internal tracking surfaces and terminals are gold-plated, whilst the 6-35mm (1/4in.) shaft is stainless steel and has a screwdriver slot. Supplied with suitable fixing nut (3/8 - 32 UNEF - 2A). Overall size: 22mm dia. x 40mm.



### Specification:

Linearity: ±0.25%  
 Noise: 100Ω ENR  
 Power rating: 2W  
 Insulation resistance: 1000MΩ min 500V DC  
 Dielectric strength: 1000V RMS min 60Hz  
 Temperature coefficient: 20ppm/°C

Value	Resolution %	Max. current at 70°C ambient	Max. voltage across coil	MPS Code
100Ω	0.06	141	14.1	DA85G
200Ω	0.037	100	20.0	DA86T
500Ω	0.031	63.2	31.6	DA87U
1k	0.025	44.7	44.7	DA88V
5k	0.016	20.0	100.0	DA90X
10k	0.017	14.1	141.0	DA91Y
20k	0.015	10.0	200.0	DA92A
50k	0.009	6.32	316.0	DA93B
100k	0.007	4.47	447.0	DA94C

Price each shown, but sold only in multiples of 1.

Order Code	Type 2211	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DA86T	10-Turn Pots 200R	£4.840	£4.600	£4.350	£5.690
DA87U	10-Turn Pots 500R	£4.840	£4.600	£4.350	£5.690

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 2211	Price each exc. VAT			inc. VAT each
		5+	10+	50+	
DA85G	10-Turn Pots 100R	£3.990	£3.650	£3.490	£5.990
DA86T	10-Turn Pots 200R	£3.990	£3.650	£3.490	£5.990
DA87U	10-Turn Pots 500R	£3.990	£3.650	£3.490	£5.990
DA88V	10-Turn Pots 1k	£3.990	£3.650	£3.490	£5.990
DA90X	10-Turn Pots 5k	£3.990	£3.650	£3.490	£5.990
DA91Y	10-Turn Pots 10k	£3.990	£3.650	£3.490	£5.990
DA92A	10-Turn Pots 20k	£3.990	£3.650	£3.490	£5.990
DA93B	10-Turn Pots 50k	£3.990	£3.650	£3.490	£5.990
DA94C	10-Turn Pots 100k	£3.990	£3.650	£3.490	£5.990

## Cermet Type

Meggitt



A high quality cermet element rotary potentiometer for panel mounting. The cermet element gives excellent electrical and thermal stability, reliability, low noise and long life. Linear track.

Power rating: 2W at 70°C  
 Tolerance: ±10%  
 Working voltage: 315V max  
 Dimensions: Body diameter 21mm, height 12.7mm max. Bush 9.5mm (3/8in.) diameter, flattened on opposing sides to 8.6mm, 10mm long. Requires 9.5mm (3/8in.) diameter panel cut-out. Spindle: standard 6.35mm (1/4in.), 15mm long. Pins 4mm long. Centre pin is wiper.

The following values are available: 47Ω, 100Ω, 470Ω, 1k, 4k7, 10k, 47k, 100k, 1M.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2213	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
YP02C	High Power Pot 47R	£3.200	£2.960	£2.740	£3.990
YP03D	High Power Pot 100R	£3.200	£2.960	£2.740	£3.990
YP04E	High Power Pot 470R	£3.200	£2.960	£2.750	£3.990
YP05F	High Power Pot 1k	£3.200	£2.960	£2.750	£3.990
YP06G	High Power Pot 4k7	£3.200	£2.960	£2.750	£3.990
YP07H	High Power Pot 10k	£3.200	£2.960	£2.750	£3.990
YP08J	High Power Pot 47k	£3.160	£2.920	£2.710	£3.990
YP09K	High Power Pot 100k	£3.200	£2.960	£2.750	£3.990
YP10L	High Power Pot 1M	£3.200	£2.960	£2.750	£3.990

## Loudspeaker Volume Controls

Wirewound controls with 6.3mm (1/4in.) dia. shaft, 9.5mm long. Standard 9.5mm (3/8in.) hole mounting. Ideal for use as a loudspeaker volume control. Available in four values: 20Ω, 50Ω, 100Ω, and 200Ω. Power rating: 3.5W.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2214	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	
FX40T	L/S Control 20R	£1.190	£1.090	£0.930	£2.110
FX97F	L/S Control 50R	£1.090	£0.990	£0.890	£2.110
FX98G	L/S Control 100R	£1.090	£0.990	£0.890	£2.110
FX99H	L/S Control 200R	£1.090	£0.990	£0.890	£2.110

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.



RS12750

BS EN ISO 9002

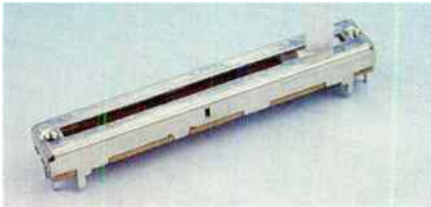
Stockholding and Supply  
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## SLIDE

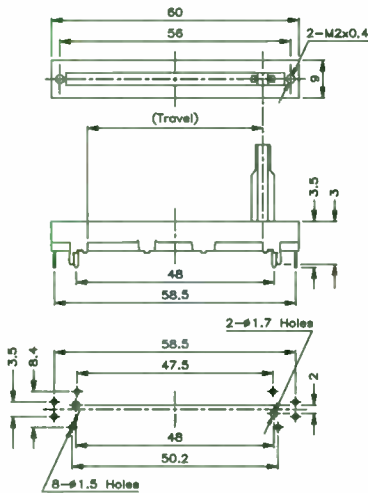
### Miniature Dual Gang



A range of dual miniature slide track carbon potentiometers with printed circuit board mounting terminals. Potentiometer measures 60mm long x 9mm wide with a 45mm track length. Height above PCB (excluding slide tang) 6.5mm. The pin spacing is not compatible with 2.54mm (0.1in.) matrix board. The potentiometer may be attached to a front panel using two M2 bolts, fixing centres 56mm. Slide tang is 15mm long. Slide Knobs YG09K and CH21X (low profile) fit the tang on these sliders. Linear types are marked 'B' and log types are marked 'A'.

The following values are available with a linear track: 10k, 100k

The following values are available with logarithmic track: 10k, 100k



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2215	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
JM85G	Min Slide Lin 10k	£0.735	£0.630	£0.590	£1.490
JM86T	Min Slide Lin 100k	£0.735	£0.630	£0.590	£1.490
JM87U	Min Slide Log 10k	£0.735	£0.630	£0.590	£1.490
JM88V	Min Slide Log 100k	£0.990	£0.840	£0.630	£1.990

## THERMISTORS

### Negative Temperature Coefficient Thermistors

A range of negative temperature coefficient thermistors. The resistance  $R_{T_1}$  of a thermistor at a temperature  $T_1$  °K can be found by inserting the resistance  $R_{T_2}$  at a given temperature  $T_2$  °K in the following equation:

$$R_{T_1} = R_{T_2} \cdot e^{\left(\frac{B}{T_1} - \frac{B}{T_2}\right)}$$

$$\log_{10} R_{T_2} + B \left(\frac{T_2 - T_1}{T_1 \times T_2}\right) \log_{10} e$$

where B is the characteristic temperature for any given thermistor in °K and e is the exponential factor (= 2.7183). °K = °C + 273.

### Disc Thermistor

**Philips**  
Disc type lacquer coated thermistor suitable for use in temperature measurement, control and compensation applications.



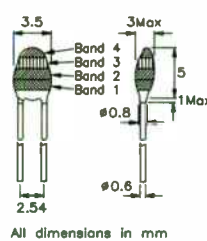
Diameter: 5.0mm (±0.3mm)  
Power (max): 0.5W Tamb = 25°C  
Dissipation factor: 8.5mW/°C  
Temperature range: -25°C to +125°C reducing to 0°C to +55°C at max. power 10%

Tolerance:	B (°K)	R at 125°C (approx)	Equivalent
R at 25°C (±20%)			
1500Ω	3975	52.5Ω	VA1098

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2217	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
UL82D	Thermistor 1500R	£0.390	£0.290	£0.260	£0.690

### Bead Thermistors



Bead type thermistors for general applications including temperature measurement and compensation.

Tolerance: ±5%  
Power (max): 250mW  
Dissipation factor: 7mW/°C  
Response time: 1-2 secs  
Thermal time constant: 11 secs  
Temperature range: -40°C to +125°C reducing to 0° to 55°C at max power

R at 25°C	B (°K)	R at 100°C (approx)	R at 0°C (approx)
4k7	3977	318.4Ω	15.28kΩ
15k	3740	1.19kΩ	45.13kΩ
47k	4090	2.94kΩ	155.6kΩ
150k	4370	7.73kΩ	534.9kΩ

#### Colour code

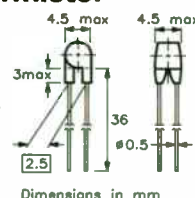
R at 25°C	Band 1	Band 2	Band 3	Band 4
4k7	Yellow	Violet	Red	Gold
15k	Brown	Green	Orange	Gold
47k	Yellow	Violet	Orange	Gold
150k	Brown	Green	Yellow	Gold

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2218	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
FX21X	Thermistor 4k7	£0.367	£0.338	£0.314	£0.790
FX22Y	Thermistor 15k	£0.440	£0.370	£0.290	£0.860
FX42V	Thermistor 47k	£0.440	£0.360	£0.290	£0.890
FX43W	Thermistor 150k	£0.440	£0.360	£0.290	£0.890

### 100k Bead Thermistor

**Siemens**  
A 100k bead thermistor for general applications, in particular, accurate temperature measurement. The case has a black epoxy resin coating and tinned leads.



Tolerance: ±2%  
Power (max.) 350mW at 25°C 220mW at 60°C  
Dissipation factor: 3.5mW/K

Heat capacity: 40mJ/K approx.  
Thermal time constant (air): 12secs approx.  
Temperature range: -55°C to +155°C  
B value: 4450°K  
Approx. resistance at 25°C: 100kΩ  
at 100°C: 4.77kΩ  
at 0°C: 352.4kΩ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2220	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
CR05F	Thermistor 100k	£0.367	£0.338	£0.314	£0.790

### Bead Thermistor Type R53

Directly heated bead type thermistor housed in evacuated glass bulb, designed for operation at very low power levels owing to its exceptionally high sensitivity and is thus particularly suitable for use in transistor circuits.



Length: 25.4mm (max)  
Diameter: 4mm (approx)  
Power at 20°C max: 3mW  
Power sensitivity: 62.5°C/mW  
Dissipation factor: 0.016mW/°C  
Max. operating temperature: 175°C (ambient), 220°C (bead)  
R at 20°C (±20%): 5000Ω  
R at 25°C (±20%): 4200Ω  
B (°K): 3100  
Typical resistance at 3mW dissipation in free air at 20°C: 63Ω.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2221	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
FX62S	Thermistor R53	£9.990	£8.990	£8.490	£15.990

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## Personal Attack Alarms

### Personal Emergency Alarm



This very compact and light personal electronic alarm can be used as a 'life saver' to summon help in an emergency, as a 'help caller' for elderly people in difficulties or as an effective security alarm for doors and personal property. The extremely loud 120dB alarm is sounded at the press of a button or when the cord is yanked free, releasing the safety pin. Water resistant. Requires two 1.5V 'AAA' batteries (JY50E, not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE22Y	Emergency Alarm	£4.240	£4.990

### Personal Protector

A very compact personal alarm, in a tough black plastic case. Due to its slim size, it can be easily slipped into a pocket or handbag. The 110dB alarm is activated by pulling the rip cord, which removes a plastic plug from its socket.

The unit is powered by two 1.5V 'N' size batteries (supplied). Overall dimensions: 80 x 60 x 18mm. Weight: 66g including batteries.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM37S	Personal Protector	£5.940	£6.990

### Personal Attack Alarm

This alarm uses a gas cartridge to produce an ear-piercing shriek, just a firm push of the top will set off the alarm, which can be either a short burst or continuous. The continuous deafening sound will last for about two minutes - enough to frighten off the most determined attacker. Once locked on, the noise will continue even if dropped. The Alarm is small enough to fit easily into a pocket or handbag, or clipped into a blouse or jacket pocket.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KR18U	Personal Alarm	£5.940	£6.990
KR19V	Cartridge x 2	£5.090	£5.990

### Key-fob Attack Alarm

A compact gas-powered personal attack alarm that you can carry with you everywhere. It produces an ear-splitting 130dB at source. Attaching it to your keys means it is easy to find when you need it.

Supplied complete with spare cartridge.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GG57M	Key-fob Attack Alarm	£4.240	£4.990

### Mugger Buster



A handy but reliable device for personal protection, combining a flashlight with a high-powered alarm built into a rugged case. The alarm is provided with a belt clip and a slide switch on one edge. It is finished in mat black with an orange lamp-cover. Sliding the switch toward the lamp provides a steady beam of light. Sliding the switch away from the lamp will sound the alarm and provide a flashing beam of light to attract attention. To de-activate the alarm simply insert the de-activate pin, attached to the wrist-strap, into the de-activate gap. The alarm is powered by three 'AA' size batteries, supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW54J	Mugger Buster	£8.800	£7.990

### Child Tracking System



A unique system that ensures your child cannot wander off even while you are busy with other tasks. Simply attach the small transmitter to your child and switch it on. Now place the receiver in your pocket or on your belt and activate it. You will hear a series of beeps to signal that the unit is working correctly, then the siren will silence and the unit starts to listen for the transmitters signal. When your child goes out of range the signal deteriorates and the receiver will sound. Even if you are busy the siren is loud enough to alert you. Battery condition is constantly monitored and when the battery begins to run low a long beep signal will sound. Can also be used to keep track of luggage, bags and personal items. The transmitter unit operates from a 12V (23A type) cell provided, while the receiver utilises a 9V PP3 (JY49D cell, not provided). Operates over a range up to 15 to 23 feet before alarm sounds.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS77J	Child Tracking Syst	£15.310	£17.990

### Touch Sensitive Electronic Alarm



The 'Sensor' gives you effective low cost security at home and on the move and it couldn't be simpler to use. Just switch it on, hang it from a door handle or place it on your luggage and it's guarded.

The 'Sensor' is extremely sensitive, so any vibration (just touching the door handle on either side of the door is enough) will sound the very loud high pitched alarm.

Can be fixed with velcro pads or screwed in place for more permanent fixing.

Supplied with velcro pads and security warning stickers. Requires an alkaline PP3 battery (JY49D, not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CN63T	Watchman Alarm	£11.050	£12.990

### Window/Door Entry Alarm



An ultra-miniature window and door alarm that can be installed quickly and easily. Simple stick-on installation means you can install this device in under a minute! Once installed the alarm protects against entry with a powerful 95dB siren that will warn away burglars and prowlers while alerting you instantly. Operation is from three LR44 button cells (provided). Simple ON/OFF switch allows virtually anybody to operate this alarm. Supplied with full operating instructions, self adhesive pads and window stickers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE66W	Window Alarm	£8.800	£7.990



## Sliding Door/Window Alarm



This neat, compact alarm is designed to be attached to sliding doors or windows to give added protection. The unit is battery operated and emits a piercing tone when movement is detected.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YD75S	Sliding Door Alarm	£7.650	£7.230	£6.800	£8.990

## Portable PIR Alarm/Chime Unit



A compact passive infra-red detector and alarm unit that is completely self contained. The unit, finished in smart white plastic, measures 35.5 x 108.5 x 68mm. The unit may be used free-standing on a desk, shelf, etc, or using the integral swivel bracket, mounted on a wall either horizontally or vertically. A slide switch on the side of the unit selects chime/off/alarm modes. In the chime mode, when the detector is triggered, a 'ding-dong' chime sounds, ideal for use as an automatic door or shop bell. In the alarm mode, triggering the detector will sound an ear piercing 90dB siren, the alarm will reset and re-arm after 30 seconds. Exit delay after arming is 10 seconds. Power requirements 9V PP3 alkaline battery (ZB46A) not supplied, standby current is 90µA, expected battery life 6 months. Detector coverage angle 60°. Operating temperature range -10 to +40°C.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YU17T	Portable PIR Alarm	£16.160	£10.550	£9.440	£18.990

## Programmable PIR Alarm



This smart PIR alarm is the compact Passive Infra Red sensor alarm that you can use anywhere – at home or in your office, shop or warehouse. You can

even take it with you for extra security when travelling.

Once armed, the sensor will trigger a piercing siren for 90 seconds if it detects any movement or body heat within its 10 meter, 130o range. It then resets itself automatically and triggers the siren again if further movement is detected. For added security, the alarm can only be disarmed with a four digit (programmable) code.

The alarm also has an intrusion memory – pushing the 'LATCH' button will light a small LED if the alarm has been triggered in your absence.

Can be used free standing or wall mounted. Requires a single PP3 battery or suitable 9V power adaptor (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DN15R	Programmable PIR Alarm	£17.010			£19.990
JY49D	Duracell PP3	£2.800	£2.500	£2.200	£3.290

## Security Markers

### UV Security Marker



To maximise the chances of getting your stolen property returned, the police recommend that you mark your possessions with your postcode and house number. This pen uses discrete invisible ink that only shows up when illuminated by ultra violet light. The police routinely use UV light when examining recovered goods for this very purpose.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
GG58N	UV Security Marker	£0.842			£0.990

### Security Marker Triple Pack



This pack contains the UV pen described above plus a permanent ink marker and a diamond-tipped scriber to visibly and permanently mark any hard surface, e.g. glass, metal, plastic, etc. A stencil is also included to enable neat marking with the scriber and a set of warning labels to act as a visible deterrent.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
GG59P	Security Marker Pack	£5.090			£5.990

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## Security Marker Wallet



This handy wallet contains the following items for security marking your property:

- ★ Permanent black marker - for visibly marking valuables around the home, e.g. furniture, books, etc.
- ★ UV security marker - for discrete marking of property such as paintings, antiques, electrical goods, etc.
- ★ China/glass marker - specially designed for writing on porcelain, china and glass without scratching or cutting the surface. Permanently marks and should be used with stencil for neatness. Ideal for marking car registration numbers on car windows.
- ★ Diamond tipped scriber - for permanently marking most hard surfaces at home and in the office. For neatness use the stencil. Uses include marking machinery, office equipment, PCs, bicycles, etc.
- ★ Security labels - a selection which will act as a visible deterrent. Includes vehicle, premises, equipment and general labels.
- ★ Stencil - for use with the above markers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
GG61R	Security Wallet	£11.050			£12.990

## Security Labels Pack



A selection of 20 security labels that act as a visible deterrent to would-be thieves. Includes double-sided property label for your window, double-sided labels for your car windows, and labels for individual items.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
GG62S	Security Labels Pack	£2.110			£2.490

## Counterfeit Note Detector Pen

Make a small mark on the banknote. Depending on the colour drawn, the note can be treated as probably genuine or suspect.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CN08J	Note Detector Pen 2	£2.540	£2.290	£2.200	£2.990

## FREE HOME MONITORING



REMOTE MONITORING STATION



FREE monitoring for the first year and thereafter from less than **12<sup>p</sup>** per day



\* based on a five year contract for the 3 star service with three keyholders and twelve test calls, of approximately 75 seconds each, per annum. All calls made by the subscriber unit to the arms system are on a premium rate line charged at £1.50 per minute. Average length of emergency calls is two minutes.

**arms** - professional monitoring and notification of not only intruder, fire and personal attack activations, but also mains failure, frozen pipes, water leaks, carbon monoxide and natural gas leaks.

Audio verification - 20 seconds of audio recording from your property before the activation and 10 seconds after the activation - keyholders can arrange immediate emergency service response.

Mailed confirmation of event and response details.

REGISTRATION FORM CONTAINED IN SUBSCRIBER UNIT BOX

### \* FREE ONGOING MONITORING?

A substantial discount to the home buildings and contents insurance premium is made possible by subscribing to arms.

In many cases, the reduced cost of insurance can more than repay the annual monitoring charge, enabling customers to enjoy the protection and peace of mind offered by arms for free.

## Building Alarms

### Wired Systems

#### AJ 400 Burglar Alarm Kit



- ★ 1 x Exit/entry zone
- ★ 1 x Detection zone
- ★ 1 x 24-hour/personal attack zone

A complete low cost alarm kit. Simple to install and easy to use.

The control panel is mains operated by use of the low voltage mains adaptor with the facility of battery back-up in the event of mains failure.

An on-board keypad is used to set and un-set the system with the added benefit of 2-button press panic alarm. This will activate the siren whether the system is set or un-set.

The unit, which is microprocessor based, provides:- Fault indicators for each zone and will flash the zone first activated.

Monitoring of 24-hour circuits to protect against tampering with any device.

Personal attack buttons (purchased separately), can be added to activate the alarm whether the system is set or un-set.

#### Kit Contents:

- 1 x AJ400 microprocessor control panel
- 1 x Passive Infra Red detector
- 2 x Magnetic door contacts
- 1 x External siren and cover
- 1 x Mains adaptor

Back up batteries for control panel

50m 4-core alarm cable

Fitting instructions

Bag of fixings

Most of the detection devices available in this catalogue can be added to the system, and up to 2 additional passive infra-red detectors can be fitted to the control panel.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YS01B	AJ400 Alarm Kit	£46.800	£42.900	£42.000	£54.990

## Hardwired Alarm Kit

### A1 Security



Professional hardwired kit ideal for domestic or small commercial property. The kit includes all the security components necessary, including step by step installation instructions. The system can be expanded to most requirements using additional detectors available in this catalogue. Further details of the individual components are contained in this catalogue. 4 core alarm cable XR89 will be required to connect siren/strobe to alarm panel. This may be ordered by the metre to the desired length.

EQUIPMENT REQUIRED	OPTION	YEARS OF CONTRACT	ANNUAL MONITORING (A)
	<b>MONITORING CHARGE FOR FIRST YEAR</b>		<b>FREE</b>
ARMS3 used with alarm system	3 STAR SERVICE ~ notifying INTRUDER, FIRE and PERSONAL ATTACK	1	£40
	3 STAR SERVICE ~ notifying INTRUDER, FIRE and PERSONAL ATTACK	3	£30
	3 STAR SERVICE ~ notifying INTRUDER, FIRE and PERSONAL ATTACK	5	£20
ARMS3 used with alarm system plus	4 STAR SERVICE ~ notifying FREEZER TEMPERATURE, FROZEN PIPES and WATER LEAKS in addition to 3 star events.	1	£45
	4 STAR SERVICE ~ notifying FREEZER TEMPERATURE, FROZEN PIPES and WATER LEAKS in addition to 3 star events.	1	£45
ARMS10	4 STAR SERVICE ~ notifying FREEZER TEMPERATURE, FROZEN PIPES and WATER LEAKS in addition to 3 star events.	1	£45
ARMS3 used with alarm system plus	5 STAR SERVICE ~ notifying ELECTRICAL RING MAIN FAILURE, GAS LEAKS and CARBON MONOXIDE leaks in addition to 4 star events.	1	£50
	5 STAR SERVICE ~ notifying ELECTRICAL RING MAIN FAILURE, GAS LEAKS and CARBON MONOXIDE leaks in addition to 4 star events.	3	£38
ARMS30	5 STAR SERVICE ~ notifying ELECTRICAL RING MAIN FAILURE, GAS LEAKS and CARBON MONOXIDE leaks in addition to 4 star events.	5	£28
COST INCLUDES 3 KEYHOLDERS	Change does not include the cost of the initial registration call when connecting the subscriber unit to arms. All calls made by the subscriber unit to arms are on a premium rate line charged at £1.50 per minute. Registration calls last approximately 5 minutes.		<b>ALL PRICES INCLUDE VAT</b>
ORDER CODE	Type	Price each exc. Vat	inc. Vat
MT99H	Subscriber Unit	£42.540	£49.990
MU44X	Additional Subscriber Unit Speaker	£12.750	£14.990
MU43W	Additional Subscriber Unit Microphone	£12.750	£14.990
ORDER CODE	Type	Price each exc. Vat	inc. Vat
MU41U	Water, Temp, Freezer Sensors	£22.970	£26.990
MU42V	Water, Temp, Freezer, CO Gas, Natural Gas & Mains Failure Sensors.	£93.600	£109.990

**System Contents:**

- 1 x Advantage control panel
- 1 x Low profile bell box including siren, RSCB, timer and strobe
- 2 x Passive infra-red detectors
- 2 x Magnetic door contacts
- 1 x 1.2A battery
- 50m 6-core cable
- Fixings and instructions

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YS02B 1	Security Systems Kit	£89.350	£84.250	£82.250	£104.990

## Omnicon 8000 Control Panel



- ★ 1 x Entry/exit zone
- ★ 4 x Detection zones (1 programmable as a designated fire zone)
- ★ 1 x Personal attack zone monitored 24 hours
- ★ 1 x 24-hour tamper monitoring zone
- ★ 3 x Communicator outputs

The Omnicon 8000 is a 5-zone microprocessor control panel. It is designed primarily for domestic and small commercial applications and has a large number of programmable features.

The microprocessor has a non-volatile memory, this protects all programming if the power is interrupted. A watchdog circuit, which is found in many expensive commercial panels, has also been introduced to this control panel to protect the processor from any mains borne interference. The unit can be easily programmed by use of the onboard keypad, the display of 8 LEDs will indicate the status whilst programming the unit or whilst in use.

Dimensions: H 214mm W 298mm D 80mm  
Outputs: Internal speaker, External sounder, Latching strobe, Positive set for latching PIRs, Auxiliary 12V supply, 1A power supply.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YS04E 1	MSS8000 Panel	£48.500			£56.990

## Intruder and Fire Alarm

A1 Security



The MSS3500 is a 9 zone microprocessor control panel, ideally suited for use in large domestic and small, or medium, commercial installations.

The MSS3500 provides:

- ★ 1 x Delay zone for entry/exit
- ★ 1 x 24 hour zone for personal attack monitoring
- ★ 1 x 24 hour tamper monitoring (with the added benefit of a tamper indication being shown by an LED on each separate zone)
- ★ 5 x Detection zones
- ★ 1 x Fire zone

**Specification**

Construction: Polycarbonate  
Dimensions: Height 214, width 298, depth 80 (mm)  
Outputs: Internal speakers  
External speakers: Positive set for latching PIRs  
Latching strobe: Auxiliary 12V supply  
Dedicated fire output: 1A power supply.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XP02C 3	Alarm Panel MSS3500	£59.560	£50.750	£46.460	£69.990

## Remote Keypad for MSS3500



All the features of the keypad, display and audible warnings which are present in the main control panel are also present on the remote keypad. Up to 2 remote keypads can be fitted to the system thus providing more flexibility, i.e. giving the facility to arm, disarm, and programme the system from wherever a remote keypad is fitted. Flush or surface mounted.

**Specification**

Construction: White enamelled metal case  
Dimensions: Height 115, Width 190, Depth 30 (mm)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YZ66W	MSS3500 Remote Keypd	£38.280	£28.030	£26.770	£44.990

## Remote Slave Keyswitch

This neat remote keyswitch, in a polycarbonate case, enables the Advantage and Omnicon 8000 control panel to be armed or disarmed from a separate location outside the protected area. Incorporation into these systems enables the keypad panel to be activated, whilst retaining all the desirable programmable features of a keypad panel.

Dimensions: (H) 100, (W) 70, (D) 27 (mm)

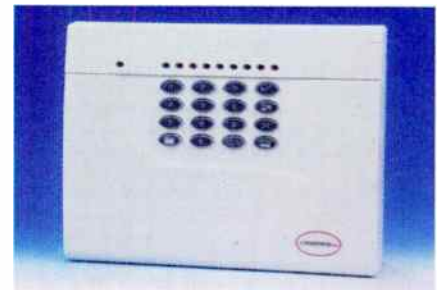


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YZ65V	Slave Keyswitch	£11.050	£9.600	£9.090	£12.990

## Advantage ZX6 Alarm

A1 Security



- ★ 1 x Entry/exit zone, designated zone 1
- ★ 5 x Detection zones
- ★ 1 x Personal attack zone monitored 24 hours
- ★ 1 x 24-hour tamper monitoring zone
- ★ 2-button easy-set facility

The Advantage is a 6-zone microprocessor control panel, designed primarily for domestic and small commercial applications.

The microprocessor has a non-volatile memory, this protects all programming if the power is interrupted. A watchdog circuit, which is found in many expensive commercial panels has also been introduced to this control panel to protect the processor from any mains borne interference. The operation of the control panel can be either by the backlit digital keypad, which has the option of 2-button easy setting, full and part guard, or by the use of a remote backlit keypad or keyswitch, available separately in this catalogue.

Dimensions: H 185mm W 250mm D Top 30mm Bottom 50mm

Outputs: Internal speakers, External sounder, Latching strobe, Positive set for latching PIRs, Auxiliary 12V supply, 1A power supply.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YS03D 1	Advantage ZX6 Panel	£38.280	£34.950	£32.750	£44.990

## Backlit Remote Control

A1 Security



- ★ Programmable 1-12 digit user code
- ★ Backlit keypad
- ★ Anti-tamper protected
- ★ Up to 10 remote keypads can be fitted
- ★ Built in sounder

An attractive compact remote keypad for use with the Advantage and Omnicon 8000 control panels. The remote keypad can be mounted either flush or surface, using a standard light switch pattress (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YS10L	Remote Keypad	£15.310			£17.990

See Stock Code Index For More Price Breaks

Account Enquiries: 01702 554187

## Caravan Alarm Kit



An easy-to-fit expandable alarm system for caravans, boats, summerhouses, garages, sheds, workshops, etc. Operates from a single PP3 battery (JY49D, not included). Replacement keys are available.

Retail Unit Price each (inc. VAT).

Order Code	Type 9930	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
AP97F	Versatile Alarm	£8.500	£7.950	£7.250	£9.990
AR31J	Versatile Alarm Key	£0.417			£0.490
JY49D	Duracell PP3	£2.800	£2.500	£2.200	£3.290

## Outdoor Siren



This compact, attractive External Siren Output can be easily connected to the alarm to provide a visible and extremely audible alarm. The siren could be mounted on the outside of the building, or positioned closer to, or even inside, the main building. The siren is easy to install and is supplied with the necessary hardware and cable.

Retail Unit Price each (inc. VAT).

Order Code	Type 4812	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
CW50E	FSA105 Outdoor Siren	£7.650	£5.950	£5.200	£8.990

## Garage Door Sensor

This garage door sensor is specifically designed for up-and-over type doors, and will quickly react to anyone trying to open the door when the alarm is armed. Easy to install and supplied with fitting instructions.



Retail Unit Price each (inc. VAT).

Order Code	Type 4798	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
CW51F	FGS104 Garage Sensor	£6.800	£5.150	£4.500	£7.990

## Urgent Requirement?

Call and collect from your local Maplin store.

## Wireless Systems

### Wireless Home Alarm Kit



The Maplin Fox Wireless Home Alarm is a technically advanced house alarm system that uses radio waves instead of direct cable connections between the sensors and the central alarm panel. This greatly simplifies the installation and any further expansion of the system. The basic system includes the following features:

- ★ 4 detection zones, part or full arming capability
- ★ Remote control panic alarm
- ★ Easy to fit, simple installation
- ★ No ugly wiring between detectors and the control panel
- ★ DTI approved transmitters
- ★ Full remote control operation, via key-fob transmitter
- ★ Built-in extra loud 120dB siren
- ★ Fully expandable — just add more detectors
- ★ Output for external siren, for extra attention
- ★ Optional battery back-up for protection during mains failures
- ★ Intrusion history display shows where the alarm was triggered
- ★ Unique code-learning feature eliminates tedious manual programming of the control panel and key-fob transmitters

The basic Wireless Home Alarm System includes a Control Panel, Wireless PIR Intruder Detector, Wireless Contact Transmitter, 2-button Key-fob Transmitter, Instruction Manual and wall fixings. An expanded kit, CN10L, is also available (see below) which includes extra PIR sensor, extra contact transmitter and external siren/strobe unit.

Retail Unit Price each (inc. VAT).

Order Code	Type 9988	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
XS57M	FSS7500 W/Less Alarm	£85.090	£76.760	£72.720	£99.990
DE76H	Wireless Alarm Video	£4.250			£5.000

### Wireless Alarm Kit



- ★ Easy to install and operate
- ★ Fully expandable
- ★ Low battery indicators for sensors
- ★ Piercing 120dB Siren & strobe
- ★ Up to 4 keyfob transmitters can be used
- ★ Any number of sensors may be used
- ★ Includes wireless doorbell

An expanded version of the XS57M system containing the following components:  
Control panel; 2 wireless PIR detectors; 2 contact

transmitters; doorbell transmitter; external siren with strobe light; remote control key fob; magnetic contact switches; and full instructions. The system requires 5 x PP3 batteries (JY49D not included) for the detectors and doorbell. An optional lead-acid back-up battery is available (YJ69A) for continued protection during power failures.

Retail Unit Price each (inc. VAT).

Order Code	Type 9747	Price each exc. VAT			inc. VAT each 1+
		1+	5+	20+	
CN10L	Wireless Alarm Kit	£144.670			£169.990
YJ69A	1.2Ah L/Acid Bat 12V	£13.600	£10.300	£10.050	£15.990

## PIR Detector



Additional PIR Detectors can be installed in every major room in the house providing additional security and peace of mind. The Wireless PIR Detector has a coverage angle of 90° and a range of 12m and is therefore ideal for mounting in a corner to protect a whole room. Requires an alkaline PP3 battery (JY49D). A pack containing three different types of lens is also available (DK21X).

Retail Unit Price each (inc. VAT).

Order Code	Type 9675	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
XS58N	FWP100 Wireless PIR	£25.520	£24.190	£20.150	£29.990
DK21X	FPL100 3 PIR Lenses	£2.540	£1.930	£1.740	£2.990

## Contact Transmitter



By using additional Wireless Contact Transmitters you can connect other windows, patio and exterior doors into the system for maximum protection. Supplied with mounting hardware and instructions. Requires an alkaline PP3 battery (JY49D).

Retail Unit Price each (inc. VAT).

Order Code	Type 9970	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
XS59P	FWT101 Contact TX	£12.750	£10.350	£9.040	£14.990

**Doorbell Transmitter**



By adding a Wireless Doorbell Transmitter to the Wireless Alarm System, you can save the inconvenience of wiring up a doorbell. Requires an alkaline PP3 battery (JY49D).

Retail Unit Price each (inc. VAT).

Order Code	Type 1583	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
XS60Q	Doorbell Transmitter	£11.050	£9.150	£8.250	£12.990

**External Siren/Strobe**



This siren/strobe unit is housed in a robust polypropylene, weatherproof enclosure and is specifically designed to operate with the Fox wireless alarm (CN10L). Conventional 4 core burglar alarm cable may be used to connect to the alarm panel.

This unit will also work with any suitably equipped alarm panel. The siren and strobe may be wired to function separately if required.

Power requirement 12v DC  
Siren output 110 dB

Retail Unit Price each (inc. VAT).

Order Code	Type 12843	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FR69A	Siren/Strobe	£21.260	£17.350	£15.290	£24.990

**Cordless Alarm System**

A1 Security



- ★ Cordless system, very easy to install, requires minimum wiring
- ★ Sophisticated anti-jamming protection
- ★ 5 detection zones with a maximum of 15 cordless detectors/sensors
- ★ Complies with requirements of BS6707 – intruder alarm systems for consumer installations
- ★ Conforms to wireless standard BS6799 Pt 4A and to MPT 1340 wireless exemption standard
- ★ Up to 6 remote control units can be used, each providing a personal attack alarm facility
- ★ 115dB external siren and flashing strobe unit

The RF8200 is a sophisticated cordless alarm system. A unique feature of this system is the anti-jamming protection. To enhance the system further, the movement detectors send out several signals if they detect an intruder. This combined with the anti-jamming protection makes the system virtually impossible to beat. The system is very easy to install, requiring minimal wiring. The remote control unit, movement detector and door/window sensor are already programmed and ready to use. It is only necessary to fit the batteries and site the units in suitable positions.

The advanced control panel incorporates five detection zones. Each zone can accept three types of cordless detector such as a PIR movement detector, smoke detector, or door or window sensor. The siren unit houses a powerful 115dB siren and flashing strobe light. Both the housing and the cable connecting the unit to the control panel are protected from tampering. The PIR movement detector, door/window sensor and remote control are available separately. A smoke detector is also available separately that will provide 24-hour protection from smoke and fire even if the alarm is disarmed.

The control panel has provision for a sealed lead-acid battery (YJ69A, not supplied) to provide battery back-up in the event of a mains power failure.

**Contents of Kit**

- Control panel: 1
- PIR detector: 2
- Door/window sensor: 1
- Remote control: 1
- External bell box: 1
- Connecting cable: 20m
- All detector batteries
- Assorted clips, fixings and instructions

Retail Unit Price each (inc. VAT).

Order Code	Type 4779	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AQ39N	MSS8000 Cordless Alm	£170.200	£159.080	£154.530	£199.990
AQ40T	MSS8002 PIR Detector	£32.330	£28.300	£26.500	£37.990
AQ41U	MSS3003 Smoke Detect	£32.330	£27.950	£25.950	£37.990
AQ42V	MSS8004 Door/Win TX	£25.520	£21.160	£19.850	£29.990
AQ43W	MSS8005 Rem/PA TX	£17.010	£15.400	£14.800	£19.990

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**Cordless Shock Sensor RF8007**



- ★ LED indication
- ★ Adjustable sensitivity
- ★ PP3 type battery

The state of the art impact and vibration detector is an accessory to add to the RF8200 system. The detector can be fitted to most window and door frames to detect any sudden impact. The detector operates on a 9V PP3 battery and sends a signal to the control unit identifying if the unit is being tampered with or a forcible entry is being attempted (when the system is armed).

Retail Unit Price each (inc. VAT).

Order Code	Type 9713	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YS06G	CdLess Shock Sensor	£22.970	£21.140	£20.200	£26.990

**Solar, Cordless Alarm Kit**

A1 Security



- ★ Solar bell box - no cable to run to control panel
- ★ Cordless detectors - easy to install
- ★ Sophisticated Anti-jamming system
- ★ System can take up to 3 bellboxes
- ★ System is fully expandable
- ★ Extensive programmable features
- ★ Conforms to BS6799 IV Part A and MPT 1340 Exemption standard

A sophisticated solar, cordless alarm system with anti-jamming circuitry to prevent tampering. All sensors are wireless and easily installed without the need for running cables. The bellbox is solar powered with full battery backup and also requires no wiring. Up to three bellboxes can be installed on this system.

**Kit Contents**

- Control Panel 1
- PIR Detector 1
- Door/Window sensor 1
- Solar Bellbox with Siren/strobe 1
- Rechargeable battery 1
- All detector batteries
- Assorted clips & fixings
- Full fitting instructions

Up to a total of 3 solar powered bellboxes may be connected to this system. Additional bellboxes are available (order code VJ74R).

Retail Unit Price each (inc. VAT).

Order Code	Type 12580	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
YD44X	Solar Cordless Alarm	£204.240	£195.500	£187.000	£239.990
VJ74R	Solar Siren/Strobe	£93.600			£109.990
AQ40T	MSS8002 PIR Detector	£32.330	£28.300	£26.500	£37.990
AQ41U	MSS3003 Smoke Detect	£32.330	£27.950	£25.950	£37.990
AQ42V	MSS8004 Door/Win TX	£25.520	£21.160	£19.850	£29.990
AQ43W	MSS8005 Rem/PA TX	£17.010	£15.400	£14.800	£19.990

TO SCHEDULE  
YOUR DELIVERIES  
**01702 554000**

## Security Auto-dialler



**NEW**

A very advanced and useful addition to any security system, the auto-dialler connects to any alarm panel and will relay your pre-recorded message to up to 4 different personally programmed telephone numbers when the alarm system has been triggered. These can be any standard BT, Mercury or cellular numbers, such as for your home, office, or mobile phone so that you may be contacted if on the move. The unit plugs into a standard BT phone socket and is fully BABT approved. A simple programming sequence means that the contact numbers can be changed as often as required.

**Do not use to ring the emergency services directly.** Full instructions for the use and installation of the unit are supplied. Overall dimensions: 214 x 298 x 80mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB70M	Security Auto Dialler	£95.940	£67.670	£61.860	£100.990

## Siren/Strobe Housing With Built In Piezo Siren



This robust, weatherproof housing comes complete with a piercing 110dB siren and has provision to house a strobe light and various anti tamper devices if required. The casing is white with a red translucent section at the bottom for the strobe.

Dimensions 260 x 147 x 68mm Approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YD83E †	Siren/Strobe Box	£11.900	£8.100	£7.150	£13.990

## Outdoor Siren with Strobe Light



Designed to work with most Alarm systems, providing an additional siren with the added advantage of a bright red strobe. The powerful 120dB siren and eye-catching dual strobe light can be operated separately if necessary. The Siren and Strobe Light can be used with many suitably equipped alarm systems. Supplied with instructions, mounting bracket and 15m of cable.

**Specification**  
 Sound output: 120dB  
 Power requirements: 11V to 14V DC  
 Operating current:  
 siren: 200mA  
 strobe: 250mA

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
KU93B †	FSA106 Siren+Strobe	£12.750	£11.950	£11.250	£14.990

## Bell Boxes

### Assembled Low Profile Polypropylene Siren Housing

A1 Security



- ★ Rechargeable 6V power cell included
- ★ Varnished printed circuit board to withstand adverse weather conditions
- ★ Available in White

Attractive low profile siren housing complete with siren, timer, rechargeable self-contained bell module (RSCB) and strobe light. The siren will emit an ear piercing 115dB two tone sound when activated. The RSCB protects the unit and the connecting cable, if the unit is tampered with, by opening the front cover, pulling the unit from the wall or cutting the cable. The RSCB will cut in and sound the siren from its own built-in battery, automatically recharged by the control panel.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YS09K 5	Assembled Bellbox	£34.030	£30.250	£27.780	£39.990

### Polypropylene Low Profile Siren Housing



- ★ Attractive lasso proof design
- ★ Will accommodate most low profile sirens and SCBs
- ★ Anti-foam unit (no vents)

Eye pleasing low profile siren housing made from polypropylene plastic, this product has been manufactured to withstand the weather elements and needs no maintenance. The siren box has no vents, this prevents attack from the would-be thief using foam to limit the noise. Comes complete with back-plate, with numerous cable access holes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	
YS08J	Low Profile Bellbox	£7.220		£8.490

## Large External Alarm Box

A large well-made external alarm box in polypropylene. The box has a strong rear panel with various fixing holes and a shelf for a battery etc. The front part of the box is coloured and has three vents moulded in each side. The two parts clip together after fixing the back plate to an outside wall and then one screw locks the box together. A plate is provided for fixing a microswitch, e.g., FP45Y or FP42V etc. which would be held operated by the long thread on the screw. Anyone attempting to unscrew the screw to get into the box will operate the microswitch long before the screw is removed. Overall size 405 x 273 x 140mm deep. Box is available in red, white, or yellow.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YP50H 2	Bell Box Yellow	£5.940	£4.190	£3.690	£6.990
YP51F 2	Bell Box White	£6.370	£4.490	£3.950	£7.490
YP53H 2	Bell Box Yellow	£6.370	£4.490	£3.950	£7.490

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## A1 Bellbox Sticker

A1 Security

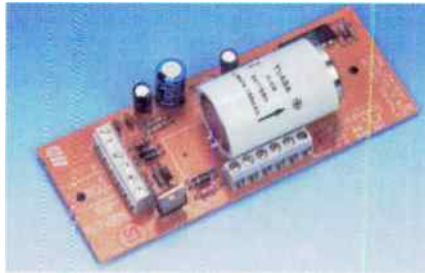


In response to customer's requests, we now stock A1 stickers which will affix to most styles of alarm bellbox. They have the effect of making a DIY alarm system or dummy bellbox more realistic and come in either white or black. (bellbox not included).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD98G	Bellbox Sticker (BK)	1+ £0.842 25+ £0.610 100+ £0.510	1+ £0.990
YD99H	Bellbox Sticker (WH)	1+ £0.842 25+ £0.610 100+ £0.510	1+ £0.990

## RSAB Unit

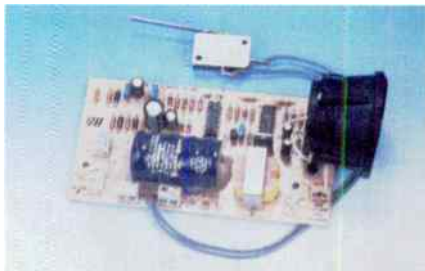


A compact rechargeable self-actuating bell module for use with sirens and bells. Utilises a 6V 280mAh battery allowing use with high power sirens, etc. Standard connection to most alarms supporting SW- and RETURN and siren output connections. Fitted with an anti tamper microswitch. Dimensions: 120 x 50 x 30mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CN65V	R.S.A.B. With Switch	1+ £11.900	1+ £13.990

## RSAB with Siren

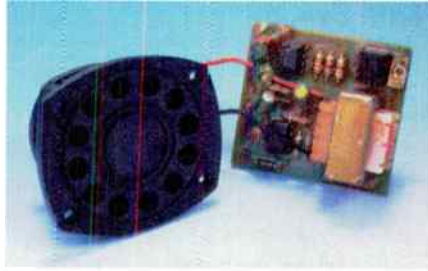


A rechargeable self-actuating bell module with a built-in siren. The 6V 280mA battery combined with the high power siren provide a real deterrent to thieves. Standard alarm connections using SW-RETURN and siren outputs. Also features connection points for an LED, battery defeat and ready fitted tamper microswitch. Overall dimensions: 150 x 67 x 60mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CN66W	R.S.A.B. With Siren	1+ £16.160	1+ £18.990

## Piezo Siren Driver Module



A complete piezo siren driver module for alarm systems, etc. that emits a piercing 120dB at 1m warbling sound. The module requires a 12V DC 350mA supply. Module PCB measures 52 x 48 x 22mm. Sounder measures 55 x 60 x 28mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE75S	Piezo Driver Module	1+ £7.650	1+ £8.990

## Small Siren

A small, compact yet powerful siren requiring a power supply of between 6-14v DC making it ideal for a variety of applications. A small mounting bracket is located at the bottom with two fixing holes.



**Specification**  
Power supply range 6-14v DC  
Current rating 100mA (at 12v)  
Output 108 dB (at 12v)  
Diameter 48mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD76H	Small Siren	1+ £3.820 25+ £2.680 100+ £2.350	1+ £4.490

## Weatherproof Siren



A miniature, HI-powered siren ideally suited for indoor or outdoor use. Comes complete with a choice of 2 removable mounting brackets for ease and flexibility of fixing. Supplied with approx. 250mm of twin cable.

**Specification**  
Power supply range 6-14 V DC  
Current (at 12V) 150 mA  
Siren output 115dB  
Dimensions 58mm Diameter  
50mm deep

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD84F	Weatherproof Siren	1+ £4.670 10+ £3.280 25+ £2.980	1+ £5.490

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## Alarm Siren with Battery Backup



A 12V siren for car alarm systems, etc. that has a built-in rechargeable battery that will activate the siren in the event that the car or main battery is disconnected. The siren can be triggered from either a positive or negative pulse. The siren can be disabled for servicing by a keyswitch that has a protective rubber cover. Requires 12V DC 1.2A supply. Dimensions: 92mm(dia) x 112mm(h) x 95mm (d)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE76H	Siren With Backup	1+ £17.610	1+ £19.990

## Twin Sounder in Housing



An extremely loud 126dB (at 1m) twin warbling piezo sounder in a tough black plastic housing. Requires 12V DC 650mA supply.

Dimensions: 127 x 68 x 90mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE68A	Twin Sounder	1+ £12.75	1+ £14.99

## Low Profile Xenon Flasher Unit



Weatherproofed xenon tube-based flasher designed primarily as an alarm beacon. Gives off two bright, attention-grabbing pulses of light every second. The translucent acrylic cover lens of the unit is marked with Fresnel rings and the sides are striated to maximise light dispersal. Flashers with lenses in four different colours are available; red, clear, amber and blue. The body itself is manufactured from durable black ABS plastic. This unit is not suitable for continuous flashing use. Tube life approx. 1 million flashes.

Working voltage: 12V DC  
 Supply current: 180mA  
 Power Output: 1W  
 Flash Rate: 2Hz (approx)  
 Overall size: 70mm dia. x 44mm high  
 Fixing: 1 x 6mm dia. centre fixing  
 Supplied with approx 0.5m red and black cable and mounting gasket.

Retail Unit Price each (inc. VAT).

Order Code	Type 2047	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
ZC14Q	Xenon Flasher Amber	£8.500	£6.820	£5.350	£9.990
ZC15R	Xenon Flasher Blue	£8.500	£6.820	£5.350	£9.990
ZC16S	Xenon Flasher Clear	£8.500	£6.820	£5.350	£9.990
ZC17T	Xenon Flasher Red	£8.500	£6.820	£5.350	£9.990

## Alarm Accessories

### Reed Switch Recessed



A reed switch and magnet encapsulated in identical white plastic mouldings designed to be recessed into door or window frames. Reed moulding has four wires, two form a security loop, the other two are connected to the reed. Reed contact makes when subjected to a magnetic field.

Operate distance: 9.5mm  
 Release distance: 11mm  
 Flange dimensions: 19mm dia x 1mm thick  
 Main body dimensions: 27.5 x 8mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 4757	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YW46A	Door Contact Reed	£1.690	£1.260	£1.110	£1.990

## Five Terminal Flush Contact Reed Switch



A magnet and reed switching sensor for burglar alarms, normally to be recessed into doors or windows and their frames. One part contains the magnet, while the other part contains the reed switch which is normally closed in the presence of the magnet. Opening the door/window will cause the reed to open. The reed switch terminates in a pair of screw terminals, and there are a further three terminals for the security loop. Operating distance, reed to magnet: Reed closes at 13mm, and opens at 15mm. Dimensions, magnet or reed: Length 35mm, width 22mm. Requires a recess at rear in door or frame 19mm diameter (3/4in.), by 15mm deep. Fixing centres 27mm. Screws supplied. Conforms to BS4737.

Retail Unit Price each (inc. VAT).

Order Code	Type 3076	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK77J	Flush Contact Reed	£1.690	£0.859	£0.636	£1.990

## Panel Pin Fixing Five Terminal Contact Switch



Magnet and reed contact switch identical to the above, except parts are retained in the door or window frame by a pair of 15mm long panel pins. Ideal where dimensions of the wooden frame are limited. Each surrounding lip is 26mm diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type 3077	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JU65V	Pinned Flush Reed	£1.690	£0.859	£0.636	£1.990

## Miniature Contact Switch

A very small, compact magnetic contact switch consisting of a sealed unit reed switch wired with 4 core cable and a matching magnet. Available in white (MM08J) or brown (MM10L).



Retail Unit Price each (inc. VAT).

Order Code	Type 12585	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
MM10L	Min Contact (Brown)	£1.690	£1.400	£1.230	£1.990
MM08J	Min Contact Switch	£1.690	£1.350	£1.190	£1.990

## Reed Switch Surface

A surface mounting reed switch and magnet in similar plastic mouldings. Reed unit has five screws, three for making security loops and two are connected to the reed. Reed contact makes when subjected to a magnetic field.

Available in white (YW47B) and brown (MM18U).

Operate distance: 14mm  
 Release distance: 15.5mm  
 Dimensions: (both parts) 66 x 14 x 12mm  
 Fixing centres: 52mm

Retail Unit Price each (inc. VAT).

Order Code	Type 2082	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YW47B	Surface Cont. White	£1.690	£0.929	£0.783	£1.990
MM18U	Surface Cont. Brown	£1.690	£1.180	£0.960	£1.990

## UPVC Window Contact



An alarm contact switch especially designed for UPVC windows where drilling or screw fixings may invalidate manufacturers warranty. This device is affixed by means of a self adhesive pad on both the switch and the magnet. As it is so easy to fit, it may also be used in place of conventional contact switches in most locations indoors.

Retail Unit Price each (inc. VAT).

Order Code	Type 12611	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
MM11M	UPVC Contact (S/A)	£1.690	£1.400	£1.230	£1.990

## Door Loop



Two junction boxes connected with 300mm of four core cable. Each box contains five screw terminals and two others, connected to contact which breaks when the lid is opened. Available in white (YW48C) or brown (MM20W).

Retail Unit Price each (inc. VAT).

Order Code	Type 12561	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YW48C	Door Loop White	£2.970	£2.170	£1.970	£3.490
MM20W	Door Loop Brown	£2.970	£2.380	£2.110	£3.490

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WHILE STOCKS LAST



## Window Foil



A self-adhesive aluminium foil with a strong adhesive on one side and a shiny finish on the other. As the window foil has a backing paper only remove as much as is necessary as you fix the foil around the window.

To form a neat mitred fold proceed as follows: Lay the foil about 25mm (1in.) from the window frame. At the first corner fold the foil back over itself, adhesive side upper most. Now fold the foil back on itself turning it through 90° so that the adhesive is now on the under side. This will result in a corner being formed at right angles to the original direction. Also a neat mitred 45° fold is made.

Continue to lay the foil parallel to the frame and repeat the process for any other remaining corners. Leave enough foil at the beginning and the end so that the Window Foil Termination Block (YW51F available separately) can be connected. It is advisable to practice with a small amount of the foil first before attempting to complete the major project.

**DO NOT CUT THE FOIL AT THE CORNERS AS THIS WILL BREAK THE CONTINUITY. THE ONLY TIME IT IS CUT IS AFTER LAYING THE FOIL AND CONNECTING IT TO THE WINDOW FOIL TERMINATION BLOCK (YW51F).**

If the glass cracks the foil will break. Supplied on reel 33m x 9mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YW50E	Window Foil	£2,340	£1,600	£1,470	£2,750

## Window Foil Terminations

Two self-adhesive terminating blocks which clamp onto the ends of the window foil and provide a screw terminal connection to the foil. Moulded in clear acrylic plastic.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YW51F	Foil Terms	£0,672	£0,393	£0,355	£0,790

## Pressure Mat



Designed for use with intruder alarms etc., the mat is placed under a carpet, rug etc. and gives an abrupt change from open to short circuit when stepped on. Size: 555 x 395 x 3mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1-	10+	25+	
YB91Y	Std Pressure Mat	£5,090	£2,630	£2,610	£5,990

## Stair Pressure Mat



A four contact pressure mat as YB91Y, but having dimensions 555mm x 215mm x 3mm in order to lay along the top of a step or stair.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FK79L	Stair Press Mat	£4,240	£2,270	£2,000	£4,990

## Junction Box 5-Way



A white PVC junction box with five screw terminals and two others connected to a contact which makes when the lid is on and breaks when the lid is removed. Suitable fixings (not supplied), two 12.7mm (1/2in.) countersunk No.6 woodscrews. Dimensions: 80 x 24 x 18mm. Fixing centres: 56.5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YW49D	EA Junction Box	£0,842	£0,477	£0,406	£0,990

## Junction Box 8-Way



A junction box for interconnecting cables of a security system. The box has a pair of contacts at centre which are normally closed with the lid in position, but which are released if any attempt is made to remove the lid. There are eight additional

screw terminals, and a number of holes are provided in the back for cable entry and screw fixing. Dimensions: 72 x 56 x 19mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK76H	Junc Box JIB8S	£0,936	£0,657	£0,596	£1,100

## Junction Box 12-Way

A junction box for interconnecting cables of a security system. It has a pair of break contacts which will normally be closed while the lid is securely in position, but which will be released if any attempt is made to remove the lid. The box has twelve screw terminals. Colour is white.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
MM19V	12W Junction Box	£1,430	£1,230	£1,050	£1,690

## Help Button



A rectangular button in an off-white plastic moulding with the word "help!!" printed in red on a push-to-make with screw terminals. Dimensions 76 x 23 x 15mm deep. Fixing centres 66.5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FP12N	Help Button	£1,260	£0,960	£0,840	£1,490

## Panic Button

A red button in a round, off-white mounting for fixing to a wall, underside of a table or counter or any flat surface, which may be used to trigger an alarm system manually.

Contacts are single pole push to make, with screw terminals. The red button is surrounded by a shallow, concave recess to prevent it being depressed accidentally. Dimensions: 44mm diameter x 18mm deep. Fixing centres 28mm, two screws supplied.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK46A	Panic Button	£3,020	£2,270	£2,020	£3,550

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## Push Action Panic Button

A large red rectangular plastic button housed in a quality white plastic box. The button is normally flush with the top of the box and requires minimum effort to activate. Once pushed and the loop is broken (by reed switch), a supplied key is used to reset the button. The lid has a single screw fixing, and a tamper contact is provided that is made when the lid is screwed into place.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MM06G	T/O Panic Button	£3.020	£2.420	£2.200	£3.550

## Metal Panic Button

A red button housed in a metal case. The button requires a positive push to activate alarm. It is push-to-break and should be used in normally closed loop circuits. Once depressed, the alarm can only be disarmed by resetting with the key provided and resetting the control panel. The unit is of a sturdy metal construction and ideally suited to heavy duty applications.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MM07H	Metal Panic Button	£5.520	£4.800	£4.350	£6.490

## Vibration Sensor



A simple mechanical vibration sensor comprising a weighted moving contact which can be adjusted by a set-screw for varying degrees of sensitivity. Usually the screw setting is chosen for the contacts to be normally closed; physical displacement of the unit causing the contacts to open since the weighted movable portion remains inert relative to the body of the unit. The detector reacts best to a displacement in the same direction as the moving contact's natural direction of movement (it will operate with a displacement applied at right-angles, but to a lesser degree). Greatest sensitivity can be achieved by mounting the unit vertically with the bob-weight of the movable contact uppermost (cable entry hole at top). To ensure equal sensitivity in both directions two such units may be used mounted vertically with one turned 90° to the other. The two units are then wired together in series. In addition, a second contact is provided in series with the movable contact which is normally held closed by the cover so that the cover cannot be removed without triggering the alarm. Readily applicable to automotive security systems, for example.

Dimensions: 60mm long x 15mm wide x 22mm deep.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FK78K	Vibration Detector	£3.390	£2.420	£1.970	£3.960

## Glass Break Detector

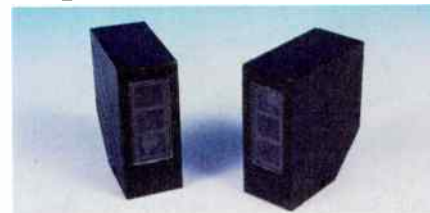
A sensitive glass-break detector which uses a strong adhesive pad to fix to the glass. The sensor may be positioned to give a make or break action. The sensor must be mounted at least 75mm from a corner or edge of the pane. The sensor is first fixed to the glass, then adjustments can be made which allow the sensor to be rotated to the desired position in accordance with the enclosed instructions for use. The two-core cable which is approx. 250mm long can then be terminated on a junction box mounted on the window-frame for example. Dimensions 34mm diameter x 21mm high.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FP11M	Glass Break Sensor	£2.540	£1.800	£1.440	£2.990

## Single Beam Break Detector



A single beam Infra Red detector with a range of up to 10 metres, suitable for indoor protection. It detects intruders when the beam is broken. The detectors each require a 12v DC power supply. TTL output.  
Note: Infra red beam break detectors work best in low light levels and are least effective in sunlight.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YD81C	Beam Break Detector	£21.260	£20.250	£16.650	£24.990

## Twin Beam Break Detector



A synchro twin beam infra-red detector with a range of 30 metres, suitable for indoor protection. It detects intruders when both the upper and lower beams are simultaneously broken. The detectors each require a 12V to 20V DC supply and the transmitter has a green LED in transmitting mode and the receiver has a red LED in alarm mode. A reed relay output is provided with normally closed contacts.

### Specification

Recommended range: 30 metres (indoor use)  
Beam characteristics: 950nm modulated 700Hz (wavelength)  
Beam response time: 50 to 100msec.  
Alarm period: 1sec.  
Relay output: Reed relay NC 20W 0-5A

Power requirement: 250V DC  
Current consumption at 12.5V DC: 20mA Tx 15mA Rx  
Rx alignment adjustment: 180° (±90°) horiz.  
Environment: -25°C to +50°C  
Case material: Infra-red transmissive polycarbonate 260g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BZ64U	Beam Break Detector	£28.070	£19.500	£17.950	£32.990

## Miniature Infra-red Detector

### A1 Security

A compact, 90° indoor passive infra-red detector as used in our existing range of Maplin alarm kits.



The unit can be fitted for normal range (up to 12m) or tilted down by 8° for a reduced range. The pulse count can be set for either 1, 2 or 3 counts, and it is suggested that at the recommended height, a count of 2 is selected. This will require an intruder to move a few paces before triggering the alarm. False triggering due to insects etc., will be greatly reduced. In addition to the normal alarm contacts, the device has tamper contacts as well. Requires 12V DC.

### General Specification

Detection system: Passive infra-red dual element sensor  
Range: 12m approx. over 90°  
Recommended mounting height: 2.2m  
Alarm signal: Normally closed contacts 30V DC 75mA maximum  
Tamper output: Normally closed 24V 50mA  
Supply voltage: 9 to 14V DC 50mA  
Ambient temperature: -10°C to +50°C  
Weight: 50g  
Case dimensions: 68 x 58 x 43mm, white ABS

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DM12N	Miniature PIR	£19.560	£16.630	£12.480	£22.990

## Indoor Pulse-Count Type 180°

A very high quality passive infra-red detector using the very latest technology to provide extremely high immunity to false alarms. The alarm will only be triggered if two consecutive signals are detected within about half a minute. This very small and unobtrusive unit can mount on a flat wall, in the corner between two walls or between the ceiling and a wall. An anti-tamper switch is incorporated which can be connected to the alarm system's 24-hour circuit along with smoke detectors, heat sensors etc. to set off the alarm even while the system is not set.



### Specification

Detection method: Dual pyroelectric passive infra-red  
Detection angle: 110° (fan shape)  
Coverage: 12m x 12m  
Detection angle: 180° (left - right)  
Coverage: 3m  
Detection beams: 38  
Detection rows: 2  
Mounting height: 1-8 to 2m

Adjustable angle: 30o Vertical  
 Operating voltage: 12V DC  
 Operating current: 20mA  
 Relay output: 30V at 0.5A N.C. max. (AC/DC)  
 Pulse count: Switchable 1 or 2.  
 In 2 count mode second pulse must occur within 40 secs for alarm to trigger  
 Alarm display: Red LED monitor  
 Alarm period: 2 (±1) seconds  
 Sensitivity: Adjustable  
 Tamper switch: Internal microswitch  
 Weight: 60g (Net)  
 Dimensions: 65mm dia x 43mm deep

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AJ96E	Pulse Count PIR	£20.410	£17.350	£12.480	£23.990

## High Immunity Indoor Pulse-Count Detector



A compact indoor PIR sensor for use with intruder alarm systems. This detector has superior immunity from white light, EMI and RFI, and exceeds the industry standards by 200%. Once installed, the unit gives highly effective intruder detection to BS4737. The detector is supplied with a volumetric lens, which has an adjustable range up to 12m (40ft.) over a 104° arc of coverage, producing a maximum width of 18.9m (62ft.). There are 3 alternative lenses available offering different ranges and coverage for specific applications. The pet lens (AG82D), if positioned above the reach of pets, prevents them from triggering the alarm accidentally. The curtain lens (AG83E) enables the detector to be hidden in a small gap between two curtains. The long-range lens (AG84F) is ideal for long corridors and passageways.

### Specification

Pyro-electric detector: dual-element, low-noise  
 Voltage: 9 to 16V DC  
 Current: 17mA typically at 12V DC  
 Alarm output: normally closed relay contacts rated at 24V DC 50mA  
 Tamper output: normally closed switch contacts rated at 24V DC 50mA  
 Alarm period: 2s to 3s  
 False Alarm Protection  
 Electrostatic discharge: no false alarm up to 8kV, complies with IEC 801-2 and BS6667 Pt 2  
 RF immunity: no false alarm from 150kHz to 1GHz at 30V/m modulated, complies with IEC 801-3 and BS 6667 Pt 3  
 Transient immunity: no false alarm up to 4kV, complies with IEC 801-4 and BS 6667 Pt 4  
 Operating temperature: -10°C to 55°C  
 Temperature tolerance: no false alarms up to 1.7°C/m  
 Maximum humidity: 95% non-condensing  
 Mounting: up to 4.1m (13.6ft.) with

Casing: adjustment range ±30°  
 flame retardant ABS  
 Dimensions: 90 x 63 x 40mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AG81C	Hi Immunity PIR	£21.260	£18.890	£14.090	£24.990
AG82D	Pet Lens	£0.842			£0.990
AG83E	Curtain Lens	£0.842			£0.990
AG84F	Long Range Lens	£0.842			£0.990

## 360° PIR Detector

This versatile PIR detector can be ceiling mounted to provide 360° coverage. Ideal for homes, storage areas and shops. To allow the unit to be serviced, cleaned or replaced easily, the sensor can be removed from the ceiling bracket by simply pulling it downward. The power connections, tamper and alarm contacts will be disconnected automatically when the unit is removed.



### Specification

Installation height: 3 to 4m  
 Power source: 10-5 to 15V DC  
 Activated current: <30mA  
 Continued alarm time: 1 to 3 seconds

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YE18U	360 Deg PIR Detector	£21.260			£24.990

## Outdoor PIR Light Control Device



A light control device with a 180° motion sensor and the ability to switch up to 1100 watts, attractively styled for indoor use but is also suitable for outdoor use. The unit uses a built-in passive infra-red (PIR) detector that reacts instantly to body heat and switches on a lamp(s). After an adjustable period of time, the lamp is automatically switched off. A built-in, variable light level, photocell deactivates the motion sensor during the day.

### Specification

Detection method: Passive infra-red  
 Power requirements: 220/240V AC 50Hz  
 Standby current: 30mA (max.)  
 Operating current: 35mA (max.)  
 Lighting load: 1100W (max.) incandescent 500W (max.) fluorescent  
 Detection range: 12m min. at 20°C  
 Detection angle: 180°  
 Adjustable angle: Vertical 180°  
 Lux level: 0 to 1000 lux  
 Housing design: Water resistant  
 Lamp-on time: 5 secs ±3 to 12 mins ±3

Retail Unit Price each (inc. VAT).

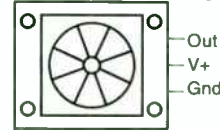
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BZ18U	Indoor/Outdoor PIR	£21.260	£18.890	£14.090	£24.990

## Passive Infra Red Module



An extremely compact passive infra red detector which can be incorporated into a variety of housings depending on the nature of the application required. This unit will work from a power supply of between 4.5 - 13.5V DC and is ideal for use with most burglar alarm systems which work from a 12V DC supply.

Viewed from above



The three connections are: Output, V+ and Gnd. The output is a logic signal that pulses high when movement is detected and is otherwise low. The output can be interfaced directly with other logic circuits, or used to switch an external load via a triac, opto-coupler or relay. The impedance is less than 35Ω, enabling it to directly drive a small (100Ω) pulse relay through a 150µF series capacitor.

The detection range is approximately 8 metres. Dimensions: 34 x 24 x 16mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YD85G	PIR Sensor Module	£9.350	£6.990	£6.250	£10.990

## Combined PIR and Smoke Detector



A space saving combined PIR and smoke detector in a compact white ABS case that is suitable for any intruder alarm system with 12V detector system. The PIR has an operational angle of 90° and a range of approximately 15 metres. The ionisation type smoke detector conforms to BS5446 Part 1. There are separate connections for use with control panels with fire and intruder outputs. To utilise all the functions, either one 8-way cable or two 4-way cables will be needed to connect to the control panel; two for the power connections, two each for the smoke detector and PIR and two for the anti-tamper function. Size 110 x 66 x 41mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CP96G	PIR/Smoke Detector	£25.520	£20.960	£18.940	£29.990

Account Enquiries: 01702 554187

## Combined PIR and Break Glass Detector

A1 Security

The PIR/Break glass detector is a twin detection device which can be fitted in conjunction with any alarm system control panel. The unit will activate the alarm system if, either movement is detected, or if the intruder breaks a window or glass door panel to gain entry.



### Specification:

**PIR detector**  
 Range 15 metres  
 Operational angle 90°  
 10 long range zones  
 10 intermediate zones  
 5 short range zones  
 Pulse count 1 or 3

**Break glass detector**  
 Range 15 metres  
 Electret microphone  
 Detection freq. 2 to 8KHz

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GG73Q	PIR/Glass Break	£25.520	£29.990

## Smoke Alarms

### Smoke Alarm Test Match



It is recommended that you clean and test your smoke alarm regularly. These matches are specially designed to produce dense smoke that simulates a genuine blaze. Merely strike the match and hold below your smoke alarm to hear whether it sounds promptly. Average contents 12.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GG60Q	Smoke Test Match	£1.060	£1.250

### Smoke & Fire Alarm



- ★ Operating indicator
- ★ Low battery warning
- ★ Test button
- ★ Loud piezo electric alarm
- ★ Battery included

The Micro 300 smoke & fire alarm is of compact design, easy to install with a battery life of

approximately 1 year. It complies to BS5446 Part One, comes complete with battery and five year manufacturer's guarantee. Twin pack also available (YD54J).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD53H	Battery Smoke Alarm	£4.240	£4.990
YD54J	Smoke Alarm Twin Pk	£7.650	£8.990

### Linkable Smoke & Fire Alarm



- ★ Interconnectable
- ★ Low battery warning
- ★ Loud piezo electric alarm
- ★ Test button
- ★ Battery included

The Micro 300i smoke & fire alarm can be linked to up to eleven similar alarms for simultaneous warning. It complies to BS5446 Part One and comes complete with five year manufacturer's guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD55K	Smoke Alarm Linkable	£6.800	£7.990

### Smoke & Fire Alarm with Escape Light



- ★ Emergency light illuminates when alarm sounds
- ★ Ideal for hallways and stairs
- ★ Loud piezo electric alarm
- ★ Low battery warning
- ★ Batteries included

The 350 smoke & fire alarm incorporates a bright light which illuminates when the alarm sounds to assist escape from a smoke filled room. It complies to BS5446 Part One, and comes complete with five year manufacturer's guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD56L	Smoke Alarm Light	£10.200	£11.990

**FOR TECHNICAL ADVICE  
 ON ALL PRODUCTS  
 01702 556001  
 e-mail: Technical@maplin.co.uk**

### Lithium Powered Smoke & Fire Alarm

Dicon

- ★ 10 year battery life
- ★ Easy test & silence feature
- ★ Loud piezo electric alarm
- ★ Operating indicator
- ★ Lithium battery included

The SA900 long life smoke & fire alarm is ideal for applications where changing batteries is either inconvenient or impractical. A lithium battery is included with a life expectancy of approximately 10 years under normal operating conditions. The alarm complies with BS5446 Part One and comes with a ten year comprehensive manufacturer's guarantee.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD57M	Smoke Alarm 10Y Batt	£11.050	£12.990

### Mains Powered Smoke & Fire Alarm



- ★ 220/240 V AC Hardwired
- ★ No batteries required
- ★ Interconnectable
- ★ Alarm pause feature
- ★ Sensitivity test button

The 670M smoke & fire alarm is mains powered and linkable to up to eleven similar alarms for simultaneous operation. It complies to BS5446 Part one and comes with a five year manufacturer's guarantee. Battery backup version also available (YD59P).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD58N	Smoke Alarm Mains	£10.200	£11.990

### Mains Powered Smoke & Fire Alarm with Battery Back-Up Facility



- ★ 220/240V AC hardwired
  - ★ Interconnectable
  - ★ Alarm pause feature
  - ★ Sensitivity test button
  - ★ Battery back-up feature (battery not included)
- The 370MBX smoke & fire alarm is mains powered and linkable to up to eleven similar alarms such that

if one is triggered all twelve will sound simultaneously. It complies to BS5446 Part one and comes with a five year manufacturer's guarantee. Requires an alkaline PP3 type battery for back-up operation, not included. JY49D is suitable.

Retail Unit Price each (inc. VAT).

Order Code	Type 12099	Price each exc. VAT	inc. VAT each
YD59P	Smoke Alarm B-BUp	1+ 10+ 25+ £17.010 £15.200 £14.550	1+ £19.990

## Low Voltage Smoke & Fire Alarm with Relay



- ★ Low voltage 12V to 28V DC powered
- ★ Linkable to up to eleven other systems
- ★ Compatible with Warden Call or remote telemetry systems
- ★ Form C normally open/close relay
- ★ Contacts can be configured as momentary or latching

The 440SRIM smoke & fire alarm has a working voltage range of between 12V and 28V DC and is ideal for linking to fire alarm systems. It comes with form C normally open/close relay contacts which can be configured as momentary or latching, and carries a five year manufacturer's guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type 12100	Price each exc. VAT	inc. VAT each
YD60Q	Smoke Alarm/Relay	1+ 10+ 25+ £25.520 £23.650 £23.000	1+ £29.990

## Plug Alert

Designed to be stuck to the top of ordinary mains plugs, these heat sensitive patches change colour if the plug overheats giving advanced notice of a potential fire risk.

Supplied in packs of 8.



Retail Unit Price each (inc. VAT).

Order Code	Type 18025	Price each exc. VAT	inc. VAT each
GG66W	Plug Overheat	1+ £2.970	1+ £3.490

## Carbon Monoxide Detector

A1 Security



A high quality carbon monoxide detector designed to keep you and your family safe at all times. Simply plugs into a standard 3-pin power socket providing

portability and fast, versatile installation. Complies with BS7860 standard to provide a high level of protection and security. Suitable for use in the vicinity of vehicles, domestic appliances and burning fuels such as oil, coal, natural/bottled gas, paraffin, wood, charcoal, etc. Supplied with full operating and installation instructions. Hard wired version for permanent installation also available which is ideal for landlords, etc.

### Specification

Power source 220-240V AC @ 50Hz  
Alarm trigger point 150ppm  
Alarm output 85dB @ 3m  
LED status indicators Power/alarm  
Dimensions 70 x 147 x 63mm

Retail Unit Price each (inc. VAT).

Order Code	Type 0985	Price each exc. VAT	inc. VAT each
Y576H	Carbon Monoxide Det	1+ 5+ 10+ £34.030	1+ £39.990
YD62S	CO Alarm HWired	£34.030 £30.450 £26.500	£39.990

## Propane/Butane Detector

A1 Security

Propane and Butane are extensively used as domestic and commercial fuels. They are both colourless but have distinctive odours. Both are highly flammable and have densities higher than that of air, so may not be noticed until built up to a dangerous level. This electronic alarm is designed to detect the presence of these gases before they reach high levels. Under normal conditions a green light shows. As the level of gas builds up a red light will show followed shortly afterwards by a piercing audible alarm. There is an amber light which will show should any fault occur. The unit must be hard wired.



### Specification

Power source 240V AC, 50Hz Mains  
Power Consumption 4.32W  
Operating Temp. 0°C - 40°C (32°F - 104°F)  
Sensor Type SP-11 Gas Sensor  
Audible Alarm 100dB at 3 Metres

Retail Unit Price each (inc. VAT).

Order Code	Type 12307	Price each exc. VAT	inc. VAT each
YD63T	Prop/But Alarm HW	1+ 5+ 10+ £36.580 £32.950 £31.000	1+ £42.990

## Carbon Monoxide Detector Patches



These patches could be life-savers. Carbon Monoxide (CO) gas is an invisible, odourless killer. Place a patch near to suspect appliances, which include gas water-heaters and fires, solid fuel fires, etc. If CO is detected then the patch changes colour, giving a visible warning. The patches should be replaced every 6 months. Supplied in packs of 2.

Retail Unit Price each (inc. VAT).

Order Code	Type 18027	Price each exc. VAT	inc. VAT each
GG65V	CO Detector Patches	1+ £4.240	1+ £4.990

## Fenceguard

A1 Security



★ Ideal protection against intruders & trespassers

★ Water & rustproof

★ Easy to install - supplied in 0.5 metre lengths

★ High impact plastic construction

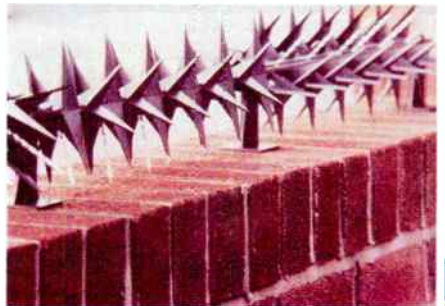
Your first line of defence against crime should be perimeter protection. The Fenceguard provides versatile, low cost security which is quick and easy to install, and provides a very effective deterrent. Fenceguard can be used in a variety of different applications. Typical examples include prevention of access via flat roofs, fences, brick walls and drain pipes. The high impact plastic construction means no maintenance is required. Available in 2m or 8m packs.

Retail Unit Price each (inc. VAT).

Order Code	Type 12096	Price each exc. VAT	inc. VAT each
YD95D	Fenceguard 2 Metres	1+ 5+ 10+ £12.750 £11.450 £10.750	1+ £14.990
YD96E	Fenceguard 8 Metres	£42.540 £37.250 £34.550	£49.990

## Rotaguard

A1 Security



The Rotaguard adaptor kit transforms Fenceguard into an effective rotating deterrent suitable high security applications.

Rotaguard is ideal for properties with high parameter walls and is cheap and easy to install.

Retail Unit Price each (inc. VAT).

Order Code	Type 12098	Price each exc. VAT	inc. VAT each
YD97F	Rotaguard Adaptor	1+ 10+ 25+ £4.240 £3.650 £3.350	1+ £4.990

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## Door Spy Holes

### 160° Door Viewer



Avoid opening your door to strangers with this stylish brass door viewer. Enables you to see exactly who is calling no matter where they decide to stand or how tall they happen to be. Suitable for door depths between 35 and 50mm. Simple to fit – just drill a 13mm hole at a convenient height and screw the retainer tube and the lens tube together from each side of the aperture.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE01B	Brass Door Viewer B1	£1.690	£1.990

### 180° Door Viewer



Enables you to see exactly who is calling no matter where they decide to stand or how tall they happen to be. Simple to fit – just drill a 13mm hole at a convenient height and screw the retainer tube and the lens tube together from each side of the aperture. Suitable for door depths between 35 and 50mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE03D	Brass Door Viewer B3	£2.540	£2.990

## Door Guards

### Brass Door Guard



A simple and effective device for preventing intruders from forcing open your door from the adjacent position. Ideally suitable when opening a door to strangers as the strong design makes it virtually impossible for them to force their way in. Cutting equipment suitable for disabling conventional door chains will prove useless against the Door Guard! Simply slide across the bar before opening the door. To unlatch the bar you must first fully close the door. Ruggedly designed using brass for strength and looks.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE09K	Brass Door Guard	£5.090 £4.250 £3.950	£5.990

## Portable Door Guard



When you want to ensure that the door is kept closed, this ingenious portable door lock solves the problem. Simply position the Door Guard around the door frame and push the ratchet mechanism forward. The door is securely fastened for peace of mind, especially when you are travelling away from home. Comes in a handy travel pouch that will slip into your pocket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GG63T	Portable Door Lock	£6.800	£7.990

## Door Access Systems

### Door Entry Systems

Door entry systems are an effective method of controlling access to offices, homes, factories, etc. They also help to protect the elderly or infirm by allowing them to identify callers before letting them into their homes. Other applications include operation of shared entrance doors in flats or office buildings, and remote door opening allowing secretaries and disabled or elderly people to admit visitors, doctors, etc., at the press of a button.

### Door Access System



- ★ Programmable 1 to 12-digit access code
- ★ Code can be easily changed by main user
- ★ Adjustable entry time from 3 to 99 seconds
- ★ Backlit keypad
- ★ Alarm system compatible
- ★ Anti-tamper protected
- ★ Keypad fits into standard single light switch pattern (not supplied)

A low-cost system, ideal to protect a single door point from unauthorised access. Suitable for use in domestic or small commercial applications. The system comes complete with main controller unit/power supply, remote flush fitting keypad and electronic lock release.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS12N 1	Door Access System	£50.560	£60.990

## Call and Collect

At all our stores nationwide.  
See the maps at the front of the catalogue for the nearest one to you.

## Electric Door Catch Release



A strong and secure electrically operated door catch release mechanism, which operates from 12V AC or DC, current 1-5A. Ideal for use in security, doorphone and restricted access systems. Please note the lock mechanism itself is not supplied and this should be purchased from a good hardware store or locksmith. Connection to solenoid coil is via two screw terminals. Mechanism requires a cavity of 102 x 21 x 29mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU89W	Electric Door Lock	£14.450 £9.850 £8.740	£16.990

## P151C Doorphone



A mains operated doorphone system with flush mounted door station and free standing or wall mounted internal handset. The room station has high/low volume switch and electric door lock release button. Separate D.C. power supply required – see battery section.

Effective distance	150m
Power	230V AC 50Hz
Dimensions:	
Handset	225 x 110 x 75mm
Door Station	140 x 98 x 38mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BED4E 5	Door Phone Lock	£32.330 £24.320	£37.990

## P662M (1-Way Kit) and P662T (2-Way Kit) Doorphone

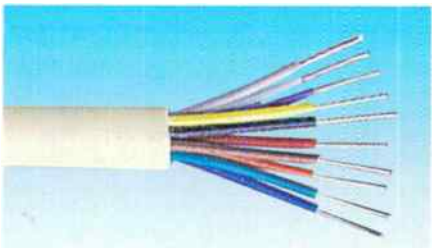


Each doorphone package consists of: Wall-mounting telephone handset(s) in hard-wearing matt white finish with door-lock release buttons and top or bottom cable exit. Surface-mounting door station with brushed metal plate and nameplates, volume control and back box. Mains transformer to power complete system. Electric door release (not suitable for deadlocks).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BE02D	10 Door Phone Kit 2 Way	£79.140	£92.990
BE03C	2 Door Phone Kit 1 Way	£64.670	£75.990

## P601M 10-Way Colour-Coded Cable (Twisted Pairs)



10-way colour-coded cable for wiring intercoms, doorphones and similar installations. 10 x 1/0-5mm (0.2mm<sup>2</sup>). White 5mm OD. 50m reel.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BE20W	Intercom Cable 10Way	£25.520	£29.990

## Video Doorphone



Now you can have an in-house security system that is technically sophisticated, easy to use, practical and attractively styled. The Video Doorphone allows you to view and communicate with your visitors while remaining in the privacy and safety of your home. The system consists of a camera and intercom which is housed in a strong polypropylene box with a weatherproof, aluminium front panel. A call button activates the monitor and chime alerting

you and showing a picture of your visitor automatically. The video monitor is complete with a handset and door release button which can be used to operate an electric door catch. The CCD camera has infra-red LEDs to allow you to view your visitors regardless of the lighting conditions. It will be necessary to purchase the required length of coaxial cable (XS52G) to complete the installation.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS82D	Video Entry Syst	£170.200	£199.990
XS52D	75 Ohm Cable	£0.331	£0.390

## CCTV

### Systems

## Security Camera for use with standard television



A low-cost CCD security camera based on one of our sub-miniature board camera modules. The camera is very easy to install and offers an affordable TV security for the old, infirm, single people or anyone desiring additional security. The camera has a built-in UHF modulator and can be connected directly to any domestic TV, so when there is a caller it is simply a matter of selecting the relevant channel to actually see the caller. The housing can be swivelled and angled to meet most viewing requirements. Supplied complete with 12V mains adaptor, cables, and connectors.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN48C	CCD Camera	£127.650	£149.950

## Domineye CCTV System



- ★ Connects directly into domestic TV/VCR
- ★ Weatherproof camera housing
- ★ Discreet and vandal resistant
- ★ Easy to install and operate
- ★ Complete with cables and connectors
- ★ Will work in total darkness

The Domineye is a versatile and easy to use system. It connects directly into standard TVs and VCRs and can be installed inside or outside the home or workplace.

It can be used to detect bogus callers, keep a watchful eye on babies rooms, monitor visitors in a business environment, and for many other applications. It has a powerful built in microphone to aid detection of intruders and will work in low light

or total darkness (with a range of approx. 2 Metres). Supplied with vandal resistant, weatherproof dome, modulator, camera, cable and connectors. Extra cables are available in 10m, 15m, 25m, 50m and 100m lengths. An in line connector is also available for the joining of two cables.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CD12N	1 Domineye CCTV Kit	£187.220	£172.000	£163.000	£219.990
MT95D	10m Cable	£15.311			£17.990
VD20W	15m Camera Cable	£19.560	£18.500	£17.600	£22.990
VD21X	25m Camera Cable	£31.480	£29.100	£27.500	£36.990
MT98G	1 50m Cable	£42.540			£49.990
MU31J	1 100m Cable	£76.580			£99.990
VD22Y	Camera Cable Conn.	£3.820	£3.590	£3.460	£4.500

## Domineye Pro



- ★ Supplied with 2 cameras
- ★ Connects up to 4 cameras
- ★ Automatic switching
- ★ Two way speech
- ★ Connects directly into domestic TV/VCR
- ★ Weatherproof camera housing
- ★ Discreet and vandal resistant
- ★ Easy to install and operate
- ★ Complete with cables and connectors
- ★ Will work in total darkness

The Domineye Pro is a versatile and easy to use system. It connects directly into standard TVs and VCRs and can be installed inside or outside the home/workplace. Two cameras are supplied but the switching unit will switch up to four so additional cameras may be added.

It can be used to detect bogus callers, keep a watchful eye on babies rooms, monitor visitors in a business environment, and for many other applications. It has a powerful built in microphone to aid detection of intruders and has two way speech facility enabling you to speak to callers without necessarily letting them in. The cameras will work in low light or total darkness (with a range of approx. 2

Metres). Supplied with vandal resistant, weatherproof domes, modulator, 4 way switcher, 2 cameras, cables and connectors.

Extra cameras are available. Extension cables are also available in 10m, 15m 25m, 50m and 100m lengths. In line connectors are also available for joining two cables together.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
GT50E	Domineye Pro	£340.410	£325.000	£310.000	£399.990
GT51F	Domineye Camera	£127.650			£149.990
MT95D	10m Cable	£15.311			£17.990
VD20W	15m Camera Cable	£19.560	£18.500	£17.600	£22.990
VD21X	25m Camera Cable	£31.480	£29.100	£27.500	£36.990
MT98G	1 50m Cable	£42.540			£49.990
MU31J	1 100m Cable	£76.580			£99.990
VD22Y	Camera Cable Conn.	£3.820	£3.590	£3.460	£4.500


 This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## Telecam with SCART

Viewmate



The world's smallest and most versatile home and office security system. The telecam sees and hears what's going on around the home or office and relays it to your TV and video recorder.

- ★ Works with any tv and video recorder with a SCART connection.
- ★ Records onto your video recorder.
- ★ Sees and hears up to 10 metres.
- ★ Weather proof.
- ★ Easy to install - just plug in and play.
- ★ Securing your car.
- ★ Securing your home.
- ★ Securing your place of work.
- ★ Monitoring your baby and kids.
- ★ Watching over the ill and infirm.
- ★ Practising your golf swing.
- ★ Watching nature.
- ★ Producing the kids first home movies.

### System pack includes

- ★ Back and white camera with wide angle, focusable lens.
- ★ Built-in microphone.
- ★ 15 metres of cable with mini din connector. SCART connection.
- ★ Mains power supply.
- ★ Mounting brackets and screws with full installation and user guide.

### Product Specifications:

AC adapter	9V DC - 300 mA
Lens	5 element glass, 4.3mm wide angle
Sensor	VLSI CMOS sensor chip with automatic gain control and electronic shuttering
Min.light level	2Lux
Resolution	265 tv lines
Temperature	-15°C to + 40°C

Additional cables are also available in the following lengths: 10m, 20m, and 30m.

Retail Unit Price each (inc. VAT).

Order Code	Type 18028	Price each exc. VAT	inc. VAT each
MT34M	Viewmate SCART	£85.090	£99.990
MT36P	10m Cable	£17.010	£19.990
MT37S	20m Cable	£21.260	£24.990
MT38R	30m Cable	£25.520	£29.990

focusable lens.

- ★ Built-in microphone.
- ★ 15 metres of cable with mini din connector.
- ★ Scart connection with built-in sound activation system.
- ★ Mains power supply.
- ★ Mounting brackets and screws with full installation and user guide.

### Product Specifications:

AC adapter	9V DC - 300 mA
Lens	5 element glass, 4.3mm wide angle
Sensor	VLSI CMOS sensor chip with automatic gain control and electronic shuttering
Min.light level	2Lux
Resolution	265 tv lines
Temperature	-15C to + 40C

Extra cables are also available in the following lengths: 10m, 20m and 30m.

Price each shown, but sold only in multiples of 0.

Order Code	Type 18028	Price each exc. VAT	inc. VAT each
MT34M	Viewmate Sound	£119.140	£139.990
MT36P	10m Cable	£17.010	£19.990
MT37S	20m Cable	£21.260	£24.990
MT38R	30m Cable	£25.520	£29.990

## Telecam with TV Interface Unit

Viewmate



### Telecam with TV Interface Unit

All the features of the Telecam plus a TV interface/modulator. Simply plug your VCR/TV into the interface unit and tune onto any available channel.

Programmes easily like a tv channel  
By adding a splitter, pictures from this telecam can be shown on all tv's in your home.  
Using this telecam system up to a further 4 systems can be programmed onto the same tv.  
Sees and hears up to 10 metres.

### System pack includes

- Back and white camera with wide angle, focusable lens.
- Built-in microphone.
- 15 metres of cable with mini din connector.
- TV interface unit.
- 2 metres coaxial link to tv and video recorder.
- Mains power supply.
- Mounting brackets and screws with full installation and user guide.

### Product Specifications

AC adapter	9 volts dc - 300 milliamps
RF output	VHF channels adjustable between 29-39
Lens	5 element glass, 4.3mm wide angle
Sensor	VLSI CMOS sensor chip with automatic gain control and electronic shuttering
Minimum light level	2LUX
Resolution	265 tv lines
Temperature	-15C to + 40C

Additional cables are available in 10m, 15m and 25m lengths.

Retail Unit Price each (inc. VAT).

Order Code	Type 18040	Price each exc. VAT	inc. VAT each
MT35Q	Viewmate Modulator	£119.140	£139.990
MT36P	10m Cable	£17.010	£19.990
MT37S	20m Cable	£21.260	£24.990
MT38R	30m Cable	£25.520	£29.990

## Plug-in Observation System (SCART)

A1 Security



- ★ Plugs in to domestic TVs or VCRs
- ★ Built in microphone - listen as well as view
- ★ Low light operation
- ★ Weatherproof camera housing
- ★ All cables and connectors provided
- ★ Simple to install and use

This observation system is suitable for use for a wide range of observation applications. The camera is connected directly to the TV or VCR via a SCART connector; phono and BNC connectors are also provided.

The system can be used to monitor babies or young children at home, observing callers at the door or even to keep an eye on shop or warehouse stock. Camera sensitivity 0.2 lux.

### Kit contents:

- 1 x 90° External/ Internal Camera with built in audio
- 1 x 15m Camera lead with Scart connector
- 1 x Plug-in mains adaptor
- 1 x Phono/BNC adaptor
- Clips and fixings
- Full installation instructions

### Accessories to expand the system:

- YD92A 15m camera extrn. Cable & connectors
- YD93B 25m camera extrn. Cable & connectors

Retail Unit Price each (inc. VAT).

Order Code	Type 18010	Price each exc. VAT	inc. VAT each
GG68Y 1	Obs System (Scart)	£85.090	£99.990
YD92A	15m Cable/Connectors	£17.010	£19.990
YD93B	25m Cable/Connectors	£24.670	£29.990

## Telecam with SCART and Sound Activation

Viewmate



All the features of the Telecam Scart plus:

- ★ Hears a sound and changes the channel to the view from your telecam.
- ★ Cuts in on what you are watching for 5 seconds.
- ★ Adjustable sound sensitivity level.
- ★ Records onto your video recorder.
- ★ Sees and hears up to 10 metres
- ★ Ideal for monitoring your baby.

### System pack includes

- ★ Back and white camera with wide angle,



## Plug-in Observation System (Universal)

A1 Security



**NEW**

- ★ Works with all standard domestic TVs and VCRs
- ★ Built in movement detector and internal sounder
- ★ Built in microphone - listen as well as view
- ★ Low light operation
- ★ Record activity on your VCR
- ★ Weatherproof camera housing
- ★ Observe callers/intruders at the touch of a button
- ★ All cables and connectors provided
- ★ Simple to install and use

This observation system provides not just the ability to observe callers/intruders but will also provide a security warning tone when someone enters the area being observed. The camera has a built in movement detector which when triggered will cause an audible warning tone from the control unit.

The system which simply plugs in to standard domestic TVs and VCRs can be used to monitor babies or young children at home, observing callers at the door or even to keep an eye on shop or warehouse stock. Camera sensitivity 0.2 lux.

Kit contents:-

- 1 x 90° External/ Internal Camera with:-
  - built in audio
  - built in movement detector
- 1 x Modulator (control) unit with
  - mains adapter
  - RF modulator
  - internal sounder
- 1 x 15m Camera lead & connector
- 1 x 2m RF lead
- Clips and fixings
- Full installation Instructions

Accessories to expand the system:-  
**YD92A** 15m camera extn. Cable & connectors  
**YD93B** 25m camera extn. Cable & connectors

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GG68A 1	Obs System (RF)	£127.650			£149.990
YD92A	15M Cable/Connectors	£17.010	£15.650	£14.750	£19.990
YD93B	25m Cable/Connectors	£24.670	£22.500	£21.100	£28.990

## CCTV System with 2 Channel Monitor System

A1 Security



**NEW**

- ★ 110mm Monitor with 2 way switching
- ★ Weatherproof camera housing
- ★ Built in microphone - listen as well as view
- ★ Low light operation
- ★ Manual or Scan camera selection
- ★ Record activity on your VCR
- ★ Observe callers/intruders at the touch of a button
- ★ All cables and connectors provided

★ Simple to install and use

This compact observation system comes with one camera but an additional camera can be added to expand the system. The monochrome monitor has a built in two way switching unit which allows manual selection of either camera or automatic scan operation. The monitor also has an output that allows the pictures to be recorded on to a standard VCR. Camera sensitivity 0.2 lux.

Contents:

- 1 x 2 Channel Monitor with VCR facility
- 1 x 90° External/ Internal Camera with built in audio
- 1 x 15m Camera lead
- 1 x Plug top mains adapter
- Clips and fixings
- Full Instructions

Accessories to expand the system:  
**GG71N** Extra 90° camera with built in audio  
**YD92A** 15m camera extn. Cable & connectors  
**YD93B** 25m camera extn. Cable & connectors

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GG70M 1	2Ch CCTV	£195.730			£229.990
GG71N 1	Camera with Audio	£85.090			£99.990
YD92A	15M Cable/Connectors	£17.010	£15.650	£14.750	£19.990
YD93B	25m Cable/Connectors	£24.670	£22.500	£21.100	£28.990

## ATC12 Observation System

A1 Security



**NEW**

- ★ Suitable for use with standard domestic TVs and VCRs
- ★ Observe callers/intruders at the touch of a button
- ★ Record activity on your VCR
- ★ Listen as well as view
- ★ High picture resolution
- ★ Audible warning when activity is detected
- ★ Camera can be used indoors or outdoors

The ATC12 observation system offers a flexible and effective monitoring system. Due to the compact design and ease of use, the ATC12 is suitable for a wide range of applications ranging from monitoring babies or young children at home to keeping an eye on warehouse stock. The control unit plugs directly into a standard TV and/or VCR. The camera has a built in movement detector, which when triggered, will emit an audible warning tone from the control unit which will indicate activity in the observation area. A plug-in Mains Relay Switch is available that can be used to switch on a mains appliance (e.g. lighting) when movement is detected.

Kit consists of :-

- 1 x Modulator (control) unit
- 1 x ATC2B Camera unit
- 1 x 2m RF Coaxial cable
- 1 x 15m Camera cable
- 1 x Clips & fixings
- 1 x Installation & operation manual

There are a number of accessories available to expand your observation system :-

- YD88V** Extra Camera with sound & PIR
- YD89W** 15m Camera cable
- VD09K** 50m Camera cable
- YD92A** 15m Camera extn.cable & connectors
- YD93B** 25m Camera extn.cable & connectors
- VD10L** Camera Hood
- VD11M** Daylight sensor

- YD91Y** 2 way Mains Relay Switch box.
- YD94C** 15m Switch box extn.cable & connectors
- YD90X** 2 way Switch box &25m lead

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
YD87Q 1	CCTV Obs. System	£280.840	£270.000	£262.000	£329.990
YD88V 1	ATC2 Camera	£131.900	£128.000	£122.000	£154.990
GG72P 1	Col Camera Audio/PIR	£297.860			£349.990
YD89W	15m Camera Cable	£16.160	£15.250	£14.300	£18.990
VD09K	50M Camera Cable	£46.800	£42.500	£39.000	£54.990
YD92A	15M Cable/Connectors	£17.010	£15.650	£14.750	£19.990
YD93B	25m Cable/Connectors	£24.670	£22.500	£21.100	£28.990
VD10L	Camera Hood	£2.540	£2.360	£2.230	£2.990
VD11M	Daylight Sensor	£15.310	£13.950	£13.000	£17.990
YD91Y	2 Way Switch Box	£22.970	£20.850	£19.500	£26.990
YD94C	Switch/Bx Extn Cable	£16.160	£14.800	£13.900	£18.990
YD90X 1	2W Switch/25m Cable	£34.030	£31.500	£29.350	£39.990

**MPS**  
MAPLIN PROFESSIONAL



**RS12750**  
BS EN ISO 9002

Stockholding and Supply  
 Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

**THE QUALITY CATALOGUE DISTRIBUTOR WITH MORE OUTLETS THAN ANY OTHER**

## ATC 4 Observation System

A1 Security



- ★ Movement detecting camera
- ★ Programmable infra red control of TV, VCR, HiFi and most other remote controlled devices
- ★ Audible indication of movement
- ★ Internal & external lighting control
- ★ Automatic recording of activity
- ★ Automatic view from active camera
- ★ On screen programming display
- ★ Views & records in complete darkness
- ★ Up to 4 internal/external cameras can be connected
- ★ Time & date on view and record

This highly advanced, unique observation system is ideal for domestic and light commercial applications. There is no need to buy expensive additional equipment, the ATC4 has been designed to work with most domestic TV's and VCR's. The control unit offers an advanced user friendly, on screen display menu system giving full access to all the information and programming features needed to fully customise and operate your system.

The ATC4 system has 5 programming modes:-

**Manual mode** - to select which camera to view manually.

**Scan mode** - which will scan through the cameras at a pre determined rate.

**Home mode** - which enables the system to follow a set of pre programmed instructions when a camera has been triggered.

**Away mode** - also enables the system to follow pre programmed instructions when the owner is out. System can be programmed to activate VCR, TV, HiFi, lights, Etc...

**Beep mode** - in order to alter the duration of the alert tone produced by the control unit when a camera is activated.

**Kit consists of:-**

- 1 x ATC7 Control unit with lead & plug
- 1 x ATC2 Camera unit
- 1 x 20m Infra red transmitter, cable & holder
- 1 x 2m Coaxial cable
- 1 x 15m Camera connection cable
- 1 x Clips & fixings
- 1 x Installation & operation manual

There are a number of accessories available to expand your observation system:

- YD88V Extra Camera with Audio & PIR
- GG72P Colour Camera with Audio & PIR
- YD89W 15m Camera Cable
- VD09K 50m Camera Cable
- YD92A 15m Camera Extn.Cable & Connectors
- YD93B 25m Camera Extn.Cable & Connectors
- VD10L Camera Hood
- VD11M Daylight Sensor
- YD91Y 2 way Mains Relay Switch Box
- YD94C 15m Switch Box Extn.Cable & Connectors
- YD90X 2 way Switch Box & 25m Lead

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
MM14Q	CCTV Obs System	£280.840	£270.00	£262.000	£329.990
YD88V	ATC2 Camera	£131.900	£128.000	£122.000	£154.990
GG72P	Col Camera Audio/PIR	£297.860			£349.990
YD89W	15m Camera Cable	£16.160	£15.250	£14.300	£18.990
VD09K	50M Camera Cable	£46.800	£42.500	£39.000	£54.990
YD92A	15M Cable/Connectors	£17.010	£15.650	£14.750	£19.990
YD93B	25m Cable/Connectors	£24.670	£22.500	£21.100	£28.990
VD10L	Camera Hood	£2.540	£2.360	£2.230	£2.990
VD11M	Daylight Sensor	£15.310	£13.950	£13.000	£17.990
YD91Y	2 Way Switch Box	£22.970	£20.850	£19.500	£26.990
YD94C	Switch/Bx Extn Cable	£16.160	£14.800	£13.900	£18.990
YD90X	2W Switch/25m Cable	£34.030	£31.500	£29.350	£39.990

## Colour Camera with Audio and PIR

A1 Security

- ★ High quality, full colour image
- ★ Integral high performance lens
- ★ Built in movement detector
- ★ Built in microphone - listen as well as view



This colour camera is designed for use with the ATC4 Observation System, YD87U. It is now possible to mix both monochrome and colour cameras on the same system.

**Specification:**

Pick up device	1/3" Colour CCD
Resolution	512 x 582 Pixels
Horizontal Resolution	330 lines
Sensitivity	1 lux

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GG71N	1 Camera with Audio	£85.090	£99.990

## Mini CCTV System



The Mini CCTV system is the ideal portable 'watching' system for use in a commercial environment or within the home. In fact, it's adaptable and affordable enough to be used in a wide variety of situations - from a shop security system to monitoring activity on a production line or simply keeping an eye, literally, on the baby! The sensitive fixed lens camera supplied has a built-in hypersensitive infrared LED for night viewing (at 0.2 lux) and a high speed auto-iris function for a constantly clear image in daylight or bright artificial light (at 20 lux). The built-in microphone ensures that you can hear as well as see everything that's going on. The pack includes a 115mm (4 1/2 in.) black and white monitor, clip holder, desk top stand, 12V power adaptor and 20m connecting cable.

**Specification**

<b>Power:</b>	Supplied by monitor via connector
<b>Dimensions:</b>	55 x 85 x 35mm
<b>Weight:</b>	95g approx
<b>115mm (4 1/2 in.) Black and White Monitor</b>	
<b>Power:</b>	12V DC ±1.2V (power adaptor supplied)
<b>Dimensions:</b>	130 x 145 x 165mm
<b>Weight:</b>	910g approx

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE70M	1 Home CCTV System	£170.200	£198.990
YE72P	11 Home CCD Camera	£110.620	£128.990

## CCTV System



- ★ 10" Monitor with 4 way switching
- ★ Easy to install and operate
- ★ Compact, lightweight and versatile
- ★ High resolution picture
- ★ Low lighting capability
- ★ Manual or auto camera selection
- ★ 2 way audio monitoring
- ★ Can be connected to VCR

This compact, versatile system comes with one camera but can be used with up to 4 cameras without the need for expensive, additional hardware. The 10" monitor has a built in 4 way switching unit which allows manual switching or automatic scanning of selected cameras with an adjustable switching speed. There is an intercom facility to allow two way speech which also makes this system ideal for access control. The camera comes with a choice of universal bracket or clamp and connecting cable. Supplied complete with full operating instructions and 12 month guarantee. Additional cameras available separately (VD01B).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MM09K	1 Observation System	£297.860	£349.990
VD01B	1 CCTV Camera	£161.690	£189.990

## Cameras

### Monochrome CCTV Camera



- ★ Compact and robust
- ★ Highly sensitive
- ★ Excellent, clear image
- ★ Easy to install and use
- ★ Easy to conceal
- ★ Accepts standard C-mount or CS-mount lenses

This camera is a compact, high performance, general purpose security camera. It features a highly sensitive 9mm interline transfer CCD (Charge Coupled Device) which produces a sharp, clear black & white image in a wide range of lighting conditions. This camera also features a connection for lenses with auto-iris.

Although this camera is a highly sophisticated device it's actually very simple to use. Just fit a suitable lens (not included), plug in a 12V DC regulated power supply (not included), mount in a convenient location and connect to a monitor or VCR. This unit is supplied with C-mount ring adaptor, mounting block for optional top mounting, fixing screws and allen key.

**Specifications**

Pickup device	9mm interline transfer CCD
Resolution	500(H) x 582(V) Pixels
Horizontal resolution	420 TV lines
Sensitivity	0.02 lux / f1.2
Lens mount	C or CS type

Power source 12V DC, 120mA Regulated  
Dimensions 42(h) x 47(w) x 100(l)mm  
Operating Temp. -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
YD66W 1	CCD Camera Mono	£119.140	£116.000	£98.990	£139.990

## Colour CCTV Camera



- ★ High quality, full colour image
- ★ Compact and robust
- ★ Highly sensitive
- ★ Easy to install and use
- ★ Accepts standard C-mount or CS-mount lenses

As with the camera above, this camera gives a crystal clear image at low light level. The difference being that this camera gives a superb full colour image. The output is a standard composite video signal via a BNC connector. There is also a connector for lenses with auto iris.

### Specifications

Pickup device 9mm interline transfer CCD  
Resolution 500(H) x 582(V) Pixels  
Horizontal resolution 380 TV lines  
Sensitivity 1.0 lux / f1.2  
Lens mount C or CS type  
Power source 12V DC, 150mA Regulated  
Dimensions 42(h) x 47(w) x 100(l)mm  
Operating Temp. -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YD67X 1	CCD Camera Colour	£255.310	£230.000	£210.500	£299.990

## C-Mount Lenses



**NEW EXTENDED RANGE**

A range of fixed-iris lenses suitable for cameras with standard lens C-Mounts. These lenses range from wide angle to telephoto. Wide angle gives maximum coverage at the expense of detail. Telephoto lenses are ideal for observing distant objects in high detail. These lenses are colour corrected and suitable for both colour and black & white cameras.

Code	Focal length	Viewing Angle	Typical Coverage
MS01	2.8mm f2	90° Wide	Full room
MS02	4mm f2	60° Wide	2/3 room
VD04	6mm f2	40° Wide	1/2 room
VD05	8mm f2	30° Std.	Front of building
MS03	12mm f2	20° Tele	
VD06	16mm f1.6	15° Tele	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MS01B	2.8mm CC Mount Lens	£42.540	£40.410	£38.990	£49.990
MS02C	4.0mm CC Mount Lens	£33.180	£31.520	£29.940	£38.990
VD04E	6mm C Mount Lens	£34.030	£31.400	£29.600	£39.990
VD05F	8mm C Mount Lens	£36.580	£33.100	£30.850	£42.990
MS03D	12mm C Mount Lens	£28.070	£26.670	£25.330	£32.990
VD06G	16mm C Mount Lens	£42.540	£38.750	£36.250	£49.990

## Miniature CCTV Camera



- ★ Integral high performance lens
- ★ Compact, modern design
- ★ Highly sensitive
- ★ Excellent, crystal clear image
- ★ Easy to install and use
- ★ Ideal for a range of applications

This very compact and robust general purpose security camera features a highly sensitive 9mm interline transfer CCD (Charge Coupled Device) which guarantees a sharp, clear black & white image in a range of lighting conditions. Tough and very compact, it is suitable for installation in a wide variety of locations including shops, offices, warehouses, pubs or the home. This camera is ideal for situations where discrete observation is desired. It is small enough to be inobtrusive and can be easily concealed. Supplied with integral lens, mounting bracket, screws and fixings. This unit is supplied complete with the necessary 12V DC regulated power supply.

### Specifications

Pickup device 9mm interline transfer CCD  
Power source 12V DC regulated  
Operating Temp. -10°C to +50°C  
Dimensions 30 x 25 x 100mm inc. lens

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YD68Y 1	Mini CCD Camera	£153.180	£131.950	£119.500	£179.990

## Camera Mounting Brackets

Topica



A range of professional camera mounting brackets to suit most applications. A choice of four types of bracket and an extender, which can be used in conjunction with YD72P bracket to give added flexibility.

- YD70M Square section plastic bracket.  
Base diameter 90mm, length 160mm
- YD71N Round section plastic bracket  
Base diameter 90mm, length 145mm
- YD74P T - Section aluminium bracket  
Base plate 95mm, length 285mm
- YD72R Round section metal bracket  
Base diameter 44mm, Length 100mm
- YD73Q Extender for use with YD72P  
Length 67mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YD70M	Camera Bracket	£5.940	£4.200	£3.800	£6.990
YD71N	Camera Bracket	£5.940	£4.200	£3.800	£6.990
YD74R	Camera Bracket	£16.160	£12.700	£11.390	£18.990
YD72P	Camera Bracket	£6.800	£5.450	£4.950	£7.990
YD73Q	Bracket Extender	£2.540	£2.060	£1.880	£2.990

## External Camera Housing



An extruded aluminium, weatherproof camera housing with adjustable/removable cowl. The front and back panels are plastic with a glass insert at the front and two water tight grommets at the rear for cable entry. An adjustable mounting plate inside and choice of fixings on the outside makes it suitable for most applications.

Dimensions :- 330mm (385mm with cowl)  
105mm (110mm with cowl)  
90mm (100mm with cowl)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YD86T 1	Camera Housing	£34.030	£29.500	£26.500	£39.990

**RS12750**  
**BS EN ISO 9002**  
Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

**Stockist of Assessed Capability**  
**YOUR GUARANTEE OF QUALITY & SERVICE**

## Quad Processor



A range of 3 quad processors that allow four separate camera images to be displayed simultaneously on one monitor.

### Basic B&W (MU75S)

- ★ Option to watch a full or quadrant picture
- ★ Provides an auto sequential switching function and the dwell time is adjustable (1-15 seconds)
- ★ Auto video loss and alarm detection, producing two different alarm sounds
- ★ The alarm can be connected to existing alarm systems
- ★ Adjustable Gain controls for each camera input

### Specifications

Digital Memory 512 x 512 pixels, 256 grey scale  
Display Rate 25 fields / Second

### Real Time B&W with Time & Date(CD07H)

- ★ High resolution quad picture with real time refresh rate
- ★ Built-in Time & Date generator plus 8 character camera title
- ★ Setup menus, easy to operate
- ★ Looping camera outputs for use with other accessories
- ★ Auto video loss detection and alarm indication
- ★ Records time, date and channel of video loss

### Specifications

Digital memory 1024 x 512 pixels (full screen)  
512 x 512 (quadrant screen)  
Sampling rate 14.318 MHz  
Refresh rate 50 frames / Second

### Real Time Colour (MU76H)

- ★ Real time refresh rate with 16 million colours
- ★ Auto sequencing function with adjustable dwell time (1 - 15 seconds)
- ★ Option to watch full screen or quadrant picture
- ★ Auto video loss and alarm detection, producing two different alarm sounds

### Specifications

Digital Memory 512 x 512 pixels  
Refresh rate 50 fields / Second

All units share the following:

### Shared Specifications

Camera inputs BNC 2:1 Interlace Composite Video  
1.Vp-p,75Ω  
Video output BNC Composite video 1.Vp-p, 75Ω  
VCR output BNC Composite video 1.Vp-p 75Ω  
Temp 5°C to 40°C  
Power 12v DC, 500mA  
(from Mains Adaptor - supplied)  
Dimensions 343(W) x 250(D) x 66(H) mm

Retail Unit Price each (inc. VAT).

Order Code	Type 13818	Price each exc. VAT	inc. VAT each
MU75S 1	BW Quad Processor	£229.770	£269.990
CD07H 1	Quad Splitter	£255.310	£299.990
MU76H 1	Col Quad Processor	£570.200	£669.990

## Board Cameras

### Standard Camera Module (B&W)



A small board camera, ideal for security and covert surveillance. The Camera PSU and Cable kit, MU45Y, is recommended for easy installation and operation of this camera. The camera comes with a

3 way miniature pre-wired plug and socket with the following connections:

1. +12V (denoted by angled corner)
2. Gnd
3. Video Out

### Specification

Image sensor 1/3in CCD, 320,000 pixels  
Scanning system 2:1 Interlace  
Resolution 500(H) x 582(V) pixels  
Horizontal Resolution 380 TV lines  
Scanning Freq. H: 15.625 KHz±1%  
V: 50Hz±1%

Min Illumination 1 lux, f2.0  
lens 3.6mm, f2.0  
Power Supply 12V DC±1V, <100mA  
Dimensions 37(w) x 38(h) x 25(d)mm  
Weight 30g

Retail Unit Price each (inc. VAT).

Order Code	Type 18403	Price each exc. VAT	inc. VAT each
MS06G 1	Cam Mod B/W	£63.820	£74.990

### B & W Camera Module with Infra Red LEDs



A small CCD video camera capable of producing a monochrome picture from both normal light and infra-red light with good resolution and detail. The infra-red capability makes the camera ideal for security applications. It includes six IR LEDs which together act as an infra-red lamp for IR illumination in the dark with a range of 2 to 3 metres.

### Specification

Image sensor 1/3in CCD, 320,000 pixels  
Scanning system 2:1 Interlace  
Resolution 500(H) x 582(V) pixels  
Horizontal Resolution 380 TV lines  
Scanning Freq. H: 15.625 KHz±1%  
V: 50Hz±1%

Min Illumination 1 lux, f2.0  
lens 3.6mm, f2.0  
Power Supply 12V DC±1V, <160mA  
Dimension 54(w) x 38(h) x 25(d)mm  
Weight 33g

The Camera PSU and Cable kit, MU45Y, is recommended for easy installation and operation of this camera. The camera comes with a 3 way miniature pre-wired plug and socket with the following connections:

1. +12V (denoted by angled corner)
2. Video Out
3. Gnd

Retail Unit Price each (inc. VAT).

Order Code	Type 23013	Price each exc. VAT	inc. VAT each
MS05F 1	Cam Mod B/W w IREDS	£63.820	£74.990

### High Quality Extra Small B & W Camera

An extra small board camera, ideal for security and covert surveillance. The Camera PSU and Cable kit, MU45Y, is recommended for easy installation and operation of this camera. The camera comes with a 4 way



miniature pre-wired plug and socket with the following connections:

1. +12V (pin 1 nearest lens)
2. Gnd
3. Video Out
4. Not connected

### Specification

Image sensor 1/3in CCD, 320,000 pixels  
Scanning system 2:1 Interlace  
Resolution 500(H) x 582(V) pixels  
Horizontal Resolution 380 TV lines  
Scanning Freq. H: 15.625 KHz±1%  
V: 50Hz±1%

Min Illumination 1 lux, f2.0  
lens 3.6mm, f2.0  
Power Supply 12V DC±1V, <100mA  
Dimensions 32(w) x 30(l) x 20(h)mm

Retail Unit Price each (inc. VAT).

Order Code	Type 18408	Price each exc. VAT	inc. VAT each
MS07H 1	HQ Cam Mod B/W Std	£85.090	£99.990
MU45Y	SCART+PSU Kit	£21.260	£24.990

### HQ B & W Camera Module with Infra Red LEDs



A small, high quality board camera, ideal for security and covert surveillance. This board replaces our popular AY16S camera. The Camera PSU and Cable kit, MU45Y, is recommended for easy installation and operation of this camera. The camera comes with a 3 way miniature pre-wired plug and socket with the following connections:

1. +12V (denoted by angled corner)
2. Video Out
3. Gnd

### Specification

Image sensor 1/3in CCD, 320,000 pixels  
Scanning system 2:1 Interlace  
Resolution 500(H) x 582(V) pixels  
Horizontal Resolution 380 TV lines  
Scanning Freq. H: 15.625 KHz±1%  
V: 50Hz±1%

Min Illumination 1 lux, f2.0  
lens 3.6mm, f2.0  
Power Supply 12V DC±1V, <100mA  
Dimensions 54(h) x 38(w) x 20(d)mm

Retail Unit Price each (inc. VAT).

Order Code	Type 18401	Price each exc. VAT	inc. VAT each
MS37S 1	HQ Cam B/W w IREDS	£85.090	£99.990
MU45Y	SCART+PSU Kit	£21.260	£24.990

### High Quality Pinhole Camera



The ultimate high security camera – a tiny, good quality monochrome video camera that can be effectively incorporated into security/access systems without being seen by the people you are watching. The unit is discrete, very easy to conceal and operates well in poorly lit locations. This board

replaces our popular MB20W.

Specification	
Image sensor	1/3in CCD, 320,000 pixels
Scanning system	2:1 Interlace
Resolution	500(H) x 582(V) pixels
Horizontal Resolution	380 TV lines
Scanning Freq.	H: 15.625 KHz±1% V: 50Hz±1%
Min Illumination	1 lux, f2.0
lens	3.6mm, f2.0
Power Supply	12V DC±1V, <100mA
Lens:	f= 5.5mm/F2.0
Dimensions:	38 x 37 x 17mm

The Camera PSU and Cable kit, MU45Y, is recommended for easy installation and operation of this camera. The camera comes with a 3 way miniature pre-wired plug and socket with the following connections:

1. +12V (denoted by angled corner)
2. Gnd
3. Video Out

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS38W 11	Pinhole Camera	£85.090	£99.990
MU45Y	SCART+PSU Kit	£21.260	£24.990

## High Quality C-Mount Camera Module



A small CCD video camera capable of producing crystal clear pictures in low light conditions. This board is a replacement for our popular YD65V. The unit takes a standard C-Mount lens (not supplied). Select one from our range to suit your particular application.

Specification	
Image sensor	1/3in CCD, 320,000 pixels
Scanning system	2:1 Interlace
Resolution	500(H) x 582(V) pixels
Horizontal Resolution	380 TV lines
Scanning Freq.	H: 15.625 KHz±1% V: 50Hz±1%
Min Illumination	1 lux, f2.0
Power Supply	12V DC±1V, <100mA

The camera comes with a 4 way miniature pre-wired plug and socket with the following connections:

1. +12V (denoted by angled corner)
2. Gnd
3. Video Out

The Camera PSU and Cable kit, MU45Y, is recommended for easy installation and operation of this camera.

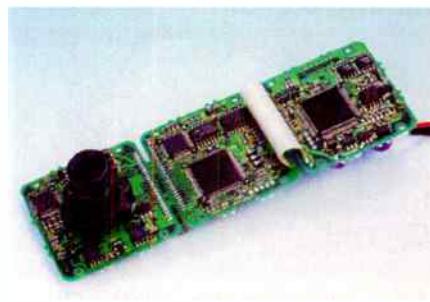
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS39N 11	CCD Camera C-Mount	£85.090	£99.990
MU45Y	SCART+PSU Kit	£21.260	£24.990



means fast  
service and best  
value for money

## Sub-Miniature Colour CCD Video Camera



A miniature CCD camera capable of producing a superb full-colour picture in normal and reduced lighting conditions. This board replaces our popular AR59P. The fixed focus lens allows the CCD element to show a high degree of detail without the need for any special optics. This is because all the focusing is controlled by the in-built electronic iris. All the electronics of the camera are mounted on three press-out printed circuit boards. The three small sub-assemblies are interconnected by ribbon cable so that the module can be arranged to fit into a small enclosure. These sub-assemblies reduce the overall width to 42mm. The module requires a nominal 12V DC at 200mA and because it has an on-board regulator this voltage can vary from +11V to +13V DC.

Specification	
Area image sensor:	1/4 in interline transfer type CCD, 290,000 pixels
Resolution	752(H) x 582(V) pixels
Scanning system:	625 lines, 2:1 interlace
Scanning Freq.	H: 15.625 KHz±1% V: 50Hz±1%
Horizontal Resolution	380 TV lines
Standard illuminance:	1,000 Lux, f4.0, (3,200°K)
Minimum illuminance	2.5 Lux, f1.4
Power supply voltage:	11 to 13V DC
Current consumption:	200mA or less
Operating temp. range:	-10 to +45°C
Dimensions	
Image Board	42(w) x 42(h) x 33(l)mm
Main Board	42(w) x 42(h) x 44(l)mm
Power	42(w) x 42(h) x 12(l)mm
Weight:	Approximately 52g

There are several feature connectors that give access to white balance manual over-ride, manual iris shutter speed over-ride and 8 character camera title generator. The Camera PSU and Cable kit, MU45Y, is recommended for easy installation and operation of this camera.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS40T 11	CCD Colour Camera	£212.750	£249.990
MU45Y	SCART+PSU Kit	£21.260	£24.990

## Camera PSU and Cable Kit



A total solution for powering and connecting to our range of board camera modules and covert cameras. The kit contains a quality plug-in mains adaptor and a 20m pre-wired cable. One end of the cable has a SCART plug, an audio phono plug, a video phono plug and a DC power socket. The lead from the mains adaptor is plugged into the DC socket and either the SCART plug or audio and

video phono plugs are plugged into your TV, monitor or VCR.

The other end of the cable has four tinned wires which attach to the camera:

Red	+12V DC
Yellow	Video
Black	Common Ground (-)
Blue	Audio

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU45Y	SCART+PSU Kit	£21.260	£24.990

## Covert Cameras

### Covert PIR Camera with and without Sound



This innocent-looking PIR hides a secret: a highly miniaturised camera! This non-working internal PIR comes fitted with a low light, mono CCD camera incorporating an electronically built-in auto iris shutter. Excellent coverage is achieved by the built-in wide angle lens ensuring discrete surveillance. This unit is also available with a super-sensitive built-in microphone to transmit sound as well as pictures. Connections are made using a simple screw terminal block. 3 wires are required for the video only model, 4 wires for the audio/video model.

The Camera PSU and Wiring Loom (MU45Y) is designed specially to power this camera and allows easy connection to TVs, Monitors and VCRs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU24B 1	Covert PIR Camera	£110.620	£129.990
MU25C 1	PIR Cam with Audio	£127.650	£149.990
MU45Y	SCART+PSU Kit	£21.260	£24.990

## Covert 'Smoke Detector' camera with/without Sound



An innocent looking Fire Detector? No! This working smoke detector is fitted with a highly miniaturised pinhole camera. You can discreetly monitor rooms and corridors with this low light mono CCD camera that incorporates an electronic auto iris shutter that adjusts automatically to a wide range of light levels.



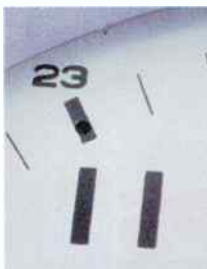
Excellent coverage of the designated area is achieved by the built-in wide angle lens. The unit is also available with super-sensitive built-in microphone to transmit sound as well as pictures. 3 core cable for the video model and 4 core cable for the audio/video model is connected at the rear of the smoke detector using a simple screw terminal connecting block.

The Camera PSU and Wiring Loom (MU45Y) is designed specially to power this camera and allows easy connection to TVs, Monitors and VCRs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU26D 1	Smoke Det Camera	£127.650	£149.990
MU27E 1	Smoke Det Cam/ Audio	£144.670	£169.990
MU45Y	SCART+PSU Kit	£21.260	£24.990

## Covert 'Clock' Camera



Discreetly monitor your living room, reception, office or any such area. This attractive, working, battery-operated clock houses a low-light, mono CCD camera incorporating a built-in electronic auto iris shutter to cope with wide variances in lighting conditions. Excellent coverage of the designated area is

achieved by the built-in wide angle lens. Connections are made at the rear of the clock using 3 core cable to a simple screw terminal connecting block.

The Camera PSU and Wiring Loom (MU45Y) is designed specially to power this camera and allows easy connection to TVs, Monitors and VCRs.>

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU23A 1	Covert Clock Camera	£127.650	£149.990
MU45Y	SCART+PSU Kit	£21.260	£24.990

## Dummy Cameras

### Dummy Camera



A dummy camera based on our security camera housing AG00A, offering additional protection to an existing installation, or to provide a low-cost alternative. Flashing LED requires 1 x pp3 battery (order code JY49D)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BJ61R	Dummy Camera WLED	£21.260	£24.990
JY49D	Duracell PPS	£2.800	£3.290

### Dummy Camera



This very realistic dummy camera can be used as an addition to your existing security system or on its own as a deterrent where the cost of a CCTV system is prohibitive. Its robust metal case and life like lens coupled with a BNC and DC socket on the back make it indistinguishable from the real thing. The unit comes in black with CCTV markings clearly displayed in bold white lettering.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD69A 1	Dummy Camera	£29.770	£34.990

## Dummy Camera Set



Ultra realistic dummy camera, utilising a genuine mini security camera housing and mounting bracket. Supplied complete with coaxial cable and professional f connectors for a totally convincing installation. In-built flashing LED requires optional power adaptor, e.g. XX09K.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS11M	Dummy Camera	£21.260	£24.990

## Accessories

### Infra Red Security Lamp



All CCD mono cameras operate well into the infra-red spectrum. This makes them ideal for use at night and for covert surveillance. This infra red spotlight emits a strong beam of infra red light that is invisible to the naked eye yet brightly illuminates an area when viewed through a camera. The unit has a threaded mount on the back which allows it to be attached to standard CCTV camera mounting brackets and an on/off switch. Supplied complete with 24V AC mains adaptor.

Specification:

Light source	168 Infra Red LEDs
Wave Length	890nm
Light Angle	30°
Range	15m
Power	24V AC (from PSU)/ 3W
Operating Temp	-10°C to 40°C (14 F-104 F)
Dimensions	17(W) x 115(H) x 40(D)mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU28F 1	IR Security Lamp	£127.650	£149.990

## External Infra Red Spotlight



A superb, high quality infrared illuminator that is much more efficient than conventional IR lamps that merely filter out the visible part of the spectrum from a standard tungsten filament bulb. This lamp uses the latest solid state IR technology to produce illumination that is virtually invisible to the human eye yet is directly matched to the spectral response of CCD cameras.

Ideal for both commercial and domestic applications with extremely low running costs. This mains-powered device is supplied with a universal pan and tilt mounting bracket.

Operating ranges of up to 50m are obtainable depending upon camera performance. This unit is sealed to IP65 (totally dustproof and protected from low pressure water from all directions).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GG74R 1	Ext IR Light	£144.670	£169.990

**All Customers**  
No additional freight charges for heavy items

## Event Capture Recorder



The Event Capture recorder is a low-cost alternative to the professional 'time-lapse' recorder, offering its own unique combination of features. Its advantages include real time recording with sound and maintenance free standby operation - no routine tape changing. With low power consumption, it is designed to offer affordable protection and many years of trouble-free service.

The Event Capture Recorder will record the output from any security or surveillance camera. It may be triggered by virtually any existing alarm system or by a dedicated detector device, e.g. PIR, door switch, etc. Once activated, it records for a pre-programmed time and then waits for another trigger. Recording begins within 2 seconds of the trigger signal. The record time may be set from 1 minute to continuous and up to 8 hours of total record time is available by selecting 'Long Play'. The VHS tape can store up to 480 'events'

### Rear Panel Connections:

**PIR Detector** - This comprises a 12V output and a Normally Closed trigger input, designed to allow any standard PIR to trigger the recording.

**Trigger** - A general purpose Normally Open trigger input that will accept a variety of inputs including connection to the auxiliary output of an existing alarm.

**Aux Power** - This provides power for external devices. This is primarily designed to power cameras at 12V DC 500mA.

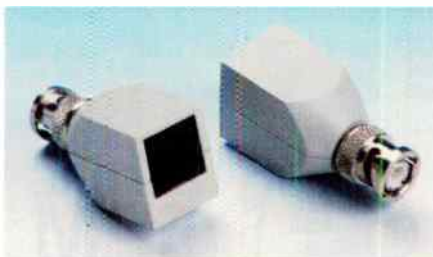
**Relay** - This is output which is an uncommitted Normally Open relay contact. The maximum load is 125V 500mA. You must not connect mains devices directly to this relay. The relay closes during record, which allows other devices to be triggered or powered at this time. E.g. this can be used to switch the power to a 12V camera such that it operates only when required.

**Mains 240V AC or 12V DC operation.** Supplied complete with remote control. Don't let them get away with it, capture the event!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU46A 1	Security VCR	£297.860	£348.990

## Composite Video Balun



A composite video balun suitable for all CCTV composite video systems, security systems, video conferencing etc. Gives a transmission distance of up to 400m on twisted pair cable. Connects via a 75Ω BNC plug and an RJ45 socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CD64U 1	Comp Video Balun	£34.030	£39.990

## Security Camera Housing

A camera housing designed to house the AY16S camera module and suitable for indoor and sheltered outdoor applications.

Designed to be mounted on a vertical surface, the unit is adjustable in both horizontal and vertical axes, giving a coverage of +10° to -30° (from 90° horizontal) and 160° left to right



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ME00A	Security Camera Case	£19.560	£22.990

## Camera & Modulator Housing

Camera housing made specifically to house the AY16S CCD Camera and LT37S Modulator and suitable for internal and sheltered external applications.

Designed to be mounted on any vertical wall, the unit is adjustable in both horizontal and vertical axes, giving a coverage of +10° to -30° (from 90° horizontal) and 160° left to right.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AG00A 1	Security Camera Case	£19.560	£22.990

## Security Lighting

### Floodlight Security System with PIR



A high-powered floodlight, controlled by a built-in passive infra-red intruder sensor. This practical outdoor security system offers outstanding value for money and at the flick of a switch it can also double as illumination for outdoor events, such as parties and barbecues. When installed, the infra-red sensor provides detection over a wide 110° degrees of arc with a range of 15m.

### Specification

Power requirements: 240V AC 50Hz at 2-1A

Maximum lamp rating: 500W  
Detection range: 15m (50ft.) at 20°C  
Horizontal detection angle: 110°

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS99H 5	IR Halogen Lamp+Tube	£13.600	£15.990

## Replacement Halogen Tubes

Halogen tubes to fit YS99H, rated 300W or 500W. Full details can be found in the opto-electrical section of this catalogue.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KP50E	300W Halogen Tube	£2.540	£2.990
JX53H	500W Halogen Tube	£2.540	£2.990

## Mini Floodlight with PIR



A compact high-powered floodlight, controlled by a built-in passive infra-red intruder sensor, similar to our popular standard security floodlighting system (GK05F). Like its bigger brother, this outdoor security system offers outstanding value for money, and at the flick of a switch can also double as a source of general illumination for outdoor events. The lamp is not only a useful deterrent against intruders at night, it is also a handy automatic welcoming light for you, your family and friends. The lamp is prevented from operating wastefully during daylight hours.

Tube not supplied, requires tube: DM51F

### Specification

Operating voltage: 240V AC 50Hz  
Maximum lamp rating: 150W  
Detection range: 12m (39ft.) at 20°C  
Horizontal detection angle: 110°

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM50E 2	Mini Halogen Lamp	£16.160	£18.990

## 150W Halogen Tube

A halogen tube rated at 250V AC, 150W, for use with the mini halogen lamp DM50E.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM51F	150W Halogen Tube	£2.540	£2.990

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## Twin Spot PIR and Lamps



### ★ Bulbs Included

A stylish twin spot PIR activated wall lamp. Ideal for conservatories and hallways, etc. Automatically triggered when approached by the built in PIR sensor with a range of approximately 90° by 6m. Designed to work with PAR38 Edison Screw Floodlights (supplied). Fully adjustable sensor direction for both lamps and the sensor ensure the unit will illuminate the required area when required.

Supplied with full operating and installation instructions. Spare bulbs available (RZ26D).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MU22Y	Twin spot PIR	£17.010			£19.990
RZ26D	Econ FloodLamp	£4.670	£3.810	£3.510	£5.490

## Outdoor Carriage Lamp with PIR Sensing



This stylish and elegant carriage lamp with an in-built PIR sensor is the ideal way to offer a warm welcome to your visitors at night and help to deter night-time intruders. The PIR sensor can be rotated through 330° horizontally to set up the ideal detection angle for your chosen location. The lamp is wall mounted and requires connection to the household mains supply. It takes ordinary domestic light bulbs (up to 100W, not supplied) with bayonet-type connector.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DN14Q3	Outdoor Lantern	£23.820			£27.990

## PIR Automatic Lamp

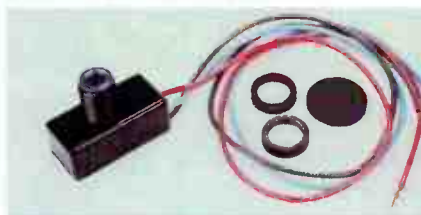


Eliminate the need to fumble around for a light switch in all those dark spaces – stairways, basements, storage areas, garages, car park entrances etc – with this Passive Infra Red automatic lamp. It will detect any movement/body heat within its 6 metre range (90° detection angle), light the area with its extra bright krypton bulb (supplied) and keep the area lit until 20 seconds after all movement has ceased within its range. Can be used free standing or wall mounted. Requires 4 'AA' type batteries or a suitable 6V power adaptor (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YE24B	PIR Auto Lamp	£8.500			£9.990

## Photo-Electric Control



A photo-electric control especially designed for use in both industrial and domestic installations. The photocontrol is manufactured from high quality materials to give a long and reliable performance. The housing is moulded from polycarbonate, for excellent mechanical strength and high impact resistance. The opaque housing eliminates false operation due to light feedback from within the fixture. A clear ultra-violet stabilised window prevents cracking or clouding due to sunlight. A bimetallic switch provides time delay to prevent turn-off due to temporary ambient light conditions, i.e. car headlights. Overall size 52 x 26 x 41mm (includes 'eye', excludes cables).

### Specification

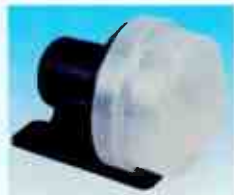
Off Light Level:	200Lux
Photocell:	19.05mm <sup>2</sup> (0.75in <sup>2</sup> ) cadmium sulphide (surface passivated)
Switch:	Single pole, single throw normally closed
Temp. range:	-40°C to +60°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KR47B	PhotoElectric Control	£9.350	£6.640	£7.520	£10.390

## SS4 Photo Electric Switch

This photo electric control unit is designed to switch on at dusk and off at dawn and incorporates a standard photo electric switch and a translucent plastic dome.



Screws and wall plugs for mounting the unit are supplied.

### Specification

Light switching levels:	70 Lux On, 210 Lux Off
Voltage range:	240V AC, 50Hz
Max current switchable:	5A
Max power rating:	1200W
Standby current:	30mA

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GX12N	SS4 Thermal PhCell	£14.450	£10.150	£9.340	£16.990

## Security Timers

## Programmable Security Light Switch

Smiths-Timeguard

RECENTLY INTRODUCED



- ★ Easy to install
- ★ Replaces standard lightswitch
- ★ Concealed programming panel
- ★ Easily programmed
- ★ Light sensor prevents operation during day light hours

Designed to operate when you are away from home, this light switch will turn a light on automatically when it gets dark and can be programmed to turn off again up to 8 hours later. It can also act as a normal on/off or 2 way light switch.

Bulb size 40W minimum, 300W maximum.

Rated at 240V AC 50Hz

Can only be used with Fluorescent lighting if used in conjunction with the Strip Light Adaptor -VJ65V. Not suitable for low energy bulbs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VJ62S	Programmable Switch	£19.560	£18.800	£17.750	£22.990



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## Programmable Lightswitch

Smiths-Timeguard



This unit is designed to replace a conventional lightswitch and can be programmed to copy up to 9 switch settings of the previous 24 hours' switching pattern and repeat the programme daily until it is altered. The unit can be used as a normal lightswitch and is able to switch a minimum load of 40W and a maximum load of 200W. Please note: Unit not designed for switching fluorescent lighting.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AQ21X	Copy Lightswitch	£21.260	£16.110	£15.690	£24.990

## Passive Infra Red Lightswitch

Smiths



- ★ Simple to use
- ★ Replaces existing lightswitch.
- ★ Turns light on when movement is detected.
- ★ Light level control for dusk-till-dawn switching.
- ★ Light on time adjustable.
- ★ Full instructions included.

This Passive Infra-Red Lightswitch is for indoor use and designed to automatically switch on when it detects body heat turning off again after a preset length of time from 5 seconds to 5 minutes. The lightswitch works in conjunction with a light level control which provides a dusk-till-dawn switching operation in response to body movement. It can also act as a normal On/Off or 2-way lightswitch. Bulb size : 40W minimum / 300W maximum.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ64U	Passive Light Switch	£29.770	£28.160	£26.420	£34.990

## 24-Hour Segment Timeswitch

Smiths-Timeguard

- ★ Simple to program & operate
- ★ Plug in control for all 13A appliances and lamps
- ★ Switches on and off at preset times.
- ★ Manual override.

Easily set by its captive segment dial this 24Hour plug in time controller will automatically switch appliances On and Off at preset times during the day over a 24-Hour cycle. With a minimum On/Off switching of 15 minutes the unit can switch up to 96 times per day. You can switch your appliance On and Off at any time by using the self cancelling switching rider on the top left of the unit. Rated at 240V AC 50Hz.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ58N	24Hr Segment Timer	£12.750	£12.130	£11.400	£14.990

## 7-Day Segment Time Switch

Smiths-Timeguard

- ★ Simple to program and operate.
- ★ Plug in Control for all 13amp appliances and lamps.
- ★ Switches on and off at preset times up to 12 times each day.
- ★ Manual override.

This 7-day Segment Timeswitch has all the benefits and features of the 24-hour Timeswitch (VJ58) but has a minimum On/Off switching time of 2hours and can switch a maximum of 12 times a day. Rated at 240V AC 50Hz.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ59P	7Day Segment Timer	£14.450	£13.560	£12.670	£16.990

## 7-Day Plug-In Timer

This timer can be plugged into your existing 13A socket outlet and gives automatic control of an electrical appliance over a 7-day period. The time controller can switch up to 13A resistive or 2A inductive loads. The minimum time interval is 2 hours with a minimum time between settings of 4 hours. The timer can be extremely useful as a security device turning on such appliances as radios and table lamps to give a potential intruder an impression that your home is occupied.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RZ82D	7 Day Plug In Timer	£14.450	£12.470	£11.720	£16.990

## 24-Hour Slimline Digital Timer



This timer is a slimline digital controller that can be plugged straight into your existing 13A socket outlet and can be programmed to switch loads of up to 13A resistive or 2A inductive. The timer can switch up to 4 ON/OFF programmes per day, with a minimum of 1 minute between switch settings, each of which can be manually overridden. The override function is cancelled at the next automatic ON or OFF switching time. The unit has a back up battery in order that timing is kept accurately, even during a power cut.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
RZ84F	24h Digital Timer	£17.430	£15.150	£14.390	£20.490

## 7-Day Slimline Digital Timer

Smiths-Timeguard



This 7 Day Slimline Digital Timer has all the benefits and features of the 24Hour version - RZ84F- plus individual day, everyday, weekday or weekend programme selections. Six programmes are available which if selected to operate over all 7 days give a total of 42 switchings per week.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VJ63T	7Day Digital Timer	£19.560	£18.800	£17.750	£22.990

## 24Hr Plug-in Timer

- ★ Turns table lamps on and off
  - ★ Random programme feature
  - ★ Up to 4 on/off programmes available every 24 hours
  - ★ Automatically repeats the programme every day
  - ★ Manual override
- Full instructions are contained in the packaging.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
KE88V	24HR Elec Timer	£17.010	£15.350	£14.750	£19.990

Apply for a  
Maplin MPS  
Account Today  
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TO SCHEDULE  
YOUR DELIVERIES  
01702 554000

## 7 Day Plug-in Security Timer

- ★ Turns table lamps on and off
- ★ Up to 4 on/off programmes per day, allowing up to 28 repeated on/off settings
- ★ Weekly, weekday or weekend operation
- ★ Built-in rechargeable circuit. **NO BATTERIES REQUIRED**
- ★ Manual override
- ★ 220V to 240V AC 500Hz
- ★ Max current 13A, 3kW



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KE89W	7Day Elec Timer	£17.860	£16.110	£15.410	£20.990

## Security Lampholders

### Smiths-Timeguard

- ★ As simple as fitting an existing light bulb.
- ★ Requires no wiring or adaptors.
- ★ Light level control for dusk-till-dawn switching.
- ★ Microchip controlled.



Dusk-till-Dawn -VJ66W- has a light level sensor that turns the light on at dusk and off at dawn.  
 Random -VJ67X- has the same features and benefits but will switch the light on and off at completely different times between dusk and dawn.  
 Sound Activated -VJ68Y- will turn the light on in response to sound and will remain lit for between 10 & 20 minutes, the duration varying with each activation between dusk and dawn.

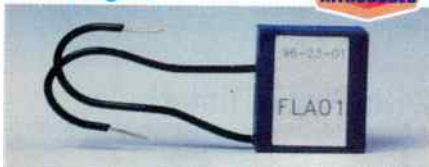
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VJ66W	Dusk/Dawn Lampholder	£13.600	£13.210	£12.540	£15.990
VJ67X	Random Lampholder	£19.560	£18.540	£17.400	£22.990
VJ68Y	Sound Act. Lampholder	£19.560	£18.800	£17.750	£22.990

## Strip Light Adaptor

### Smiths-Timeguard

RECENTLY INTRODUCED



This Strip Light Adaptor is designed to convert fluorescent lighting for use with a range of Smiths Security product only.  
 It can be used in conjunction with our :-  
 VJ62S Programmable Lightswitch.  
 VJ64U Passive Lightswitch.  
 Please note that it is not suitable for use with Low Energy Fluorescent lamps.  
 Full wiring instructions are supplied.  
 Maximum Fluorescent tube load :-  
 2 x 4ft Fittings (max 40w each) or  
 1 x 6ft Fitting (max 85w)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VJ65V	Strip Light Adaptor	£5.940	£5.500	£5.270	£6.990

## Vehicle Alarms

### Vixen Vehicle Alarm Systems

A range of low-cost, high quality, vehicle alarm systems, that includes a compact, easy to install, basic model; a compact expandable model, and a top-of-the-range, battery backed-up, fully expandable system. All the alarms include a small remote control that has an in-built dedicated code. This code can be one of 59,000, programmed into the alarm system during installation. This makes it virtually impossible for another remote control to arm/disarm your alarm. An additional feature of the alarm is a 'self learning' ability, where, on set-up, the alarm memorises the code from the remote transmitter. The alarm can be armed/disarmed from a maximum of two different codes, from two transmitters. Should one of the transmitters be lost or stolen, the alarm can be reprogrammed to accept a replacement transmitter's code, and in the process rendering the lost unit incapable of operating the alarm. Additionally, the remote control also provides a 'panic' facility, this allows the alarm to be activated if you are personally attacked within 30-5m (100ft.) of your vehicle. All the alarms feature a very loud 115dB siren, which should deter the most determined thief, and a fully adjustable shock sensor - any attempt to break into the vehicle by breaking a window, will trigger the alarm. Additionally, opening any door, the boot or bonnet resulting in a courtesy light coming on, will also trigger the alarm. Also, all the alarms feature a 'warn away' facility, where a slight disturbance to the vehicle will result in a subdued response, making any potential thief aware an alarm is fitted. This feature also greatly helps reduce false alarms. Should the tampering or disturbance continue after the warn away has sounded, then the full alarm response will be triggered. The alarms can be set to operate with vehicles that have an electric cooling fan that can operate when the ignition is switched off. By cutting one wire, this facility will not cause the alarm to trigger. A range of accessories is also available and includes a remote receiver that can be used to operate house lights or possibly an automatic garage door, if this facility is fitted.

### Remote Vehicle Alarm Model 6650



- ★ Remote Keyfob Operation
  - ★ Choice of 5 Siren Sounds plus Multi-tone
  - ★ Remote Shock Sensitivity Setting
- This low cost alarm is an easy to install one piece design, connected to your vehicle by two (or three) wires. When programmed with the remote control code, the alarm is installed and is ready for use. When armed, any forced entry into the vehicle which will turn on an interior light, or any sudden 'shock' to the vehicle (if used) is a Ground Trigger input for use with optional add-on accessories like boot and bonnet switches or ultrasonic sensors. The alarm is supplied complete with comprehensive fitting instructions, fixing kit, warning stickers and one keyfob transmitter. Additional keyfob transmitters are available separately, as a spare, or for a second user of the vehicle.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
ME67X 1	Remote Car Alarm	£25.520	£22.000	£20.000	£29.990
CR43W	Spare Transmitter	£8.500	£7.320	£6.570	£9.990

### Expandable Remote Vehicle Alarm Model 6652



- ★ Remote Keyfob Operation
  - ★ Choice of 5 Siren Sounds plus Multi-tone
  - ★ Remote Shock Sensitivity Setting
  - ★ Car Locator Facility
- An expandable version of the basic model (ME67X) that includes two pin switches, to provide protection for the boot and bonnet. An LED status indicator is included which, when mounted on the dash, provides a very visible indication that the alarm is active. Additionally, the alarm has a high-current pulsed output that is used to 'flash' sidelights, indicator lights or dipped beam headlights, in fact any lighting load up to 10A. The alarm has a grounded trigger input that can be used with an ultrasonic detector or the very sensitive motion detector. Additionally, an output is provided to operate the remote door lock interface. The alarm remote control features two buttons - the upper button is used to arm/disarm the system, activate the 'warn away' facility and for personal attack. The second button is used to deactivate the in-built shock sensor circuit. The alarm is supplied complete with comprehensive fitting instructions, fixing kit, warning stickers and one keyfob transmitter. Additional keyfob transmitters are available separately, as a spare, or for a second user of the vehicle.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MM36P1	Expandable Car Alarm	£42.540			£49.990
CR43W	Spare Transmitter	£8.500	£7.320	£6.570	£9.990

### Expandable Remote Vehicle Alarm with Battery Back-up facility Model 6645



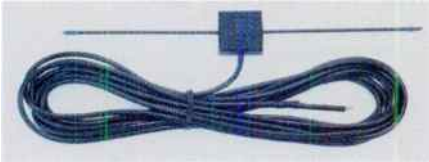
- ★ Remote Keyfob Operation
  - ★ Choice of 5 Siren Sounds plus Multi-tone
  - ★ Ignition Disable Facility
  - ★ Dual Flashing Lights Output
  - ★ Remote Shock Sensitivity Setting
  - ★ Car Locator Facility
- A top-of-the-range vehicle alarm system that incorporates all the features of MM36P including LED status indicator, built-in parking light flasher, plus an in-built engine ignition disable facility. When the alarm is armed, the ignition coil is disabled, the engine will turn, but will not start. An alkaline 9V PP3 back-up battery JY49D (not included) provides additional security. When armed, if the main power, or earth connection to the alarm, is broken, the alarm will be triggered. A key operated switch is provided on the alarm that will bypass all the alarm functions when operated; this is convenient when

the vehicle is being serviced or valeted. Inputs and outputs are also provided for connection to the range of optional extras that can be used with this alarm to produce a very comprehensive and sophisticated vehicle alarm system. The alarm is supplied complete with comprehensive fitting instructions, fixing kit, warning stickers and one keyfob transmitter. Additional keyfob transmitters are available separately as a spare or for a second user of the vehicle.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MM37S1	Car Alarm Batt Back	£51.050	£46.000	£42.500	£59.990
CR43W	Spare Transmitter	£8.500	£7.320	£6.570	£9.990
JY49D	Duracell PP3	£2.800	£2.500	£2.200	£3.290

## Antenna for Car Alarms



Fit this antenna to your car alarm (by connecting the supplied cable to the existing antenna wire and to ground) and you will double the range of your alarm's transmitter. Simple to fit, the antenna can be fixed to any part of your vehicle with the supplied sticky pad.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YE61R	Car Alarm Antenna	£5.090			£5.990

## Compact Ultrasonic Detector



A compact one-piece unit that will detect the breaking or removal of glass, and will sense intrusion or movement within the vehicle. The unit incorporates adjustable sensitivity and an LED that is used for testing the unit. The small size makes it ideal for siting the unit on a parcel shelf or dash providing a very visible deterrent. The detector is easy to install requiring just three leads to be connected, one to a positive (+) 12V DC, one to earth and one to the alarm system. Supplied with 1m of 3-core cable. Size 85 x 60 x 30mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CR38R	Comp U/Sonic Detct	£17.010			£19.990

## Ultrasonic Detector with Separate Sensors

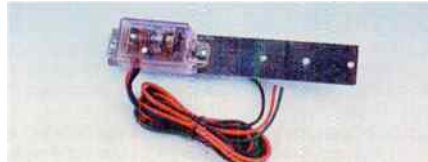


An ultrasonic detector with detached sensors attached to the control box by leads 2.5m long. The small control box can be fixed in any convenient position such as under the dash or in the boot. The two sensors can be mounted at suitable positions inside the vehicle. The control box is fitted with a test LED and adjustable sensitivity, and requires three leads (5m long) to be connected; two to the battery supply and one to the alarm system.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CR38N	U/Sonic Det and Sens	£21.260	£19.640	£18.030	£24.990

## Very Sensitive Motion Detector



A very sensitive, adjustable, motion detector that will detect anyone trying to force a door, a bonnet or boot, or attempt to raise the vehicle, in order to illegally remove the wheels or tow the vehicle away. Complete with 30.5cm (1ft.) of three-core lead. Size 154 x 26 x 25mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CR40T	Motion Detector	£4.240	£3.640	£3.230	£4.990

## Remote Door Lock Interface



This device is intended to interface the alarm system with a vehicles central door locking system. When the alarm is armed the doors will automatically be locked and unlocked when the alarm is disarmed. The door lock pulse time can be increased from 0.6 to 3.6 seconds, for cars that require a longer pulse time. It is

important to ascertain the type of door locking mechanism fitted to your vehicle e.g., plungers, vacuum, relay etc., so that the module can be installed correctly. Some vehicles may require extra external relays to suit the vehicles requirements.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CR41U	Remote Door Lock Int	£12.750	£10.860	£9.700	£14.990

## Door Lock Motor Kit



A kit to convert a car that does not have central locking, into power locking, so that the doors can be locked automatically when the alarm is armed. A kit will be required for each door, and each kit includes a motor, mounting bracket, screws, connector rod, 2.5m of connecting cable and a rubber tube to protect the cable as it passes from the door into the body of the car. Requires the remote door lock interface CR41U. Supplied with full fitting instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	12+	1+
CR42V	Door Lock Motor	£8.500	£8.250	£7.950	£9.990

## Push Switch with Cover



A push-to-open switch with weatherproof cover for use in motor vehicles. Suitable for use with alarm systems as a door/boot/bonnet sensing switch, or simply as a courtesy light switch operated by a door or the boot lid. The switch is provided with a standard 6.35mm (1/4in.) blade terminal for accepting push-on receptacles, such as HF10L, and notches in the push rod as a guide for cutting to fit any installation. Maximum throw is 6mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
AY07H	Pin Sw With Cover	£1.260	£0.889	£0.747	£1.490



is a Preferred Supplier to the National Universities Working Party on Electronic Components

## Starter Immobiliser



A simple to install starter immobiliser that provides additional protection for your car. When the unit is activated, the LED status indicator flashes when the ignition is turned off. To start the car the driver must briefly activate a designated switch to disarm the unit - the driver will have 15 seconds to start the car. The process can be repeated if the car does not start within 15 seconds. A valet switch is included to override the unit for servicing.

Retail Unit Price each (inc. VAT).

Order Code	Type 4881	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AG89W	Interrupt Starter	£12.750	£10.350	£9.340	£14.990

## Remote Receiver



This receiver can be used to control an electric garage door opening system, exterior house lights etc., by pressing the button on your remote transmitter, as supplied with the Vixen car alarm systems. Alternatively, a second transmitter can be purchased if preferred (CR43W). The receiver can switch up to 10A, and can be programmed to provide a momentary pulsed output, a latching output, a 60 second timed output or a 3 minute timed output. The receiver has a range up to 45-7m (150ft.) and requires a 12V DC power supply (not included). Please note that the remote receiver is NOT supplied with a transmitter. Maximum switching voltage is 50V. A suitable rated slave relay will have to be used if mains operated devices are to be used in conjunction with this device.

Retail Unit Price each (inc. VAT).

Order Code	Type 4850	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CR44X	Remote Receiver	£21.260	£15.400	£14.390	£24.990
CR43W	Spare Transmitter	£8.500	£7.320	£6.570	£9.990

## Remote Alert Paging Alarm

Nowadays alarms sounding in the street are a common occurrence. So much so that most people simply ignore them. This paging alarm is different. If your alarm goes off you know about it immediately. The pager can be worn using the belt-clip or slipped into a pocket of handbag. If the alarm is activated then the pager emits an urgent warning sound alerting you to the fact that your car is under threat. The pager operates upto 100m and is fully DTI approved. The pager incorporates automatic range checking and will sound the alarm if it is out of range, tampered with or subject to interference (jamming).



Manufactured in the UK, the Remote Alert protects cars, vans, trucks, motorcycles, garages, sheds, outbuildings, etc. The basic kit monitors the voltage drop caused by the courtesy light operating in the vehicle. There are inputs to interface to existing alarm systems and a complete upgrade kit is available that includes ultrasonic detectors.

Basic kit (MU20) contains:  
**Alarm unit** - fitted in vehicle or building to be protected. Trigger input and outputs available to extend capabilities of alarm and a disable input that can be connected to offer automatic dis-arming with ignition or hidden valetting switch, etc. Operates on 12-24V DC.

**Pager** - carried with you.  
**Plug-in fused power lead** - designed to fit a cigar lighter socket for instant plug and go use.



Upgrade kit (MU21) contains:  
**Wiring loom** for permanent installation; generous 3m length with all fuses and connectors.  
**Ultrasonic movement sensors** complete with fitted leads and mounting stalks, range 5m.

Retail Unit Price each (inc. VAT).

Order Code	Type 18081	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MU20W1	Alert Paging Alarm	£51.050			£59.990
MU21X1	Alert Upgrade kit	£34.030			£39.990

## Car Alarm Sticker

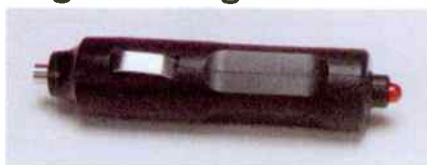
A highly visible triangular self-adhesive car alarm sticker, ideal to ward-off thieves whether an alarm is fitted or not. The sticker measures 75 x 75 x 75mm (approx.), has a bright red border and black lettering on a white background.



Retail Unit Price each (inc. VAT).

Order Code	Type 3114	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JR91Y	Alarm Sticker	£0.638	£0.343	£0.293	£0.750

## Plug-In Flashing LED



A flashing LED built into a car cigar lighter plug to give visual warning that an alarm is activated (whether an alarm is fitted or not). Simply plugs into the car's cigar lighter socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 0991	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YE73D	Plug In LED	£2.540			£2.990

## Sparkrite Car Alarms

Sparkrite is the largest manufacturer of car alarms in the UK and their long history of design and innovation has resulted in a range of products that brings the highest level of security to your vehicle. All products are manufactured to the highest standards using superior quality components and the latest in microchip technology.

The four Sparkrite alarm systems offered here are all microprocessor controlled and will sense any signals which indicate that the car has an intruder and warning them off with an ear-piercing 128dB siren. The SR-100 also includes an immobiliser that will prevent the intruder from simply driving away. All Sparkrite alarms also include an automatic reset that re-activate the alarm once intruders have been repelled.

Every car alarm in the Sparkrite range is easy to fit and features remote control arming and disarming. To help deter car thieves they all come complete with a set of warning stickers and a dashboard mounted LED that flashes when the alarm is armed.

All car alarms in the Sparkrite range can be fitted to any vehicle with a 12V negative earth. Some cars have a fan which runs after the engine has stopped but Sparkrite alarms are programmed to ignore the fan and therefore avoid false alarms.

### The Sparkrite Range

Key feature	SR-60	SR-75	SR-85	SR-90	SR-100
Microprocessor control	Standard	Standard	Standard	Standard	Standard
DTI approved remote control	Standard	Standard	Standard	Standard	Standard
Automatic Arming	No	No	No	Standard	Standard
Door, boot, bonnet protection	C	C	C,S	C,S	C,S
Entry alert	Standard	Standard	Standard	Standard	Standard
Door open alert	Standard	Standard	Standard	Standard	Standard
Automatic reset	Standard	Standard	Standard	Standard	Standard
Electric fan sensing	Standard	Standard	Standard	Standard	Standard
Ultrasonic interior protection	No	Optional	Optional	Free offer	Standard
Engine immobilisation	No	No	No	No	Standard
Shock sensing	Standard	Standard	Standard	Optional	Standard
Remote panic facility	Standard	Standard	Standard	Standard	Standard
Built in siren	Standard	Standard	Standard	Standard	Standard
Flashing hazard lights	No	No	Standard	Standard	Standard
Audible signal on arm/disarm	Standard	Standard	Standard	Standard	Standard
Visible signal on arm/disarm	Optional	No	Standard	Standard	Standard
Flashing LED warning light	Optional	Standard	Standard	Standard	Standard
Passive arming	No	No	No	Standard	Standard
Alarm status indicator	Optional	Standard	Standard	Standard	Standard
Under bonnet mounting	Choice	Standard	Standard	Standard	Standard
Central door locking	No	Optional	Optional	Optional	Optional
Window warning stickers	Standard	Standard	Standard	Standard	Standard
Circuit to prevent accidental arming	No	No	No	Standard	Standard

Note:

C=current sensing (detects operation of interior light and ignition)

S=switch sensing (detects operation of the door switch)

**Easy Fit Car Alarm  
SR-60**

Sparkrite



- ★ Easy two wire installation
- ★ Radio remote control
- ★ Current sensing & built in shock sensor
- ★ Optional flashing LED

The ultimate Easy fit car alarm. No drilling, No mess, Fitted in 10 minutes. Comes complete with bracket, securing strap and self adhesive pad to give you the choice of fixing method. The self adhesive pad or the securing strap can be used to affix alarm directly onto the car battery if desired, minimising the length of wiring necessary, or if preferred, the bracket may be used as with conventional car alarms. Supplied with full fitting and operating instructions, alarm warning stickers and remote control. A flashing LED is available separately should a further deterrent be required (order code YD23A).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD20W 1	Easy Fit Car Alarm	£29.778	£34.990

**Warning Light**

Sparkrite



This LED is designed as a visual deterrent to be used in conjunction with the Easy Fit Car Alarm (order code YD20W). It is easy to fit and an ideal add on for added protection. This LED will flash when used with Easy Fit Alarm (YD20W).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD23A	Add On Flashing LED	£2.540	£2.990

**Sparkrite SR-75**



The Sparkrite SR-75 is a simple to fit yet technically advanced alarm system that can be fitted in minutes. It has two sensors systems – a built in shock sensor (with adjustable sensitivity) that will detect any interference with the vehicle and an electronic current sensor that will trigger the alarm if an interior light turns on or the ignition is started.

Once activated, the alarm's high power siren will emit a 128dB ear-piercing tone that is intolerable within the passenger compartment. The alarm system is armed and disarmed with an individually coded remote control transmitter (there are 4 billion individual codes) and the siren will 'chirp' to confirm that an instruction has been received. This remote transmitter can also serve as a remote 'panic' alarm.

The SR-75 includes a socket for an optional plug-in ultrasonic sensor (SR-913 or SR-915) for added security and a door locking control wire suitable for connection to the optional SR-911 Central Door Locking Interface.

Refer to the comparison table for a complete breakdown of the SR-75's key features. The pack contains the compact alarm unit with built-in siren and shock sensor, LED warning light, window stickers, one remote control transmitter, all wiring and components and comprehensive fitting instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS27E 1	Remote Car Alarm	£34.034	£39.990

**Sparkrite SR-85**



The SR-85 compact remote car alarm system incorporates the latest microprocessor technology, offering the ultimate in product reliability and performance. Its unique, easy to fit design ensures easy DIY installation and guarantees many years of trouble free operation.

Like the SR-75, this model has a built-in shock sensor and current sensors but extra security is provided by the addition of a switch sensor that detects the opening of a door (and the boot or bonnet if the optional switches, SR-910, are fitted). The SR-85 includes a socket for an optional plug-in ultrasonic sensor (SR-913 or SR-9015) for added security and a door locking control wire suitable for connection to the optional SR-911 Central Door Locking Interface.

Refer to the comparison table for a complete breakdown of the SR-85's key features. The pack contains the compact alarm unit with built-in siren and shock sensor, LED warning light, window stickers, one remote control transmitter, all wiring and components and comprehensive fitting instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS28F 1	Remote Alarm Plus	£42.540	£49.990

**Sparkrite SR-90SD**



Like the SR-85, this model has current sensors and a switch sensor that detects the opening of a door (and the boot or bonnet if the optional switches,

SR-910, are fitted).

The SR-90SD can also be set up for passive arming – this automatically begins the arming sequence 10 seconds after the last door is closed and the alarm will then be fully armed after a further 20 seconds. The vehicle's hazard lights will flash and the siren will 'chirp' to indicate that passive arming is taking place.

A special feature of the SR-90SD is the addition of a free SR-915 ultrasonic detector in the pack. This unit simply plugs into the car alarm system and provides added protection by detecting entry via the windows or sun-roof. Once armed, the ultrasonic detector fills the interior of the vehicle with invisible sound waves, setting up a steady pattern. Any movement within the vehicle or tampering with the windows or roof will bring about a change in the pattern and set off the alarm.

The SR-90SD includes a door locking control wire suitable for connection to the optional SR-911 Central Door Locking Interface. Refer to the comparison table for a complete breakdown of the SR-90SD's key features.

The pack contains the compact alarm unit with built-in siren, LED warning light, window stickers, one remote control transmitter, all wiring and components and comprehensive fitting instructions. The pack also includes a free ultrasonic sensor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS29G 1	Remote U/Sonic Alarm	£55.310	£64.990

**Sparkrite SR-100**



The top of the range SR-100 has all of the features and sensors of the SR-90 (including the SR-913 ultrasonic sensor as standard) and also features a starter motor immobiliser – any tampering with the vehicle that sets off the alarm will also completely disable the motor.

Like the SR-90SD, the SR-100 can be set up for passive arming – this automatically begins the arming sequence 10 seconds after the last door is closed and the alarm will then be fully armed after a further 20 seconds. The vehicle's hazard lights will flash and the siren will 'chirp' to indicate that passive arming is taking place.

The SR-100 includes the SR-915 ultrasonic detector as standard. This unit simply plugs into the car alarm system and provides the added protection of detecting entry via the windows or sun-roof. Once armed the ultrasonic detector fills the interior of the vehicle with invisible sound waves, setting up a steady pattern. Any movement within the vehicle or tampering with the windows or roof will bring about a change in the pattern and set off the alarm.

The SR-100 includes a door locking control wire suitable for connection to the optional SR-911 Central Door Locking Interface. Refer to the comparison table for a complete breakdown of the SR-100's key features.

The pack contains the compact alarm unit with built-in siren and shock sensor, LED warning light, window stickers, two remote control transmitters, all wiring and components and comprehensive fitting instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS30H 1	U/Sonic Immo. Alarm	£102.110	£119.990

See Stock Code Index For More Price Breaks

## Sparkrite Central Door Locking Interface SR-911



The central door locking interface can be used in conjunction with any of the car alarms in the Sparkrite range to automatically lock all doors when arming the alarm and open all doors when disarming the system with the remote control transmitter (your car must already feature electrical or pneumatic central locking for this system to work). It is not suitable for use as a stand-alone unit.

The pack includes the interface unit with fixing screws, all necessary cabling and comprehensive fitting and wiring instructions.

It is important to ascertain the type of door locking mechanism fitted to your vehicle, e.g., plungers, vacuum, relay, etc., so that the module can be installed correctly. Some vehicles may require extra external relays to suit the vehicles requirements.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS31J	CLocking Interface	£21.260	£24.990

## SR-913 Ultrasonic Detector Unit



This unit simply plugs into the socket fitted to the SR-75 and SR-85 car alarm systems to provide added protection, by detecting attempted entry via the windows or sun-roof. It is not suitable for fitting as a stand-alone unit.

The ultrasonic detector is adjustable for sensitivity and features a highly visible scanning LED array – designed to deter intruders while the unit is armed. The pack contains the ultrasonic detector with scanning LED array, mounting bracket with fixing screws, a plug-in connector and full installation and operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS32K	U/Sonic T-Bar	£23.820	£27.990

## SR-915 Professional Ultrasonic Sensors



The SR-915 is a more discrete ultrasonic alarm system offering the same protection as the SR-913 but without 'advertising' its presence to potential intruders. It simply plugs into the socket provided in the SR-75 and SR-85 car alarm systems or can be used to upgrade the unit provided with the SR-90 and SR-100.

The pack contains two ultrasonic sensors, a central control unit with sensitivity control, all connectors and components for simple installation and full instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS33L	Professional U/Sonic	£23.820	£27.990

## SR-910 Door/Boot/Bonnet Switches



These quality switches are ideal for use in conjunction with the SR-85, SR-90 and SR-100 car alarm systems (and most major brands of car alarm) to provide the added protection offered by detecting the opening of the vehicle's boot or bonnet. If your vehicle does not already feature door switches to operate an internal courtesy light these switches will be needed for your doors too. The pack contains a pair of switches, two fixing brackets with screws and two crimp terminals for wiring.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YS34M	Door Pin Switch Kit	£4.240	£4.990

## Engine Immobilisers SR-190 & SR-190/2

Sparkrite



### SR-190

- ★ Easy 4 wire installation
- ★ Enable & disable by coded key
- ★ Red/green LED indication
- ★ 2 Digital keys supplied

This easy-fit electronic car immobiliser has been designed for simple installation. The single circuit SR (cuts a single electrical circuit) only 4 wires to connect. It is armed and disarmed by a digitally coded key which is simply touched onto a small, dash mounted receiver. Red and green warning LEDs confirm whether armed or disarmed. Comes complete with full fitting and operating instructions, 2 coded keys and warning stickers.



### SR190/2

- ★ Disables two main electrical circuits for maximum security.
- ★ Enable & disable by coded key
- ★ Red/green LED indication
- ★ 2 Digital keys supplied

This system is designed for easy installation, requiring only two connections to the vehicle's battery, four wires to the immobiliser circuits and one wire for the safety circuit to prevent accidental arming. When armed a red LED illuminates on the dashboard as a visible deterrent. Disarming can only be achieved using the specially coded digital keys (two supplied), indicated by a green LED.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD21X 1	Engine Immobiliser	£25.523	£29.990
GG46A 1	SR190/2	£34.034	£39.990

## Motorcycle Alarm



- ★ Motion detection
- ★ Piercing 115dB siren
- ★ Automatic arming and disarming
- ★ Easy to hide
- ★ Easy to install

The MA-100 is a miniature alarm that is very easy to hide and easy to install. Any motion of the bike (the sensitivity is adjustable) will set off the piercing 115dB alarm, alerting everyone nearby that your bike has been disturbed and warning the

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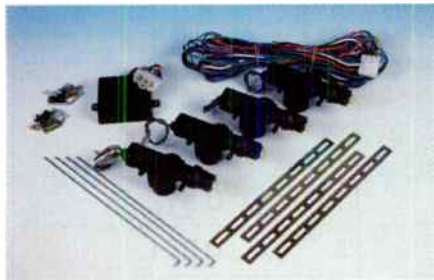
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would-be thieves that they've picked the wrong target. The siren sounds continuously for 35 seconds before rearming itself to detect any further movement of the bike. Pack contains MA-100 alarm sensor, piezo siren, wiring and connectors and full installation instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB95D 1	Motorcycle Alarm	£34.030	£39.990

## Central Door Locking System



- ★ 4 Door system
- ★ Universal fitting
- ★ Easy installation
- ★ Silent operation
- ★ All fittings included

This 4 door central locking system is easy to install and can be fitted to any car which runs off a 12V negative earth battery. The system enables all doors to lock and unlock simultaneously from the drivers door by way of the existing key. All wiring and fixings are included. Unit comes complete with fitting and operating instructions and 12 months guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD77J 1	Central Lock System	£38.280	£44.990

## Door Lock Motors

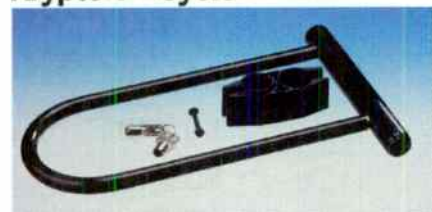


Replacement door locks for central locking systems. Sold individually and available in 2 wire (YD79L) and 5 wire (YD78K) versions for single or multiple operation depending on your requirements. Supplied with fixings, bracket and connecting rod

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD79L	Car Door Lock 2W	£5.520	£6.490
YD78K	Car Door Lock 5W	£6.370	£7.490

## Kryptolok Cycle U-Lock



The Kryptolok originates from the USA, where bike theft is a big problem – particularly in the crime-ridden streets of the big cities. In New York alone, for example, around 100,000 bikes are said to disappear. Kryptonite's locks take a no-compromise attitude to security, and this is reflected in the

massive build quality of the Kryptolok. Short of a direct bomb blast, there's little that the Kryptolok cannot cope with. The shackle and crossbar are resistant to bolt cutters, hacksaws, prying and smashing, and are aided by a patented overhead cam which stops hammers and prybars. With 10,000 possible key/lock combinations, the alternative to brute force is a non-starter as well. This lock comes with a £500 guarantee from the manufacturer against theft. Two keys are supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM26D	Kryptolok Long Lock	£22.970	£26.990

## Protectalock Cycle U-Lock



- ★ Resists bolt-cutters, hacksaws, prying and smashing.
- ★ Black vinyl covered shaft and shackle.
- ★ Complete with mounting bracket for storage on bike.
- ★ Supplied with two keys
- ★ 215mm x 290mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM27E	Protectalock Long Lk	£12.750	£14.990

## The Decibel (dB)

$$\text{dB} = 10 \log (P2/P1)$$

where P = Power

dB	P1/P2	dB	P1/P2
+100	1.0 x 10 <sup>10</sup>	0.0	1
+90	1.0 x 10 <sup>9</sup>	-0.2	0.955
+80	1.0 x 10 <sup>8</sup>	-0.4	0.912
+70	1.0 x 10 <sup>7</sup>	-0.6	0.871
+60	1.0 x 10 <sup>6</sup>	-0.8	0.832
+50	1.0 x 10 <sup>5</sup>	-1.0	0.794
+40	1.0 x 10 <sup>4</sup>	-1.2	0.759
+30	1000	-1.4	0.724
+25	316	-1.6	0.692
+20	100	-1.8	0.661
+15	31.6	-2.0	0.631
+10	10	-2.5	0.562
+05	3.16	-3.0	0.501
+4.5	2.82	-3.5	0.447
+4.0	2.51	-4.0	0.398
+3.5	2.24	-4.5	0.355
+3.0	1.995	-5.0	0.316
+2.5	1.778	-10	0.100
+2.0	1.585	-15	0.0316
+1.8	1.514	-20	0.0100
+1.6	1.445	-25	0.00316
+1.4	1.38	-30	1.0 x 10 <sup>-3</sup>
+1.2	1.318	-40	1.0 x 10 <sup>-4</sup>
+1.0	1.259	-50	1.0 x 10 <sup>-5</sup>
+0.8	1.202	-60	1.0 x 10 <sup>-6</sup>
+0.6	1.148	-70	1.0 x 10 <sup>-7</sup>
+0.4	1.096	-80	1.0 x 10 <sup>-8</sup>
+0.2	1.047	-90	1.0 x 10 <sup>-9</sup>
0.0	1	-100	1.0 x 10 <sup>-10</sup>





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**IMPORTANT NOTE:** The prices of the products in this section were correct as of September 1997. However, owing to the volatile nature of the semiconductor industry, we cannot guarantee these prices during the lifetime of this catalogue. We therefore urge you to telephone the sales line for the latest pricing information.

## BASE NUMBERS

### An Explanation of the Indexing of Integrated Circuits.

We have now combined all semiconductor devices into one easy to use index, based on the numerical part of each device number. Given the basic part number for a device, such as "4001" for example, it is a simple matter to find the part and look up its Maplin order code and the page number in the catalogue where further details may be found. The main advantages of this index system are that no technical knowledge of the device is required. Nor do you need to know the letter suffix for the part, which varies from one manufacturer's version to another in any case.

#### What is a "Base Number", and how do I use the index?

Whether the device you want to find is a transistor, a diode, an IC or any other semiconductor (also called an active device), all you need to look it up, is to decide what is the base number of the part. The base number part of a full device number is simply the first number you come to when reading through that device number, up to when you encounter another letter (or the end of the device number if there is no letter). So, for example, the base number of "P-80C52" is "80", that of "BC108C" is "108", for both "UA741C" and "LM741" it is "741".

Devices are often referred to by their base numbers anyway, like "6502", "40106" and "7407".

It is only if that number is split by a letter, such as "80C52" (a CMOS version of "8052") that you just have to remember the basic "first number you come to" rule. Hence the base number then becomes "80" and not "8052", because you don't read further than the end of the first number you find before hitting another letter.

The layout of this index is in numerical decade sequence (1's 10's 100's, etc., then 2's, 20's, 200's, etc. and so on to 90's and 900's). This breaks the list down into convenient sections. So for base number "80", go straight to the "Base Number 80" section, for 108, go to the "Base Number 100" section and look down that short list, which is in numerical order.

## IMPORTANT NOTE

Please note that the application circuits which appear within this catalogue are usually extracts or derivatives of information originally provided by the device manufacturers in their data sheets or data books. Circuits are provided on a purely experimental basis for more experienced constructors and should not be considered as complete projects. We are able to supply copies of the manufacturers full data sheets for almost all integrated circuits and for some discrete devices.

We are now able to provide selected data sheets on 3.5 inch disks (for PC's only) in Adobe's Portable Document Format (PDF files). These may be displayed or printed by any Windows PC with Adobe Acrobat reader (V3.0) installed. All of the new semiconductors featured in this catalogue are available in this format, as are all of the most popular IC's from our original range. The price for these is £1.99 inclusive of VAT. Photocopied data sheets are also available, priced at £1.20 NV.

To order a data sheet for a given IC, proceed as follows: In the Descriptions box on your order coupon write "Data sheet for" and the number of the device you want data for, EG, "Data sheet for NE555". If you require the data on disk in PDF format, add "PDF" after the part number, EG, "Data sheet for NE555 PDF". In the Order Code column, write DS00A and then the quantity, price, etc. as usual. Please note that we are usually unable to provide data sheets for smaller devices such as transistors, diodes, etc. We will have included any information we have for such a device in this catalogue. See also the semiconductor data books in this section and in the Books section.

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AR10L	MACH110-20JC	High Density PLA	924
DB33L	J112	N Channel FET	903
VR11M	TIP112	Darlington Transistor	903
UM89W	TIPP112	NPN Darlington Transistor	902
AD73Q	INA114AP	Instrumentation Amp	970
AD76H	INA117KP	Instrumentation Amp	970
AD74R	INA118P	Instrumentation Amp	970
GX40T	MUR120	Fast Recovery Rectifier	906
AD80B	ISO122JP	Isolation Amp	971
AD81C	ISO122P	Isolation Amp	970
WQ73Q	TIP122	NPN Power Darlington Transistor	903
AD59P	OPA124P	FET Op-Amp	964
WQ23A	C126D	Thyristor 400V 12A	907
UM77J	C126M	Thyristor 600V 12A	907
QF42V	BY127	1A Rectifier Diode 1250V	905
WQ74R	TIP127	NPN Power Darlington Transistor	903
LE64U	OPA129P	Very Lo-Bias Op Amp	964
LE62S	ISO130P	High IMR Isolation Amp	971
QF03D	BD131	NPN Power Transistor	902
QF05F	BD132	PNP Power Transistor	902
QF06G	BD135	NPN Power Transistor	902
QF75S	BD136	PNP Power Transistor	902
VR09K	BD137	NPN Transistor	902
VR10L	BD138	PNP Transistor	902
VQ48C	MAX138CPL	3 1/2-Digit A/D with LCD Driver	997
QF07H	BD139	NPN Power Transistor	902
VQ49D	MAX139CPL	3 1/2-Digit A/D with LED Driver	997
QB37S	BC140	NPN Transistor	902
QF08J	BD140	PNP Power Transistor	902
QF38R	BC141	NPN Transistor	902
UJ30H	TIP142	NPN Darlington Power Transistor	903
QB40T	BC143	PNP Transistor	902
UJ31J	TIP147	PNP Darlington Power Transistor	903
NP99H	TSH150IN	Wide Bandwidth Op-Amp	1031
VQ51F	MAX152CPP	3V 8-Bit A/D Converter	997
VQ50E	MAX153CPP	8-Bit A/D Converter	997
QB48C	BC160	PNP Transistor	902
QB49D	BC161	PNP Transistor	902
UK66W	L165V	Power Op-Amp	963
QB50E	BC168C	NPN Transistor	901
QB51F	BC169C	NPN Transistor	901
UH55K	BC171	NPN Transistor	901
QY53H	BF173	High Frequency Transistor	903
NP16S	OP177GP	Ultraprecision Op-Amp	959
AD56L	OPA177GP	Op-Amp	961
QB52G	BC177	PNP Transistor	901
QB53H	BC178	PNP Transistor	901
QB54J	BC179	PNP Transistor	901
QB55K	BC182L	NPN Transistor	901
QB56L	BC183L	NPN Transistor	901
QB57M	BC184L	NPN Transistor	901
NP19V	OP184EP	Rail-to-Rail Op-Amp	959
VR16S	BFR193	NPN Transistor	903

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UJ32K	BUZ10	Power MOSFET	904
QY35Q	MF10CN	Voltage Controlled Filter	985
CR01B	MPSH10	High Frequency Transistor	903
QQ27E	VN10KM	VMOS POWER FET	904
AY56L	ECF10N16	MOSFET 160V 125W TO3	904
AY54J	ECF10P16	MOSFET 160V 125W TO3	904
AY57M	ECF10N20	MOSFET 200V 125W TO3	904
AY55K	ECF10P20	MOSFET 200V 125W TO3	904
AX79L	ECX10N16	MOSFET 160V 125W TO3	904
AX80B	ECX10P16	MOSFET 160V 125W TO3	904
AX81C	ECX10N20	MOSFET 200V 125W TO3	904
AX82D	ECX10P20	MOSFET 200V 125W TO3	904
DT34M	BUT11A	High Voltage Switching	903
UJ33L	BUZ11	Power MOSFET	904
VR24B	BAX12A	Fast Recovery Diode	905
NP54J	TMP12FP	Airflow & Temperature Sensor	1055
JA32K	HT12A	12-Bit Encoders	1016

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UH37S	MPX100AP	Pressure Sensor	1057
UH89W	ZPY100	1.3W Zener Diode 100V	906
LE73Q	OPT101P	Light to V Converter	1055

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JY56L	NME0515S	Switching Voltage Reg	1050
KU64U	ISD1016AG	Speech Rec/Play	991
KU63T	ISD1016AP	Speech Rec/Play	991
VR43W	ispLSI1016-60LJ	High Density PLD	923
KU68y	ISD1020AG	Speech Rec/Play	991
KU66W	ISD1020AP	Speech Rec/Play	991
JA52G	SK1020	Schottky Rectifier Diode	905
AW68Y	TDA1020	12W Power Amplifier IC	977
VR44X	ispLSI1024-60LJ	High Density PLD	923
OY76H	SAA1027	Stepper Motor Driver	1023
GV11M	HT1030	Voltage Regulator	1037
JA53H	SK1030	Schottky Rectifier Diode	905
VR45Y	ispLSI1032-60LJ	High Density PLD	923
OY33L	LM1037N	Dual 4-Channel Switch	970
AN72P	SK1040	Schottky Rectifier Diode	905
UK85G	SAA1043P	Sync Generator	1014
GX32K	MBR1045	Schottky Rectifier Diode	905
BH68Y	HT1050	Voltage Regulator	1037
AH45Y	TDA1072A	AM Receiver IC	1016
GX33L	MBR1090	Schottky Rectifier Diode	905
KU92A	ISD1110P	Speech Rec/Play	991
NP91Y	LD1117V/50	5V Low Voltage Drop Reg	988
AX67X	LM1201N	Video Amplifier IC Monochrome	1010
AX68Y	LM1203N	Video Amplifier IC Colour	1010
AH19V	NME1206S	Switching Voltage Reg +5V 1.5A	1050
AH16S	NMA1206S	Switching Voltage Reg +5V 1.5A	1050
AH20W	NME1212S	Switching Voltage Reg +12V 1.5A	1050
AH17T	NMA1212S	Switching Voltage Reg +12V 1.5A	1050
LE24B	DS1213B	Smart Skt	939
LE25C	DS1213C	Smart Skt	939
LE26D	DS1213D	Smart Skt	939
JY57M	NME1215S	Switching Voltage Reg +15V 1.5A	1050
JY54J	NMA1215S	Switching Voltage Reg +15V 1.5A	1050
LE13P	DS1231	CPU PSU Mon	936
LE14Q	DS1232	CPU PSU Mon+Rst	1043
AD97F	MAX1232CPA	LP CMOS Micro-Monitor	1044
LE15R	DS1233-10	EconoReset 5V	1043
LE16S	DS1233A-10	EconoReset 3.3V	1043
LE17T	DS1236	CPU Mon+Rst+Wd+NonVol	1043
LE18U	DS1239	CPU+Rst+Wd+NonVol+PB	1043
LE23A	DS1275	RS-232 Dual TX/RX	941
AV41U	LM1458N NSC	Dual Op-Amp	958
QH46A	MC1458CN	Dual Op-Amp	958
NP61R	ADM1485JN	EIA RS-485 Transceiver	940
YH89W	MC1489P	RS232 Driver	941
YH90X	MC1489P	RS232 Receiver	941
QH47B	MC1496P	Double Balanced Modulator	1015
UK75S	TDA1514AN-7	40W Power Amp	977
GX34M	MBR1535CT	Schottky Rectifier Diode	905
GX43W	MUR1615CT	Fast Recovery Rectifier	906
AH07H	T1616MH	Triac 600V 16A	907
JA54J	SK1620	Schottky Rectifier Diode	905
JA55K	SK1630	Schottky Rectifier Diode	905
AN73Q	SK1640	Schottky Rectifier Diode	905
VQ61R	CXA1645P	RGB Encoder	1013
LE20W	DS1666-50	Dig Log Pot	983
AD63T	DF1700P	Digital Filter	997
AD64U	PCM1700P	Music/Sound Generator	998
QL20W	LM1709CN	Op-Amp	957
LE19V	DS1802-10	Dig Dual Log Pot	983
YY99H	LM1830N	Fluid Level Detector	1058
NP43W	AD1845JP	16-Bit SoundPort Stereo Codec	982
NP44X	AD1847JP	16-Bit SoundPort Stereo Codec	982
NP30H	AD1859JR	Stereo 18-Bit Integrated DAC	992
LE21X	DS1869-10	Dig Lin Pot 10k	983
LE22Y	DS1869-50	Dig Lin Pot 50k	983
UH78K	LM1875N	20W Power Amp	976
QH38R	LM1877N-9	2W Stereo Power Amp	976
UL75S	LM1881N	Sync Separator	1011
UF50E	LM1893N	Mains Data Transceiver	1022
VR72P	DS1920-F5	Dallas Touch Memory	952
VR70M	DS1982-F5	Dallas Touch Memory	953
GX48C	LMC1983	Stereo Amplifier IC	984

VR71N	DS1985-F5	Dallas Touch Memory	953
CK42V	DS1990A	Dallas Touch Memory	954
VR31J	DS1990A-F5	Dallas Touch Memory	953
GS89W	DS1990A-F3	Dallas Touch Memory	953
VR32K	DS1991L-F5	Dallas Touch Memory	953
VR65V	DS1992L-F5	Dallas Touch Memory	953
VR66W	DS1993L-F5	Dallas Touch Memory	953
VR67X	DS1994L-F5	Dallas Touch Memory	953
VR68Y	DS1995L-F5	Dallas Touch Memory	953
VR69A	DS1996L-F5	Dallas Touch Memory	953

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AY33L	MC13077P	RGB To Composite PAL/NTSC	1013
YH64U	LM13700N	Dual Transconductance Op-Amp	969
QL03D	MC14001UBCP	Quad 2-I/P NOR	911
UU26D	MJE13005	NPN Power Transistor	903
UU27E	MJE13007	NPN Power Transistor	903
VR15R	MJE18004	High Voltage/Current Transistor	903
GS10L	MC13175D	UHF FM/AM Transmitters	1015
GS11M	MC13176D	UHF FM/AM Transmitters	1015
VR00A	PIC14000-04/SP	OTP Microcontroller	926
VR01B	PIC14000JW	OTP Microcontroller	926

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UU49D	M145026B-1	Remote Control Transmitter	1018
UU50E	M145027B-1	Remote Control Receiver	1018
UU51F	M145028B-1	Remote Control Receiver	1018

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Order Code	Device	Type	Page
KU70M	ISD-ES002	Record/Playback IC	991
LE81C	MACHXL 2.0	PAL/Mach software	924
AQ96E	W02	Bridge Rectifier 1.5A 200V	906
AR83E	J02	Bridge Rectifier 10A 200V	906
UL09K	REF02CP	5V Precision Reference	1032
AR20W	SIMM2Mx32	Memory Module	946
AR17T	SIMM2Mx36	Memory Module	946
AY49D	2SJ114	Power MOSFET	904
AY46A	2SJ160	Power MOSFET	904
AY47B	2SJ161	Power MOSFET	904
UR41U	2SJ162	Power MOSFET	904
AY53H	2SK400	Power MOSFET	904
QR01B	2N706	NPN Transistor	901
QR56L	2SA715	PNP Power Transistor	903
QQ31J	2SB716	PNP Transistor	901
UF76H	2SB718	PNP Transistor	901
QQ33L	2SD756	NPN Transistor	901
UF75S	2SA872A	PNP Transistor	901
AY50E	2SK1056	Power MOSFET	904
AY51F	2SK1057	Power MOSFET	904
UR40T	2SK1058	Power MOSFET	904
QY12N	2SA1085E	PNP Transistor	901
QR59P	2SC1162	NPN Power Transistor	903
QR09K	2N1711	NPN Transistor	902
QR10L	2N1893	NPN Transistor	902
QR11M	2N2219	NPN Transistor	902
UH54J	2N2222A	High Frequency Transistor	903
QR12N	2N2369A	High Frequency Transistor	903
QY11M	2SC2547E	NPN Transistor	901
QR14Q	2N2646	Unijunction Transistor	904
QR17T	2N2905	PNP Transistor	901
QR19V	2N2907	PNP Transistor	901
QR22Y	2N2926Gn	NPN Transistor	901
QR20W	2N2926Cr	NPN Transistor	901
QR21X	2N2926Ye	NPN Transistor	901
QR23A	2N3053	NPN Transistor	902
QR24B	2N3054	NPN Power Transistor	903
YH98G	2N3055	NPN Power Transistor (Epitaxial)	903

BL45Y	2N3055H	NPN Power Transistor (Hometaxial)	903
QR26D	2N3702	PNP Transistor	901
QR27E	2N3703	PNP Transistor	901
QR28F	2N3704	NPN Transistor	901
QR29G	2N3705	NPN Transistor	901
QR30H	2N3706	NPN Transistor	901
QR31J	2N3707	NPN Transistor	901
QR32K	2N3708	NPN Transistor	901
QR34M	2N3711	NPN Transistor	901
QW07H	2N3772	NPN Power Transistor	903
QR35Q	2N3773	NPN Power Transistor	903
QR36P	2N3819	Field Effect Transistor	903
QR38R	2N3866	High Frequency Power Transistor	903
QR39N	2N3903	NPN Transistor	901
QR40T	2N3904	NPN Transistor	901
QR41U	2N3905	PNP Transistor	901
QR42V	2N3906	PNP Transistor	901
UL37S	2N5401	PNP Transistor	901
QR50E	2N5459	Field Effect Transistor	903
UL38R	2N5460	Field Effect Transistor	904
UL36P	2N5551	NPN Transistor	901
UR42V	2N6399	Thyristor 800V 12A	907
QW08H	2N6609	PNP Power Transistor	903
UF89W	2N7000	Fetlington	903

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Order Code	Device	Type	Page
QF32K	BSX20	High Frequency Transistor	903
AY97F	VN20N	High Side Driver 60V 28A	1025
DT30H	ECF20N16	MOSFET 160V 250W TO3	904
DT31J	ECF20P16	MOSFET 160V 250W TO3	904
AR06G	PALCE20E8H-25/4	PAL Device	924
AR03D	PAL22V10-15PC	PAL Device	924
AR07H	PALCE22V10H-15	PAL Device	924
AR08J	PALCE22V10H-25	PAL device	924
AX19V	PEEL22CV10AJ-5	PEEL Device 5MHz PLCC	922
AX20W	PEEL22CV10AJ-7	PEEL Device 7MHz PLCC	922
AX24B	PEEL22CV10AJ-7	PEEL Device 7MHz DIP	922
AX21X	PEEL22CV10AJ-10	PEEL Device 10MHz PLCC	922
AX25C	PEEL22CV10AJ-10	PEEL Device 10MHz DIP	922
AX26D	PEEL22CV10AJ-15	PEEL Device 15MHz DIP	922
AX22Y	PEEL22CV10AJ-15	PEEL Device 15MHz PLCC	922
AX27E	PEEL22CV10AJ-25	PEEL Device 25MHz DIP	922
AX23A	PEEL22CV10AJ-25	PEEL Device 25MHz PLCC	922
AH60Q	ST24C02AB1	EEPROM 2K	948
AH62S	ST24C08B1	EEPROM 8K	948
AD23A	24LC16B/P	PIC EEPROM	948
AD26D	24AA65/P	PIC EEPROM	948
AD25C	24LC65/P	PIC EEPROM	948
DB58N	REF25Z	Precision Reference IC	1032
AX71N	DS26LS31CN	RS422 Line Driver	943
AX72P	DS26LS32CN	RS422 Line Receiver	943
UK56L	BTA26-600B	Triac 600V 26A	907
RA74R	OP-27GNB	Precision Op-Amp	959
AX54J	TS27L2CN	FET Op-Amp	964
AX55K	TS27M2CN	FET Op-Amp	964
AR57M	TLC27L4CN	FET Op-Amp	964
AX56L	TS27L4CN	FET Op-Amp	964
AX57M	TS27M4CN	FET Op-Amp	964
AW00A	NMC27C32BQ200	32K CMOS EPROM	948
AW01B	AM27C64-120AMD	64K CMOS EPROM	948
AW02C	AM27C64-150AMD	64K CMOS EPROM	948
AW07H	M27C64A-15F1	64K CMOS EPROM	948
UH43W	M27C64A-25F1	64K CMOS EPROM	948
AW08J	AM27C128-120AMD	128K CMOS EPROM	948
AW09K	AM27C128-150AMD	128K CMOS EPROM	948
AW10L	AM27C128-200AMD	128K CMOS EPROM	948
UH95D	TMS27C128-25JL	128K CMOS EPROM	948
UH44X	M27C256B-12XF1	256K CMOS EPROM	948
AW18U	M27C256-10XF1	256K CMOS EPROM	948
AW15R	AM27C256-120AMD	256K CMOS EPROM	948
AW20W	NM27C256Q120	256K CMOS EPROM	948
AW16S	AM27C256-150AMD	256K CMOS EPROM	948

AW19V	M27C256B-15XF1	150ns256K CMOS EPROM	948
UM57M	M27C512-15XF1	512K CMOS EPROM	948
AW26D	M27C512-12XF1	120ns512K CMOS EPROM	948
AW28F	NM27C512Q120	120ns 512K CMOS EPROM	948
AW24B	AM27C512-150AMD	150ns 512K CMOS EPROM	948
AW29G	NM27C512Q150	150ns512K CMOS EPROM	948
AW27E	M27C512-20XF1	200ns512K CMOS EPROM	948
AW30H	NM27C512Q200	200ns 512K CMOS EPROM	948
AW32K	AM27C010-150AMD	1M CMOS EPROM	948
AW31J	AM27C010-120AMD	120ns 1M CMOS EPROM	948
AW33L	AM27C010-200AMD	1M CMOS EPROM	948
AW34M	M27C1001-10F1	1M CMOS EPROM	948
AW35Q	M27C1001-12F1	1M CMOS EPROM	948
UM58N	M27C1001-15XF1	1M CMOS EPROM	948
AW36P	NM27C010Q120	1M CMOS EPROM	948
AW37S	NM27C010Q150	1M CMOS EPROM	948
AW38R	NM27C010Q200	1M CMOS EPROM	948
AW39N	AM27C020-150AMD	2M CMOS EPROM	948
AW40T	M27C2001-10F1	2M CMOS EPROM	948
AW41U	M27C2001-12F1	2M CMOS EPROM	948
UM59P	M27C2001-15XF1	2M CMOS EPROM	948
AW42V	NM27C020Q150	2M CMOS EPROM	948
AW44X	AM27C040-200AMD	4M CMOS EPROM	948
UM60Q	M27C4001-15XF1	4M CMOS EPROM	948
AW45Y	M27C4001-110XF1	110ns 4M CMOS EPROM	948
AW46A	M27C-4001-12XF1	120ns 4M CMOS EPROM	948
AX58N	M27C801-120F1	8M CMOS EPROM	948
AX59P	M27C801-150F1	8M CMOS EPROM	948
AX60Q	M27C801-200F1	8M CMOS EPROM	948
AX61R	M27C160-200F1	16M CMOS EPROM	948
QQ13P	BAR28	Schottky Barrier Diode	904
NR72P	MEM23F400BA30FF	4M CMOS Flash Memory	947

NR45Y	MAX233CPP	RS-232 Driver/Receiver	940
CR21X	MAX238CNG	Quad RS232C From 5V	942
UH56L	BC239	NPN Transistor	901
NR69A	LM239N	Quad Voltage Comparator	954
VR13P	BD241C	NPN Transistor	902
VR14Q	BD242C	PNP Transistor	902
QF16S	BF244A	Field Effect Transistor	903
QL14C	C246D	Triac 400V 16A	907
UR31J	C246M	Triac 600V 16A	907
UR38R	CF246D	Triac 400V 16A	907
UR39N	CF246M	Triac 600V 16A	907
UR50E	IRFP250	Power MOSFET	904
AY26D	R250S	6A/800V Diode	905
QF18U	BF259	High Frequency Transistor	903
UR33L	C263M	Triac 600V 25A	907
AX35Q	DG271CJ	Analogue Switch/Multiplexer	986
AV67X	TS271CN ST	CMOS Op-Amp	964
UJ36P	L272M	Dual Power Op-Amp	968
AV68Y	TS272CN ST	CMOS Op-Amp	964
AV69A	TS274CN ST	CMOS Op-Amp	964
NP17T	OP275GP	Dual Bipolar/JFET Op-Amp	959
NP18U	OP279GP	Rail-to-Rail Op-Amp	960
NP20W	OP281GP	Rail-to-Rail Op-Amp	960
AH80B	L293D	Stepper Motor Driver	1024
AH81C	L293E	Stepper Motor Driver	1024
AY41U	MAX293	L/P Filter	985
NP21X	OP295GP	Dual Rail-to-Rail Op-Amp	961
UK62S	L296P	4A Switching Regulator	1050
NP22Y	OP296GT	Rail-to-Rail I/P, O/P Op-Amp	961
AY42V	MAX297	L/P Filter	985
UK72P	L298N	Stepper Motor Driver	1025

VQ88V	SSM2165	Microphone Pre-amp	980
GS39N	SSM2166P	Microphone Pre-amp	981
NP40T	ADSP2181KS-133	DSP Microcontroller	935
UL79L	SSM2210P	Dual NPN Transistor	1061
QY43W	RC2211N	FSK Demod/Modem Receiver	1054
AJ56L	EL2244CN	Dual Op-Amp	956
AJ58N	EL2245CN	Dual Op-Amp	956
VR80B	SO2369A	NPN Transistor SMD	1144
AH40T	U2400B	NiCd Battery Charger	1029
AH41U	U2401B	NiCd Battery Charger	1029
UL81C	SSM2412P	Analogue Switch	987
CR12N	TLE2425CLP	Precision Virtual Ground	1033
GX53H	ULN2455M	Auto Lamp Monitor	1026
QH57M	MJ2501	PNP Darlington Power Transistor	903
AH08J	T2516MH	Triac 600V 25A	907
AD86T	LM2575T-ADJ	Voltage Regulator	1049
AD83E	LM2575T-5	Voltage Regulator	1049
AD84F	LM2575T-12	Voltage Regulator	1049
AD85G	LM2575T-15	Voltage Regulator	1049
AD89W	LM2576T-ADJ	Voltage Regulator	1049
AD87U	LM2576T-5	Voltage Regulator	1049
AD88V	LM2576T-12	Voltage Regulator	1049
AD90X	LM2577T-ADJ	Voltage Regulator	1049
GX47B	LM2577T-12	Step-Up Regulator	1049
AD58N	OPA2604AP	Dual FET Op-Amp	967
LE65V	OPA2650P	Dual V/FB 360MHz Op Amp	961
LE66W	OPA2658P	Dual I/FB 750MHz Op Amp	961
QQ07H	M2716-1F1	16K EPROM	947
UH88V	M2732A-2F1	32K EPROM	947
QQ09K	M2764AF1	64K CMOS EPROM	947
JU36P	TBA2800	IR Preamplifier	1021
QY78K	ULN2801A	Octal Darltn Drrv Bipolar/CMOS	944
QY79L	ULN2803A	Octal Darlington Driver TTL	944
AZ32K	HT2810B	Car Siren Sound Gen	1005
AZ33L	HT2810C	Car Siren Sound Gen	1005
AZ34M	HT2810H	Police Car Sound Gen	1005
BH69A	HT2811	Bell Sound Generator	1006
AZ37S	HT2812A	Aeroplane Sound Gen	1005
AZ38R	HT2812B	Rocket Sound Gen	1005
AZ44X	HT2820L	Motor Cycle Sound Gen	1004
AZ45Y	HT2821E	Brake/Explosion Sound	1004
UJ38R	TDA2822M	1W Stereo Power Amp	979
AZ46A	HT2830C	Train Sound Gen	1005
AZ47B	HT2844P	Jet Sound Gen	1005
AE15R	HT2860B	Alarm Sounds	1006
AZ49D	HT2883E	Submarine War Sounds	1005
AZ50E	HT2883F	Helicopter War Sounds	1005
AZ51F	HT2883I	Racing Car Sounds	1005
AZ52G	HT2884	Sound Gen with LED Driver	1006
AX73Q	LM2901N	Low Power Comparator	973
AX74R	LM2902N	Low Power Quad Comparator	973
AX75S	LM2903N	Low Power Comparator	973
AX76H	LM2904N	Low Power Dual Comparator	973
NR68Y	LM2904N	Low Power Quad Op-Amp	954
WQ38R	LM2917N	Frequency to Voltage Converter	1001
AH87U	LM2930A	Voltage Regulator	1034
AV22Y	LM2940CT-5.0	Voltage Regulator	1038
AV35Q	LP2950CZ-N5C	Voltage Regulator	1037
BL38R	MJ2955	PNP Power Transistor	903
QH55K	TIP2955	PNP Power Transistor	903

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QX09K	HCF4017BEY	Decade Counter	911
AB38R	HCF4017BM1	Dec/Doz Counter SMD	911
QX10L	HCF4018BEY	Presetable BCD Counter	911
QW17T	HCF4019BEY	Quad AND/OR Select Gate	911
AB27E	HCF4019BM1	4-Bit AND/OR Select SMD	911
QX11M	HCF4020BEY	14-Stage Binary Ripple Counter	911
QW18U	HCF4021BEY	8-Stage Static Shift Register	911
AB29G	HCF4021BM1	8-Bit Shift Register SMD	911
QW19V	HCF4022BEY	Divide by 8 Counter	911
QX12N	HCF4023BEY	Triple 3-Input NAND Gate	911
AB39N	HCF4023BM1	Triple 3-Input NAND SMD	911
QX13P	HCF4024BEY	7-Stage Ripple Counter	911
AB31J	HCF4024BM1	7-Stage & Higher Counter SMD	911
QX14Q	HCF4025BEY	Triple 3-Input NOR Gate	911
AB41U	HCF4025BM1	Triple 3-Input NOR Gate SMD	911
QX15R	HCF4026BEY	7-Seg. Display Decade Counter	911
QX16S	HCF4027BEY	Dual J-K Master-Slave Flip-Flop	911
AB42V	HCF4027BM1	Dual J-K Latch SMD	911
QX17T	HCF4028BEY	BCD to Decimal Decoder	911
AB43W	HCF4028BM1	4 to 10 Line Converter SMD	911
QW20W	HCF4029BEY	Presetable Up/Down Counter	911
AB44X	HCF4029BM1	4-Bit Bin/Dec Counter SMD	911
	HCF4030BEY	see HCF4070BEY	911
QW23A	HCF4033BEY	7-Seg. Display Decade Counter	911
QW25C	HCF4035BEY	4-Stage Shift Register	911
QX17E	HCF4040BEY	12-Stage Binary Counter	911
AB32K	HCF4040BM1	7-Stage & Higher Counter SMD	911
QX19V	HCF4042BEY	Quad Clocked D-Latch	911
QW29G	HCF4043BEY	Quad 3-State NOR R/S Latch	911
AB45Y	HCF4043BM1	Quad SR Latch SMD	911
QW30H	HCF4044BEY	Quad 3-State NAND R/S Latch	911
AB46A	HCF4044BM1	Quad SR Latch SMD	911

QW32K	HCF4046BEY	Phase Locked Loop	911
QX20W	HCF4047BEY	Multivibrator	911
AB47B	HCF4047BM1	Multivibrator SMD	911
QX21X	HCF4049UBEY	Hex Buffer Inverting	911
AB48C	HCF4049UBM1	Hex Buffer Inverting SMD	911
QX22Y	HCF4050BEY	Hex Buffer Non-Inverting	911
AB49D	HCF4050BM1	Non-Invert Hex Buffer SMD	911
QW34M	HCF4051BEY	8-Channel Analogue Multiplexer	911
AB51F	HCF4051BM1	1-Pole 8-Way Switch SMD	911
QW35Q	HCF4052BEY	4-Channel Analogue Multiplexer	911
AB52G	HCF4052BM1	2-Pole 4-Way Switch SMD	911
QW36P	HCF4053BEY	Triple 2-Channel Multiplexer	911
AB53H	HCF4053BM1	3-Pole 2-Way Switch SMD	911
QW39N	HCF4056BEY	BCD to 7-Segment Decoder LCD	911
AE99H	HCF4056BM1	BCD to 7-Segment SMD	911
QW40T	HCF4060BEY	14-Stage Counter	911
AB54J	HCF4060BM1	7-Stage & Higher Counter SMD	911
QW41U	HCF4063BEY	4-Bit Magnitude Comparator	911
AB01B	HCF4063BM1	4-Bit Comparator SMD	911
QX23A	HCF4066BEY	Quad Bilateral Switch	911
AB55K	HCF4066BM1	4-Pole 1-Way Switch SMD	911
QW42V	HCF4067BEY	16-Channel Multiplexer	911
AB02C	HCF4067BM1	1-Pole 16-Way Switch SMD	911
QX24B	HCF4068BEY	8-Input NAND Gate	911
AB03D	HCF4068BM1	Single 8-Input NAND Gate SMD	911
AB56L	HCF4069TBM	Inverting Hex Buffer SMD	911
QX25C	HCF4069UBEY	Hex Inverter	911
QX26D	HCF4070BEY	Quad Exclusive-OR Gate	911
AB04E	HCF4070BM1	Quad Exclusive-OR SMD	911
QW43W	HCF4071BEY	Quad 2-Input OR Gate	911
AB57M	HCF4071BM1	Quad 2-Input OR Gate SMD	911
QX27E	HCF4072BEY	Dual 4-Input OR Gate	911
AB58N	HCF4072BM1	Dual 4-Input OR SMD	911
QW44X	HCF4073BEY	Triple 3-Input AND Gate	911
QW45Y	HCF4075BEY	Triple 3-Input OR Gate	911
AB05F	HCF4075BM1	Triple 3-Input OR SMD	911
QW46A	HCF4076BEY	4-Bit D-Type Register	911
AB59P	HCF4076BM1	Quad 2-Input With Register SMD	911
QW47B	HCF4077BEY	Quad Exclusive-NOR Gate	911
AB06G	HCF4077BM1	Quad Exclusive-NOR SMD	911
QX28F	HCF4078BEY	8-Input NOR/OR Gate	911
QW48C	HCF4081BEY	Quad 2-Input AND Gate	911
AB07H	HCF4081BM1	Quad 2-Input NAND SMD	911
QW49D	HCF4082BEY	Dual 4-Input AND Gate	911
AJ59P	EL4089CN	Low Power DC Restore Amp	1001
QW53H	HCF4093BEY	Quad 2-1/2 NAND Schmitt Trigger	911
AB08J	HCF4093BM1	Quad 2-Input Schmitt NAND SMD	911
AJ60Q	EL4094CN	8-Pin Video Fader/Gain Control	1010
QW54J	HCF4094BEY	8-Stage Shift Register	911
AB19V	HCF4094BM1	8-bit shift register SMD	911
AJ61R	EL4095CN	Fader Gain Control With Switches	1010
QX29G	HCF4098BEY	Dual Monostable Multivibrator	911
AB09K	HCF4098BM1	Multivibrator SMD	911
QW57M	HCF4099BEY	8-Bit Addressable Latch	911
AB12N	HCF4099BM1	8-Bit Addressable Latch SMD	911
XX01B	RC4136N	Quad Op-Amp	962
UR17T	RC4152N	Voltage to Frequency Counter	1000
QQ06G	4164	64K DRAM	946
UR15R	RC4190N	Switching Regulator	1045
AE04E	RC4194N	Dual Rail Reg	1040
XX02C	RC4195N	15V Dual Tracking Regulator	1050
UR16S	RC4200N	Analogue Multiplier	985
UR18U	RC4227GN	Dual Precision Op-Amp	962
NR47B	MAX4427CPA	High Speed MOSFET Driver	1025
UH93B	4464	4 x 64K DRAM	946
QQ41U	HCF4503BEY	Hex Buffer 3-State Non-Inverting	911
AB13P	HCF4503BM1	Non-Invert Hex Buffer SMD	911
QW83E	HCF4510BEY	Dec/Doz Counter	911
QX31J	HCF4511BEY	BCD to 7-Seg. Decoder Driver	911
AB21X	HCF4511BM1	BCD to 7 segment SMD	911
QW84F	HCF4512BEY	8-Channel Data Selector	911
QW85G	HCF4514BEY	4 to 16-Line Decoder	911
AB14Q	HCF4514BM1	4 to 16 Line Converter SMD	911
QW87U	HCF4516BEY	Binary Presettable Counter	911
AB16S	HCF4516BM1	4-Bit Bin/Oct Counter SMD	911
QX32K	HCF4518BEY	Dual BCD Counter	911

AB22Y	HCF4518BM1	Dec/Doz Counter SMD	911
QX33L	HCF4520BEY	Dual Binary Counter	911
AB17T	HCF4520BM1	4-Bit Bin/Oct Counter SMD	911
	HCF4528BEY	see HCF4098BEY	911
QW89W	HCF4532BEY	8-Bit Priority Encoder	911
AB18U	HCF4532BM1	8-Bit Priority SMD	911
AB23A	HCF4538BM1	Multivibrator SMD	911
QO47B	HCF4541BEY	Programmable Timer	911
AB24B	HCF4541BM1	Oscillator SMD	911
QW90X	HCF4555BEY	Dual Binary To 1 of 4 Decoder	911
DT32K	NJM4558D	Dual 741 DIL	959
DT33L	NJM4558L	Dual 741 SIL	959
UR19V	RC4559N	Dual Op-Amp	962
AJ62S	EL4581CN	Video Sync. Separator	1011
	HCF4585BEY	see HCF4063BEY	911
AH86T	L4904A	Dual Voltage Regulator 5V	1042
NP94C	L4931CV50	5V Low Voltage Drop Reg	1036
UK64U	L4960	2.5A Switching Regulator	1048

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Order Code	Device	Type	Page
QW61R	HCF40103BEY	8-Stage Counter	911
QW64U	HCF40106BEY	Hex Schmitt Trigger	911
AB34M	HCF40106BM1	Hex Inverter SMD	911
AE98G	HCF40107BM1	Dual 2-Input NAND Buffer SMD	911
QW65V	HCF40107BEY	Dual 2-Input NAND Buffer	911
QW68Y	HCF40110BEY	Decade Up/Down Counter	911
QW73Q	HCF40174BEY	Hex D-Type Flip-Flop	911
QY74R	41256	256K DRAM	946

## Base Number 400,000

Order Code	Device	Type	Page
UM72P	431000	1M CMOS Static RAM	945

## Base Number 5

Order Code	Device	Type	Page
NP51F	ADXLOSJH	Monolithic Accelerometer	1055
AY98G	VN05N	High Side Driver 60V 12A	1025
AQ94C	W005	Bridge Rectifier 1.5A 50V	906
AQ98G	S005	Bridge Rectifier 2A 50V	906
AR82D	J005	Bridge Rectifier 10A 50V	906

## Base Number 50

Order Code	Device	Type	Page
NP52G	ADXL50JH	Monolithic Accelerometer	1055
NP95D	LF50CDT	5V Low Voltage Drop Reg	1037
DB59P	REF 50Z	Precision Reference IC	1032
QF27E	BFY50	NPN Transistor	902
NP92A	LE50CD	5V Low Voltage Drop Reg	1036
NP93B	LE50CZ	5V Low Voltage Drop Reg	1036
QF28F	BFY51	NPN Transistor	902
UL34M	BYW51-200	2 x 8A Fast Rectifier 200V	905
QF29G	BFY52	NPN Transistor	902
UM80B	BDX53C	NPN Power Darlington Transistor	902
UM81C	BDX54C	PNP Power Darlington Transistor	902

## Base Number 500

Order Code	Device	Type	Page
QL60Q	ZTX500	PNP Transistor	901
QL64U	ZTX504	PNP Transistor	901
AH18U	NME0505S	Switching Voltage Reg +5V 1.5A	1050
AX48C	DG506ACJ	Analogue Switch/Multiplexer	986
VR08J	BU508A	High Voltage Switching	903
DB31J	DG508ACJ	Analogue Switch/Multiplexer	986
AX49D	DG509ACJ	Analogue Switch/Multiplexer	986
KU41U	E510	MIDI Keyboard Scanner	1003
JY55K	NME0512S	Switching Voltage Reg +12V 1.5A	1050
NP87U	TSS12A1N	High Speed Dual Op-Amp	962
AH14Q	NMA0512S	Switching Voltage Reg +12V 1.5A	1050
NP88V	TSS14A1N	High Speed Quad Op-Amp	962

AH15R	NMA0515S	Switching Voltage Reg +15V 1.5A	1050
AX50E	DG528CJ	Analogue Switch/Multiplexer	986
WQ54J	NE531N	Op-Amp	958
AX51F	DG535DJ	Analogue Switch/Multiplexer	986
AX52G	DG538ADJ	Analogue Switch/Multiplexer	986
UM78K	BD539C	NPN Power Transistor	902
UR43W	IRF540	Power MOSFET	904
QL68Y	ZTX541	PNP Transistor	901
QL69A	ZTX542	PNP Transistor	901
QQ14Q	BC547	NPN Transistor	901
QB73Q	BC548	NPN Transistor	901
QQ15R	BC549	NPN Transistor	901
UL49D	BC550	NPN Transistor	901
DB39N	ZTX 550	Hi-Fi Amplifier	902
DB86T	NE555D	SMD Precision Timer	1051
QH66W	NE555N	Timer	1051
AV71N	NE555N (PC)	Timer	1051
RA76H	TSS55CN	Lin CMOS Timer	1051
QH67X	NE556	Dual Timer	1052
DB87U	NE556D	SMD Precision Timer	1043
AV72P	NE556N (PC)	Dual Timer	1052
AV73Q	TSS556CN (ST)	Dual Timer	1051
QQ16S	BC557	PNP Transistor	901
QQ17T	BC558	PNP Transistor	901
QQ18U	BC559	PNP Transistor	901
UL50E	BC560	PNP Transistor	901
DB46A	SL560CDP	Low Noise Amplifier	1014
WQ56L	LM565N	Phase Locked Loop	1054
QH68L	NE566N	Function Generator	1007
QH69A	LM567CN	Tone Decoder	1021
YY87U	NE571N	Compander	984
DC10L	AD584JN	Precision Voltage Reference	1033
UL43W	SLB0586A	Electronic Dimmer	1027

## Base Number 5000

Order Code	Device	Type	Page
BH75S	SAA5246	Teletext decoder IC	1013
UJ53H	M5450B7	LED Display Driver	1059
GX06G	TLC548IP	8-Bit A/D Peripheral	999
UH35Q	NE5532N	Dual Low Noise Op-Amp	958
YY68Y	NE5534AN	Low Noise Op-Amp	959
DT24B	HIP5600IS	High Voltage Regulator	1038

## Base Number 5000

Order Code	Device	Type	Page
BH75S	SAA5246	Teletext decoder IC	1013
UJ53H	M5450B7	LED Display Driver	1059
GX06G	TLC548IP	8-Bit A/D Peripheral	999
UH35Q	NE5532N	Dual Low Noise Op-Amp	958
YY68Y	NE5534AN	Low Noise Op-Amp	959
DT24B	HIP5600IS	High Voltage Regulator	1038

## Base Number 500,000

Order Code	Device	Type	Page
AD05F	511000	1Mx1 70ns DRAM (DIP)	946
AD06G	511000	1Mx1 70ns DRAM (ZIP)	946
AD13P	514100	4Mx1 70ns DRAM (SOJ)	946
AD04E	514256	256Kx4 70ns DRAM (DIP)	946
AD03D	514256	256Kx4 70ns DRAM (SOJ)	946
AD09K	514400	1Mx4 70ns DRAM (ZIP)	946
AD10L	514400	1Mx4 70ns DRAM (SOJ)	946
AD16S	514800	512Kx8 70ns DRAM (SOJ)	946

## Base Number 6

Order Code	Device	Type	Page
DK24B	MAR-6	Silicon bipolar MMIC	1014
AR81C	PW06	Bridge Rectifier 6A 600V	906
CP78K	P6KE15	Voltage Suppressor	907
CP77J	P6KE6.8	Voltage Suppressor	907

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Order Code	Device	Type	Page
VR30H	MTB60N06HD	Power MOSFET	904
VR29G	MTP60N06HD	Power MOSFET	904
AV54J	TL061CN ST	FET Op-Amp	964
AV55K	TL061CP TI	FET Op-Amp	964
QF45Y	BZX61C4V7	1.3W Zener Diode 4.7V	906
QF46A	BZX61C5V1	1.3W Zener Diode 5.1V	906
QF47B	BZX61C5V6	1.3W Zener Diode 5.6V	906
QF48C	BZX61C6V2	1.3W Zener Diode 6.2V	906
QF49D	BZX61C6V8	1.3W Zener Diode 6.8V	906
QF50E	BZX61C7V5	1.3W Zener Diode 7.5V	906
QF51F	BZX61C8V2	1.3W Zener Diode 8.2V	906
QF52G	BZX61C9V1	1.3W Zener Diode 9.1V	906
QF53H	BZX61C10	1.3W Zener Diode 10V	906
QF54J	BZX61C11	1.3W Zener Diode 11V	906
QF55K	BZX61C12	1.3W Zener Diode 12V	906
QF56L	BZX61C13	1.3W Zener Diode 13V	906
QF57M	BZX61C15	1.3W Zener Diode 15V	906
QF58N	BZX61C16	1.3W Zener Diode 16V	906
QF59P	BZX61C18	1.3W Zener Diode 18V	906
QF60Q	BZX61C20	1.3W Zener Diode 20V	906
QF61R	BZX61C22	1.3W Zener Diode 22V	906
QF62S	BZX61C24	1.3W Zener Diode 24V	906
QF63T	BZX61C27	1.3W Zener Diode 27V	906
QF64U	BZX61C30	1.3W Zener Diode 30V	906
QF65V	BZX61C33	1.3W Zener Diode 33V	906
QF66W	BZX61C36	1.3W Zener Diode 36V	906
QF67X	BZX61C39	1.3W Zener Diode 39V	906
QF68Y	BZX61C43	1.3W Zener Diode 43V	906
QF69A	BZX61C47	1.3W Zener Diode 47V	906
QF70M	BZX61C51	1.3W Zener Diode 51V	906
QF71N	BZX61C56	1.3W Zener Diode 56V	906
QF72P	BZX61C62	1.3W Zener Diode 62V	906
QF73Q	BZX61C68	1.3W Zener Diode 68V	906
QF74R	BZX61C75	1.3W Zener Diode 75V	906
AV56L	TL062CN ST	FET Op-Amp	964
AV57M	TL062CP TI	FET Op-Amp	964
DC26D	ST62T10B6	8-Bit Micro (Type HWD)	932
DC27E	ST62T10B6	8-Bit Micro (Type SWD)	932
DC31J	ST62T15B6	8-Bit Micro (Type SWD)	932
DC30H	ST62T15B6	8-Bit Micro (Type HWD)	932
KU81C	ST62E20B6/HWD	8-Bit Micro (Type HWD)	932
KU80B	ST62E20B6/SWD	8-Bit Micro (Type SWD)	932
KU74R	ST62E20F1/HWD	8-Bit Micro (Type HWD)	932
KU76H	ST62E20F1/SWD	8-Bit Micro (Type SWD)	932
KU83E	ST62E25B6/HWD	8-Bit Micro (Type HWD)	932
KU77J	ST62E25F1/HWD	8-Bit Micro (Type HWD)	932
KU78K	ST62E25F1/SWD	8-Bit Micro (Type SWD)	932
AV74R	ST62E45G1 (ST)	8-Bit Micro	932
AV75S	ST62T45Q6 (ST)	8-Bit Micro	932
AW54J	ST62E60BF1	8-Bit Microcontroller	932
AW56L	ST62T60BB6	8-Bit Microcontroller	932
AW55K	ST62E65BF1	8-Bit Microcontroller	932
AW57M	ST62T65BB6	8-Bit Microcontroller	932
AV58N	TL064CN	FET Op-Amp	964
RA66W	TL064CN	Quad Low-Power Op-Amp	964
QH61R	MPSA65	PNP Darlington Transistor	901
WQ37F	VN66AF	VMOS POWER FET	904
GX55K	M66T-02B	Melody Generator	1004
UJ42V	UM66 T09S	Wedding Melody Generator	1004
GX57M	M66T-36	Melody Generator	1004
GX58N	M66T-20S	Melody Generator	1004
GX59P	M66T-214	Melody Generator	1004
GX60Q	M66T-215	Warning Tone	1004
GX23A	MC68HC11A1FN	Microcontroller	933
AD62S	PCM69AP	A/D Converter	998

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Order Code	Device	Type	Page
UK59P	P600A	6A Rectifier Diode 50V	905
UK60Q	P600D	6A Rectifier Diode 200V	905
UK61R	P600J	6A Rectifier Diode 600V	905
AH03D	S0602MH	Thyristor 600V 6A	907



AD57M	OPA604AP	FET Op-Amp	967
LE70M	OPA606KP	Wide Band Di-FET	964
AH05F	T0606ME	Triac 600V 6A	907
AH09K	T0606MJ	Triac 600V 6A	907
AH10L	T1006MJ	Triac 600V 10A	907
NP37S	AD622AN	Instrumentation Amplifier	971
LE71N	OPA627AP	Precision Hi-Speed Di-FET	964
NP59P	AD630UN	Balanced Modulator/Demodulator	1011
UF44X	IRF630	Power MOSFET	904
VQ43W	MAX631ACPA	Step-Up Switching Regulator	1045
AD65V	BUF634P	High Current Buffer	963
VQ44X	MAX638ACPA	Switching Regulator	1045
VR06G	BC639	NPN Driver Transistor	902
VQ45Y	MAX639CPA	DC/DC Converter	1046
VR07H	BC640	PNP Driver Transistor	902
JA45Y	HT640	18-Bit Encoder	1018
UR45Y	IRF640	Power MOSFET	904
LE67X	OPA650P	560MHz Op Amp	961
UH46A	ZTX650	NPN Transistor	902
UH47B	ZTX651	NPN Transistor	902
UH49D	ZTX653	NPN Transistor	902
LE68Y	OPA658P	900MHz Op Amp	961
AX66W	LMC660CN	Op-Amp	966
AX64U	LPC660IN	Op-Amp	966
AX62S	LPC661IN	Op-Amp	966
AX65V	LMC662CN	Op-Amp	966
AX63T	LPC662IN	Op-Amp	966
NP97F	ST662AN	5V/12V DC/DC Converter	1047
AY39N	MAX665	MAX665 100mA	1041
AW49D	MAX666CPA	Adjustable Voltage Regulator	1041
NR50E	MAX667CPA	Programmable Voltage Reg	1039
LE72P	OPA678AP	Video Amp Switched I/Ps	1010
NP38R	AD680JN	Low Power 2.5V Reference	1031
JA38R	HT680	18-Bit Encoder	1019
CR00A	MAX680CPA	Voltage Doubler	1041
GX05F	MAX690A CPA	Microprocessor Supervisor	1044
JA39N	HT691	18-Bit Decoder	1019
NR57M	MAX691CPE	Microprocessor Supervisor	1042
DB43W	ZTX694B	High Gain Amplifier	902

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Order Code	Device	Type	Page
JA34M	HT6010	12-Bit Encoder	1017
JA35Q	HT6014	12-Bit Encoder	1017
JA36P	HT6030	12-Bit Decoder	1017
JA37S	HT6034	12-Bit Decoder	1017
AH44X	U6047B	Long-Time Timer Circuit	1026
UF33L	6116 100ns	Static Flam	945
JA40T	HT6160	18-Bit Encoder	1019
UK70M	L6203	Full Bridge Motor Driver	1024
UL01B	6264 100ns	64K CMOS Static RAM	945
UM73Q	SL6270CDP	VOGAD IC	980
JA41U	HT6280	Car Alarm Decoder	1019
AZ07H	HT6320	Radio Control Decoder	1020
UL76H	MSM6322GSK	Speech Pitch Controller	989
AZ08J	HT6350	Radio Control Encoder	1020
QQ04E	6402	UART Controller	938
QQ02C	R6502AP	Microprocessor	938
UF25C	R6522P VIA	Versatile Interface Adaptor	938
AZ27E	HT6547B	Keyboard Encoder	1023
UK95D	TD6710N	NICAM Chip-Set	1012
WQ46A	EF6821P	Peripheral Interface Adaptor	937
WQ48C	EF6850P	Asynchronous Comms Interface	937

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Order Code	Device	Type	Page
UH40T	62256	256K CMOS Static RAM	945

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Order Code	Device	Type	Page
RA73Q	OP-07CNB	Precision Op-Amp	959

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Order Code	Device	Type	Page
QF00A	BCY70	PNP Transistor	901
QF01B	BCY71	PNP Transistor	901
RA67X	TL071CN	Low Noise Op-Amp	964
AV59P	TL071CP TI	FET Op-Amp	964
RA68Y	TL072CN	Dual Low Noise Op-Amp	964
AV60Q	TL072CP TI	Dual Low Noise Op-Amp	964
VR48C	MC74LCX00D	Quad 2-Input NAND Lo V	911
UB00A	SN74HC00N	Quad 2-Input NAND Gate	910
YF00A	SN74LS00N	Quad 2-Input NAND Gate	910
RA69A	TL074CN	Quad Low Noise Op-Amp	964
AV61R	TL074CN TI	Quad Low Noise Op-Amp	964
AE40T	M74HC00M1R	Quad 2-Input Schmitt NAND SMD	910
AE20W	M74HCT00B1R	Quad 2-Input NAND	910
AE83E	M74HCT00M1R	Quad 2-Input Schmitt NAND SMD	910
AE41U	M74HC02M1R	Quad 2-Input NOR SMD	910
AE21X	M74HCT02B1R	Quad 2-Input NOR	910
AE84F	M74HCT02M1R	Quad 2-Input NOR SMD	910
VR49D	MC74LCX02D	Quad 2-Input NOR Lo V	911
UB01B	SN74HC02N	Quad 2-Input NOR Gate	910
YF02C	SN74LS02N	Quad 2-Input NOR Gate	910
YF03D	SN74LS03N	7400 with Open Collectors	910
AE42V	M74HC04M1R	Inverting Hex Buffer SMD	910
AE22Y	M74HCT04B1R	Inverting Hex Buffer	910
AE85G	M74HCT04M1R	Inverting Hex Buffer SMD	910
VR50E	MC74LCX04D	Hex Inverter Lo V	911
UB03D	SN74HC04N	Hex Inverter	910
UB04E	SN74HCU04N	Hex Inverter	910
YF04E	SN74LS04N	Hex Inverter	910
YF05F	SN74LS05N	Hex Inverter Open Collector	910
AE43W	M74HC08M1R	Quad 2-Input NAND SMD	910
AE23A	M74HCT08B1R	Quad 2-Input AND	910
AE86T	M74HCT08M1R	Quad 2-Input NAND SMD	910
VR51F	MC74LCX08D	Quad 2-Input AND Lo V	911
UB06G	SN74HC08N	Quad 2-Input AND Gate	910
YF06G	SN74LS08N	Quad 2-Input AND Gate	910
YF08J	SN74LS10N	Triple 3-Input NAND Gate	910
YF09K	SN74LS11N	Triple 3-Input AND Gate	910
AE46A	M74HC14M1R	Hex Inverter SMD	910
UB10L	SN74HC14N	Hex Schmitt Trigger Inverter	910
YF12N	SN74LS14N	Hex Schmitt Trigger Inverter	910
YF14Q	SN74LS20N	Dual 4-Input NAND Gate	910
YF15R	SN74LS21N	Dual 4-Input AND Gate	910
UB13P	SN74HC27N	Triple 3-Input NOR Gate	910
YF18U	SN74LS27N	Triple 3-Input NOR Gate	910
YF20W	SN74LS30N	8-Input NAND Gate	910
AE56L	M74HC32M1R	Quad 2-Input OR SMD	910
AE27E	M74HCT32B1R	Quad 2-Input OR Gate	910
AE91Y	M74HCT32M1R	Quad 2-Input OR SMD	910
VR52G	MC74LCX32D	Quad 2-Input OR Lo V	911
UB15R	SN74HC32N	Quad 2-Input OR Gate	910
YF21X	SN74LS32N	Quad 2-Input OR Gate	910
QQ52G	SN74LS47N	BCD to 7-Segment Decoder 15V	910
QQ63H	MC74LS48P	BCD to 7-Seg. Decoder Driver	910
YF30H	SN74LS73N	Dual J-K Flip-Flop	910
AE71N	M74HC74M1R	Dual D-Type Flip-Flop SMD	910
AE31J	M74HCT74B1R	HCT Logic	910
AE97F	M74HCT74M1R	Dual D-Type Flip-Flop SMD	910
VR53H	MC74LCX74D	Dual D-Type Flip-Flop Lo V	911
QX59P	SN7474N	Dual D-Type Flip-Flop	910
UB19V	SN74HC74N	Dual D-Type Flip-Flop	910
YF31J	SN74LS74N	Dual D-Type Flip-Flop	910
YF33L	SN74LS76N	Dual J-K Flip-Flop	910
YF35Q	SN74LS83N	see SN74LS283	910
YF35Q	SN74LS85N	4-Bit Magnitude Comparator	910
AE81C	M74HC86M1R	Quad Excluding-OR SMD	910
VR54J	MC74LCX86D	Quad 2-Input Exc OR Lo V	911
UB23A	SN74HC86N	Quad 2-Input Exclusive-OR Gate	910
YF36P	SN74LS86N	Quad 2-Input Exclusive-OR Gate	910
YF38R	SN74LS90N	Decade Counter	910
YF40T	SN74LS93N	4-Bit Binary Counter	910
UB26D	M74HC123B1N	Dual Retriggerable Monostable	910
AE44X	M74HC123M1R	Multivibrator SMD	910
YF48C	SN74LS123N	Dual Retriggerable Monostable	910

YF49D	SN74LS125N	Quad Bus Buffer	910
AE72P	M74HC132M1R	Quad 2-Input Schmitt NAND SMD	910
UB29G	SN74HC132N	Quad 2-VP NAND Schmitt Trigger	910
YF51F	SN74LS132N	Quad 2-VP NAND Schmitt Trigger	910
AE73Q	M74HC133M1R	Single 13-Input NAND SMD	910
UB30H	SN74HC133N	13-Input NAND Gate	910
AE74R	M74HC137M1R	3 to 8 Line Converter SMD	910
UB31J	SN74HC137N	3 to 8 Line Decoder	910
AE45Y	M74HC138M1R	3 to 8 Line Converter SMD	910
AE24B	M74HCT138B1R	3 to 8 Line Converter	910
AE87U	M74HCT138M1R	3 to 8 Line Converter SMD	910
VR55K	MC74LCX138DW	1-of-8 Dec/Demultiplex Lo V	911
UB33L	SN74HC138N	3 to 8 Line Decoder	910
YF53H	SN74LS138N	3 to 8-Line Decoder	910
AB82D	M74HC139M1R	Dual 2 to 4 Line converter SMD	910
UB35Q	SN74HC139N	Dual 2 to 4-Line Decoder	910
YF54J	SN74LS139N	Dual 2 to 4-Line Decoder	910
AE47B	M74HC151M1R	HCMOS Logic SMD	910
YF58N	DM74LS154N	4 to 16-Line Decoder	910
UB38R	PC74HC154P	4 to 16-Line Decoder	910
YF61R	SN74LS157N	Quad 2 to 1-Line Data Selector	910
AE48C	M74HC161M1R	4-Bit Bin/Oct Counter SMD	910
UB41U	SN74HC161N	4-Bit Binary Counter	910
AE75S	M74HC163M1R	4-Bit Bin/Oct Counter SMD	910
UB42V	SN74HC163N	4-Bit Binary Counter	910
AE49D	M74HC164M1R	8-Bit Shift Register SMD	910
AE25C	M74HCT164B1R	8-Bit Shift Register	910
AE88V	M74HCT164M1R	8-Bit Shift Register SMD	910
UB43W	SN74HC164N	8-Bit Shift Register	910
YF67X	SN74LS164N	8-Bit Shift Register	910
AE50E	M74HC175M1R	Quad D-Type Flip-Flop SMD	910
UB45Y	SN74HC175N	Quad D-Type Flip-Flop	910
YF75S	SN74LS175N	Quad D-Type Flip-Flop	910
AE51F	M74HC193M1R	4-Bit Bin/Oct Counter SMD	910
UB49D	SN74HC193N	Binary Dual Clock Counter	910
YF81C	SN74LS193N	Binary Dual Clock Counter	910
UB52G	M74HC221B1N	Dual Monostable Multivibrator	910
AE52G	M74HC221M1R	Multivibrator SMD	910
YF86T	SN74LS221N	Dual Monostable Multivibrator	910
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YF87U	SN74LS240N	Octal Buffer	910
AE76H	M74HC241M1R	Octal Buffer SMD	910
UB59P	SN74HC241N	Octal Buffer	910
AE53H	M74HC244M1R	Octal Buffer SMD	910
AE26D	M74HCT244B1R	Octal Buffer	910
AE89W	M74HCT244M1R	Octal Buffer SMD	910
VR57M	MC74LCX244DW	Octal Buffer Lo V	911
UB65V	SN74HC244N	Octal Buffer	910
QQ56L	SN74LS244N	Octal Buffer	910
AE54J	M74HC245M1R	Bus Transceiver SMD	910
AE90X	M74HCT245M1R	HCT Logic SMD	910
VR58N	MC74LCX245DW	Octal Bus Transceiver Lo V	911
UB67X	SN74HC245N	Octal Bus Transceiver	910
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YF91Y	SN74LS245N	Octal Bus Transceiver	910
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QY59P	T74LS260B1N	Dual 5-Input NOR Gate	910
UB71N	SN74HC266N	Quad 2-VP Exclusive-NOR Gate	910
AE55K	M74HCT273M1R	Octal D-Type Flip-Flop SMD	910
YH00A	SN74LS273N	Octal D-Type Flip-Flop	910
UB72P	TC74HC273AP	Octal D-Type Flip-Flop	910
YH01B	SN74LS279N	Quad S/R Latch	910
YH02C	SN74LS283N	4-Bit Binary Full Adder	910
YH11M	SN74LS365N	Non-Inverting Hex Buffer	910
AE57M	M74HC373M1R	Octal D-Type Latch SMD	910
AE92A	M74HCT373M1R	Octal D-Type Latch SMD	910
VR59P	MC74LCX373DW	Octal D-Type Latch Lo V	911
UB80B	SN74HC373N	Octal D-Type Latch	910
UB81C	SN74HCT373N	Octal D-Type Latch	910
YH15R	SN74LS373N	Octal D-Type Latch	910
AE28F	M74HCT374B1R	Octal D-Type Latch	910
VR60Q	MC74LCX374DW	Octal D-Type Flip-Flop Lo V	911
UB82D	SN74HC374N	Octal D-Type Flip-Flop	910
YH16S	T74LS374B1N	Octal D-Type Flip-Flop	910
AE58N	M74HC374M1R	Octal D-Type Flip-Flop SMD	910
AE93B	M74HCT374M1R	Octal D-Type Flip-Flop SMD	910

AE59P	M74HC390M1R	Dec/Doz Counter SMD	910
UB84F	SN74HC390N	Dual Decade Counter	910
AE60Q	M74HC393M1R	4-Bit Bin/Oct Counter SMD	910
UB85G	SN74HC393N	Dual 4-Bit Binary Counter	910
YH22Y	SN74LS393N	Dual 4-Bit Binary Counter	910
UB88V	SN74HCT533N	Octal D-Type Latch	910
VR61R	MC74LXC540DW	Octal Buffer	911
AE80B	M74HC541M1R	Octal Buffer SMD	910
AE94C	M74HCT541M1R	Octal Buffer SMD	910
VR62S	MC74LXC541DW	Octal Buffer	911
UB93B	SN74HC541N	Octal Buffer	910
UB94C	SN74HCT541N	Octal Buffer	910
AE69A	M74HC573M1R	Octal D-Type Latch SMD	910
AE29G	M74HCT573B1R	Octal D-Type Latch	910
AE95D	M74HCT573M1R	Octal D-Type Latch SMD	910
VR63T	MC74LXC573DW	Octal D-Type Latch Lo V	911
AE70M	M74HC574M1R	Octal D-Type Latch SMD	910
AE30H	M74HCT574B1R	Octal D-Type Latch	910
AE96E	M74HCT574M1R	Octal D-Type Latch SMD	910
VR64U	MC74LXC574DW	Octal D-Type Latch Lo V	911
WH02C	SN74LS629N	Dual Voltage Controlled Osc	910
KP49D	SN74LS688N	8-Bit Magnitude Comparator	910
YH30H	SN74C917N	6-Digit Display Driver	1060
QY08J	SN74C925N	4-Digit Counter Driver	1060
UB98g	MC74HC4016P	Quad Bilateral Switch	910
UB99H	M74HC4017BIR	Decade Counter	910
AE61R	M74HC4017M1R	Dec/Doz Counter SMD	910
UF01B	M74HC4024B1N	12-Stage Ripple Counter	910
AE77J	M74HC4024M1R	7-Stage & Higher Counter SMD	910
AE62S	M74HC4040M1R	7 stage & higher counter SMD	910
UF02C	SN74HC4040N	12-Stage Binary Counter	910
UF03D	PC74HC4046P	Phase Locked Loop	910
UF04E	M74HC4049BIR	Hex Buffer Inverting	910
AE78K	M74HC4049M1R	Inverting Hex Buffer SMD	910
UF05F	M74HC4050BIR	Hex Buffer Non-Inverting	910
AE79L	M74HC4050M1R	Non-Invert Hex Buffer SMD	910
UF06G	M74HC4051CP	8-Channel Analogue Multiplexer	910
AE63T	M74HC4051M1R	1-Pole 8-Way Switch SMD	910
UF07H	M74HC4052B1R	4-Channel Analogue Multiplexer	910
UF08J	M74HC4053B1R	Triple 2-Channel Multiplexer	910
AE64U	M74HC4053M1R	3-Pole 2-Way Switch SMD	910
AE65V	M74HC4060M1R	7-Stage & Higher Counter SMD	910
UF09K	SN74HC4060N	14-Stage Counter	910
AE66W	M74HC4066M1R	4-Pole 1-Way Switch SMD	910
UF10L	MC74HC4066P	Quad Bilateral Switch	910
AE67X	M74HC4075M1R	Triple 3-Input OR SMD	910
UF11M	SN74HC4075N	Triple 3-Input OR Gate	910
UF17T	M74HC4511B1N	BCD to 7-Seg. Decoder Driver	910
UF19V	M74HC4538B1N	Dual Monostable Multivibrator	910
AE68Y	M74HC4538M1R	Multivibrator SMD	910
UH45Y	M74HC4543B1N	LCD 7-Segment Decoder	910
AE10L	SN75LBC176P	RS-485 Tx/Rx Low Power	944
UL05F	OP77GP	Precision Op-Amp	960
GS08J	MC78M05COT	Voltage Regulator	1034
QL26D	LM78L05ACZ	Voltage Regulator +5V 100mA	1034
AV02C	MC78L05ACP MOT	Voltage Regulator +5V 100mA	1034
AV23A	MC78T05CT MOT	Voltage Regulator +5V 3A	1035
QL28F	L78M05CV	Voltage Regulator +5V 500mA	1034
UJ54J	L78S05CV	Voltage Regulator +5V 2A	1035
UJ55K	L78S09CV	Voltage Regulator +9V 2A	1035
WQ77J	LM78L12ACZ	Voltage Regulator +12V 100mA	1034
AV03D	MC78L12ACP	Voltage Regulator +12V 100mA	1034
QL29G	L78M12CV	Voltage Regulator +12V 500mA	1034
UJ56L	L78S12CV	Voltage Regulator +12V 2A	1035
AV24B	MC78T12CT MOT	Voltage Regulator +12V 3A	1035
QL27E	LM78L15ACZ	Voltage Regulator +15V 100mA	1034
AV04E	MC78L15ACP MOT	Voltage Regulator +15V 100mA	1034
QL30H	L78M15CV	Voltage Regulator +15V 500mA	1034
UJ57M	L78S15CV	Voltage Regulator +15V 2A	1035
AV25C	MC78T15CT MOT	Voltage Regulator +15V 3A	1035
UF37S	L78S40	Switching Voltage Regulator	1048
AW80B	78SR105HC	Switching Voltage Reg +5V 1.5A	1044
AW82D	78SR105VC	Switching Voltage Reg +5V 1.5A	1044
AW81C	78SR112HC	Switching Voltage Reg +12V 1.5A	1044
AW83E	78SR112VC	Switching Voltage Reg +12V 1.5A	1044
WQ85G	LM79L05ACZ	Voltage Regulator -5V 100mA	1034

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	WH15R	BD711	NPN Power Transistor	902
	WH16S	BD712	PNP Power Transistor	902
	LE58N	DAC712P	16 Bit Parallel D/A	996
	AY36P	MAX712	Fast NiCd Charger	1029
	AY37S	MAX713	Fast Charge NiCd	1029
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	NP49D	AD721JP	RGB to NTSC/PAL Encoder	1013
	QL21X	L723CN 14-pin	Variable Voltage Regulator	1040
	AV33L	LM723CN	Adjustable Regulator	1034
	UR46A	IRF740	Power MOSFET	904
	QL22Y	LM741CN 8-pin	Op-Amp	957
	AV39N	LM741CN-8 NSC	Op-Amp	957
	AV38R	UA741CN PC	Op-Amp	957
	NR56L	MAX743CPE	Dual O/P Switch-Mode Reg	1034
	QL24B	LM747CN	Dual Op-Amp	957
	QL25C	LM748CN	Op-Amp	957
	UH50E	ZTX750	PNP Transistor	901
	YH96E	MR751	Rectifier Diode 6A 100V	905
	UH51F	ZTX751	PNP Transistor	901
	UH52G	ZTX752	PNP Transistor	901
	UH53H	ZTX753	PNP Transistor	901
	YH97F	MR754	Rectifier Diode 6A 400V	905
	VQ40T	MAX756CPA	DC/DC Converter	1046
	VQ41U	MAX757CPA	DC/DC Converter	1046
	NR61R	MAX761CPA	DC/DC Converter	1046
	UM84F	TIPL770	NPN Power Transistor	903
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	UK79L	TDA7052	1.2W Power Amp	980
	QW94C	ICL7106CPL	A/D Converter Display Driver LCD	999
	QW95D	ICL7107CPL	A/D Converter Display Driver LED	999
	UL64U	ICM7216AJI	10MHz Universal Counter	1060
	YY94C	ICM7216DIP1	10MHz Frequency Counter	1060
	CP95D	ICM7217AIP1	4-Digit Prog. Counter Driver	1059
	NR49D	MAX7219CNG	Serial 8-Digit LED Driver	1000
	FP62S	ICM7224IFL	4-Digit Counter	1060
	LE77J	HT7230	3.0V Reg	1037
	NR52G	ICM7240IFE	Programmable Counter	1051
	NR51F	ICM7242IFL	Counter/Timer	1051
	LE79L	HT7250	5.0V Reg	1037
	CH49D	HT7290	Voltage Regulator	1037
	NP28F	AD7391AN	10-Bit Micro Power DAC	992
	QX37S	SN7400N	Quad 2-Input NAND	910
	QX39N	SN7402N	Quad 2-Input NOR Gate	910
	QX40T	SN7404N	Hex Inverter	910
	QX75S	SN7406N	Hex Inverter Open Collector	910
	QX76H	SN7407N	Hex Buffer	910
	QX46A	SN7414N	Hex Schmitt Trigger Inverter	910
	QX55K	SN7447AN	BCD to 7-Segment Decoder 15V	910
	AZ30H	HT7470	Fast NiCd Charger	1030
	QX61R	SN7476N	Dual J-K Flip-Flop	910
	QX66W	SN7490N	Decade Counter	910
	VQ52G	MAX7524JN	8-Bit Multiplying A/D	998
	UL11M	PM7528HP	Dual 8-bit D/A Converter	998
	YH63T	ICM7555IPA	CMOS Timer	1052
	CP96E	ICM7556IPD	Dual CMOS Timer	1052
	AV65V	ICL7611DCPA HA	CMOS Op-Amp	9649

AV66W	ICL7621DCPA HA	CMOS Op-Amp	964
JA43W	HT7630	PIR Controller	1028
NR54J	ICL7660CPA	Voltage Converter	1041
YY75S	SI7660CJ	Voltage Converter	1041
UH36P	ICL7673CPA	Battery Backup	1029
AH71N	TL7702ACP/A	Voltage Supply Supervisor	1043
JA44X	HT7704B	Touch Dimmer	1027
AH72P	TL7705ACD1/A	Voltage Supply Supervisor	1043
AH73Q	TL7705ACP/A	Voltage Supply Supervisor	1043
NP33L	AD7715AN-5	16-Bit Sigma Delta ADC	992
AD69A	DAC7800KP	12-bit multiplying DAC	996
AD70M	DAC7801KP	12-bit multiplying DAC	996
AD71N	DAC7802KP	12-bit multiplying DAC	996
LE54J	AD57804P	12 Bit 100KHz A/D	994
CH35Q	7805 Value Brand	Voltage Regulator	1035
CR14Q	L7805CP	Voltage Regulator +5V 1A	1035
QL31J	L7805CV	Voltage Regulator +5V 1A	1035
AV16S	LM7805CT MOT	Voltage Regulator +5V 1A	1035
GS09K	MC7805CD2T	Voltage Regulator SMD	1035
AV08J	MC7805CT MOT	Voltage Regulator +5V 1A	1035
AD67X	ADS7806P	12-bit A/D Converter	994
AW69A	L7806CV PC	Voltage Regulator +6V 1A	1035
AD68Y	ADS7807P	16-bit AD Converter	995
CR15R	L7808CP	Voltage Regulator +8V 1A	1035
AW70M	L7808CV SGS	Voltage Regulator +8V 1A	1035
LE55K	ADS7809P	16 Bit 100KHz A/D	995
CH36P	7812 Value Brand	Voltage Regulator	1035
CR16S	L7812CP	Voltage Regulator +12V 1A	1035
QL32K	L7812CV	Voltage Regulator +12V 1A	1035
AV17T	LM7812CT NSC	Voltage Regulator +12V 1A	1035
AV09K	MC7812CT MOT	Voltage Regulator +12V 1A	1035
CH37S	7815 Value Brand	Voltage Regulator	1035
QL33L	L7815CV	Voltage Regulator +15V 1A	1035
AV18U	LM7815CT	Voltage Regulator +15V 1A	1035
AV10L	MC7815CT MOT	Voltage Regulator +15V 1A	1035
AW75S	L7824CV SGS	Voltage Regulator +24V 1A	1035
AV11M	MC7824CT MOT	Voltage Regulator +24V 1A	1035
LE57M	ADS7831P	12 Bit 600KHz A/D	995
NP34M	AD7853LAN	High Speed 12-Bit Sampling ADC	993
NP35Q	AD7858LAN	8-Channel, 12-Bit Sampling ADC	993
NP36P	AD7896AN	12-Bit ADC	993
WQ92A	L7905CV	Voltage Regulator -5V 1A	1035
AV19V	LM7905CT NSC	Voltage Regulator -5V 1A	1035
AV12N	MC7905CT MOT	Voltage Regulator -5V 1A	1035
AW76H	L7908CV SGS	Voltage Regulator -8V 1A	1035
WQ93B	L7912CV	Voltage Regulator -12V 1A	1035
AV20W	LM7912CT NSC	Voltage Regulator -12V 1A	1035
AV13P	MC7912CT MOT	Voltage Regulator -12V 1A	1035
QL36P	L7915CV	Voltage Regulator -15V 1A	1035
AV21X	LM7915CT NSC	Voltage Regulator -15V 1A	1035
AV14Q	MC7915CT MOT	Voltage Regulator -15V 1A	1035
AV15R	MC7924CT MOT	Voltage Regulator -24V 1A	1035
NP31J	AD7945BN	Multiplying 12-Bit DAC	993

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	AE05F	SN75172N	RS-485 Driver	943
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	AE06G	SN75174N	RS-485 Driver	943
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	UF53H	DS75491N	MOS to LED Driver	1059

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	AH47B	P-80C31-1	8-Bit Micro 12MHz	933
	AH50E	P-80C32-1	8-Bit Micro 12MHz	933

AH51F	P-80C52-100	8-Bit Micro 12MHz	933
AH56L	BYW80-100	8A Fast Recovery 100V	905
UK63T	BYW80-150	8A Fast Rectifier 150V	905
AH57M	BYW80-200	8A Fast Recovery 200V	905
CR25C	ECC81	Valve Twin Triode	1061
RA70M	TL081CN	FET Op-Amp	964
AV64U	TL081CN TI	FET Op-Amp	964
AV62S	TL081CP TI	FET Op-Amp	964
AV63T	TL081CP TI	FET Op-Amp	964
CR26D	ECC82	Valve Twin Triode	1061
RA71N	TL082CN	Dual J-FET Op-Amp	964
AV90X	N82S123AN PC	256-Bit Bipolar PROM	949
AV91Y	N82S129AN PC	1K-Bit Bipolar PROM	949
AV92A	N82S131AN PC	2K-Bit Bipolar PROM	949
AV93B	N82S135N PC	2K-Bit Bipolar PROM	949
AV94C	N82S137AN PC	4K-Bit Bipolar PROM	949
AV95D	N82S147AN PC	4K-Bit Bipolar PROM	949
AV96E	N82S181AN PC	8K-Bit Bipolar PROM	949
AV97F	N82S185AN PC	8K-Bit Bipolar PROM	949
AV98G	N82S191AN PC	16K-Bit Bipolar PROM	949
CR27E	ECC83	Valve Twin Triode	1061
ST30H	ECF82	Valve Triode/Pentode	1062
CR29G	ELB4	Valve B9A Pentode	1062
RA72P	TL084CN	Quad J-FET Op-Amp	964
DM56L	EF86	Valve B9A Pentode	1062
LE34M	Z86CCP00ZAC	Accs Kit for P00ZEM	932
LE35Q	Z86CCP00ZEM	ICE System P00ZEM	932
LE27E	Z86E04	MCU OPT 1K PROM 14 I/O	931
LE28F	Z86E08	MCU OTP 2K PROM 14 I/O	931
LE29G	Z86E30	MCU OTP 4K PROM 24 I/O	931
LE30H	Z86E40	MCU OTP 4K PROM 32 I/O	931
LE31J	Z86C0800ZC0	E04/E08 Apps Kit	932
LE32K	Z86E3000ZDP	E30 Prog Adaptor	932
LE33L	Z86E4000ZDP	E40 Prog Adaptor	932
AW79L	KT88 Valve	Power Output Tetrode	1063
QH00A	BZY88C2V7	500mW Zener Diode 2.7V	906
QH01B	BZY88C3V0	500mW Zener Diode 3V	906
QH02C	BZY88C3V3	500mW Zener Diode 3.3V	906
QH03D	BZY88C3V6	500mW Zener Diode 3.6V	906
QH04E	BZY88C3V9	500mW Zener Diode 3.9V	906
QH05F	BZY88C4V3	500mW Zener Diode 4.3V	906
QH06G	BZY88C4V7	500mW Zener Diode 4.7V	906
QH07H	BZY88C5V1	500mW Zener Diode 5.1V	906
QH08J	BZY88C5V6	500mW Zener Diode 5.6V	906
QH09K	BZY88C6V2	500mW Zener Diode 6.2V	906
QH10L	BZY88C6V8	500mW Zener Diode 6.8V	906
QH11M	BZY88C7V5	500mW Zener Diode 7.5V	906
QH12N	BZY88C8V2	500mW Zener Diode 8.2V	906
QH13P	BZY88C9V1	500mW Zener Diode 9.1V	906
QH14Q	BZY88C10	500mW Zener Diode 10V	906
QH15R	BZY88C11	500mW Zener Diode 11V	906
QH16S	BZY88C12	500mW Zener Diode 12V	906
QH17T	BZY88C13	500mW Zener Diode 13V	906
QH18U	BZY88C15	500mW Zener Diode 15V	906
QH19V	BZY88C16	500mW Zener Diode 16V	906
QH20W	BZY88C18	500mW Zener Diode 18V	906
QH21X	BZY88C20	500mW Zener Diode 20V	906
QH23A	BZY88C24	500mW Zener Diode 24V	906
QH24B	BZY88C27	500mW Zener Diode 27V	906
QH25C	BZY88C30	500mW Zener Diode 30V	906
NR34M	AT89C51-24JC	8-Bit Micro with Flash Memory	930
NR33L	AT89C51-24PC	8-Bit Micro with Flash Memory	930
NR36P	AT89C52-24JC	8-Bit Micro with Flash Memory	930
NR35Q	AT89C52-24PC	8-Bit Micro with Flash Memory	930
NR38R	AT89C55-33JC	8-Bit Micro with Flash Memory	930
NR37S	AT89C55-33PC	8-Bit Micro with Flash Memory	930
NR29G	AT89C1051-24PC	8-Bit Micro with Flash Memory	930
NR30H	AT89C1051-24SC	8-Bit Micro with Flash Memory	930
NR31J	AT89C2051-24PC	8-Bit Micro with Flash Memory	930
NR32K	AT89C2501-24SC	8-Bit Micro with Flash Memory	930
NR39N	AT89S8252-24JC	8-Bit Micro with Flash Memory	931
NR40T	AT89S8252-24PC	8-Bit Micro with Flash Memory	931

**Base Number 800**

Order Code	Device	Type	Page
QC01B	DAC0801LCN	D/A Converter	996
QC00A	ADC0804LCN	A/D Converter	994
UJ18U	BU806	NPN Darlington Power Transistor	903
NR43W	MAX809LEUR-T	3-Pin Micro Reset	1042
NP50E	AD810AN	Video Op-Amp	1009
NR44X	MAX810LEUR-T	3-Pin Micro Reset	1042
AD72P	DAC813KP	12-bit DAC Remotely Controlled	996
NP24B	AD815AY	High O/P Current Diff. Driver	1025
JA50E	SK820	Schottky Rectifier Diode	905
WQ63T	TBA820M	2W Power Amp	977
UR47B	IRF830	Power MOSFET	904
AN10L	SK830	Schottky Rectifier Diode	905
UF49D	LM833N	Very Low Noise Op-Amp	957
UL33L	LM837N	Quac Low Noise Op-Amp	957
UR48C	IRF840	Power MOSFET	904
JA51F	SK840	Schottky Rectifier Diode	905
VR79L	BC846A	NPN Transistor SMD	901
VR17T	BC846B	NPN Transistor SMD	901
UM69A	ZTX851	NPN Transistor	902
VR18U	BC856B	PNP Transistor SMD	901
DT27E	MAX877LCPA	DC/DC Converters	1047
DT28F	MAX878LCPA	DC/DC Converters	1047
DT29G	MAX879LCPA	DC/DC Converters	1047
AH42V	U880B	Double Flasher	1026

**Base Number 8000**

Order Code	Device	Type	Page
NP45Y	AD8013AN	Triple Video Amplifier	1008
YH38R	ICL8038CCPD	Waveform Generator	1007
LE60Q	DAC8043P	12 Bit Serial CMOS DAC	996
YH39N	ICL8069CC2R	1.2V Voltage Reference	1031
YH43W	ICL8211CPA	Voltage Detector	1031
YH49D	8251	USART	937
YH50E	8255A	Peripheral Interface Adaptor	938
YH51F	8279	Keyboard/Display Interface	938
NP29G	AD8300AN	12-Bit, 3V Serial I/P DAC	994
LE85G	DC8318-01	Zilog Z8 Databook	932
UL27E	TDA8341-N6	TV IF Amp	1012
AV87U	DP8421AV25 NSC	Processor Support IC	937
AV88V	DP8422AV25 NSC	Processor Support IC	937
AZ13P	HT8656A	Record/Playback	990
AZ14Q	HT8658A	Record/Playback	990
AZ15R	HT8665	Rec/Plackback with Echo	990
AE13P	HT8950	Voice Modulator	990
AE14Q	HT8955A	Voice Echo	990

**Base Number 80,000**

Order Code	Device	Type	Page
LE36P	Z80180	Extended Z80 10 MHz	939
AZ21X	HT82142	Drum Generator	1002
AE12N	HT82231	Farmyard Sound IC	1004

**Base Number 800,000**

Order Code	Device	Type	Page
QW00A	Z0840004PSC	Microprocessor 4MHz	939

**Base Number 90**

Order Code	Device	Type	Page
QQ64U	BFY90	High Frequency Transistor	903
QH71N	OA90	Germanium Signal Diode	904
NR28F	AT90S1200-16JC	8-Bit Micro with Flash Memory	929
NR25C	AT90S1200-16PCI	8-Bit Micro with Flash Memory	929
NR27E	AT90S1200-16PCI	8-Bit Micro with Flash Memory	929
NR26D	AT90S1200-16SCE8	8-Bit Micro with Flash Memory	929
QH72P	OA91	Germanium Signal Diode	904
UL30H	MPSA92	PNP Transistor	901
AH58N	ST93C06B1	EEPROM 256K	948
AH59P	ST93C46AB1	EEPROM 1K	948
AH61R	ST93CS66B1	EEPROM 4K	948
VR21X	BYV95A	Fast Recovery Diode	905
QH73Q	OA95	Germanium Signal Diode	904
VR22Y	BYV96D	Fast Recovery Diode	905
VR25C	BYV98-50	Fast Recovery Diode	905
UK65V	BYW98-150	3A Fast Rectifier 150V	905

**Base Number 900**

Order Code	Device	Type	Page
UJ15R	BD911	NPN Power Transistor	902
UJ16S	BD912	PNP Power Transistor	9002
NP86T	TS925IN	Quad Op-Amp Rail-to-Rail	962
NR60Q	MAX931CPA	Low Power Comparator	974

**Base Number 9000**

Order Code	Device	Type	Page
VR77J	DS9082	Dallas Touch Memory Probe	953
AZ12N	HT9170	DTMF Decoder	1021
AZ11M	HT9201A	Tone Dialler	1020
AZ09K	HT9205A	DTMF Pulse Dialler	1020
AZ10L	HT9212A	DTMF Pulse Dialler	1020
NP48C	AD9300KQ	Wideband Video Multiplexer	1009
NP58N	AD9901KQ	Phase/Frequency Discriminator	1012

## Maplin Glossary and Acronyms for Computers

- ACIA** Asynchronous Communications Interface Adaptor
- ALU** Arithmetic and Logic Unit
- ANSI** American National Standards Institute
- API** Applications Programming Interface
- ASCII** American Standard Code for Information Interchange
- ASIC** Application-Specific Integrated Circuit
- AT** Advanced Technology – Term used for IBM computers launched in 1984.
- BASIC** Beginners' All-purpose Symbolic Instruction Code
- BIN** Binary
- BIOS** Basic Input/Output System
- BIT** Binary digit
- BPS** Bits Per Second
- BYTE** A group of eight binary digits
- CAD** Computer-Aided Design
- CAM** Computer-Aided Manufacture
- CD-I** Compact Disc Interactive
- CD ROM** Compact Disc Read Only Memory
- CENTRONIC** Centronic – Generic name given to parallel printer system after company that devised it
- CGA** Colour Graphics Adaptor
- CGM** Computer Graphics Metafile
- CISC** Complex Instruction Set Computer
- CMOS** Complementary Metal Oxide Semiconductor
- CMYK** Cyan, Magenta, Yellow, black
- CNC** Computerised Numerical Control
- COBOL** COmmon Business-Orientated Language
- CP/M** Control Program for Micros
- CPS** Characters Per Second
- CPU** Central Processing Unit
- CRC** Cyclic Redundancy Check
- CRISC** Complex Reduced Instruction Set
- DAT** Digital Audio Tape
- DCE** Data Communications Equipment
- DCT** Discrete Cosine Transform
- DD** Double Density
- DDE** Dynamic Data Exchange
- DLL** Dynamic Link Library
- DMA** Direct Memory Access
- DOS** Disk Operating System
- DOT** Digital Optical Tape
- DP** Data Processing
- DPI** Dots Per Inch
- DTP** Desk Top Publishing
- DRAM** Dynamic Random Access Memory
- DRDOS** Digital Research Disk Operating System
- DS** Double Sided
- DSP** Digital Signal Processor
- DTE** Data Terminal Equipment
- DVI** Digital Video Interactive
- EBCDIC** Extended Binary Coded Decimal Interchange Code
- EDI** Electronic Data Interchange
- EDP** Electronic Data Processing
- EDORAM** Enhanced Data-Out Ram
- EGA** Enhanced Graphics Adaptor
- ETA** Electrical Industries Association
- EISA** Enhanced Industry Standard Architecture
- E-MAIL** Electronic Mail
- EMC** ElectroMagnetic Compatibility
- EMI** ElectroMagnetic Interference
- EMM** Expanded Memory Manager
- EMS** Expanded Memory Specification
- EPS** Encapsulated Postscript
- ERLL** Enhanced Run Length Limited
- ESDI** Enhanced Small Device Interface
- EVGA** Enhanced Video Graphics Array
- FAT** File Allocation Table
- FM** Frequency Modulation – Method of storing data on a floppy disk
- FMV** Full Motion Video
- FORTRAN** FORmula TRANslation
- FPU** Floating Point Unit
- FSFMV** Full-Screen, Full Motion Video
- FTP** File Transfer Protocol
- Gb** Gigabyte
- GEM** Graphics Environment Manager
- GIF** Graphics Interchange Format
- GUI** Graphical User Interchange
- GW-BASIC** Gee Whizz Beginners All-purpose Symbolic Instruction Set
- HD** Hard Disk
- HDD** High Density Disk
- HGC** Hercules Graphics Card
- HLL** High-Level Language
- HMA** High Memory Area
- HPGL** Hewlett-Packard Graphics Language
- HTML** HyperText Markup Language
- IDE** Intelligent Drive Electronics
- IFF** Interchange File Format
- ISA** Industry Standard Architecture
- ISDN** Integrated Services Digital Network
- ISO** International Standards Organisation
- JPEG** Joint Photographic Expert Group
- JPG** File extension for compressed image form
- LAN** Local Area Network
- LCD** Liquid Crystal Display
- LIFO** Last In First Out
- LIM** Lotus, Intel Microsoft
- LQ** Letter Quality
- Mb** Megabyte
- MCA** Micro Channel Architecture
- MCGA** Multi-Colour Graphics Array
- MFM** Modified Frequency Modulation
- MIPS** Millions of Instructions Per Second
- MOV** File extension for video format
- MPC** Multimedia PC
- MPEG** Moving Picture Expert Group
- MPG** File extension for compressed video format
- MSDOS** Microsoft Disk Operating System
- NLQ** Near Letter Quality
- OCR** Optical Character Recognition
- OD** Over Drive
- ODA** Open Documents Architecture
- OEM** Original Equipment Manufacturer
- OOP** Object-Orientated Programming
- OS** Operating System
- OS/2** Operating System 2
- OSI** Open Systems Interconnections
- PC** Personal Computer
- PC-DOS** Personal-Computer Disk Operating System
- PCI** Peripheral Component Interconnect
- PCL** Printer Control Language
- PCMCIA** Personal Computer Memory Card International Association
- PCX** PiCture eXchange format
- PD** Public Domain
- PIC** PiCture format
- QIC** Quarter Inch Cartridge
- RAM** Randon Access Memory
- RGB** Red, Green Blue
- RISC** Reduced Instruction Set Computer
- RLL** Run Length Limited
- ROM** Read Only Memory
- SCSI** Small Computer Systems Interface
- SD** Single Density
- SGML** Standard Generalised Markup Language Method of coding text for storage on CD Rom
- SIMM** Single Inline Memory Module
- SIP** Single Inline Package
- SPOOL** Simultaneous Periferal Operation OnLine
- SS** Single Sided – Refers to a disk using only one side of media
- SVGA** Super Video Graphics Array – Upgrade of the VGA display system
- TIF, TIFF** Tagged Image Format – Bitmap graphics file format
- TPI** Tracks Per Inch
- TSR** Terminate and Stay Resident
- UMB** Upper Memory Block
- UNIX** UNiplexed Information and Computing Service
- UPS** Uninterruptible Power Supply
- VESA** Video Electronics Standards Association
- VGA** Video Graphics Adaptor
- VLBUS** Vesa Local BUS
- VM** Virtual Memory
- VR** Vitual Reality
- WAV** Sound File Format
- WIMP** Windows, Icons, Mice, Pointers
- WMF** Windows Metafile Format
- WORM** Write Once. Read Many Times
- WPG** Word Perfect Graphic
- WYSIWYG** What You See Is What You Get
- XGA** eXtended Graphics Array
- XMS** eXtended Memory Specification
- XT** eXtended Technology – Term used for IBM computers launched in 1983
- ZIF** Zero Insertion Force – Chip socket with lever on side

The abbreviations under the heading 'Type No. and Manufacturer' are identified as follows:

FA-Fagor    GI-General Instruments    HIT-Hitachi    ME-Microelectronics    MOT-Motorola    NEC-NEC    NSC-National Semiconductor    PC-Philips  
SEM-Semelab    SIE Siemens    SLX-Siliconix    ST-SGS-Thomson    TFK-Telefunken    TI-Texas Instruments    ZET-Zetex

Table 1 Small Signal Low Frequency Silicon Transistors

Order Code	Type No. and Manufacturer	Price each exc. VAT			Case Style	Material	V <sub>CEO</sub> (max) V	V <sub>CBO</sub> (max) V	V <sub>EBO</sub> (max) V	I <sub>C</sub> (max) mA	P <sub>TOT</sub> (max) mW	Typ h <sub>FE</sub> @ I <sub>C</sub>	Typ f <sub>T</sub> (MHz)	Application		
		25+	100+	500+											1+	
QB31J	BC107B	£0.170	£0.150	£0.140	£0.31	TO18	NPN	45	50	6	100	300	290 @ 2mA	300	A.F. driver (comp to BC177)	
QB32K	BC108C	£0.200	£0.160	£0.140	£0.49	TO18	NPN	20	30	5	100	300	520 @ 2mA	300	General purpose (comp to BC178)	
QB33L	BC109C	£0.190	£0.150	£0.130	£0.31	TO18	NPN	20	30	5	100	300	520 @ 2mA	300	Low noise, high gain amp (comp to BC179)	
QB50E	BC168C	£0.110	£0.070	£0.060	£0.20	TO92	NPN	20	30	5	100	300	650 @ 2mA	85	General purpose	
QB51F	BC169C	£0.110	£0.070	£0.060	£0.20	TO92	NPN	20	30	5	50	300	650 @ 2mA	150	High gain, low noise amp	
UH55K	BC171	£0.064	£0.058	£0.046	£0.08	TO92a	NPN	45	50	6	100	300	290 @ 2mA	250	BC107 in plastic package	
QB52G	BC177	£0.240	£0.170	£0.157	£0.38	TO18	PNP	-45	-50	-5	100	300	240 @ 2mA	200	A.F. amp (comp to BC107)	
QB53H	BC178	£0.240	£0.170	£0.157	£0.50	TO18	PNP	-25	-30	-5	100	300	240 @ 2mA	200	General purpose (comp to BC108)	
QB54J	BC179	£0.190	£0.170	£0.157	£0.36	TO18	PNP	-20	-25	-5	100	300	410 @ 2mA	200	High gain, low noise (comp to BC109)	
QB55K	BC182L	£0.080	£0.060	£0.050	£0.16	TO92	NPN	50	60	5	200	300	>125 @ 2mA	150	A.F. driver (comp to BC212L)	
QB56L	BC183L	£0.070	£0.060	£0.050	£0.16	TO92	NPN	30	45	5	200	300	>125 @ 2mA	150	General purpose (comp to BC213L)	
QB57M	BC184L	£0.070	£0.060	£0.050	£0.13	TO92	NPN	30	45	5	200	300	>125 @ 2mA	150	Low noise, high gain amp (comp to BC214L)	
QB60Q	BC212L	£0.090	£0.060	£0.050	£0.16	TO92	PNP	-50	-60	-5	200	300	>60 @ 2mA	200	A.F. driver (comp to BC182L)	
QB61R	BC213L	£0.070	£0.060	£0.050	£0.13	TO92	PNP	-30	-45	-5	200	300	>80 @ 2mA	200	General purpose (comp to BC183L)	
QB62S	BC214L	£0.070	£0.060	£0.050	£0.13	TO92	PNP	-30	-45	-5	200	300	>140 @ 2mA	200	Low noise, high gain amp (comp to BC184L)	
UH56L	BC239	£0.060	£0.050	£0.040	£0.08	TO92h	NPN	45	45	5	100	350	290 @ 2mA	280	A.F. amp general purpose	
QQ14Q	BC547	£0.048	£0.033	£0.030	£0.14	TO92a	NPN	45	50	6	100	500	<-520 @ 2mA	300	BC107 in plastic package	
QB73Q	BC548	£0.040	£0.033	£0.026	£0.13	TO92a	NPN	30	30	5	100	500	<-520 @ 2mA	300	BC108 in plastic package	
QQ15R	BC549	£0.050	£0.033	£0.030	£0.08	TO92a	NPN	30	30	5	100	500	<-520 @ 2mA	300	BC109 in plastic package	
UL49D	BC550	£0.048	£0.044	£0.034	£0.06	TO92a	NPN	45	50	5	200	500	<-520 @ 2mA	300	Low noise BC549 (comp to BC560)	
QQ16S	BC557	£0.060	£0.033	£0.030	£0.08	TO92a	PNP	-45	-50	-5	100	500	240 @ 2mA	150	BC177 in plastic package	
QQ17T	BC558	£0.060	£0.033	£0.030	£0.08	TO92a	PNP	-30	-30	-5	100	500	240 @ 2mA	150	BC178 in plastic package	
QQ18U	BC559	£0.060	£0.033	£0.030	£0.08	TO92a	PNP	-30	-30	-5	100	500	240 @ 2mA	150	BC179 in plastic package	
UL50E	BC560	MOT	£0.050	£0.040	£0.030	£0.06	TO92a	PNP	-45	-50	-5	200	500	240 @ 2mA	300	Low noise BC559 (comp to BC550)
QF00A	BCY70	£0.235	£0.188	£0.134	£0.31	TO18	PNP	-40	-50	-5	200	350	300 @ 1mA	450	General purpose	
QF01B	BCY71	£0.225	£0.180	£0.129	£0.31	TO18	PNP	-45	-45	-5	200	350	300 @ 1mA	450	General purpose	
QH60Q	MPSA14	£0.075	£0.060	£0.043	£0.26	TO92b	NPN	30	30	10	300	500	10,000 @ 10mA	125	Darlington amp	
UL29G	MPSA42	£0.070	£0.060	£0.050	£0.09	TO92b	NPN	300	300	6	500	625	40 @ 30mA	50	High voltage (comp to MPSA92)	
QH61R	MPSA65	£0.200	£0.160	£0.114	£0.30	TO92b	PNP	-30	-30	-8	300	500	50,000 @ 10mA	175	Darlington amp	
UL30H	MPSA92	£0.100	£0.091	£0.071	£0.12	TO92b	PNP	-300	-300	-5	500	625	25 @ 30mA	50	High voltage (comp to MPSA42)	
QH63T	MPS3638A	£0.100	£0.080	£0.057	£0.17	TO92b	PNP	-25	-25	-4	500	310	>100 @ 10mA	150	General purpose amp and switch	
QL43W	ZTX107	ZET	£0.174	£0.139	£0.099	£0.24	E-line	NPN	50	60	5	100	300	240 @ 2mA	300	A. F. amp, general purpose
QL44X	ZTX108	ZET	£0.150	£0.120	£0.086	£0.24	E-line	NPN	30	45	5	100	300	240 @ 2mA	350	A. F. amp, general purpose
QL46A	ZTX300	ZET	£0.182	£0.146	£0.104	£0.24	E-line	NPN	25	25	5	500	300	150 @ 10mA	150	(comp to ZTX500)
QL48C	ZTX302	ZET	£0.195	£0.156	£0.111	£0.24	E-line	NPN	35	35	5	500	300	>100 @ 10mA	200	(comp to ZTX502)
QL50E	ZTX304	ZET	£0.185	£0.148	£0.105	£0.24	E-line	NPN	70	70	5	500	300	>50 @ 10mA	150	(comp to ZTX504)
QL60Q	ZTX500	ZET	£0.151	£0.120	£0.086	£0.24	E-line	PNP	-25	-25	-5	500	300	150 @ 10mA	150	(comp to ZTX300)
QL64U	ZTX504	ZET	£0.120	£0.110	£0.100	£0.27	E-line	PNP	-70	-70	-5	500	300	>50 @ 10mA	150	(comp to ZTX304)
QL88Y	ZTX541	ZET	£0.120	£0.110	£0.100	£0.27	E-line	PNP	-100	-100	-5	100	500	>30 @ 2mA		High voltage capability
QL69A	ZTX542	ZET	£0.120	£0.110	£0.100	£0.27	E-line	PNP	-120	-120	-5	100	500	>40 @ 10mA		High voltage capability
QR01B	2N706	£0.240	£0.200	£0.171	£0.30	TO18	NPN	20	25	3	100	300	>20 @ 10mA	200	High speed switching	
QR19V	2N2907	£0.210	£0.175	£0.150	£0.26	TO18	PNP	-40	-60	-5	600	400	200 @ 150mA	200	High speed switching	
QR20W	2N2926Or	£0.090	£0.075	£0.064	£0.11	TO98	NPN	18	18	5	100	200	150 @ 2mA	200	General purpose	
QR21X	2N2926Ye	£0.090	£0.075	£0.064	£0.11	TO98	NPN	18	18	5	100	200	210 @ 2mA	200	General purpose	
QR22Y	2N2926Gn	£0.135	£0.100	£0.075	£0.22	TO98	NPN	18	18	5	100	200	360 @ 2mA	200	General purpose	
QR26D	2N3702	£0.070	£0.060	£0.050	£0.09	TO92	PNP	25	40	5	200	300	180 @ 50mA	100	Audio amp	
QR27E	2N3703	£0.070	£0.060	£0.050	£0.09	TO92	PNP	30	50	5	200	300	90 @ 50mA	100	Audio amp	
QR28F	2N3704	£0.070	£0.060	£0.050	£0.09	TO92	NPN	30	50	5	800	360	200 @ 50mA	100	Audio amp	
QR29G	2N3705	£0.070	£0.060	£0.050	£0.09	TO92	NPN	30	50	5	800	360	100 @ 50mA	100	Audio amp	
QR30H	2N3706	£0.070	£0.060	£0.050	£0.09	TO92	NPN	20	40	5	800	360	315 @ 50mA		Audio amp	
QR31J	2N3707	£0.070	£0.060	£0.050	£0.09	TO92	NPN	30	30	6	30	250	250 @ 0.1mA		Low level, low noise amp	
QR32K	2N3708	£0.070	£0.060	£0.050	£0.09	TO92	NPN	30	30	6	30	250	360 @ 1mA		General purpose	
QR34M	2N3711	£0.074	£0.062	£0.053	£0.09	TO92	NPN	30	30	6	30	250	420 @ 1mA		General purpose	
QR39N	2N3903	£0.070	£0.060	£0.050	£0.09	TO92b	NPN	40	60	5	200	300	100 @ 10mA		General purpose	
QR40T	2N3904	£0.068	£0.057	£0.049	£0.20	TO92b	NPN	40	60	6	200	310	>100 @ 10mA		General purpose	
QR41U	2N3905	£0.070	£0.060	£0.050	£0.09	TO92b	PNP	-40	-40	-5	200	310	>50 @ 10mA		General purpose	
QR42V	2N3906	£0.068	£0.057	£0.049	£0.20	TO92b	PNP	-40	-40	-5	200	310	>100 @ 10mA		General purpose	
UL37S	2N5401	£0.072	£0.065	£0.051	£0.09	TO92b	PNP	-150	-160	-5	600	500	120 @ 10mA	200	High voltage (comp to 2N5551)	
UL36P	2N5551	NSC	£0.100	£0.075	£0.065	£0.17	TO92b	NPN	160	180	6	600	500	140 @ 10mA	200	High voltage (comp to 2N5401)
UF75S	2SA872A	HIT	£0.250	£0.220	£0.170	£0.51	TO92	PNP	-120	-120	-5	50	300	500 @ 2mA	120	Low noise amp
QY12N	2SA1085E	HIT	£0.260	£0.230	£0.190	£0.32	TO92	PNP	-120	-120	-5	100	400	400 @ 2mA	90	Very low noise amp
QY11M	2SC2547E	HIT	£0.280	£0.240	£0.190	£0.45	TO92	NPN	120	120	5	100	400	400 @ 2mA	90	Very low noise amp
VR18U	BC856B	PC	£0.032	£0.029	£0.030	£0.04	SOT23	PNP	65	80	5	100	200	220 @ 2mA	150	
VR17T	BC846B	PC	£0.032	£0.029	£0.030	£0.04	SOT23	NPN	60	80	6	100	200	290 @ 2mA	300	



## Gain Groups (BC107, BC108, BC109, BC168, BC169)

The above transistor types are all available in different gain ( $h_{FE}$ ) groups. For example, if the design parameter calls for the transistor to have a gain of between 110 and 800, this will be divided into groups e.g. group A – 110 to 220; group B – 200 to 450; group C – 420 to 800. The transistors are then marked with their gain group after the type number (e.g. BC108C). Transistors of the above types that have no suffix letter are ungraded and therefore where the plain-numbered device is specified a graded transistor will always, without qualification, do exactly the same job.

Table 2 Medium Power Low Frequency Silicon Transistors

Order Code	Type No. and Manufacturer	Price each exc. VAT			Price each inc. VAT	Case Style	Material	VCEO (max) V	VCBO (max) V	VEBO IC (max)		PTOT (max) mW	Typ hFE @ IC	Typ fT (MHz)	Application	
		25+	100+	500+						1+	V					mA
QB37S	BC140	£0.350	£0.318	£0.250	£0.43	TO39	NPN	40	60	7	1A	800	140 @ 100mA	50	Audio amps and switching up to 1A	
QB38R	BC141	£0.300	£0.273	£0.214	£0.37	TO39	NPN	60	80	7	1A	800	140 @ 100mA	50	Audio amps and switching up to 1A	
QB40T	BC143	£0.345	£0.314	£0.246	£0.43	TO5	PNP	-60	-60	-5	800	800	>25 @ 500mA	100	Audio driver	
QB48C	BC160	£0.360	£0.327	£0.257	£0.45	TO39	PNP	-40	-60	-5	1A	800	140 @ 100mA	50	Audio amps and switching up to 1A	
QB49D	BC161	£0.360	£0.327	£0.257	£0.45	TO39	PNP	-60	-80	-5	1A	800	140 @ 100mA	50	Audio amps and switching up to 1A	
QB63T	BC301/5	£0.340	£0.309	£0.243	£0.42	TO39	NPN	60	90	7	500	850	105 @ 150mA	120	Audio driver stages (comp to BC303/5)	
QB65V	BC303/5	£0.300	£0.273	£0.214	£0.37	TO39	PNP	-60	-85	-7	500	850	105 @ 150mA	75	Audio driver stages (comp to BC301/5)	
QB66W	BC327	£0.070	£0.054	£0.050	£0.16	TO92h	PNP	-45	-50	-5	500	625	350 @ 100mA	100	Driver and output stages in audio amps	
QB67X	BC328	£0.070	£0.060	£0.050	£0.09	TO92h	PNP	-25	-30	-5	500	625	350 @ 100mA	100	Driver and output stages in audio amps	
QB68Y	BC337	£0.060	£0.050	£0.040	£0.20	TO92h	NPN	45	50	5	500	625	350 @ 100mA	200	Driver and output stages in audio amps	
QB69A	BC338	£0.070	£0.058	£0.047	£0.14	TO92h	NPN	25	30	5	500	625	350 @ 100mA	200	Driver and output stages in audio amps	
QB70M	BC441	£0.360	£0.300	£0.240	£0.75	TO39	NPN	60	75	5	2A	1W	100 @ 500mA	50	Drivers and gen purpose (comp to BC461)	
QB72P	BC461	£0.375	£0.313	£0.250	£0.75	TO39	PNP	-60	-75	-5	2A	1W	100 @ 500mA	50	Drivers and gen purpose (comp to BC441)	
VR06G	BC639	£0.082	£0.075	£0.070	£0.31	TO92	NPN	80	80	5	1A	1W	40 @ 150mA	50	High voltage audio driver	
VR07H	BC640	£0.082	£0.075	£0.070	£0.31	TO92	PNP	80	80	5	1A	1W	40 @ 150mA	50MHz	High voltage audio driver	
QF27E	BFY50	£0.310	£0.258	£0.207	£0.92	TO5	NPN	35	80	6	1A	800	112 @ 150mA	50	General purpose	
QF28F	BFY51	£0.290	£0.242	£0.193	£0.60	TO5	NPN	30	60	6	1A	800	123 @ 150mA	50	General purpose	
QF29G	BFY52	£0.300	£0.250	£0.200	£0.56	TO5	NPN	20	40	6	1A	800	142 @ 150mA	50	General purpose	
UM86T	TIPP31C	TI	£0.354	£0.327	£0.304	£0.52	TO92	NPN	100	100	5	2A	800	>20 @ 1A	Audio driver	
UM89W	TIPP112	TI	£0.398	£0.368	£0.341	£0.65	TO92	NPN	100	100	5	2A	800	>1000 @ 1A	Audio darlington	
DB36P	ZTX450	ZET	£0.158	£0.144	£0.113	£0.19	E-Line	NPN	45	60	5	1A	1W	300 @ 150mA	150	Hi-fi amps, fast pwr swch (comp to ZTX550)
DB37S	ZTX451	ZET	£0.172	£0.156	£0.123	£0.21	E-Line	NPN	60	80	5	1A	1W	150 @ 150mA	150	Hi-fi amps, fast pwr swch (comp to ZTX551)
DB38R	ZTX455	ZET	£0.272	£0.247	£0.194	£0.34	E-Line	NPN	140	160	5	1A	1W	300 @ 150mA	100	Hi-fi amps, fast pwr swch (comp to ZTX753)
DB39N	ZTX550	ZET	£0.165	£0.150	£0.118	£0.20	E-Line	PNP	-45	-60	-5	1A	1W	300 @ 150mA	150	Hi-fi amps, fast pwr swch (comp to ZTX450)
UH46A	ZTX650	ZET	£0.241	£0.221	£0.189	£0.54	E-line	NPN	45	60	5	2A	1.5W	200 @ 500mA	175	Hi-fi amps, fast pwr swch (comp to ZTX750)
UH47B	ZTX651	ZET	£0.258	£0.237	£0.203	£0.40	E-line	NPN	60	80	5	2A	1.5W	200 @ 500mA	175	Hi-fi amps, fast pwr swch (comp to ZTX751)
UH49D	ZTX653	ZET	£0.278	£0.255	£0.218	£0.43	E-line	NPN	100	120	5	2A	1.5W	200 @ 500mA	175	Hi-fi amps, fast pwr swch (comp to ZTX753)
DB43W	ZTX694B	ZET	£0.404	£0.368	£0.289	£0.50	E-Line	NPN	120	120	5	500	1W	500 @ 100mA	150	High gain, general purpose
UH50E	ZTX750	ZET	£0.291	£0.267	£0.229	£0.45	E-line	PNP	-45	-60	-5	2A	1.5W	200 @ 500mA	140	Hi-fi amps, fast pwr swch (comp to ZTX650)
UH51F	ZTX751	ZET	£0.291	£0.267	£0.229	£0.45	E-line	PNP	-60	-80	-5	2A	1.5W	200 @ 500mA	140	Hi-fi amps, fast pwr swch (comp to ZTX651)
UH52G	ZTX752	ZET	£0.336	£0.308	£0.264	£0.52	E-line	PNP	-80	-100	-5	2A	1.5W	200 @ 500mA	140	Hi-fi amps, fast pwr swch (comp to ZTX652)
UH53H	ZTX753	ZET	£0.248	£0.227	£0.195	£0.36	E-line	PNP	-100	-120	-5	2A	1.5W	200 @ 500mA	140	Hi-fi amps, fast pwr swch (comp to ZTX653)
UM69A	ZTX851	ZET	£0.372	£0.344	£0.319	£0.65	E-line	NPN	60	150	7	5A	1.2W	200 @ 4A	High gain, high current, low sat. voltage	
QR09K	2N1711		£0.288	£0.240	£0.192	£0.69	TO5	NPN	30	75	7	1A	800	200 @ 150mA	100	General purpose
QR10L	2N1893		£0.350	£0.292	£0.233	£0.62	TO5	NPN	80	120	7	500	800	80 @ 150mA	50	Amplifier outputs
QR11M	2N2219		£0.291	£0.267	£0.229	£0.45	TO5	NPN	30	60	5	800	800	200 @ 150mA	50	High speed switching
QR17T	2N2905		£0.317	£0.290	£0.249	£0.49	TO5	PNP	-40	-60	-5	600	600	200 @ 150mA	200	High speed switching
QR23A	2N3053		£0.291	£0.267	£0.229	£0.62	TO5	NPN	40	60	5	700	800	150 @ 150mA	100	Driver
QQ31J	2SB716	HIT	£0.320	£0.267	£0.213	£0.52	TO92	PNP	-120	-120	-5	50	750	500 @ 2mA	350	High voltage amp (comp to 2SD756)
UF76H	2SB718	HIT	£0.545	£0.500	£0.429	£0.85	P1b	PNP	-200	-200	-5	50	1.25W	100 @ 10mA	140	Very high voltage driver (comp to 2SD758)
QQ33L	2SD756	HIT	£0.320	£0.267	£0.213	£0.50	TO92	NPN	120	120	5	50	750	700 @ 2mA	150	High voltage amp (comp to 2SD716)

Table 3 High Power Low Frequency Silicon Transistors

Order Code	Type No. and Manufacturer	Price each exc. VAT			Price each inc. VAT	Case Style	Material	VCEO (max) V	VCBO (max) V	VEBO IC (max)		PTOT (max) mW	Typ hFE @ IC	Typ fT (MHz)	Application	
		25+	100+	500+						1+	V					mA
QF03D	BD131	£0.480	£0.400	£0.320	£0.97	TO126	NPN	45	70	6	3	15	>40 @ 500mA	60	A.F. output (comp to BD132)	
QF05F	BD132	£0.500	£0.417	£0.333	£1.24	TO126	PNP	-45	-45	-4	3	15	>40 @ 500mA	60	A.F. output (comp to BD131)	
QF06G	BD135	ST	£0.330	£0.275	£0.220	£0.88	TO126	NPN	45	45	5	1	8	100 @ 150mA	250	A.F. driver amp (comp to BD136)
QF75S	BD136	ST	£0.326	£0.272	£0.217	£0.92	TO126	PNP	-45	-45	-5	1	8	100 @ 150mA	250	A.F. driver amp (comp to BD135)
VR09K	BD137		£0.207	£0.191	£0.177	£0.81	TO126	NPN	60	60	5	1.5	8	100 @ 150mA	250	A.F. driver amp (comp to BD138)
VR10L	BD138		£0.337	£0.311	£0.289	£0.93	TO126	PNP	-60	-60	-5	1.5	8	100 @ 150mA	75	A.F. driver amp (comp to BD137)
QF07H	BD139	ST	£0.344	£0.287	£0.229	£0.92	TO126	NPN	80	100	5	1	8	100 @ 150mA	250	A.F. driver amp (comp to BD140)
QF08J	BD140	ST	£0.500	£0.417	£0.333	£1.10	TO126	PNP	-80	-100	-5	1	8	100 @ 150mA	75	A.F. driver amp (comp to BD139)
VR13P	BD241C		£0.275	£0.254	£0.236	£1.15	TO220a	NPN	100	115	5	3	40	25 @ 1A	3	High voltage, current audio
VR14Q	BD242C		£0.293	£0.271	£0.251	£1.15	TO220b	PNP	-100	-115	-5	3	40	25 @ 1A	3	High voltage, current audio
UM78K	BD539C		£0.440	£0.406	£0.377	£0.79	P1b	NPN	100	100	5	5	45	>30 @ 1A	Audio amp	
WH15R	BD711	ST	£0.622	£0.464	£0.440	£1.37	P1b	NPN	100	100	5	12	75	25 @ 4A	3	Audio amp (comp to BD712)
WH16S	BD712	ST	£0.616	£0.513	£0.440	£0.86	P1b	PNP	-100	-100	-5	12	75	25 @ 4A	3	Audio amp (comp to BD711)
UJ15R	BD911	ST	£0.661	£0.606	£0.520	£1.15	P1b	NPN	100	100	5	15	90	30 @ 5A	3	Audio amp (comp to BD912)
UJ16S	BD912	ST	£0.624	£0.572	£0.490	£0.98	P1b	PNP	-100	-100	-5	15	90	30 @ 5A	3	Audio amp (comp to BD911)
UM80B	BDX53C		£0.481	£0.444	£0.412	£0.62	P1b	NPN	100	100	5	8	60	>750 @ 3A	Audio darlington amp (comp to BDX54C)	
UM81C	BDX54C		£0.442	£0.408	£0.379	£0.87	P1b	PNP	-100	-100	-5	8	60	>750 @ 3A	Audio darlington amp (comp to BDX53C)	
UJ17T	BU208A	ST	£1.800	£1.660	£1.540	£2.49	TO3	NPN	700	1500†	10	8	150	50 @ 1A	7	PSU's & col. TV hor. deflect (VCE(sat)=1V)

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Export carriage charges (1.2 etc.) and price information see back of catalogue. † symbol in price block indicates While Stocks Last.

Table 3 High Power Low Frequency Silicon Transistors (continued from previous page).

Order Code	Type No. and Manufacturer	Price each			Case Style	Material	V <sub>CEO</sub>	V <sub>CBO</sub>	V <sub>EBO</sub>	I <sub>C</sub>	P <sub>TOT</sub>	Typ h <sub>FE</sub>	Typ f <sub>T</sub>	Application	
		exc. VAT					inc. VAT	(max)	(max)	(max)	(max)	(max)	@ I <sub>C</sub>		(MHz)
		25+	100+	500+			1+	V	V	V	A	mW			
VR08J	BU508A	£1.780	£1.480	£1.270	£2.66	SOT93 NPN	700	1500	10	8	125	50 @ 1A	7	PSUs & col. TV hor. deflect.	
UJ18U	BU806	ST	£1.380	£0.571	£0.557	£2.32	P1b NPN	-200	-400	-6	8	60	300 @ 4A	Power darlington with speed-up diode horiz.	
DT34M	BUT11A	ST	£1.120	£0.933	£0.800	£1.82	TO220 NPN	450	450	9	10	83		High voltage switching	
UJ21X	BUV47A	ST	£2.240	£1.650	£1.610	£3.94	P3c NPN	450	1000	7	9	120	20 @ 3.5A	High voltage power switch	
QH57M	MJ2501	ST	£1.760	£1.460	£1.170	£3.00	TO3 PNP	-80	-80	-5	10	150	1000 @ 5A (min) 1	High power darlington (comp to MJ3001)	
BL38R	MJ2955	ST	£0.998	£0.832	£0.713	£2.78	TO3 PNP	-60	-100	-7	15	150	45 @ 4A	4	General purpose (comp to 2N3055)
QH58N	MJ3001	ST	£1.720	£1.430	£1.140	£2.89	TO3 NPN	80	80	5	10	150	1000 @ 5A (min) 1	High power darlington (comp to MJ2501)	
QH54J	MJE340	ST	£0.566	£0.472	£0.405	£0.97	TO126 NPN	300	300	3	500mA	20	150 @ 50mA	20	Audio output stages
WQ51F	MJE350	ST	£0.473	£0.394	£0.338	£1.06	TO126 PNP	-300	-300	-3	500mA	20	150 @ 50mA	20	Audio output stages (comp to MJE340)
UJ26D	MJE13005	ST	£0.820	£0.550	£0.537	£1.54	P1b NPN	400	700††	9	4	75	30 @ 1A		High voltage switch for switch mode PSU's
UJ27E	MJE13007	ST	£1.430	£0.750	£0.732	£2.38	P1b NPN	400	700††	9	8	80	20 @ 3.5A	4	Motor control, switch regulator
VR15R	MJE18004	MOT	£0.980	£0.483	£0.414	£2.47	TO220† NPN	450	1000	9	6	100	34 @ 500mA	14	High current switching
QL15R	TIP31A	ST	£0.324	£0.270	£0.216	£0.82	P1b NPN	60	100	5	3	40	25 @ 3A	3	Audio amp (comp to TIP32A)
UM82D	TIP31C		£0.490	£0.408	£0.350	£0.78	P1b NPN	100	140	5	3	40	>25 @ 1A		Audio amp (comp to TIP32C)
QL16S	TIP32A	ST	£0.407	£0.340	£0.272	£0.82	P1b PNP	-60	-100	-5	3	40	25 @ 3A	3	Audio amp (comp to TIP31A)
UM83E	TIP32C	ST	£0.438	£0.365	£0.313	£0.90	P1b PNP	-100	-140	-5	3	40	>25 @ 1A		Audio amp (comp to TIP31C)
UJ28F	TIP35C	ST	£1.230	£1.060	£1.030	£2.34	P3c NPN	100	140	5	25	125	20 @ 15A	3	Audio amp (comp TIP36C)
UJ29G	TIP36C	ST	£1.360	£1.110	£1.080	£2.23	P3c PNP	-100	-140	-5	25	125	20 @ 15A	3	Audio amp (comp to TIP35C)
QL17T	TIP41A	ST	£0.490	£0.408	£0.327	£0.94	P1b NPN	60	100	5	6	65	50 @ 3A	3	Audio amp (comp to TIP42A)
QL18U	TIP42A	ST	£0.600	£0.500	£0.400	£0.82	P1b PNP	-60	-100	-5	6	65	50 @ 3A	3	Audio amp (comp to TIP41A)
VR12N	TIP110		£0.512	£0.427	£0.366	£1.20	TO220a NPN	60	60	5	2	50	750 @ 2A		High power darlington
VR11M	TIP112		£0.396	£0.330	£0.283	£1.26	TO220a NPN	100	100	5	2	50	750 @ 2A		High power darlington
WQ73Q	TIP122		£0.444	£0.370	£0.317	£1.39	P1b NPN	100	100	5	5	65	5000 @ 2A	5	High power darlington (comp to TIP127)
WQ74R	TIP127		£0.519	£0.433	£0.371	£1.53	P1b PNP	-100	-100	-5	5	65	3000 @ 2A	5	High power darlington (comp to TIP122)
UJ30H	TIP142	ST	£1.150	£0.685	£0.669	£2.18	P3c NPN	100	100	5	10	125	3000 @ 5A		Power darlington amp (comp to TIP147)
UJ31J	TIP147	ST	£1.160	£0.875	£0.854	£2.18	P3c PNP	-100	-100	-5	10	125	3000 @ 5A		Power darlington amp (comp to TIP142)
QH55K	TIP2955	ST	£0.900	£0.750	£0.643	£1.64	P3c PNP	-70	-100	-7	15	90	45 @ 4A	2	General purpose (comp to TIP3055)
QH56L	TIP3055	ST	£0.857	£0.715	£0.612	£1.47	P3c NPN	70	100	7	15	90	45 @ 4A	2	General purpose (comp to TIP2955)
UM84F	TIP370	TI	£0.657	£0.548	£0.470	£1.06	P1b NPN	400	850	10	2.5	50	40 @ 500mA	12	High voltage, inductive load switching
QR24B	2N3054		£0.920	£0.767	£0.613	£1.30	TO66 NPN	55	90	7	4	29	>25 @ 500mA	1	Audio amp
YH98G	2N3055	ST	£0.880	£0.733	£0.629	£1.86	TO3 NPN	60	100	7	15	115	45 @ 4A	0.8	General purpose (comp to MJ2955)
BL45Y	2N3055H*		£1.200	£1.000	£0.857	£2.05	TO3 NPN	60	100	7	15	115	45 @ 4A	0.8	General purpose (comp to MJ2955)
QW07H	2N3772	ST	£1.970	£1.610	£1.570	£3.58	TO3 NPN	60	100	7	20	150	30 @ 10A	0.8	High current power amps
QR35Q	2N3773		£2.330	£1.940	£1.550	£3.61	TO3 NPN	140	160	7	16	150	40 @ 4A	0.2	Power switching, audio amps, inverters.
QW08J	2N6609		£3.050	£2.470	£2.410	£5.38	TO3 PNP	-140	-160	-7	16	150	40 @ 4A	0.2	Power switching, audio amps, inverters.
QR56L	2SA715	HIT	£0.440	£0.201	£0.196	£0.82	TO126 PNP	-35	-35	-5	2.5	10	150 @ 500mA	160	Power switching
QR59P	2SC1162	HIT	£0.410	£0.191	£0.187	£0.70	TO126 NPN	30	30	5	2.5	10	100 @ 500mA	180	Power switching

\*2N3055H is a homotaxial base device which is highly resistant to secondary breakdown over a wide range of operating conditions. †V<sub>CES</sub> (V<sub>BE</sub> = 0). ††V<sub>CEV</sub>.

Table 4 Small Signal High Frequency Transistors

Order Code	Type No. and Manufacturer	Price each			Case Style	Material	V <sub>CEO</sub>	V <sub>CBO</sub>	V <sub>EBO</sub>	I <sub>C</sub>	P <sub>TOT</sub>	Typ h <sub>FE</sub>	Typ f <sub>T</sub>	Application	
		exc. VAT					inc. VAT	(max)	(max)	(max)	(max)	(max)	@ I <sub>C</sub>		(MHz)
		25+	100+	500+			1+	V	V	V	mA	mW			
QY53H	BF173		£0.400	£0.225	£0.220	£0.70	TO72a NPN	25	25	3	25	260	38 @ 7mA	350	R.F. amps
QQ19V	BF494		£0.098	£0.082	£0.065	£0.24	TO92k NPN	20	30	5	30	300	115 @ 1mA	260	AM/FM Low noise receiver I.F. stages
VR16S	BFR193		£0.880	£0.733	£0.630	£1.37	SOT-23 NPN	12	20	2	80mA	580mW	100 @ 30mA	8GHz	Linear low-noise broadband amplifiers
QQ64U	BFY90		£1.000	£0.836	£0.669	£1.21	TO72 NPN	15	30	2.5	50	200	52 @ 2mA	1850	Wideband amps (40 to 860MHz)
QF32K	BSX20		£0.300	£0.250	£0.214	£0.63	TO18 NPN	15	40	4.5	500	360	80 @ 10mA	500	High speed saturated switch and HF amps
CR01B	MPSH10		£0.120	£0.100	£0.086	£0.32	TO92e NPN	25	30	3	20	350	>60 @ 4mA	>650	VHF/UHF amplifiers
UH54J	2N2222A		£0.290	£0.140	£0.137	£0.69	TO18 NPN	40	75	6	800	500	200 @ 150mA	300	DC and VHF/UHF amplifiers
QR12N	2N2369A		£0.236	£0.197	£0.157	£0.46	TO18 NPN	15	40	4.5	200	360	>40 @ 10mA	500	High speed saturated switch and HF amps

\*\* G<sub>UM</sub> Maximised unilateralised power gain.

Table 5 Medium Power High Frequency Silicon Transistors

Order Code	Type No. and Manufacturer	Price each			Case Style	Material	V <sub>CEO</sub>	V <sub>CBO</sub>	V <sub>EBO</sub>	I <sub>C</sub>	P <sub>TOT</sub>	Typ h <sub>FE</sub>	Typ f <sub>T</sub>	Application	
		exc. VAT					inc. VAT	(max)	(max)	(max)	(max)	(max)	@ I <sub>C</sub>		(MHz)
		25+	100+	500+			1+	V	V	V	mA	mW			
QF18U	BF259	ME	£0.345	£0.287	£0.246	£0.72	TO39 NPN	300	300	5	100	800	>25 @ 30mA	90	High voltage video output amp
QF19V	BF337	ME	£0.344	£0.287	£0.246	£0.79	TO39 NPN	200	250	5	100	800	60 @ 30mA	80	R-G-B and colour difference
QR38R	2N3866	ST	£1.380	£1.100	£1.070	£2.74	TO5 NPN	30	55	3.5	400	5W	105 @ 50mA	700	UHF amp
UK78K	2N4427	ST	£0.790	£0.690	£0.570	£1.72	TO39 NPN	20	40	3.5	500	3.5	100 @ 100mA	500	VHF amp and oscillator

Table 6 N Channel Field Effect Transistors

Order Code	Type No. and Manufacturer	Price each			Case Style	P <sub>TOT</sub>	V <sub>DS</sub>	V <sub>DG</sub>	V <sub>GS</sub>	I <sub>GSS</sub>	Y <sub>FS</sub> (typical)	Max input Capacitance	I <sub>DSS</sub>	Application		
		exc. VAT					inc. VAT	(max)	(max)	(max)	(max)		μS		(max)	
		25+	100+	500+			1+	mW	V	V	V		nA		(V <sub>GS</sub> = 0V)	mA
QF16S	BF244A		£0.408	£0.340	£0.291	£0.63	TO92d	300	30	30	7	4500	4	25		
DB32K	J109	SLX	£0.460	£0.383	£0.329	£1.13	TO92c	360	25	25	3	17000	85	40	JFET	
DB33L	J112	SLX	£0.380	£0.317	£0.271	£0.67	TO92c	360	35	35	35	1	6000	12	5	JFET
QH59P	MPF102	NSC	£0.280	£0.233	£0.187	£0.82	TO92c	310	25	25	25	2	1600 @ 100MHz	7	20	R.F. amps
QR36P	2N3819	SLX	£0.440	£0.328	£0.228	£0.86	TO92d	200	25	25	25	2	4000	8	20	General purpose
QR50E	2N5459	ME	£0.490	£0.313	£0.305	£0.82	TO92c	310	25	25	25	0.1	4500	7	16	General purpose
UF89W	2N7000	SLX	£0.220	£0.138	£0.134	£0.34	TO92d	400	60	60	±40	10	200000	30	1	Fetlington (Darlington FET), 200mA

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Export carriage charges (1,2 etc.) and price information see back of catalogue. † symbol in price block indicates While Stocks Last.

The abbreviations under the heading 'Type No. and Manufacturer' are identified as follows:

FA-Fagor    GI-General Instruments    HIT-Hitachi    ME-Microelectronics    MOT-Motorola    NEC-NEC    NSC-National Semiconductor    PC-Philips  
 SEM-Semelab    SIE-Siemens    SLX-Siliconix    ST-SGS-Thomson    TFK-Telefunken    TI-Texas Instruments    ZET-Zetex

**Table 7 P Channel Field Effect Transistors**

Order Code	Type No. and Manufacturer	Price each exc. VAT			Price each inc. VAT	Case Style	P <sub>TOT</sub> (max) mW	V <sub>DS</sub> (max) V	V <sub>DG</sub> (max) V	V <sub>GS</sub> (max) V	I <sub>GSS</sub> (max) nA	V <sub>FS</sub> (typical) $\mu$ S (V <sub>GS</sub> = 0V)	Max input Capacitance (pF)	I <sub>DSS</sub> (max) mA	Application
		25+	100+	500+											
UL38R	2N5460 MOT	£0.250	£0.230	£0.220	£0.79	TO92p	310	40	40	40	5	1000	7	5	Low level amps, variable resistors

**Table 8 Power MOSFETs**

Order Code	Type No. and Manufacturer	Price each exc. VAT			Price each inc. VAT	Case Style	P <sub>TOT</sub> (max) W	V <sub>DS</sub> (max) V	V <sub>DG</sub> (max) V	V <sub>GS</sub> (max) V	Gate Threshold Voltage V	I <sub>GSS</sub> (max) $\mu$ A	Forward Transcond. mS (typical)	I <sub>d</sub> (max) A	I <sub>DSS</sub> (max) $\mu$ A	Max I/P Cap pF	Typical f (max) MHz	Material
		25+	100+	500+														
UJ32K	BUZ10 ST	£0.770	£0.610	£0.500	£1.85	P1d	70	50	50	$\pm$ 20	2.1 to 4	$\pm$ 100nA	3000 (RDS(on) 0.08)	20	250	550	3	N-channel
UJ33L	BUZ11 ST	£1.080	£0.990	£0.880	£1.77	P1d	75	50	50	$\pm$ 20	2.1 to 4	$\pm$ 100nA	8000 (RDS(on) 0.03)	30	250	2000	2.4	N-channel
UL41U	BUZ31 SIE	£1.650	£1.460	£1.270	£2.86	P1d	75	200	200	$\pm$ 20	2.1 to 4	$\pm$ 100nA	5000 (RDS(on) 0.17)	12.5	250	2100	3.3	N-channel
UR50E	IRFP250 SEM	£3.200	£2.700	£2.320	£5.73	TO3p	150	200	200	$\pm$ 20	2 to 4	$\pm$ 100nA	12.5S (RDS(on) 0.07)	30	250	3000	2.7	N-channel
UR49D	IRFP450 SEM	£3.200	£2.700	£2.320	£5.73	TO3p	180	500	500	$\pm$ 20	2 to 4	$\pm$ 100nA	10.8S (RDS(on) 0.35)	14	250	2950	3.2	N-channel
UR43V	IRF540 SEM	£2.880	£2.400	£1.800	£6.88	P1d	125	100	100	$\pm$ 20	2 to 4	$\pm$ 500nA	10S (RDS(on) 0.07)	27	250	1275	5	N-channel
UR44X	IRF630 SEM	£0.900	£0.740	£0.563	£1.94	P1d	75	200	200	$\pm$ 20	2 to 4	$\pm$ 500nA	4800 (RDS(on) 0.25)	9	250	600	5.8	N-channel
UR45Y	IRF640 SEM	£3.430	£2.850	£2.140	£9.18	P1d	125	200	200	$\pm$ 20	2 to 4	$\pm$ 500nA	10S (RDS(on) 0.14)	18	250	1275	4.3	N-channel
UR46A	IRF740 SEM	£2.850	£2.380	£1.780	£8.03	P1d	125	400	400	$\pm$ 20	2 to 4	$\pm$ 500nA	7000 (RDS(on) 0.47)	10	250	1250	5.7	N-channel
UR47B	IRF830 SEM	£0.900	£0.700	£0.563	£1.71	P1d	75	500	500	$\pm$ 20	2 to 4	$\pm$ 500nA	3250 (RDS(on) 1.3)	4.5	250	600	6.9	N-channel
UR48C	IRF840 SEM	£2.550	£2.200	£1.650	£5.79	P1d	125	500	500	$\pm$ 20	2 to 4	$\pm$ 500nA	6500 (RDS(on) 0.8)	8	250	1225	5.8	N-channel
VR30H	MT68008HDMOT	£2.320	£1.930	£1.450	£4.03	D2PAK	125	60	60	20	2 to 4	100	20S (RDS(on) 0.014)	60	100			N-channel
VR29G	MT68008HDMOT	£1.860	£1.550	£1.160	£3.33	TO220d	125	60	60	20	2 to 4	100	20S (RDS(on) 0.01)	60	100			N-channel
QQ27E	VN10KM SLX	£0.420	£0.410	£0.360	£0.59	TO92d	1	60	60	5	3 to 2.5	10	200	0.5	10	48		N-channel
WQ97F	VN66AF SLX	£1.450	£1.200	£0.913	£2.28	P1c	12.5	60	60	15	0.8 to 2	10	250	2	10	50	600	N-channel
AY49D	2SJ114 HIT	£7.350	£6.880	£6.490	£10.49	TO3v	100	-200	-200	$\pm$ 20	-0.15 to -1.45	$\pm$ 100	1000	8		1200	2	P-channel
AY46A	2SJ160 HIT	£4.850	£4.560	£4.490	£6.99	TO3w	100	-120	-120	$\pm$ 14	-0.15 to -1.45	$\pm$ 100	1000	7		900	3	P-channel
AY47B	2SJ161 HIT	£4.930	£4.630	£4.490	£7.19	TO3w	100	-140	-140	$\pm$ 14	-0.15 to -1.45	$\pm$ 100	1000	7		900	3	P-channel
UR41U	2SJ162 SEM	£5.100	£4.450	£3.790	£9.18	TO3w	100	-160	-160	$\pm$ 15	-0.15 to -1.45	$\pm$ 100	1000	7		900	3	P-channel
AY53H	2SK400 HIT	£4.790	£4.560	£4.400	£6.99	TO3v	100	200	200	$\pm$ 20	0.15 to 1.45	$\pm$ 100	1000	8		800	3	N-channel
AY50E	2SK1056 HIT	£4.850	£4.500	£4.400	£7.49	TO3w	100	120	120	$\pm$ 14	0.15 to 1.45	$\pm$ 100	1000	7		600	4	N-channel
AY51F	2SK1057 HIT	£4.300	£4.040	£3.980	£6.29	TO3w	100	140	140	$\pm$ 14	0.15 to 1.45	$\pm$ 100	1000	7		600	4	N-channel
UR40T	2SK1058 SEM	£4.800	£4.000	£3.790	£8.03	TO3w	100	160	160	$\pm$ 15	0.15 to 1.45	$\pm$ 100	1000	7		600	4	N-channel

**Table 9 N and P Channel Lateral Power MOSFETs**

For high quality audio amplifier applications and designed for use as complementary pairs. Lateral structure for high resistance to electrical destruction, ultra-fine architecture for uniform power distribution, excellent frequency characteristics and having an integral reverse polarity protection diode.

Order Code	Type No. and Manufacturer	Price each exc. VAT			Price each inc. VAT	Case Style	P <sub>TOT</sub> (max) W	V <sub>DS</sub> (max) V	V <sub>GS</sub> (max) V	I <sub>D</sub> (max) A	Diode I(max) A	I <sub>DSS</sub> (max) mA	Max I/P Cap pF	Typical f(max) MHz	Material
		25+	100+	500+											
AY56L	ECF10N16 Exicon	£5.350	£3.490	£2.990	£6.29	TO3	125	160	$\pm$ 14	8	8	10	500	5	N-channel
AY54J	ECF10P16 Exicon	£5.940	£3.990	£2.990	£6.99	TO3	125	160	$\pm$ 14	8	8	10	500	5	P-channel
AY57M	ECF10N20 Exicon	£6.570	£3.490	£3.390	£7.73	TO3	125	200	$\pm$ 14	8	8	10	500	5	N-channel
AY55K	ECF10P20 Exicon	£6.680	£3.990	£3.440	£7.86	TO3	125	200	$\pm$ 14	8	8	10	500	5	P-channel
AX79L	ECX1N106 Exicon	£3.990	£2.960	£2.610	£4.69	TO3P	125	200	$\pm$ 14	8	8	10	500	5	N-channel
AX80B	ECX10P16 Exicon	£4.070	£3.060	£2.710	£4.79	TO3P	125	160	$\pm$ 14	8	8	10	500	5	P-channel
AX81C	ECX10N20 Exicon	£4.500	£3.260	£2.880	£5.29	TO3P	125	200	$\pm$ 14	8	8	10	500	5	N-channel
AX82D	ECX10P20 Exicon	£4.670	£3.380	£2.980	£5.49	TO3P	125	200	$\pm$ 14	8	8	10	500	5	P-channel
DT30H	ECF20N16 Exicon	£8.500	£5.600	£4.990	£9.99	TO3	250	160	$\pm$ 14	16	16	10	500	5	N-channel
DT31J	ECF20P16 Exicon	£8.500	£5.760	£4.990	£9.99	TO3	250	160	$\pm$ 14	16	16	10	500	5	P-channel

**Table 10 Unijunction Transistors**

Order Code	Type No. and Manufacturer	Price each exc. VAT			Price each inc. VAT	Case Style	P <sub>TOT</sub> (max) mW	V <sub>EB20</sub> V	I <sub>E</sub> (peak) A	I <sub>EB</sub> (max) mA	Peak point I <sub>p</sub> (max) $\mu$ A	Valley point I <sub>v</sub> (mA)	Intrinsic stand-off ratio	V <sub>B2-B1</sub> V (max)	
		25+	100	500+											1+
QR14Q	2N2646	£1.490	£1.340	£1.180	£2.28	TO18u	300	30	2		12	5	4	0.56 to 0.75	35

**Table 11 Signal Diodes**

Order Code	Type No. and Manufacturer	Price each exc. VAT				Price each inc. VAT	Construction	Case Style	PIV V	Max I <sub>F</sub> (average) mA	Max reverse current I <sub>R</sub> ( $\mu$ A @ V)	Application
		25+	100+	500+	1000+							
QQ13P	BAR28	£0.200	£0.167	£0.133	£0.63	Schottky barrier	D035	70	15	<200nA @ 50V	Low forward voltage (V <sub>F</sub> = 410mV at 1mA), suitable replacement for germanium very fast > 10GHz	
QB28F	BAX13	£0.046	£0.035	£0.030	£0.030	Si diffused whiskerless	D035*	50	75	<200nA @ 50V	Fast logic	
QB29G	BAX16	£0.018	£0.015	£0.014	£0.014	Si diffused whiskerless	D035*	150	200	<100nA @ 150V	General purpose	
QF44X	BY206	£0.217	£0.200	£0.173	£0.33	Si double diffused	D014	350	400	<2 $\mu$ A @ 300V	Top level detector and scan rectifier and for h.f.	
QH70M	OA47	£0.242	£0.223	£0.193	£0.57	Ge gold bonded	D07	25	110	<100 $\mu$ A @ 25V	High speed switch	
QH71N	OA90	£0.175	£0.162	£0.140	£0.31	Ge point contact	D07	30	10	<275 $\mu$ A @ 100V	High frequency detector	
QH72P	OA91	£0.175	£0.162	£0.140	£0.31	Ge point contact	D07	115	50	<275 $\mu$ A @ 100V	General purpose	
QH73Q	OA95	£0.175	£0.162	£0.140	£0.31	Ge point contact	D07	115	50	<250 $\mu$ A @ 100V	General purpose	
QL71N	1N914	£0.020		£0.018	£0.016	Si whiskerless	D035	100	75	<25nA @ 25V	Fast logic	
QL72P	1N916	£0.018		£0.017	£0.014	Si whiskerless	D035	100	75	<25nA @ 20V	Low capacitance 1N914	
QL80B	1N4148	£0.020		£0.019	£0.010	Si whiskerless	D035	100	75	<25nA @ 20V	Fast logic	

\*Sometimes supplied in SOD17 package.



**Table 12 Varicaps**

Order Code	Type No. and Manufacturer	Price each exc. VAT	Price each inc. VAT	Case Style	V <sub>R</sub> (max)	I <sub>F</sub> (typ)	Capacitance ratio	Capacitance at various voltages between (limits)	typical	typical
		25+ 100+ 500+	1+ 1000+							
YH83E	BB212 PC	£1.520 £1.400 £1.120	£3.49	TO92m	12V	50nA	>22.5 (V <sub>r</sub> =0.5V to 8V)	500 and 620pF	550pF @ 0.5V	50pF @ 5.5V
Matched pair of diodes, common cathode. For low voltage AM radios, LW, MW and SW bands										
VR23A	BB515	£0.204 £0.187 £0.149	£0.39	SOD123	30V	10nA	8	1.85 to 2.25pF @ V <sub>r</sub> =28V	16 to 19.5 @ 1V	
QY81C	MV2108 MOT	£0.486 £0.426 £0.340	£1.89	TO92j	30V		>2.5	24 and 30pF @ V <sub>r</sub> = 4V	27pF @ 4V	General purpose

**Table 13 Rectifier Diodes**

Order Code	Type No. and Manufacturer	Price each exc. VAT	Price each inc. VAT	Case Style	PIV V	I <sub>F</sub> (av) A	Max V <sub>F</sub> drop (V @ A)	Max I <sub>R</sub> (µA @ V)
		25+ 100+ 500+ 1000+ 2500+	1+ 10000+					
QF42V	BY127	£0.130 £0.100	£0.23	D015	1250	1	<1.1V @ 1A	<10µA @ 1250V
QL73Q	1N4001	£0.026	£0.08	D041	50	1	<1.1V @ 1A	<10µA @ 50V
QL74R	1N4002	£0.026	£0.08	D041	100	1	<1.1V @ 1A	<10µA @ 100V
QL75S	1N4003	£0.026	£0.08	D041	200	1	<1.1V @ 1A	<10µA @ 200V
QL76H	1N4004	£0.026	£0.08	D041	400	1	<1.1V @ 1A	<10µA @ 400V
QL77J	1N4005	£0.026	£0.08	D041	600	1	<1.1V @ 1A	<10µA @ 600V
QL78K	1N4006	£0.026	£0.08	D041	800	1	<1.1V @ 1A	<10µA @ 800V
QL79L	1N4007	£0.026	£0.08	D041	1000	1	<1.1V @ 1A	<10µA @ 1000V
QL81C	1N5400	£0.080	£0.16	D027	50	3	<1.1V @ 3A	<10µA @ 50V
QL82D	1N5401	£0.071	£0.22	D027	100	3	<1.1V @ 3A	<10µA @ 100V
QL83E	1N5402	£0.086	£0.22	D027	200	3	<1.1V @ 3A	<10µA @ 200V
QL84F	1N5404	£0.143	£0.22	D027	400	3	<1.1V @ 3A	<10µA @ 400V
QL85G	1N5406	£0.143	£0.22	D027	600	3	<1.1V @ 3A	<10µA @ 600V
QL86T	1N5407	£0.143	£0.22	D027	800	3	<1.1V @ 3A	<10µA @ 800V
QL87U	1N5408	£0.109	£0.22	D027	1000	3	<1.1V @ 3A	<10µA @ 1000V
YH96E	MR751	£0.880 £0.657 £0.570	£1.36	194	100	6	<1.1V @ 6A	<250µA @ 100V
YH97F	MR754	£0.727 £0.667 £0.570	£1.36	194	400	6	<1.1V @ 6A	<250µA @ 400V
UK59P	P600A FA	£0.300 £0.230 £0.190	£0.66	P6	50	6	<0.9V @ 6A	<25µA @ 50V
UK60Q	P600D FA	£0.300 £0.260 £0.190	£0.71	P6	200	6	<0.9V @ 6A	<25µA @ 200V
UK61R	P600J FA	£0.300 £0.260 £0.190	£0.80	P6	600	6	<0.9V @ 6A	<25µA @ 600V
AY26D	R250S	£0.327 £0.300	£0.49	250	800	6	<1.1V @ 6A	<10µA @ 800V

**Table 14 Fast Recovery Rectifier Diodes**

Order Code	Type No. and Manufacturer	Price each exc. VAT	Price each inc. VAT	Case Style	PIV V	I <sub>F</sub> (av) A	t <sub>rr</sub> ns	Max V <sub>F</sub> drop (V @ A)	Max I <sub>R</sub> (µA @ V)
		25+ 100+ 500+ 1000+	1+ 10000+						
VR24B	BAX12A	£0.073 £0.067 £0.053	£0.18	DO35	90	0.4	50	<1V @ 0.2A	<100nA @ 90V
VR20W	BYD33G	£0.084 £0.077 £0.061	£0.20	SOD-81	400	1.3	250nS	1.3V @ 1A	1µA @ 400
VR21X	BYV95A	£0.127 £0.117 £0.093	£0.54	SOD-57	200	1.5	250nS	1.6V @ 3A	2µA @ 200V
VR22Y	BYV96D	£0.156 £0.143 £0.115	£0.58	SOD-57	800	1.5	300nS	1.6V @ 3A	2µA @ 200V
UK65V	BYW98-150 ST	£0.313 £0.287 £0.229	£0.59	D027	150	3	<35	<0.85V @ 3A	<10µA @ 150V
AH56L	BYW80-100 ST	£0.631 £0.578 £0.463	£0.89	D0220	100	8	<35	<0.85V @ 7A	<10µA @ 100V
UK63T	BYW80-150 ST	£0.682 £0.625 £0.500	£0.99	D0220	150	8	<35	<0.85V @ 8A	<10µA @ 150V
AH57M	BYW80-200 ST	£0.727 £0.667 £0.533	£1.09	D0220	200	8	<35	<0.85V @ 7A	<10µA @ 200V
UL34M	BYW51-200 ST	£1.250 £1.150 £0.920	£1.79	D0220a	200	2 x 8	<35	<0.95V @ 8A	<5µA @ 200V

**Table 15 Schottky Rectifier Diodes**

Order Code	Type No. and Manufacturer	Price each exc. VAT	Price each inc. VAT	Case Style	PIV V	I <sub>F</sub> (av) A	Max V <sub>F</sub> drop (V @ A)	Max T <sub>J</sub> °C
		25+ 100+ 500+ 1000+	1+ 10000+					
VR19V	BAT43	£0.093 £0.085 £0.068	£0.14	DO35	30	100mA	1V @ 100mA	125
JA46A	1N5817	£0.049 £0.045 £0.039	£0.34	DO41	20	1	0.5V @ 1A	125
JA47B	1N5818	£0.049 £0.045 £0.039	£0.34	TS1	30	1	0.5V @ 1A	125
AN07H	1N5819	£0.054 £0.049 £0.039	£0.34	DO41	40	1	0.5V @ 1A	125
GX29G	1N5820	£0.536 £0.491	£0.393	TS1	20	3	0.525V @ 3A	125
JA49D	1N5821	£0.131 £0.121 £0.105	£0.53	TS1	30	3	0.525V @ 3A	125
GX30H	1N5822	£0.522 £0.478	£0.383	TS1	40	3	0.525V @ 3A	125
AL08J	1N5822	£0.143 £0.131 £0.105	£0.65	TS1	40	3	0.525V @ 3A	125
JA50E	SK820	£0.352 £0.325 £0.282	£1.16	D0220	20	8	0.65V @ 8A	150
AN10L	SK830	£0.384 £0.352 £0.282	£1.23	D0220	30	8	0.65V @ 8A	150
JA51F	SK840	£0.391 £0.361 £0.313	£1.32	D0220	40	8	0.65V @ 8A	150
JA52G	SK1020	£0.391 £0.361 £0.313	£1.29	D0220	20	10	0.65V @ 10A	150
JA53H	SK1030	£0.411 £0.379 £0.329	£1.42	D0220	30	10	0.65V @ 10A	150
AN72P	SK1040	£0.448 £0.411 £0.329	£1.52	D0220	40	10	0.65V @ 10A	150
GX32K	MBR1045	£1.190 £1.000	£0.800	D0220	45	10	0.57V @ 10A	150
GX33L	MBR1090	£1.960 £1.800	£1.440	D0220	90	10	0.57V @ 10A	150
GX34M	MBR1535CT	£1.260 £1.150	£0.925	D0220a	35	15	0.72V @ 15A	150
JA54J	SK1620	£0.430 £0.397 £0.344	£1.63	D0220a	20	16	0.65V @ 16A	150
JA55K	SK1630	£0.450 £0.415 £0.360	£1.76	D0220a	30	16	0.65V @ 16A	150
AN73Q	SK1640	£0.512 £0.469 £0.375	£1.96	D0220a	40	16	0.65V @ 16A	150
JA56L	SK2020	£0.626 £0.578 £0.501	£2.10	D0220a	20	20	0.65V @ 20A	150
JA57M	SK2030	£0.646 £0.596 £0.516	£2.22	D0220a	30	20	0.65V @ 20	150
AE82D	SK2040	£0.798 £0.665 £0.499	£2.69	D0220a	40	20	0.65V @ 20	150
GX35Q	MBR2045CT	£1.080 £1.000	£0.867	D0220a	45	20	0.72V @ 20A	150
GX36P	MBR2080CT	£2.550 £2.350	£2.040	D0220a	80	20	0.72V @ 30A	150
JA58N	SK3020	£0.665 £0.614 £0.532	£2.53	340F	20	30	0.5V @ 30	150
JA59P	SK3030	£1.030 £0.820 £0.590	£2.53	340F	30	30	0.5V @ 30	150
AF91Y	SK3040	£2.040 £1.690 £1.540	£2.98	340F	40	30	0.5V @ 30A	150
GX38R	MBR3045PT	£2.560 £2.360	£2.050	340E	45	30	0.72V @ 30A	150

**Table 16 Ultra-Fast Recovery Rectifiers**

Order Code	Type No. and Manufacturer		Price Each exc. VAT			Price each inc. VAT	Case Style	PIV V	I <sub>F</sub> (av) A	t recovery nanoseconds	Max T <sub>J</sub> °C
			25+	100+	500+						
GX40T	MUR120	MOT	£0.431	£0.373	£0.350	£0.81	D041	200	1	>25	175
GX41U	MUR420	MOT	£0.631	£0.547	£0.510	£1.25	TS1	200	4	>25	175
GX43W	MUR1615CT	MOT	£1.090	£0.946	£0.890	£1.67	D0220a	150	16	35	175

**Table 17 Bridge Rectifiers**

Order Code	Type No. and Manufacturer		Price each exc. VAT				Case Style	PIV V	I <sub>F</sub> (av) A	Max rms input volts (V)	Max capacitance load (µF)	Max V <sub>F</sub> per diode	Max reverse current @ PIV per diode
			25+	100+	500+	1+							
AQ94C	W005		£0.085	£0.078	£0.067	£0.47	B2	50	1.5	35	5000µF	1.1V @ 1A	10
AQ95D	W01		£0.089	£0.082	£0.070	£0.47	B2	100	1.5	70	2500µF	1.1V @ 1A	10
AQ96E	W02		£0.094	£0.086	£0.074	£0.49	B2	200	1.5	140	1250µF	1.1V @ 1A	10
AQ97F	W04		£0.098	£0.090	£0.077	£0.54	B2	400	1.5	280	625µF	1.1V @ 1A	10
AQ98G	S005		£0.134	£0.123	£0.105	£0.71	B3	50	2	35	5000µF	1.1V @ 1A	10
AQ99H	S04		£0.139	£0.127	£0.109	£0.82	B3	400	2	280	625µF	1.1V @ 1A	10
AR80B	PW01		£0.291	£0.267	£0.229	£1.51	B4	100	6	70	5000µF	1.3V @ 3A	10
AR81C	PW06		£0.304	£0.279	£0.239	£1.74	B4	600	6	420	800µF	1.3V @ 3A	10
AR82D	J005		£0.739	£0.677	£0.580	£2.69	B5	50	10	35		1.1V @ 5A	10
AR83E	J02		£0.739	£0.677	£0.580	£2.93	B5	200	10	140		1.1V @ 5A	10
BH46A	J04		£1.960	£1.700	£1.590	£3.19	B5	400	10	280		1.1V @ 5A	10
AR84F	K01		£0.829	£0.760	£0.651	£3.49	B5	100	25	70		1.2V @ 12.5A	10
AR85G	K04		£0.873	£0.801	£0.686	£4.53	B5	400	25	280		1.2V @ 12.5A	10
AR86T	KBPC3501		£0.918	£0.842	£0.721	£4.93	B5	100	35	70		1.2V @ 17.5A	10
AR87U	KBPC3504		£0.963	£0.883	£0.757	£5.00	B5	400	35	280		1.2V @ 17.5A	10

**Table 18 Zener Diodes**

BZY88C/BZX55C					BZX61C/BZX85C (ZPY100)					5W Zener											
Selection tolerance: ±5%					Selection tolerance: ±5%					Selection tolerance: ±5%											
Max dissipation: 500mW					Max dissipation: 1.3W					Max dissipation: 5W											
Case style: D035					Case style: D035 (ZPY100:D041)					Case style: ZD1											
Order Code	Manu- facturer	Volts V	Price each		Price each inc. VAT	Order Code	Manu- facturer	Volts V	Price each			Order Code	Type No. and Manufacturer	Volts V	Price each						
			exc. VAT	inc. VAT					exc. VAT	1000+	2500+				1+	exc. VAT	100+	500+	1+		
			25+	100+	500+	1+			25+	100+	2500+	1+			25+	100+	500+	1+			
QH00A	TFK	2.7	£0.027	£0.020	£0.018	£0.10	QF45Y	TFK	4.7V	£0.050	£0.040	£0.035	£0.14	AY65V	1N5338B	MOT	5.1	£0.395	£0.330	£0.240	£0.62
QH01B	TFK	3.0	£0.027	£0.020	£0.018	£0.10	QF46A	TFK	5.1V	£0.050	£0.040	£0.035	£0.14	QX35Q	1N5339B	ST	5.6	£0.395	£0.330	£0.240	£0.62
QH02C	TFK	3.3	£0.027	£0.020	£0.018	£0.10	QF47B	TFK	5.6V	£0.050	£0.040	£0.035	£0.14	AY66W	1N5341B	MOR	6.2	£0.395	£0.330	£0.240	£0.62
QH03D	TFK	3.6	£0.027	£0.020	£0.018	£0.10	QF48C	TFK	6.2V	£0.050	£0.040	£0.035	£0.14	AY67X	1N5342B	MOT	6.8	£0.395	£0.330	£0.240	£0.62
QH04E	TFK	3.9	£0.027	£0.020	£0.018	£0.10	QF49D	TFK	6.8V	£0.050	£0.040	£0.035	£0.14	AY69A	1N5347B	MOT	10	£0.395	£0.330	£0.240	£0.62
QH05F	TFK	4.3	£0.027	£0.020	£0.018	£0.10	QF50E	TFK	7.5V	£0.050	£0.040	£0.035	£0.14	AY70M	1N5348B	MOT	11	£0.395	£0.330	£0.240	£0.62
QH06G	TFK	4.7	£0.027	£0.020	£0.018	£0.10	QF51F	TFK	8.2V	£0.050	£0.040	£0.035	£0.14	AY71N	1N5349B	MOT	12	£0.395	£0.330	£0.240	£0.62
QH07H	TFK	5.1	£0.027	£0.020	£0.018	£0.10	QF52G	TFK	9.1V	£0.050	£0.040	£0.035	£0.14	AY72P	1N5352B	MOT	15	£0.395	£0.330	£0.240	£0.62
QH08J	TFK	5.6	£0.027	£0.020	£0.018	£0.10	QF53H	TFK	10.0V	£0.050	£0.040	£0.035	£0.14	AY74R	1N5357B	MOT	20	£0.395	£0.330	£0.240	£0.62
QH09K	TFK	6.2	£0.027	£0.020	£0.018	£0.10	QF54J	TFK	11.0V	£0.050	£0.040	£0.035	£0.14	AY80B	1N5365B	MOT	36	£0.395	£0.330	£0.240	£0.62
QH10L	TFK	6.8	£0.027	£0.020	£0.018	£0.10	QF55K	TFK	12.0V	£0.050	£0.040	£0.035	£0.14	AY85G	1N5378B	MOT	100	£0.395	£0.330	£0.240	£0.62
QH11M	TFK	7.5	£0.027	£0.020	£0.018	£0.10	QF56L	TFK	13.0V	£0.050	£0.040	£0.035	£0.14	AY87U	1N5386B	MOT	180	£0.395	£0.330	£0.240	£0.62
QH12N	TFK	8.2	£0.027	£0.020	£0.018	£0.10	QF57M	TFK	15.0V	£0.050	£0.040	£0.035	£0.14	AY88V	1N5388B	MOT	200	£0.395	£0.330	£0.240	£0.62
QH13P	TFK	9.1	£0.027	£0.020	£0.018	£0.10	QF58N	TFK	16.0V	£0.050	£0.040	£0.035	£0.14								
QH14Q	TFK	10.0	£0.027	£0.020	£0.018	£0.10	QF59P	TFK	18.0V	£0.050	£0.040	£0.035	£0.14								
QH15R	TFK	11.0	£0.027	£0.020	£0.018	£0.10	QF60Q	TFK	20.0V	£0.050	£0.040	£0.035	£0.14								
QH16S	TFK	12.0	£0.027	£0.020	£0.018	£0.10	QF61R	TFK	22.0V	£0.050	£0.040	£0.035	£0.14								
QH17T	TFK	13.0	£0.027	£0.020	£0.018	£0.10	QF62S	TFK	24.0V	£0.050	£0.040	£0.035	£0.14								
QH18U	TFK	15.0	£0.027	£0.020	£0.018	£0.10	QF63T	TFK	27.0V	£0.050	£0.040	£0.035	£0.14								
QH19V	TFK	16.0	£0.027	£0.025	£0.023	£0.10	QF64U	TFK	30.0V	£0.050	£0.040	£0.035	£0.14								
QH20W	TFK	18.0	£0.027	£0.025	£0.019	£0.10	QF65V	TFK	33.0V	£0.050	£0.040	£0.035	£0.14								
QH21X	TFK	20.0	£0.027	£0.025	£0.019	£0.10	QF66W	TFK	36.0V	£0.050	£0.040	£0.035	£0.14								
QH23A	TFK	24.0	£0.027	£0.025	£0.019	£0.10	QF67X	TFK	39.0V	£0.050	£0.040	£0.035	£0.14								
QH24B	TFK	27.0	£0.027	£0.025	£0.019	£0.10	QF68Y	TFK	43.0V	£0.080	£0.060	£0.055	£0.15								
QH25C	TFK	30.0	£0.027	£0.025	£0.019	£0.10	QF69A	TFK	47.0V	£0.080	£0.060	£0.055	£0.15								
							QF70M	TFK	51.0V	£0.080	£0.060	£0.055	£0.15								
							QF71N	TFK	56.0V	£0.080	£0.060	£0.055	£0.15								
							QF72P	TFK	62.0V	£0.080	£0.060	£0.055	£0.15								
							QF73Q	TFK	68.0V	£0.080	£0.060	£0.055	£0.15								
							QF74R	TFK	75.0V	£0.080	£0.060	£0.055	£0.15								
							UH69W	TFK	100V	£0.150	£0.135	£0.130	£0.24								

The abbreviations under the heading 'Type No. and Manufacturer' are identified as follows:

FA-Fagor      GI-General Instruments      HIT-Hitachi      ME-Microelectronics      MOT-Motorola      NEC-NEC      NSC-National Semiconductor      PC-Philips  
 SEM-Semelab      SIE-Siemens      SLX-Siliconix      ST-SGS-Thomson      TAG-TAG      TFK-Telefunken      TI-Texas Instruments      ZET-Zetex

**Table 19 Transient Voltage Suppressors**

Order Code	Type No. and P Manufacturer			Price each exc. VAT			Case Style	V <sub>R</sub> V	V <sub>BR</sub> (min) V	V <sub>BR</sub> (max) V	Clamping Voltage (max) V	Peak Pulse Current (max) A	
				25+	100+	500+							Price each inc. VAT 1+
CP77J	P6KE6.8	ST		£0.400	£0.350	£0.290	£0.75	TS7	5.8	6.45	7.48	10.5	57
CP78K	P6KE15	ST		£0.400	£0.350	£0.290	£0.75	TS7	12.8	14.3	16.5	21.2	28
CP79L	1.5KE6.8	ST		£0.640	£0.533	£0.457	£1.66	TS1	5.8	6.45	7.48	10.5	143
CP81C	1.5KE18	ST		£0.606	£0.505	£0.433	£1.66	TS1	15.3	17.1	19.8	25.2	59.5

P6KE types are rated at 600W peak pulse power, while 1.5KE types are rated at 1500W peak pulse power. All types are unidirectional and should be connected with the band on the body to positive; choose the type with VR equal to or above the voltage in the circuit. Clamping voltage is maximum voltage at maximum peak pulse current and this and peak pulse power is for a current waveform where the peak is reached in 10µs and has decayed to 50% of its peak value in 1ms. Devices may be connected in series to increase the voltage and in parallel to increase the peak pulse handling.

**Table 20 Thyristors (Silicon Controlled Rectifiers)**

Order Code	Type No. and P Manufacturer			Price each exc. VAT			Case Style	PIV V	I <sub>T</sub> (rms) A	I <sub>T</sub> (av) A	V <sub>GT</sub> (max) V	I <sub>GT</sub> (max) mA	I <sub>H</sub> (max) mA	
				25+	100+	500								Price each inc. VAT 1+
UR24B	CF106M	TI		£0.712	£0.517	£0.484	£1.27	P1a	600	5	3.2	1	0.2	5 Fully isolated package
UM74R	CP106D	TI		£0.390	£0.325	£0.279	£0.82	TO92t	400	2	1.25	1	0.2	5
UM75S	CP106M	TI		£0.397	£0.288	£0.270	£0.82	TO92t	600	2	1.25	1	0.2	5
QH30H	C106D	TI		£0.451	£0.376	£0.322	£0.91	P1a	400	5	3.2	1	0.2	5
UM76H	C106M	TI		£0.566	£0.411	£0.385	£1.17	P1a	600	5	3.2	1	0.2	5
WQ23A	C126D	TI		£0.614	£0.567	£0.530	£1.23	P1a	400	12	7.5	1.5	20	40
UM77J	C126M	TI		£0.848	£0.616	£0.576	£1.48	P1a	600	12	7.5	1.5	20	40
UR42V	2N6399	SEM		£0.848	£0.750	£0.690	£1.29	P1a	800	12	7.5	1.5	30	40
AH00A	X0203NA	ST		£0.325	£0.300	£0.260	£0.60	TO92w	800	1.25	0.8	0.8	200µA	5
AH01B	X0405ME	ST		£0.458	£0.423	£0.367	£0.71	TO202t	600	4	2.5	0.8	50µA	5
AH02C	X0405MF	ST		£0.428	£0.395	£0.343	£0.77	TO202u	600	4	1.4	0.8	50µA	5
AH03D	S0602MH	SY		£0.633	£0.585	£0.507	£1.04	TO220	600	6	3.8	1.5	200µA	10
AH04E	S2516MH	ST		£0.983	£0.908	£0.787	£1.59	TO220	600	25	16	1.5	50	50

Note: In most cases, a thyristor having a higher PIV than the one specified can be used. Many thyristors use a suffix letter to indicate the PIV and the international standard is as follows:  
Note: A = 100V; B = 200V; C = 300V; D = 400V; E = 500V; F = 50V; M = 600V; N = 800V; P = 1000V; S = 700V; Y = 30V.

**Table 21 Triacs (Bi-directional Silicon Controlled Rectifiers)**

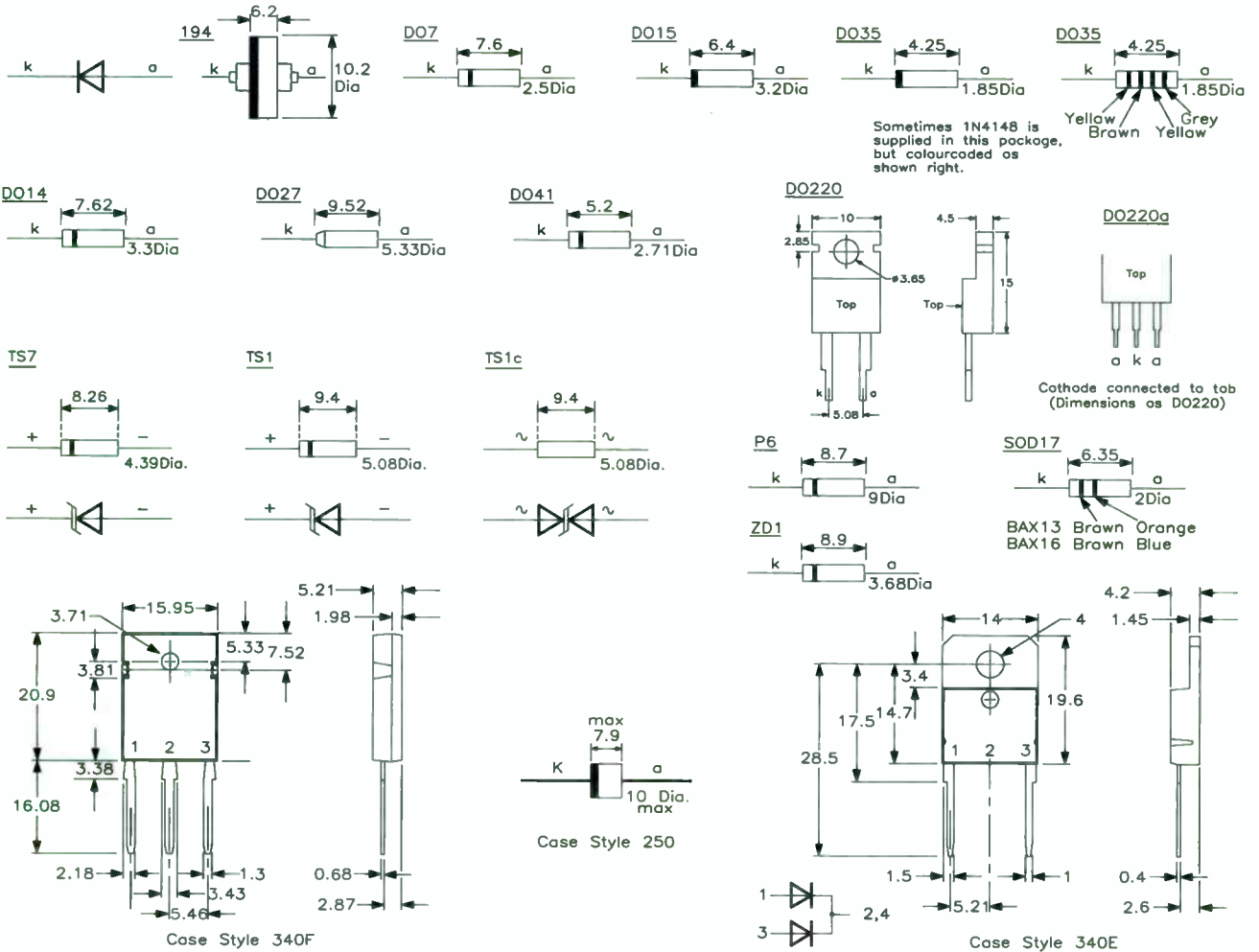
Order Code	Type No. and P Manufacturer			Price each exc. VAT			Case Style	PIV V	I <sub>T</sub> (rms) A	V <sub>GT</sub> (max) V	I <sub>GT</sub> (max) mA	I <sub>H</sub> (max) mA	
				25+	100+	500+							Price each inc. VAT 1+
UK54J	BTA08-600B	ST		£0.820	£0.683	£0.586	£1.49	P2	600	8	1.5	50	50
UK55K	BTA16-600B	ST		£0.700	£0.583	£0.500	£2.73	P2	600	16	1.5	50	50
UK56L	BTA26-600B	ST		£3.050	£2.540	£2.180	£3.90	P3t	600	25	1.5	50	80
UR34M	CF206D	TI		£0.760	£0.500	£0.490	£1.19	P2	400	4	2	5	15
UR38R	CF246D	TI		£1.060	£0.880	£0.790	£1.66	P2	400	16	2	50	40
UR39N	CF246M	TI		£1.190	£0.880	£0.790	£2.05	P2	600	16	2	50	40
UR25C	CP206D	TI		£0.451	£0.327	£0.306	£0.84	TO92r	400	1.5	2.5	8	30
UR26D	CP206M	TI		£0.498	£0.362	£0.338	£0.90	TO92r	600	1.5	2.5	8	30
WQ24B	C206D	TI		£0.462	£0.426	£0.390	£0.86	P2	400	4	2	5	15
UR27E	C206M	TI		£0.637	£0.462	£0.433	£1.22	P2	600	4	2	5	15
UR28F	C225D	TI		£0.679	£0.493	£0.462	£1.32	P2	400	8	2	20	20
WQ25C	C226D	TI		£0.597	£0.480	£0.450	£0.99	P2	400	8	2	50	30
UR30H	C226M	TI		£0.686	£0.460	£0.450	£1.26	P2	600	8	2	50	30
QL14Q	C246D	TI		£1.110	£0.931	£0.798	£1.94	P2	400	16	2	50	40
UR31J	C246M	TI		£1.090	£0.795	£0.730	£2.30	P2	600	16	2	50	40
UR33L	C263M	TI		£2.600	£1.840	£1.690	£4.99	P3t	600	25	2	50	40
VR26D	MAC9D	MOT		£0.550	£0.470	£0.440	£0.85	TO220t	400	8	1.5	50	50
VR27E	MAC9M	MOT		£0.817	£0.710	£0.680	£1.16	TO220t	600	8	1.5	50	50
VR28F	MAC9N	MOT		£0.700	£0.646	£0.610	£1.43	TO220t	600	8	1.5	50	50
AH05F	T0606ME	ST		£0.667	£0.615	£0.533	£1.21	TO202t	600	6	1.5	5	5
AH09K	T0606MJ	ST		£0.767	£0.708	£0.613	£1.26	TO220	600	6	1.5	5	5
AH10L	T1006MJ	ST		£0.883	£0.815	£0.707	£1.32	TO220	600	10	1.5	5	5
AH07H	T1616MH	ST		£1.220	£1.130	£0.983	£1.81	TO220	600	16	1.5	50	50
AH08J	T2516MH	ST		£1.250	£1.150	£1.000	£2.09	TO220	600	25	1.5	50	50
AH63T	T405600D	ST		£0.388	£0.358	£0.311	£0.75	SOT82	600	4	1.5	.5	-
AH64U	T405600T	ST		£0.425	£0.392	£0.340	£0.75	TO220t	600	4	1.5	.5	-
AH65V	T410600D	ST		£0.378	£0.349	£0.303	£0.75	SOT82	600	4	1.5	10	15
AH66W	T410600T	ST		£0.390	£0.330	£0.320	£0.76	TO220t	600	4	1.5	10	15
AH67X	T410800D	ST		£0.390	£0.370	£0.290	£0.75	SOT82	800	4	1.5	10	15
AH68Y	T410800T	ST		£0.390	£0.330	£0.290	£0.75	TO220t	800	4	1.5	10	15
AH11M	Z0105MA	TAG		£0.233	£0.215	£0.187	£0.57	TO92U	600	0.8	2	5	5
AH12N	Z0405MF	TAG		£0.400	£0.369	£0.320	£0.68	TO202V	600	4	2	5	5

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Table 22 Diacs

Order Code	Type No. and Manufacturer	Price each exc. VAT			Price each inc. VAT	Style	Case (V)	V <sub>BO</sub> (V)	P <sub>BOH</sub> (mW)	P <sub>TOT</sub> (A)	I <sub>TRM</sub> (mA)	I <sub>BO</sub>
		25+	100+	500+								
QL08J	DB3/ST2 ST	£0.120	£0.110	£0.100	£0.25	DO7/DO14	32	3	150	2		200

## Diode Cases





## 74 Series

## LOGIC LISTING

Device	Type	Pinout	Man.	Order Code	Price each exc. VAT			Device	Type	Pinout	Man.	Order Code	Price each exc. VAT			Price each inc. VAT	
					10+	25+	100+						500+	10+	25+		100+
SN7400N	Quad 2-Input NAND	14-pin DIL	QX37S	£0.550		£0.390	£0.330	£1.19	M74HCT164B1R	8-Bit Shift Register	14-pin DIL	AE25C		£0.440	£0.400	POA	£0.68
M74HC00M1R	Quad 2-Input Schmitt NAND SMD	14-pin DIL	AE40T	£0.170		£0.141	£0.121	£0.39	SN74HC164N	8-Bit Shift Register	14-pin DIL	UB43W		£0.520	£0.280	POA	£1.19
SN74HC00N	Quad 2-Input NAND Gate	14-pin DIL	UB00A	£0.220		£0.190	£0.160	£0.59	M74HC164M1R	8-Bit Shift Register SMD	14-pin DIL	YF67X		£0.550	£0.360	POA	£0.89
M74HCT00B1R	Quad 2-Input NAND	14-pin DIL	AE20W	£0.167		£0.139	£0.119	£0.38	M74HC164M1R	8-Bit Shift Register SMD	14-pin DIL	AE49D		£0.370	£0.320	POA	£0.52
M74HCT00M1R	Quad 2-Input Schmitt NAND SMD	14-pin DIL	AE83E	£0.260		£0.233	£0.200	£0.42	M74HC175M1R	Quad D-Type Flip-Flop SMD	16-pin DIL	AE88V		£0.370	£0.320	POA	£0.52
SN74LS00N	Quad 2-Input NAND Gate	14-pin DIL	YF00A	£0.228		£0.175	£0.163	£0.38	M74HC175N	Quad D-Type Flip-Flop	16-pin DIL	UB45Y		£0.470	£0.250	POA	£0.79
SN7402N	Quad 2-Input NOR Gate	14-pin DIL	QX39N	£0.426		£0.355	£0.304	£0.90	SN74LS175N	Quad D-Type Flip-Flop	16-pin DIL	YF75S		£0.470	£0.330	POA	£0.79
SN74HC02N	Quad 2-Input NOR Gate	14-pin DIL	UB01B	£0.220		£0.190	£0.160	£0.59	M74HC221M1R	Dual Monostable Multivibrator	16-pin DIL	AE50E		£0.370	£0.320	POA	£0.52
SN74LS02N	Quad 2-Input NOR Gate	14-pin DIL	YF02C	£0.228		£0.175	£0.163	£0.40	SN74HC193N	Binary Dual Clock Counter	14-pin DIL	UB49D		£0.750	£0.620	POA	£1.29
M74HC02M1R	Quad 2-Input NOR SMD	14-pin DIL	AE41U	£0.260		£0.233	£0.200	£0.39	SN74LS193N	Binary Dual Clock Counter	14-pin DIL	YF81C		£0.530	£0.350	POA	£0.84
M74HC02B1R	Quad 2-Input NOR	14-pin DIL	AE21X	£0.250		£0.233	£0.200	£0.38	M74HC193M1R	4-Bit Bin/Oct Counter SMD	14-pin DIL	AE51F		£0.420	£0.365	POA	£0.61
M74HCT02M1R	Quad 2-Input NOR SMD	14-pin DIL	AE84F	£0.260		£0.233	£0.200	£0.39	M74HC221B1N	Dual Monostable Multivibrator	16-pin DIL	UB52G		£0.590	£0.390	POA	£0.99
SN74LS03N	7400 with Open Collectors	14-pin DIL	YF03D	£0.363		£0.280	£0.260	£0.53	M74HC221M1R	Multivibrator SMD	16-pin DIL	AE52G		£0.460	£0.420	POA	£0.70
SN7404N	Hex Inverter	14-pin DIL	QX40T	£0.420		£0.350	£0.300	£0.90	SN74LS221N	Dual Monostable Multivibrator	16-pin DIL	YF82T		£0.580	£0.380	POA	£0.92
SN74HC04N	Hex Inverter	14-pin DIL	UB03D	£0.220		£0.190	£0.160	£0.59	SN74LS240N	Octal Buffer	20-pin DIL	YF87U		£0.520	£0.340	POA	£0.89
SN74HC0404N	Hex Inverter	14-pin DIL	UB04E	£0.220		£0.190	£0.160	£0.59	SN74HC241N	Octal Buffer	20-pin DIL	UB59P		£0.850	£0.540	POA	£1.39
SN74LS04N	Hex Inverter	14-pin DIL	YF04E	£0.228		£0.175	£0.163	£0.40	M74HC241M1R	Octal Buffer SMD	20-pin DIL	AE76H		£0.490	£0.425	POA	£0.70
M74HC04M1R	Inverting Hex Buffer SMD	14-pin DIL	AE42V	£0.260		£0.233	£0.200	£0.39	SN74LS244N	Octal Buffer	20-pin DIL	QO56L		£0.560	£0.370	POA	£0.89
M74HCT04B1R	Inverting Hex Buffer	14-pin DIL	AE22Y	£0.183		£0.153	£0.131	£0.38	M74HC244M1R	Octal Buffer SMD	20-pin DIL	AE53H		£0.490	£0.425	POA	£0.70
M74HC04M1R	Inverting Hex Buffer SMD	14-pin DIL	AE85G	£0.280		£0.233	£0.200	£0.39	M74HCT244B1R	Octal Buffer	20-pin DIL	AE26D		£0.575	£0.525	POA	£0.85
SN74LS05N	Hex Inverter Open Collector	14-pin DIL	YF05F	£0.228		£0.175	£0.163	£0.34	M74HCT244M1R	Octal Buffer SMD	20-pin DIL	AE89W		£0.490	£0.425	POA	£0.70
SN7406N	Hex Inverter Open Collector	14-pin DIL	QX75S	£0.420		£0.350	£0.300	£0.90	SN74HC244N	Octal Buffer	20-pin DIL	UB65V		£0.570	£0.350	POA	£0.99
SN7407N	Hex Buffer	14-pin DIL	QX76H	£0.421		£0.314	£0.290	£0.99	SN74HC245N	Octal Bus Transceiver	20-pin DIL	UB67X		£0.600	£0.320	POA	£1.19
SN7408N	Quad 2-Input AND Gate	14-pin DIL	QX42V	£0.578		£0.482	£0.413	£0.90	SN74HC245N	Octal Bus Transceiver	20-pin DIL	YF68Y		£0.650	£0.320	POA	£1.29
SN74HC08N	Quad 2-Input AND Gate	14-pin DIL	UB06G	£0.220		£0.190	£0.160	£0.59	M74HC245M1R	Bus Transceiver SMD	20-pin DIL	AE54J		£0.490	£0.425	POA	£0.70
SN74LS08N	Quad 2-Input AND Gate	14-pin DIL	YF06G	£0.228		£0.175	£0.163	£0.34	M74HCT245M1R	HCT Logic SMD	20-pin DIL	AE90X		£0.710	£0.645	POA	£1.12
M74HC08M1R	Quad 2-Input NAND SMD	14-pin DIL	AE43W	£0.260		£0.233	£0.200	£0.39	SN74LS245N	Octal Bus Transceiver	20-pin DIL	YF91Y		£0.550	£0.360	POA	£0.89
M74HCT08B1R	Quad 2-Input AND	14-pin DIL	AE23A	£0.234		£0.195	£0.167	£0.38	SN74LS259N	8-Bit Addressable Latch	16-pin DIL	YF97F		£0.680	£0.460	POA	£1.05
M74HC08M1R	Quad 2-Input NAND SMD	14-pin DIL	AE86T	£0.260		£0.233	£0.200	£0.39	T74LS260B1N	Dual 5-Input NOR Gate	14-pin DIL	OY58P		£0.270	£0.190	POA	£0.59
SN74LS10N	Triple 3-Input NAND Gate	14-pin DIL	YF08J	£0.228		£0.175	£0.163	£0.34	SN74HC266N	Quad 2-Input Exclusive-NOR Gate	14-pin DIL	UB71N		£1.200	£1.050	POA	£1.99
SN74LS11N	Triple 3-Input AND Gate	14-pin DIL	YF09K	£0.228		£0.175	£0.163	£0.34	SN74LS273N	Octal D-Type Flip-Flop	20-pin DIL	YH00A		£0.530	£0.350	POA	£0.84
SN7414N	Hex Schmitt Trigger Inverter	14-pin DIL	QX46A		£1.190	£0.990	£0.850	£1.90	T74HC273AP	Octal D-Type Flip-Flop	20-pin DIL	YF82P		£0.570	£0.500	POA	£0.99
M74HC14N	Hex Schmitt Trigger Inverter	14-pin DIL	UB10L	£0.220		£0.190	£0.160	£0.69	M74HC273M1R	Octal D-Type Flip-Flop SMD	20-pin DIL	AE55K		£0.490	£0.425	POA	£0.70
SN74LS14N	Hex Schmitt Trigger Inverter	14-pin DIL	YF12N	£0.228		£0.190	£0.163	£0.34	SN74LS279N	Quad SR Latch	16-pin DIL	YH01B		£0.500	£0.330	POA	£0.79
M74HC14M1R	Hex Inverter SMD	14-pin DIL	AE46A	£0.260		£0.250	£0.240	£0.39	SN74LS283N	4-Bit Binary Full Adder	16-pin DIL	YH02C		£0.550	£0.360	POA	£0.89
SN74LS20N	Dual 4-Input NAND Gate	14-pin DIL	YF14Q	£0.368		£0.307	£0.263	£0.56	SN74LS365N	Non-Inverting Hex Buffer	16-pin DIL	YH11M		£0.580	£0.380	POA	£0.92
SN74LS21N	Dual 4-Input AND Gate	14-pin DIL	YF15R	£0.368		£0.307	£0.263	£0.60	SN74HC373N	Octal D-Type Latch	20-pin DIL	UB80B		£0.570	£0.310	POA	£1.19
SN74HC27N	Triple 3-Input NOR Gate	14-pin DIL	UB13P	£0.428		£0.357	£0.306	£0.75	SN74HC373N	Octal D-Type Latch	20-pin DIL	UB81C		£0.570	£0.310	POA	£1.19
SN74LS27N	Triple 3-Input NOR Gate	14-pin DIL	YF18U	£0.343		£0.286	£0.245	£0.56	SN74LS373N	Octal D-Type Latch	20-pin DIL	YH15F		£0.510	£0.330	POA	£0.79
SN74LS30N	8-Input NAND Gate	14-pin DIL	YF20W	£0.219		£0.183	£0.157	£0.36	M74HC373M1R	Octal D-Type Latch SMD	20-pin DIL	AE57M		£0.490	£0.425	POA	£0.70
SN74HC32N	Quad 2-Input OR Gate	14-pin DIL	UB15R	£0.228		£0.190	£0.163	£0.51	M74HCT373M1R	Octal D-Type Latch SMD	20-pin DIL	AE92A		£0.490	£0.425	POA	£0.70
SN74LS32N	Quad 2-Input OR Gate	14-pin DIL	YF21X	£0.228		£0.190	£0.163	£0.36	SN74HC374N	Octal D-Type Flip-Flop	20-pin DIL	UB82D		£0.570	£0.310	POA	£1.19
M74HC32M1R	Quad 2-Input OR SMD	14-pin DIL	AE56L	£0.260		£0.233	£0.200	£0.39	M74HCT374B1R	Octal D-Type Latch	20-pin DIL	AE26F		£0.590	£0.535	POA	£0.90
M74HC32B1R	Quad 2-Input OR Gate	14-pin DIL	AE27E	£0.260		£0.233	£0.200	£0.38	T74LS374B1N	Octal D-Type Flip-Flop	20-pin DIL	YH16S		£0.510	£0.330	POA	£0.79
M74HCT32M1R	Quad 2-Input OR SMD	14-pin DIL	AE91Y		£0.255	£0.233	£0.187	£0.41	M74HC374M1R	Octal D-Type Flip-Flop SMD	20-pin DIL	AE58N		£0.490	£0.425	POA	£0.70
SN7447AN	BCD to 7-Segment Decoder 15V	16-pin DIL	QX55K		£1.190	£0.990	£0.850	£1.90	M74HCT374M1R	Octal D-Type Flip-Flop SMD	20-pin DIL	AE93B		£0.490	£0.425	POA	£0.70
SN74LS47N	BCD to 7-Segment Decoder 15V	16-pin DIL	QO52G	£0.690		£0.490	£0.480	£1.35	M74HC390N	Dual Decade Counter	16-pin DIL	UB90N		£0.860	£0.560	POA	£1.29
MC74LS48P	BCD to 7-Seg. Decoder Driver	14-pin DIL	QO53H	£0.590		£0.290	£0.270	£1.46	M74HC390M1R	Dec/Doz Counter SMD	16-pin DIL	AE59P		£0.420	£0.365	POA	£0.61
SN74LS573N	Dual J-K Flip-Flop	14-pin DIL	YF30H	£0.875		£0.729	£0.625	£1.39	SN74HC393N	Dual 4-Bit Binary Counter	16-pin DIL	UB85G		£0.570	£0.310	POA	£1.19
SN7474N	Dual D-Type Flip-Flop	14-pin DIL	QX59P	£0.527		£0.439	£0.376	£0.90	SN74LS393N	Dual 4-Bit Binary Counter	14-pin DIL	YH22Y		£0.520	£0.350	POA	£0.89
SN74HC74N	Dual D-Type Flip-Flop	14-pin DIL	UB19V	£0.258		£0.215	£0.184	£0.59	SN74HC393M1R	4-Bit Bin/Oct Counter SMD	16-pin DIL	AE60Q		£0.420	£0.365	POA	£0.61
M74HCT74M1R	Dual D-Type Flip-Flop SMD	14-pin DIL	AE71N	£0.290		£0.260	£0.250	£0.42	M74HCT533N	Octal D-Type Latch	20-pin DIL	UB88V		£0.830	£0.510	POA	£1.99
SN74LS74N	Dual D-Type Flip-Flop	14-pin DIL	YF31J	£0.258		£0.215	£0.184	£0.44	SN74HC541N	Octal Buffer	20-pin DIL	UB93B		£0.770	£0.460	POA	£1.79
M74HCT74B1R	HCT Logic	14-pin DIL	AE31J	£0.310		£0.300	£0.257	£0.45	SN74HCT541N	Octal Buffer	20-pin DIL	UB94C		£0.750	£0.410	POA	£1.49
M74HCT74M1R	Dual D-Type Flip-Flop SMD	14-pin DIL	AE97F		£0.290	£0.260	POA	£0.44	M74HCT541M1R	Octal Buffer SMD	20-pin DIL	AE94C		£0.490	£0.425	POA	£0.70
SN7476N	Dual J-K Flip-Flop	16-pin DIL	QX61R	£0.610		£1.340	£1.120	£0.960	M74HC541M1R	Octal Buffer SMD	20-pin DIL	AE80B		£0.490	£0.425	POA	£0.70
SN74LS76N	Dual J-K Flip-Flop	16-pin DIL	YF33L	£0.690		£0.490	£0.320	£1.89	M74HC573M1R	Octal D-Type Latch SMD	20-pin DIL	AE69A		£0.490	£0.425	POA	£0.70
SN74LS83N	see SN74LS283	14-pin DIL							M74HCT573B1R	Octal D-Type Latch	20-pin DIL	AE29G		£0.610	£0.545	POA	£0.94
SN74LS85N	4-Bit Magnitude Comparator	16-pin DIL	YF35Q	£0.340		£0.283	£0.243	£0.89	M74HCT573M1R	Octal D-Type Latch SMD	20-pin DIL	AE95D		£0.490	£0.425	POA	£0.70
SN74HC86N	Quad 2-Input Exclusive-OR Gate																

## 4000 Series

Device	Type	Pinout	Man.	Order Code	Price each exc. VAT				Price each inc. VAT 1+
					10+	25+	100+	500+	
HCF4001BEY	Quad 2-Input NOR Gate	14-pin DIL	QX01B	£0.160		£0.123	£0.114	£0.54	
HCF4001BM1	Quad 2-Input NOR Gate SMD	14-pin DIL	AB33L	£0.173		£0.133	£0.123	£0.49	
MC14001UBCP	Quad 2-Input NOR Gate Unbuffered	14-pin DIL	QL03D	£0.243		£0.187	£0.173	£0.64	
HCF4002BEY	Dual 4-Input NOR Gate	14-pin DIL	QX02C	£0.168		£0.129	£0.120	£0.66	
HCF4006BEY	18-Bit Shift Register	14-pin DIL	QX03D	£0.290		£0.223	£0.207	£1.51	
HCF4007UBEY	Complementary Pair Plus Inverter	14-pin DIL	QX04E	£0.186		£0.143	£0.133	£0.66	
HCF4008BEY	4-Bit Full Adder	16-pin DIL	QW14Q	£0.354		£0.272	£0.253	£1.06	
HCF4009UBEY	see 4049UBEY	16-pin DIL							
HCF4011BEY	Quad 2-Input NAND Gate	14-pin DIL	QX05F	£0.165		£0.127	£0.118	£0.66	
HCF4011BM1	Quad 2-Input Schmitt NAND SMD	14-pin DIL	AB26D	£0.240		£0.153	£0.142	£0.49	
HCF4011UBEY	Quad 2-Input NAND Gate Unbuffered	14-pin DIL	QL04E	£0.242		£0.186	£0.173	£0.66	
HCF4012BEY	Dual 4-Input NAND Gate	14-pin DIL	QX06G	£0.262		£0.201	£0.187	£0.66	
HCF4013BEY	Dual D-Type Flip-Flop	14-pin DIL	QX07H		£0.300	£0.200	POA	£0.64	
HCF4013BM1	Dual D-Type Flip-Flop SMD	14-pin DIL	AB35Q	£0.328		£0.252	£0.234	£0.49	
HCF4014BEY	8-Bit Shift Register	16-pin DIL	QW15R	£0.583		£0.449	£0.417	£1.18	
HCF4015BEY	8-Bit Shift Register	16-pin DIL	QW16S	£0.280		£0.215	£0.200	£1.30	
HCF4015BM1	8-Bit Shift Register SMD	16-pin DIL	AB36P		£0.490	£0.425	POA	£0.70	
HCF4016BEY	4-Pole 1-Way Analogue Switch	14-pin DIL	QX08J	£0.260		£0.200	£0.186	£0.30	
HCF4016BM1	4-pole 1-Way Switch SMD	14-pin DIL	AB37S	£0.320		£0.246	£0.229	£0.52	
HCF4017BEY	Decade Counter	16-pin DIL	QX09K	£0.263		£0.202	£0.188	£1.66	
HCF4017BM1	Dec/Doz Counter SMD	16-pin DIL	AB38R	£0.560		£0.431	£0.400	£0.73	
HCF4018BEY	Presetable BCD Counter	16-pin DIL	QX10L	£0.325		£0.250	£0.232	£1.36	
HCF4019BEY	Quad AND/OR Select Gate	16-pin DIL	QW17T	£0.200		£0.154	£0.143	£0.34	
HCF4019BM1	4-Bit AND/OR Select SMD	16-pin DIL	AB27E	£0.400		£0.308	£0.286	£0.57	
HCF4020BEY	14-Stage Binary Ripple Counter	16-pin DIL	QX11M	£0.294		£0.226	£0.210	£1.74	
HCF4021BEY	8-Stage Static Shift Register	14-pin DIL	QW18U	£0.595		£0.458	£0.425	£1.18	
HCF4021BM1	8-Bit Shift Register SMD	14-pin DIL	AB29G	£0.622		£0.478	£0.444	£0.84	
HCF4022BEY	Divide by 8 Counter	16-pin DIL	QW19V	£0.405		£0.311	£0.289	£1.18	
HCF4023BEY	Triple 3-Input NAND Gate	14-pin DIL	QX12N	£0.160		£0.123	£0.114	£0.66	
HCF4023BM1	Triple 3-Input NAND SMD	14-pin DIL	AB39N	£0.280		£0.215	£0.200	£0.49	
HCF4024BEY	7-Stage Ripple Counter	14-pin DIL	QX13P	£0.223		£0.171	£0.159	£1.06	
HCF4024BM1	7-Stage & Higher Counter SMD	14-pin DIL	AB31J	£0.434		£0.334	£0.310	£0.57	
HCF4025BEY	Triple 3-Input NOR Gate	14-pin DIL	QX14C	£0.160		£0.148	£0.137	£0.66	
HCF4025BM1	Triple 3-Input NOR Gate SMD	14-pin DIL	AB41U	£0.280		£0.215	£0.200	£0.49	
HCF4026BEY	7-Seg. Display Decoder Counter	16-pin DIL	QX15R	£0.300		£0.231	£0.214	£2.22	
HCF4027BEY	Dual JK Master-Slave Flip-Flop	16-pin DIL	QX16S	£0.220		£0.169	£0.157	£1.06	
HCF4027BM1	Dual JK Latch SMD	16-pin DIL	AB42V	£0.396		£0.297	£0.276	£0.52	
HCF4028BEY	BCD to Decimal Decoder	16-pin DIL	QX17T	£0.279		£0.214	£0.199	£1.06	
HCF4028BM1	4 to 10 Line Converter SMD	16-pin DIL	AB43W	£0.215		£0.166	£0.154	£0.73	
HCF4029BEY	Presetable Up/Down Counter	16-pin DIL	QW20W	£0.349		£0.268	£0.249	£1.30	
HCF4029BM1	4-Bit Bin/Dec Counter SMD	16-pin DIL	AB44X	£0.540		£0.415	£0.385	£0.73	
HCF4030BEY	see HCF4070BEY	14-pin DIL							
HCF4033BEY	7-Seg. Display Decoder Counter	16-pin DIL	QW23A	£0.640		£0.492	£0.457	£1.42	
HCF4035BEY	4-Stage Shift Register	16-pin DIL	QW25C	£0.474		£0.365	£0.339	£1.30	
HCF4040BEY	12-Stage Binary Counter	16-pin DIL	QW27E	£0.600		£0.462	£0.429	£1.30	
HCF4040BM1	7-Stage & Higher Counter SMD	16-pin DIL	AB32K	£0.353		£0.272	£0.252	£0.73	
HCF4042BEY	Quad Clocked D-Latch	16-pin DIL	QX19G	£0.233		£0.179	£0.166	£1.06	
HCF4043BEY	Quad 3-State NOR R/S Latch	16-pin DIL	QW29G	£0.256		£0.197	£0.183	£1.18	
HCF4043BM1	Quad SR Latch SMD	16-pin DIL	AB45Y	£0.480		£0.369	£0.343	£0.62	
HCF4044BEY	Quad 3-State NAND R/S Latch	16-pin DIL	QW30H	£0.240		£0.185	£0.171	£1.18	
HCF4044BM1	Quad SR Latch SMD	16-pin DIL	AB46A	£0.480		£0.369	£0.343	£0.62	
HCF4046BEY	Phase Locked Loop	16-pin DIL	QX22K	£0.280		£0.215	£0.200	£1.42	
HCF4047BEY	Multivibrator	14-pin DIL	QX20W	£0.490		£0.369	£0.343	£1.66	
HCF4047BM1	Multivibrator SMD	14-pin DIL	AB47B	£0.540		£0.415	£0.386	£0.88	
HCF4049UBEY	Hex Buffer Inverting	16-pin DIL	QX21X	£0.192		£0.148	£0.137	£0.81	
HCF4049UBM1	Hex Buffer Inverting SMD	16-pin DIL	AB48C	£0.320		£0.246	£0.229	£0.49	
HCF4050BEY	Hex Buffer Non-Inverting	16-pin DIL	QX22Y	£0.192		£0.148	£0.137	£0.81	
HCF4050BM1	Non-Invert Hex Buffer SMD	16-pin DIL	AB49D	£0.320		£0.246	£0.229	£0.49	
HCF4051BEY	8-Channel Analogue Multiplexer	16-pin DIL	QW34M	£0.232		£0.179	£0.166	£1.18	
HCF4051BM1	1-Pole 8-Way Switch SMD	16-pin DIL	AB51F	£0.510		£0.392	£0.364	£0.86	
HCF4052BEY	4-Channel Analogue Multiplexer	16-pin DIL	QW35Q		£0.550	£0.480	POA	£0.99	
HCF4052BM1	2-Pole 4-Way Switch SMD	16-pin DIL	AB52G		£0.420	£0.365	POA	£0.61	
HCF4053BEY	Triple 2-Channel Multiplexer	16-pin DIL	QW36P	£0.273		£0.210	£0.195	£1.18	

Device	Type	Pinout	Man.	Order Code	Price each exc. VAT				Price each inc. VAT 1+
					10+	25+	100+	500+	
HCF4053BM1	3-Pole 2-Way Switch SMD	16-pin DIL	AB53H			£0.475	£0.425	POA	£0.66
HCF4056BEY	BCD to 7-Segment Decoder LCD	16-pin DIL	QW39N	£0.546		£0.420	£0.390	£1.66	
HCF4056BM1	BCD to 7-Segment SMD	16-pin DIL	AE99H	£0.660		£0.508	£0.471	£1.03	
HCF4060BEY	14-Stage Counter	16-pin DIL	QW40T	£0.323		£0.249	£0.231	£1.78	
HCF4060BM1	7-Stage & Higher Counter SMD	16-pin DIL	AB54J	£0.600		£0.462	£0.429	£0.84	
HCF4063BEY	4-Bit Magnitude Comparator	16-pin DIL	QW41U	£0.274		£0.235	£0.224	£1.26	
HCF4066BEY	4-Bit Comparator SMD	16-pin DIL	AB01B	£0.464		£0.346	£0.309	£0.76	
HCF4066BM1	Quad Bilateral Switch	14-pin DIL	QX23A	£0.180		£0.138	£0.129	£1.02	
HCF4066BM1	4-Pole 1-Way Switch SMD	14-pin DIL	AB55K	£0.362		£0.278	£0.259	£0.60	
HCF4067BEY	16-Channel Multiplexer	24-pin DIL	QW42V	£2.600		£2.000	£1.850	£5.38	
HCF4067BM1	1-Pole 16-Way Switch SMD	24-pin DIL	AB02C	£3.050		£2.270	£2.030	£4.44	
HCF4068BEY	8-Input NAND Gate	14-pin DIL	QX24B	£0.228		£0.175	£0.163	£0.66	
HCF4068BM1	Single 8-Input NAND Gate SMD	14-pin DIL	AB03D	£0.265		£0.213	£0.190	£0.49	
HCF4069TBM	Inverting Hex Buffer SMD	14-pin DIL	AB56L	£0.280		£0.215	£0.200	£0.49	
HCF4069UBEY	Hex Inverter	14-pin DIL	QX25C	£0.230		£0.177	£0.164	£0.66	
HCF4070BEY	Quad Exclusive-OR Gate	14-pin DIL	QX26D	£0.160		£0.123	£0.114	£0.66	
HCF4070BM1	Quad Exclusive-OR SMD	14-pin DIL	AB04E	£0.280		£0.209	£0.187	£0.49	
HCF4071BEY	Quad 2-Input OR Gate	14-pin DIL	QW43W	£0.160		£0.123	£0.115	£0.66	
HCF4071BM1	Quad 2-Input OR Gate SMD	14-pin DIL	AB57M	£0.169		£0.130	£0.121	£0.49	
HCF4072BEY	Dual 4-Input OR Gate	14-pin DIL	QX27E		£0.280	£0.180	POA	£0.55	
HCF4072BM1	Dual 4-Input OR SMD	14-pin DIL	AB58N	£0.280		£0.215	£0.200	£0.49	
HCF4073BEY	Triple 3-Input AND Gate	14-pin DIL	QW44X	£0.272		£0.209	£0.194	£0.66	
HCF4073BEY	Triple 3-Input OR Gate	14-pin DIL	QW45W	£0.271		£0.209	£0.194	£0.66	
HCF4075BM1	Triple 2-Input OR SMD	14-pin DIL	AB05F	£0.280		£0.209	£0.187	£0.49	
HCF4076BEY	4-Bit D-Type Register	16-pin DIL	QW46A	£0.462		£0.366	£0.330	£1.54	
HCF4076BM1	Quad D-Type With Register SMD	16-pin DIL	AB59P	£0.526		£0.405	£0.376	£0.73	
HCF4077BEY	Quad Exclusive-NOR Gate	14-pin DIL	QW47B	£0.220		£0.169	£0.157	£0.66	
HCF4077BM1	Quad Exclusive-NOR SMD	14-pin DIL	AB06G	£0.280		£0.209	£0.187	£0.49	
HCF4078BEY	8-Input NOR/OR Gate	14-pin DIL	QX28F	£0.175		£0.136	£0.125	£0.66	
HCF4081BEY	Quad 2-Input AND Gate	14-pin DIL	QW48C	£0.230		£0.177	£0.164	£0.66	
HCF4081BM1	Quad 2-Input NAND SMD	14-pin DIL	AB07H	£0.320		£0.239	£0.213	£0.49	
HCF4082BEY	Dual 4-Input AND Gate	14-pin DIL	QW49D	£0.270		£0.208	£0.193	£0.66	
HCF4083BEY	Quad 2-Input NAND Schmitt Trigger	14-pin DIL	QW53H	£0.192		£0.148	£0.137	£0.82	
HCF4083BM1	Quad 2-Input Schmitt NAND SMD	14-pin DIL	AB08J	£0.360		£0.269	£0.240	£0.52	
HCF4084BEY	8-Stage Shift Register	16-pin DIL	QW54J	£0.296		£0.228	£0.211	£1.66	
HCF4084BM1	8-bit shift register SMD	16-pin DIL	AB19V	£0.544		£0.418	£0.389	£0.73	
HCF4088BEY	Dual Monostable Multivibrator	16-pin DIL	QX29G	£0.329		£0.253	£0.235	£1.54	
HCF4088BM1	Multivibrator SMD	16-pin DIL	AB09K	£0.556		£0.428	£0.397	£0.91	
HCF4089BEY	8-Bit Addressable Latch	16-pin DIL	QW57M	£0.540		£0.415	£0.386	£1.18	
HCF4089BM1	8-Bit Addressable Latch SMD	16-pin DIL	AB12N	£0.648		£0.498	£0.463	£0.94	
HCF4093BEY	Hex Buffer 3-State Non-Inverting	16-pin DIL	QO41U	£0.300		£0.231	£0.214	£0.93	
HCF4093BM1	Non-Invert Hex Buffer SMD	16-pin DIL	AB13P	£0.526		£0.405	£0.376	£0.73	
HCF4510BEY	Dec/Doz Counters	16-pin DIL	QW58E	£0.546		£0.420	£0.390	£1.86	
HCF4511BEY	BCD to 7-Seg. Decoder Driver	16-pin DIL	QX31J	£0.313		£0.240	£0.223	£1.66	
HCF4511BM1	BCD to 7 segment SMD	16-pin DIL	AB21X	£0.590		£0.258	£0.239	£1.82	
HCF4512BEY	8-Channel Data Selector	16-pin DIL	QW84F	£0.480		£0.369	£0.343	£1.42	
HCF4514BEY	4 to 16-Line Decoder	24-pin DIL	QW85G	£2.540		£1.950	£1.810	£3.82	
HCF4514BM1	4 to 16 Line Converter SMD	24-pin DIL	AB14Q	£3.440		£2.640	£2.450	£4.78	
HCF4516BEY	Binary Presetable Counter	16-pin DIL	QW87U	£0.270		£0.208	£0.193	£1.78	
HCF4516BM1	4-Bit Bin/Oct Counter SMD	16-pin DIL	AB16S	£0.617		£0.474	£0.440	£0.84	
HCF4518BEY	Dual BCD Counter	16-pin DIL	QX32K	£0.273		£0.210	£0.195	£1.50	
HCF4518BM1	Dec/Doz Counter SMD	16-pin DIL	AB22Y	£0.528		£0.406	£0.377	£0.73	
HCF4520BEY	Dual Binary Counter	16-pin DIL	QX33L	£0.497		£0.382	£0.355	£1.14	
HCF4520BM1	4-Bit Bin/Oct Counter SMD	16-pin DIL	AB17T	£0.540		£0.415	£0.386	£0.73	
HCF4528BEY	see HCF4088BEY	14-pin DIL							
HCF4532BEY	8-Bit Priority Encoder	16-pin DIL	QW89W	£0.504		£0.388	£0.360	£1.54	
HCF4532BM1	8-Bit Priority SMD	16-pin DIL	AB18U	£0.560		£0.431	£0.400	£0.84	
HCF4538BM1	Multivibrator SMD	16-pin DIL	AB23A	£0.280					

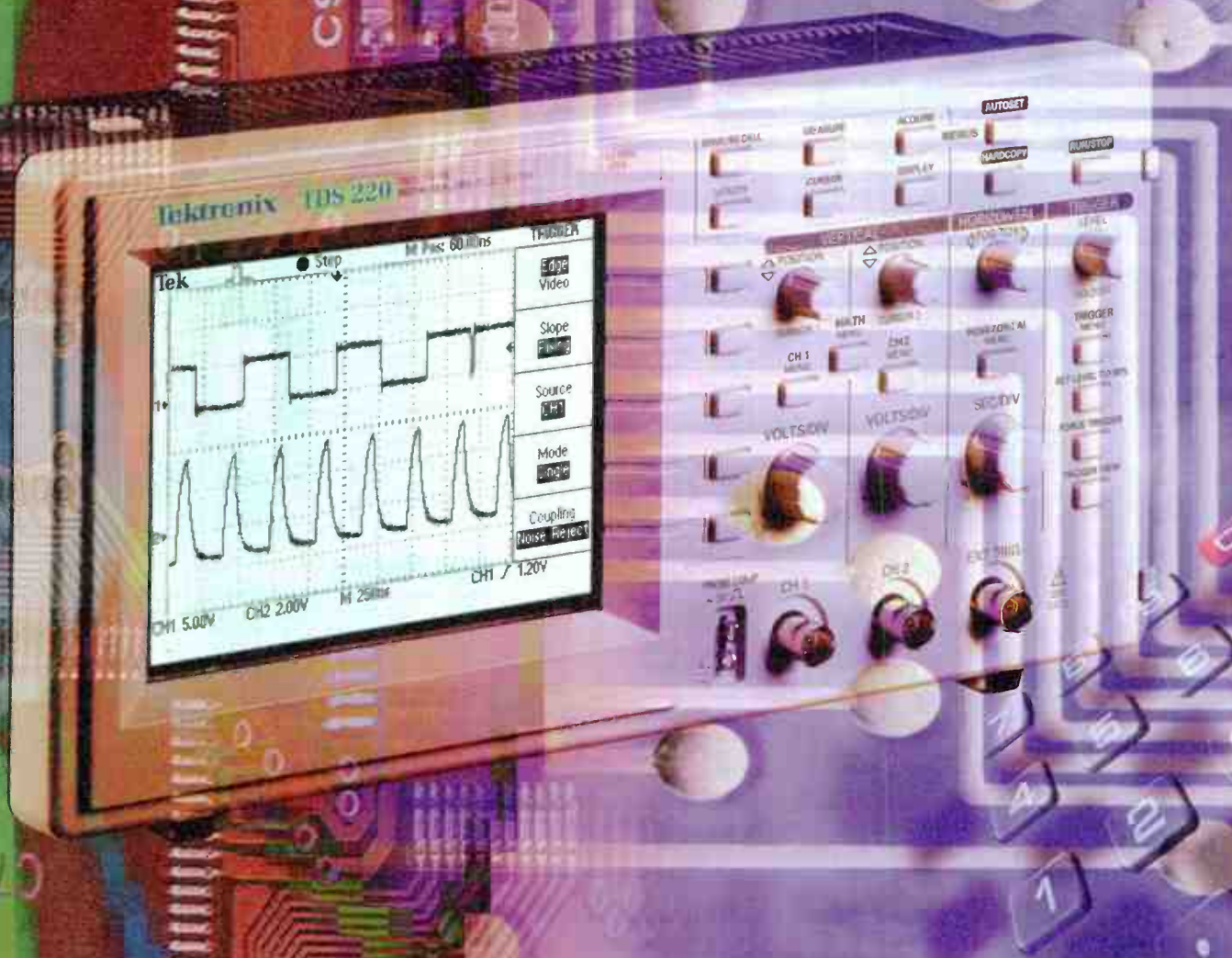
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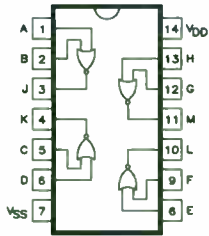
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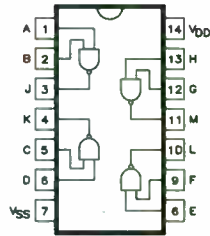




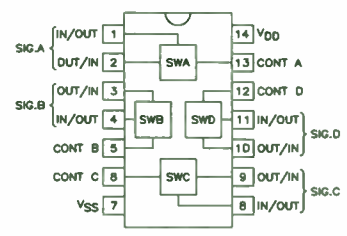
## Pin-Out Diagrams



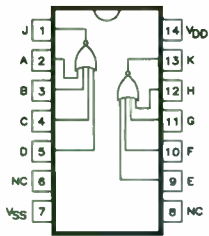
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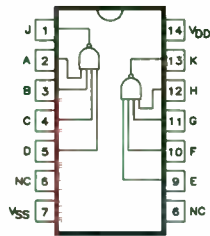
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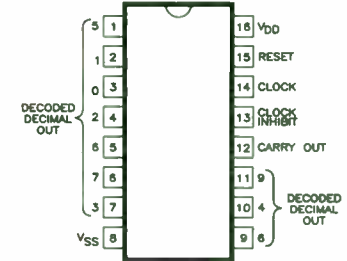
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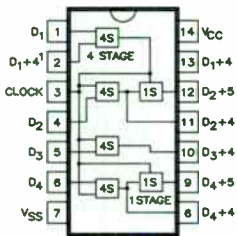
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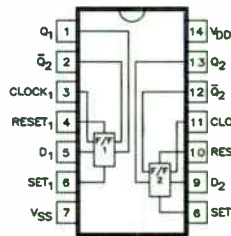
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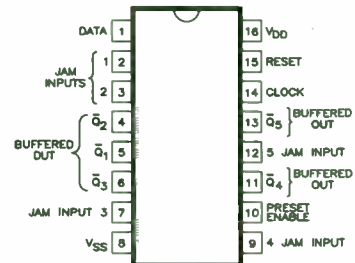
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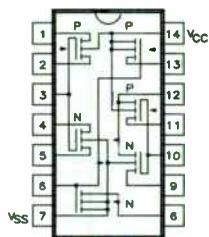
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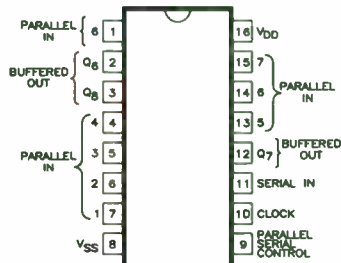
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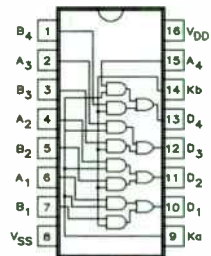
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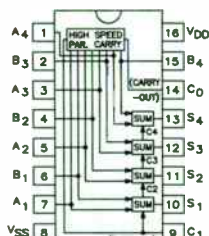
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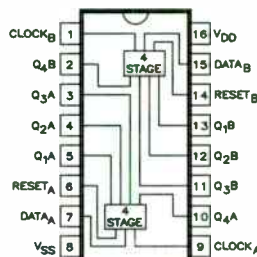
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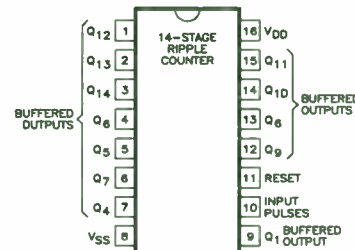
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4008B

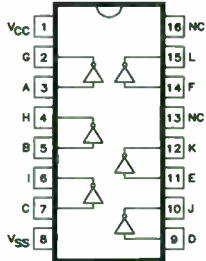


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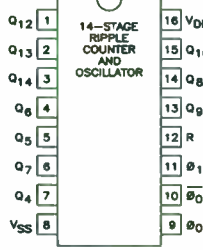


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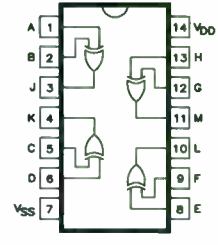




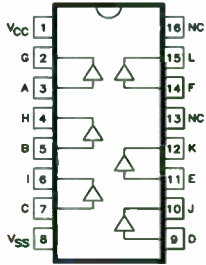
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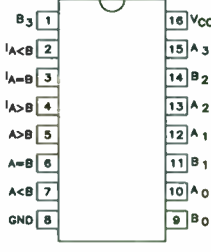
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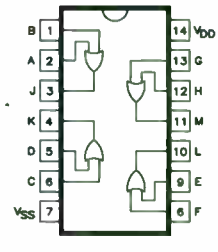
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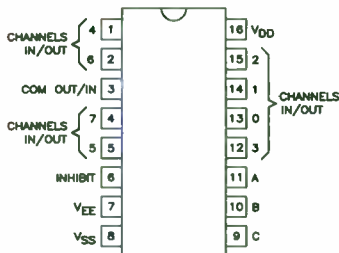
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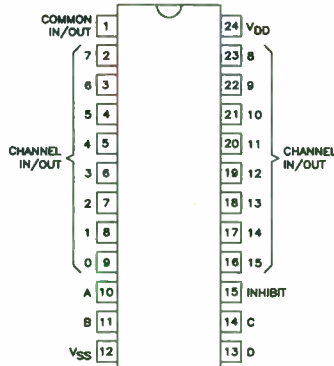
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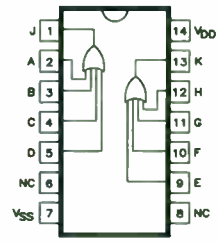
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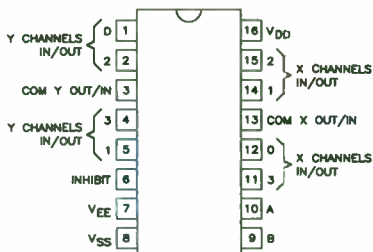
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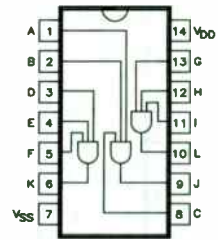
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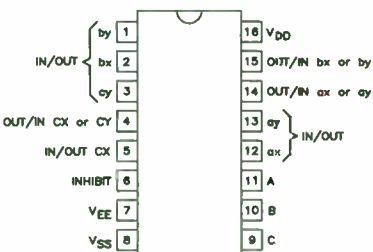
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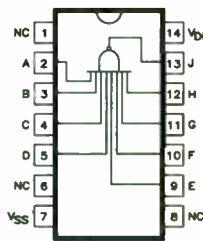
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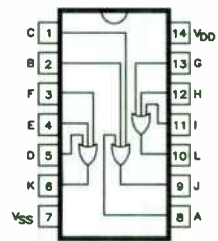
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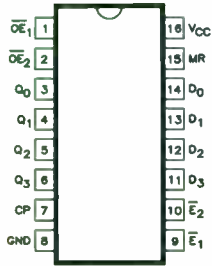
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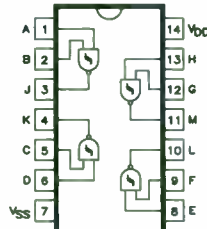
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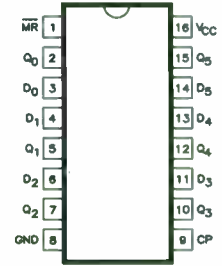
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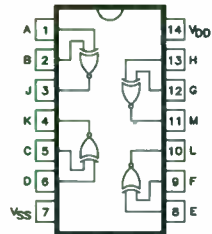
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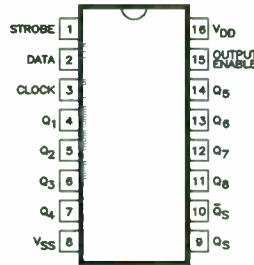
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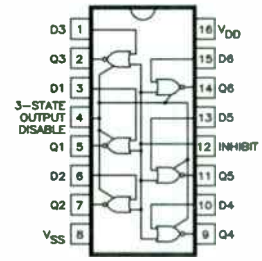
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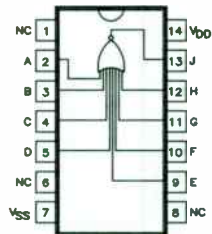
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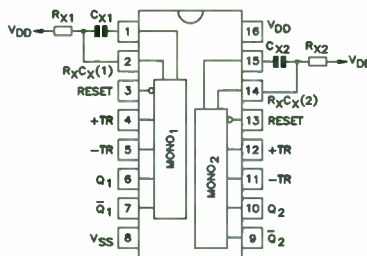
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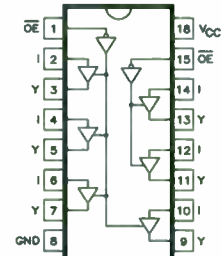
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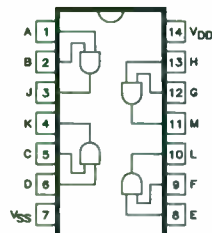
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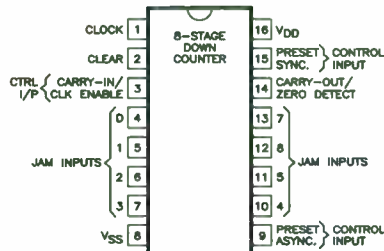
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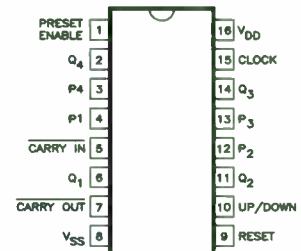
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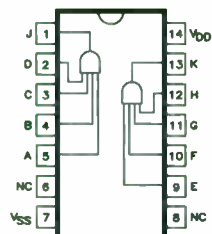
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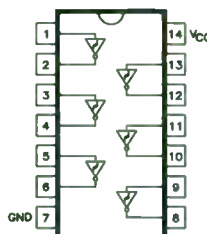
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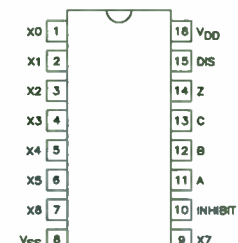
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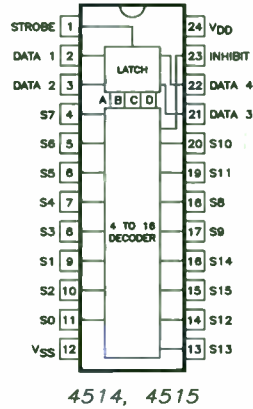
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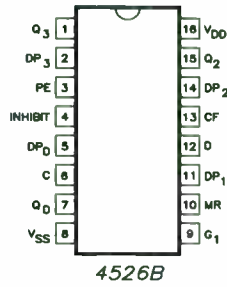
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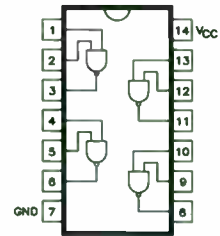
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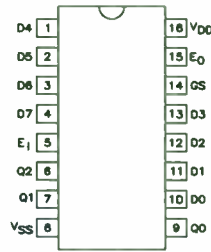
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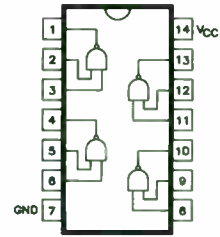
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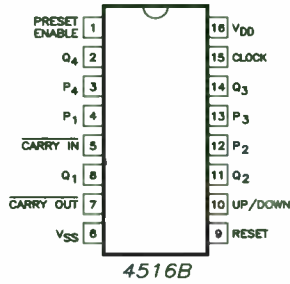
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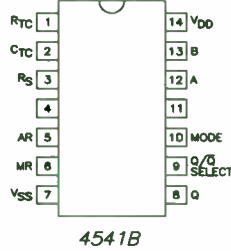
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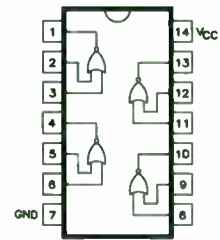
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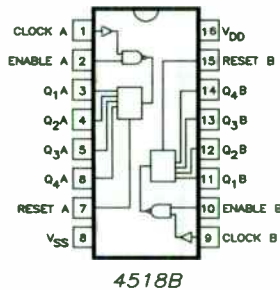
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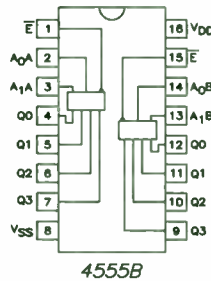
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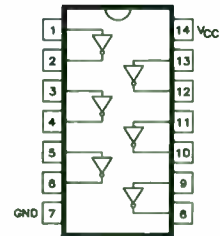
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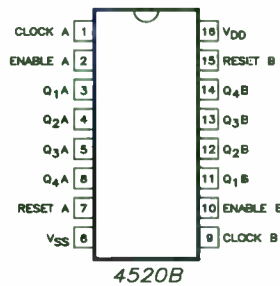
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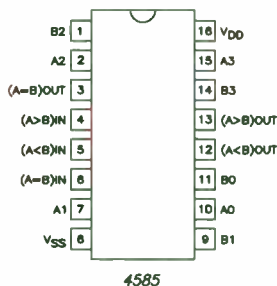
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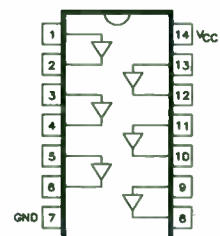
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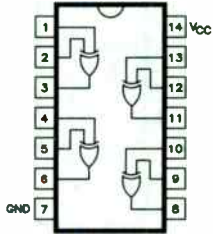


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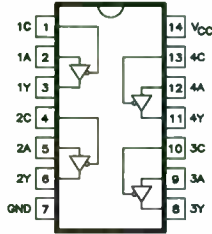


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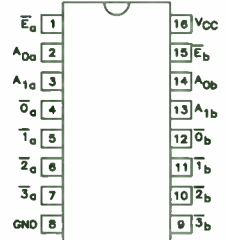




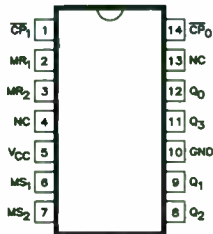
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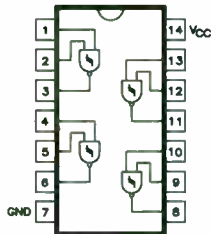
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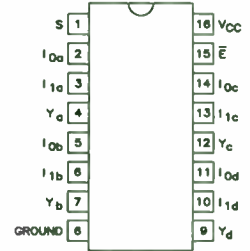
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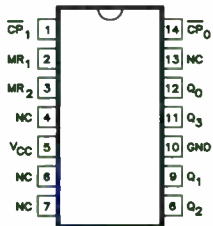
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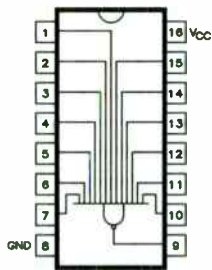
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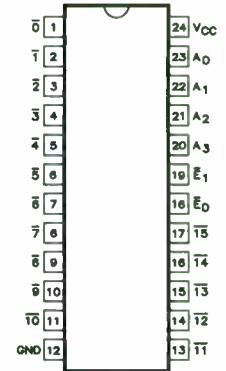
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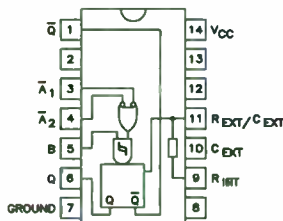
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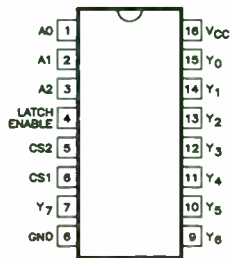
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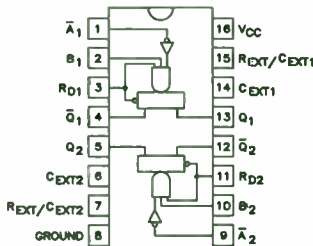
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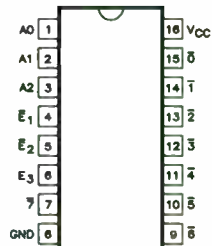
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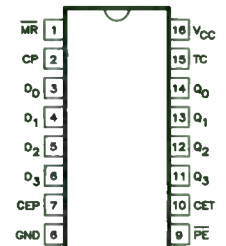
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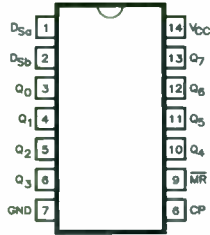
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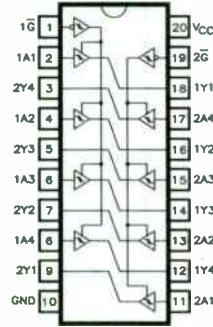
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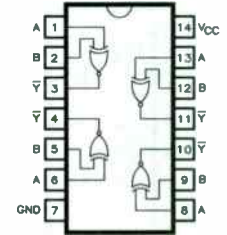
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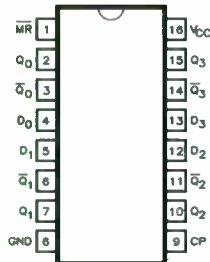
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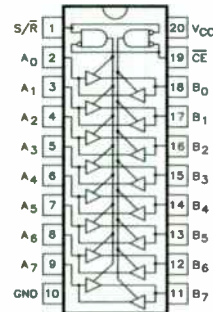
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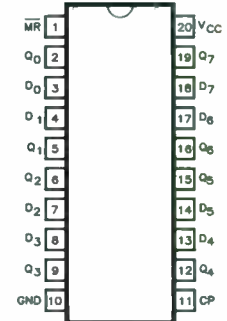
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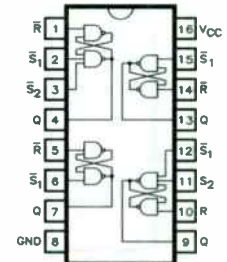
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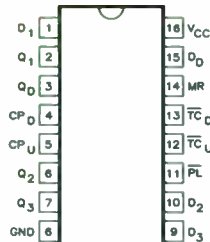
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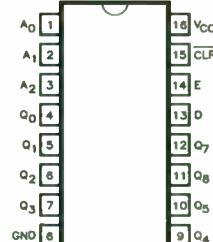
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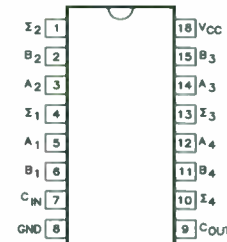
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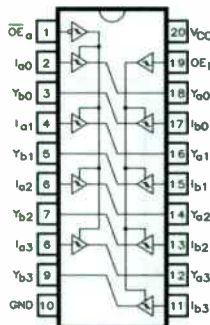
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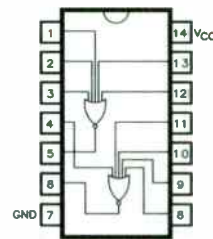
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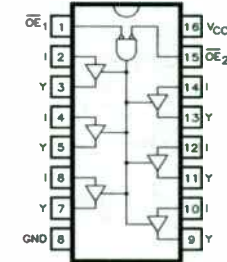
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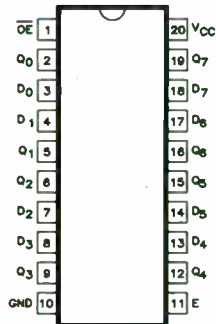


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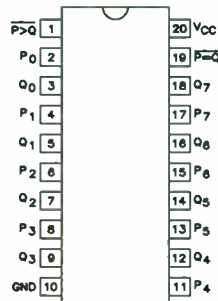


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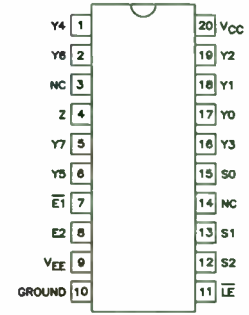




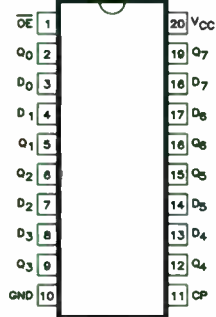
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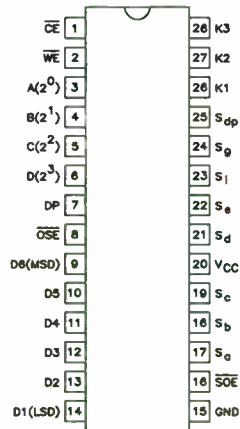
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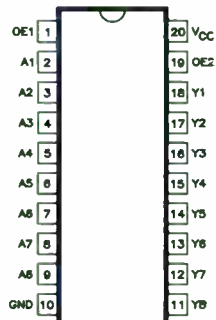
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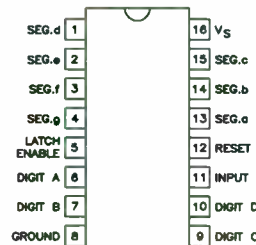
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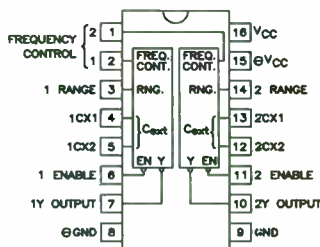
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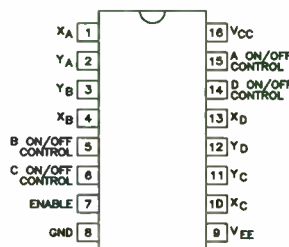
74HC541



74C925



74LS629



74HC4316

## Semiconductor Data

Please note that, although we have listened to your feedback regarding the omission of IC pinouts from previous issues of the Maplin catalogue and have put the 7400 and 4000 logic series pinouts back into this section, commercial constraints have forced us to make the decision to reduce the amount of pinout or application information for some semiconductors, especially where older products are no longer used by manufacturers in quantities sufficient to warrant that level of support. We have however considered the criteria behind this decision with the customer in mind, as we are aware that many customers have always used the Maplin catalogue as a combination of designers' reference and supply source book. As a general rule, we are omitting pinout information only where the device concerned is complex to use to the extent of needing a full data sheet for successful applications to be realised (microprocessors are a typical example).

It is our policy to continue to improve the availability of application data for our customers through our provision of copies of manufacturers' data sheets upon request through our sales staff, as well as by the support provided by our Technical Sales department, who will be pleased to clarify any technical matters related to semiconductors in this section.

Wherever possible, we also support the introduction of new ranges by endeavouring to secure supplies of the original manufacturers' data books for our customers. Please be aware that some semiconductor manufacturers are not used to supplying bulk deliveries of their data books to mail order suppliers such as ourselves and therefore supply of these very useful references may be somewhat erratic. Please bear with us if the data book you require is temporarily unavailable, and we will do our best to supply your data as soon as we can.

## The TTL Data Book, Volume 1

**Texas Instruments**

Full data sheets covering Tis very large range of TTL, Schottky and Low Power Schottky ICs. Contains internal circuits, pin-out diagrams and specifications of over 400 device types. 1989. 1184 pages. 210 x 148mm, illustrated. American book.



Retail Unit Price each (inc. VAT).

Order Code	Type 774	Price each exc. VAT 1+	inc. VAT each 1+
WA14Q 3	TI TTL Data Vol 1	£14.950	£14.950 NV

## The TTL Data Book, Volume 2

**Texas Instruments**

Packed with the design data, internal circuit and pin-out diagrams, and dynamic parameters information for some 400 Advanced Low-Power Schottky (ALS) and Advanced Schottky (AS) logic ICs. Included in this volume is a functional index to all types of bipolar digital devices available or under development showing the available technologies for each type, TTL, Schottky, AS, ALS etc. There is also a short explanatory section on logic symbols for new circuit diagrams. 1989. 1278 pages. 210 x 150mm, illustrated.



Retail Unit Price each (inc. VAT).

Order Code	Type 753	Price each exc. VAT 1+	inc. VAT each 1+
WP31J 3	TI TTL Data Vol 2	£14.950	£14.950 NV

## Programmable Logic

### PEEL / PAL Devices

## PEEL Devices

ICT

This range of 5 volt programmable electrically erasable logic devices from ICT provide an attractive alternative to ordinary low density PLDs, offering the convenience of instant reprogramming. This not only aids product development, but minimises the impact of programming updates on stock inventory compared with the wastage involved with scrapping large numbers of preprogrammed one-time programmable PLAs. ICT PEEL device architecture allows for super-set replacement of many earlier PALs, GALs and PLDs, and the powerful ICT PLACE development software available separately (GS90X) provides JEDEC file translation software that instantly converts PEEL devices to other PLDs, without the need to rework the existing design. Once the design process is complete, these devices may be easily programmed or reprogrammed using the Speedmaster or Micromaster programmers shown elsewhere in this catalogue.

**Device Specification:**

Part No.	Input pins	I/O pins	Array size	Macrocells/Configs	Max speed	Package	Order Code
16V8P-7	10	8	32x64	8/4	7nS	20 DIP	AX07H
16V8P-10	10	8	32x64	8/4	10nS	20 DIP	AX08J
16V8P-15	10	8	32x64	8/4	15nS	20 DIP	AX09K
16V8P-25	10	8	32x64	8/4	25nS	20 DIP	AX10L
18CV8J-7	10	8	36x74	8/12	7nS	20 PLCC	AX11M
18CV8J-10	10	8	36x74	8/12	10nS	20 PLCC	AX12N
18CV8J-15	10	8	36x74	8/12	15nS	20 PLCC	AX13P
18CV8J-25	10	8	36x74	8/12	25nS	20 PLCC	AX14Q
18CV8P-7	10	8	36x74	8/12	7nS	20 DIP	AX15R
18CV8P-10	10	8	36x74	8/12	10nS	20 DIP	AX16S
18CV8P-15	10	8	36x74	8/12	15nS	20 DIP	AX17T
18CV8P-25	10	8	36x74	8/12	25nS	20 DIP	AX18U
22CV10AJ-5	12	10	44x132	10/4	5nS	28 PLCC	AX19V
22CV10AJ-7	12	10	44x132	10/4	7nS	28 PLCC	AX20W
22CV10AJ-10	12	10	44x132	10/4	10nS	28 PLCC	AX21X
22CV10AJ-15	12	10	44x132	10/4	15nS	28 PLCC	AX22Y
22CV10AJ-25	12	10	44x132	10/4	25nS	28 PLCC	AX23A
22CV10AP-7	12	10	44x132	10/4	7nS	24 DIL	AX24B
22CV10AP-10	12	10	44x132	10/4	10nS	24 DIL	AX25C
22CV10AP-15	12	10	44x132	10/4	15nS	24 DIL	AX26D
22CV10AP-25	12	10	44x132	10/4	25nS	24 DIL	AX27E

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 11906	Price each exc. VAT			inc. VAT each 1+
		10+	100+	300+	
AX07H	PEEL16V8P-7 ICT	£3.000	£2.300	£2.140	£4.780
AX08J	PEEL16V8P-10 ICT	£1.890	£1.660	£1.400	£2.550
AX09K	PEEL16V8P-15 ICT	£1.220	£1.100	£1.030	£1.700
AX10L	PEEL16V8P-25 ICT	£1.220	£1.080	£0.920	£1.600
AX11M	PEEL18CV8J-7 ICT	£2.790	£2.450	£2.050	£3.790
AX12N	PEEL18CV8J-10 ICT	£1.980	£1.750	£1.490	£2.650
AX13P	PEEL18CV8J-15 ICT	£1.420	£1.260	£1.050	£1.890
AX14Q	PEEL18CV8J-25 ICT	£1.530	£1.200	£1.150	£2.060
AX15R	PEEL18CV8P-7 ICT	£2.740	£2.380	£1.990	£3.790
AX16S	PEEL18CV8P-10 ICT	£1.890	£1.660	£1.400	£2.550
AX17T	PEEL18CV8P-15 ICT	£1.300	£1.250	£1.200	£1.600
AX18U	PEEL18CV8P-25 ICT	£1.530	£1.240	£1.190	£2.730
AX19V	PEEL22CV10AJ-5 ICT	£24.500	£22.500	£19.500	£29.990
AX20W	PEEL22CV10AJ-7 ICT	£15.250	£13.750	£11.250	£19.990
AX21X	PEEL22CV10AJ-10 ICT	£5.750	£4.950	£4.200	£7.990
AX22Y	PEEL22CV10AJ-15 ICT	£3.800	£3.300	£2.800	£5.210
AX23A	PEEL22CV10AJ-25 ICT	£2.970	£2.590	£2.200	£4.070
AX24B	PEEL22CV10AP-7 ICT	£13.450	£11.200	£9.750	£18.040
AX25C	PEEL22CV10AP-10 ICT	£5.200	£4.550	£3.900	£7.110
AX26D	PEEL22CV10AP-15 ICT	£3.450	£3.000	£2.550	£4.740

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## ISP Synario System (VR36P)

Lattice Semiconductor

The Synario System from Lattice Semiconductors is a low-cost, easy-to-use kit that contains everything needed to design and program with Lattice ispLSI and GAL devices. The kit contains a full featured version of Data I/O's Synario Entry tools for schematic capture and ABEL-HDL language logic design. The Synario Entry Tools also includes a functional simulator with wave form viewer and and DATA I/O's powerful Project Navigator for easy design and logic debugging. The Lattice innovative in-system programmability (ISP) enables device programming and reprogramming on the PCB. There are several advantages with this;

- It accelerates board and system level debug and enables the user to define board layout earlier in the design process.
- ISP eliminates bent leads caused by extra handling and socket insertions made during the device programming.
- Systems incorporating ISP are reconfigurable with the devices already soldered to the PCB, minimising board rework expense.
- Field upgrades become easy by downloading a new configuration file to the end equipment by a floppy disk or modem

The tools included will support the full range of Lattice industry standard ispGAL and GAL devices including the ISP GAL22V10, GAL16V8, GAL20V8 and GAL6001, and others. The System includes device samples as well as an ispDOWNLOAD Cable to download designs to the PC board. Documentation on CD Include in the Synario Development System are:

### Software

DATA I/O's Synario Entry and Functional Simulation software.

pDS+ Synario Filter for ispLSI devices

ispGDS (Generic Digital Switch) compiler software

ISP programming software

### Samples and Hardware

ispLSI 2032 Device in 44-pin PLCC package

ispGAL22V10 Device in 28-pin PLCC

ispGDS14 Device in 20-pin PLCC package

ispDOWNLOAD cable



## isp Download Adaptor (VR35Q)

Lattice Semiconductor

- Allows all isp devices to be programmed via an IBM compatible PC
- Supports ispLSI 1016/E and 2032 devices when used with isp Starter/Encyclopedia CD
- Supports industry standard 22V10 architecture
- Supports ISP Generic Digital Switch
- Enables low cost entry to programmable logic

When used with the software provided on the isp Starter/Encyclopedia CD-ROM, this combined connection cable and RS232 Com port adaptor allows you to start programming Lattice in system programmable devices at a very modest cost.

The cable/adaptor assembly is terminated with the usual 25 way D socket for connection to the host PC, and the flying lead will connect to your development/prototype PCB via an RJ-45 eight way connector. Suitable sockets are already fitted to the ispLSI development board GS13P (also supplied with unpopulated version GS14Q).

## ispLSI Development Board (GS13P, GS14Q)

Lattice Semiconductors

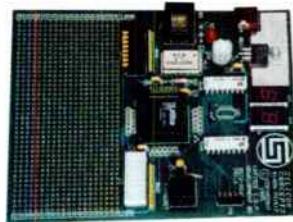
The Development Board is intended to be used with the Lattice In-System Synario Kit, or the isp Download Adaptor/cable and CD software, to enable designers to quickly explore the features and benefits of In-System Programmability (ISP). The board will accept either an ispLSI1016 (as fitted) or an ispLSI2032, in their 44-pin PLCC package option. A scratch pad area is included consisting of a grid 5 x 10 of plate through hole pads arranged on a standard 0.1in pad. The pads can accept wire wrap pins and sockets etc. 0V and +5V power rails are provided.

The populated board includes:-

- A 5V regulator, which is connected to a 7.5V to 9V DC unregulated supply, rated at least 200mA
- RJ45 ISP connector which connects to a PC parallel port using the VR35Q ISP DOWNLOAD cable.
- 44-pin PLCC socket - fitted with a programmed ispLSI1016-60LJ device, which can easily be 'in-system programmed
- Displays and switches - includes one bank of 8 DIP switches, one bargraph display and two 7-segment displays

A reset button and various monitor points are included on the board.

An unpopulated version of the board is available that is fitted with just the RJ45 ISP connector, PLCC and power sockets



## Data Book (VR40T)

Lattice Semiconductor

Written especially for system designers, this 1996 Databook provides full specification for Lattice's entire range of high performance E<sup>2</sup>CMOS devices and design tools. Packed with datasheets and architectural descriptions for the ispLSI range. Also included are package outlines for the new high pin-count TQFPF and MQFP packages as well as the latest information on thermal management and handling moisture-sensitive packaging.



## ISP Starter Software & ISP Encyclopedia CD (VR37S)

Lattice semiconductor

This CD-ROM from Lattice includes the ISP Encyclopedia which contains the most recent edition of the Lattice Data Book, the revised and updated ISP Manual, the Lattice Handbook, product selection guide and ISP cost analysis spreadsheets that allow the user to compute their own cost-savings when using Lattice ISP products. All documents may be accessed on a PC or Sun workstation using Adobe's Acrobat software - included on the CD-ROM. The ISP Starter System software supports Lattice's ispLSI 2032 and 1016 high-density devices and all GAL devices (boolean entry only, use Synario for schematic entry). The software can easily be upgraded to support all or part of Lattice's high-density families.



Retail Unit Price each (inc.VAT)

Order Code	Type 12944	Price each exc. VAT 1+	inc. VAT each 1+
VR36P	isp Synario 2	£245.680	£289.900
VR35Q	isp Download Adaptor	£51.050	£59.990
GS13P	isp Dev Board Assm	£84.255	£99.000
GS14Q	isp Dev Board Assm	£21.268	£24.990
VR40T	isp Databook	£6.800	£7.990
VR37S	isp CD ROM	£6.800	£7.990

## ispLSI High Speed Programmable Logic Devices (VR41U-VR45Y)

Lattice Semiconductor

This family of programmable logic devices are the first to combine the performance and ease of use of PLD's with the density and flexibility of FPGA's. From registers to counters, multiplexers to complex state machines, these devices with high-density programmable logic will address your high-performance system logic needs. Each device contains multiple Generic Logic Blocks (GLBs) designed to maximise system flexibility and performance. A generous supply of registers and I/O cells provide the optimum balance of internal logic and external connections. A global interconnect scheme ties everything together, enabling high logic utilisation. The 1000 series implements high integration functions such as controllers, LASNs and encoders at high speeds. The high performance 2000 series, with their large number of I/Os, handle timers and counters, (as well as timing critical interfaces) to high speed RISC/CISC microprocessors. The family incorporates the innovative in-system programmable (ISP) technology which allows for real-time programming direct from a PC and simple in circuit manufacturing and end-user feature reconfiguration.

Device	Macrocells	PLD Gates	I/Os	Speed MHz	Propagation Speed ns	Package PLCC
ispLSI2032-80LJ	32	1000	32	84	15	44-pin
ispLSI2064-80LJ	64	2000	64	81	15	84-pin
ispLSI1016-60LJ	64	2000	32	60	20	44-pin
ispLSI1024-60LJ	96	4000	48	60	20	68-pin
ispLSI1032-60LJ	128	6000	64	60	20	84-pin

In addition the devices have dedicated input and clock input pins, and a Global Routing Pool (GRP).

The GRP provides complete interconnectivity between all of the elements. Also, there is a 5V in-system programming and in-system diagnostic capability. These are the first devices to offer non-volatile 'on-the-fly' reprogrammability of the logic as well as the interconnection to provide truly reconfigurable systems.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 12944	Price each exc. VAT 10+	25+	100+	inc. VAT each 1+
VR42V	ispLSI2064-80LJ	£16.490	£13.230	£12.400	£19.990
VR43W	ispLSI1016-60LJ	£6.450	£5.920	£5.550	£9.990
VR44X	ispLSI1024-60LJ	£19.670	£15.480	£14.510	£29.990
VR45Y	ispLSI1032-60LJ	£27.920	£17.980	£16.960	£39.990
VR41U	ispLSI2032-80LJ	£5.650	£5.040	£4.720	£6.990

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## High Speed PAL Devices

AMD

This range of programmable logic devices are some of the fastest on the market today. With operating speeds equivalent to 142MHz possible on some devices, you may be sure that these devices will be an excellent choice for any logic design, no matter how demanding.

This selection from the AMD range includes the 'half power' CE16V8H, CE20V8 and CE22V10 CMOS electrically erasable devices, as well as the standard OTP bipolar versions for established designs unlikely to change.

Part No.	Input pins	Outputs	Array size	Macro cells	Speed I-O	Package	Order Code
16L8BCN	10	6 I/O, 2 out	32x64	-	30ns	20 DIP	AR00A
16R4ACN	8,CLK,OE	8	32x64	-	30ns	20 DIP	AR02C
16R4BCN	8,CLK,OE	8	32x64	-	20ns	20 DIP	AR01B
CE16V8H-15	8,CLK,OE	8	32x64	8	15ns	20 DIP	AR04E
CE16V8H-25	8,CLK,OE	8	32x64	8	25ns	20 DIP	AR05F
CE20V8	12,CLK,OE	8	40x64	8	25ns	24 SDIP	AR06G
CE22V10H-15	11,CLK	10	44x132	10	15ns	24 SDIP	AR07H
CE22V10H-25	11,CLK	10	44x132	10	25ns	24 SDIP	AR08J
22V10	11,CLK	10	44x132	10	15ns	24 SDIP	AR03D

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11820	Price each exc. VAT			inc. VAT each 1+
		25+	100+	300+	
AR00A	PAL16L8ACN	£0.800	£0.743	£0.667	£1.180
AR02C	PAL16R4ACN	£0.800	£0.743	£0.667	£1.180
AR01B	PAL16R4BCN	£1.070	£0.933	£0.897	£1.510
AR04E	PALCE16V8H-15PC/4	£0.862	£0.800	£0.718	£1.510
AR05F	PALCE16V8H-25PC/4	£0.837	£0.690	£0.620	£1.220
AR08J	PALCE22V10H-25PC/4	£2.560	£2.350	£2.140	£3.790
AR07H	PALCE22V10H-15PC/4	£3.460	£3.210	£2.880	£6.160
AR06G	PALCE20V8H-25PC/4	£1.090	£0.990	£0.910	£1.890
AR03D	PAL22V10-15PC	£5.780	£4.990	£4.590	£9.490

## PAL Device Data Book and Design Guide

AMD

A book of application notes and data providing a survey of AMD's CMOS PLDs (Programmable Logic Devices). This includes both PAL (Programmable Array Logic) devices and the more general realm of PLDs, to which PAL devices belong. With the proliferation of parts the selection of the best PLD for your application may seem difficult. If you are a new PLD user, this overview will guide you through the wide variety of different device architectures, speed, and power grades. This tutorial should increase your understanding of the basic characteristic features that make a device appropriate for a given application. 1993. 754 pages. 230 x 180mm, illustrated.

Retail Unit Price each (inc. VAT)

Order Code	Type 3602	Price each exc. VAT	inc. VAT each 1+
AR15R	Databook-PAL DTA/DSN	£6.990 NV	£6.990 NV

## MACHXL V2.0

This software allows the logic device designer to compile a source program written for the AMD MACH series devices, in order to generate a standard JEDEC file. The JEDEC file may be used by any device programmer which supports the programming of MACH 1100/210 logic devices, such as the Speedmaster LV (with programming adaptor AR16S). MACH device design programs may be written using a standard text editor, or from within the MACHXL program using the special MACH design file language (details not supplied with this version which is distributed by AMD as freeware. Our charge for this item covers only handling and distribution/duplication costs).

Retail Unit Price each (inc. VAT)

Order Code	Type 11816	Price each exc. VAT	inc. VAT each 1+
LEB1C	MACHXL V2.0	£4.990 NV	£4.990 NV

See Stock Code Index For More Price Breaks

## MACH CMOS PLDs

AMD

The Macro Array CMOS High-density family of programmable logic arrays offers the designer of large and complicated logic circuits a choice of compact devices with several times the capacity of the PEELS and PALs shown earlier in this section.

Each MACH device consists of a number of PAL blocks interconnected by a programmable switch matrix, based around AMD's advanced electrically erasable CMOS technology. The MACHXL design software provides a low cost tool which also allows the user to easily upgrade designs when required. Data books are also available.

The devices featured here are the MACH 110 which has approximately three times the logic macrocell capacity of the PAL22V10 and the MACH 210, which has about six times the capacity of the 22V10. Both are offered with 15 or 20ns propagation delay times, making operating speeds up to 80MHz possible. I/O pins may be configured to be input, output, combined in/out or tri-state outputs.

Part No.	Input pins	I/O pins	Array size	Macrocells	Max speed	Package	Order Code
110-15JC	6	32	(22x64)x2	32	15ns	44 PLCC	AR09K
110-20JC	6	32	(22x64)x2	32	20ns	44 PLCC	AR10L
210-15JC	6	32	(22x64)x4	64	15ns	44 PLCC	AR11M
210-20JC	6	32	(22x64)x4	64	20ns	44 PLCC	AR12N

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 11822	Price each exc. VAT			inc. VAT each 1+
		10+	25+	100+	
AR09K	MACH 110 - 15JC	£5.240	£5.690	£4.950	£7.400
AR10L	MACH 110 - 20JC	£5.240	£5.690	£4.950	£7.400
AR11M	MACH 210 - 15JC	£7.460	£6.590	£6.090	£8.880
AR12N	MACH 210 - 20JC	£6.290	£5.840	£5.240	£8.880

## 44-Pin PLCC to DIL Adaptor

ICE

A plug-in adaptor to enable the 44-pin PLCC packages of the MACH 1 and 2 PAL ICs to be connected into the DIL programming socket of the Speedmaster and Micromaster range of programmers.

Retail Unit Price each (inc. VAT)

Order Code	Type 5519	Price each exc. VAT	inc. VAT each 1+
AR16S	AD-110/210/PLCC	£85.098	£99.990

## MACH™ 1 and 2 Family Data Book High-Density EE CMOS Programmable Logic

AMD

This book introduces you to the new MACH (Macro Array CMOS High-density) 1 and MACH 2 families of programmable logic ICs from Advanced Micro Devices (AMD). These provide programmable logic capabilities from around 900 PLD (Programmable Logic Device) gates to 3,600 PLD gates. Included in this book is a general discussion, and final data sheets, for the MACH 1 and 2 family members.

The general discussion deals with those issues that affect the entire device family, including a brief discussion of design software used in configuring the devices. Because of the common architecture, most of the understanding of the device can come from a look at the family as a whole. Individual devices differ only in the number of resources. The data sheets discuss items that are specific to each device. They contain the basic DC and switching specifications. Other general specifications, such as switching waveforms and endurance, follow the data sheets since they are the same for all devices. The book concludes with the MACH device design planning guide. This section introduces you to the methodology of designing with MACH devices. It will help you select the right device and show you how to structure your designs for successful fitting within a MACH device. 1993. 176 pages. 230 x 180mm, illustrated.

Retail Unit Price each (inc. VAT)

Order Code	Type 5601	Price each exc. VAT	inc. VAT each 1+
AR14Q	Databook - MACH 1&2	£1.790 NV	£1.790 NV

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## Microcontrollers 8 Bit Based

### Microchip Pic Devices

#### PIC Microcontrollers

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This range of microcontrollers includes some of the best known and most widely used devices in today's market. The complete family of EPROM based CMOS products offers a solution to practically any design problem with features such as automatic reset circuitry, watchdog protection, code protection, low power versions and sleep modes as well as a broad range of input and output options including serial (including I<sup>2</sup>C) and parallel ports, PWM outputs, external interrupts, analogue to digital converters and analogue comparators.

The high speed RISC architecture and instruction set is unique to the PIC range of microcontrollers and is fully supported by a range of affordable data books and development tools to help you to learn and develop your skills in fitting these versatile building blocks into your circuits.

The tables below are intended to show just some of the basic features of each of the selected devices featured in the Maplin catalogue. If you need more information about these devices or their programming support, you may order any of the books shown after the tables for full and comprehensive data regarding the devices themselves or to help you choose the right development system. We can now also offer the latest project kits and software packs (ideal for breadboarding your experimental circuits) which are designed by the author of the excellent *Beginners Guide to the Microchip PIC*.

Guide to suffix coding.

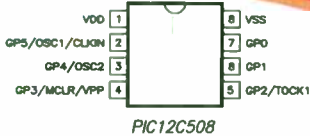
Suffix code	Basic device options
RC	resistor/capacitor clock speed selection may be used where cost is a design factor and precise timing control is not required
XT	crystal clock speed control for applications where event timing is critical
LP	the device is a low power version with a maximum clock speed of 200KHz
JW	the device has a windowed EPROM package and may therefore be erased after use and reprogrammed. This is not the case for any other suffix based on an EPROM as the others have no windows and are one time programmable (OTP) devices. The only exception is the 16C84 series which is electrically erasable (EEPROM)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11876	Price each exc. VAT	inc. VAT each
CR17T	PIC16C54RC/P	£2.490 £1.990 £1.690	£3.940
AD35Q	PIC16C54XT/P	£2.890 £2.590 £2.190	£5.230
AD32K	PIC16C54JW/P	£12.990 £10.490 £9.380	£19.490
AD33L	PIC16C54LP/P	£3.140 £2.890 £2.390	£3.790
CR18U	PIC16C55RC/P	£3.290 £2.990 £2.490	£4.990
AD38R	PIC16C55XT/P	£3.590 £3.290 £2.490	£4.990
AD37S	PIC16C55JW/P	£16.990 £15.490 £11.560	£23.990
CR20W	PIC16C57RC/P	£3.890 £3.050 £2.790	£5.790
AD41U	PIC16C57JW/P	£21.690 £19.590 £16.990	£29.990
AD42V	PIC16C57XT/P	£4.100 £3.750 £3.250	£5.590
CR19V	PIC16C56RC/P	£2.980 £2.840 £2.490	£3.580

#### PIC12C508

Arizona Microchip



This latest addition to the PIC microcontrollers are 8-bit data/12-bit instructions devices housed in an 8-pin DIL package, and are based on the Enhanced PIC16C5x family. The device requires only 33 single word instructions to learn, and all instructions are single cycle (1µs), except for program branches which are two-cycle. Other features include:

- 512 words in EPROM; 25 bytes of RAM
- Operating speed DC to 4MHz clock input DC to 1µs instruction cycle
- Seven special function hardware registers
- Two-level deep hardware stack
- Direct, indirect and relative addressing modes for data and instructions
- Internal 4MHz RC oscillator with programmable calibration
- In-circuit serial programming
- 8-bit real time clock/counter (TMRO) with 8-bit programmable prescaler
- Power-on reset
- WDT with its own on-chip RC oscillator for reliable operation
- Device reset timer (DRT)
- Internal pull-ups on I/O pins
- Programmable code-protection

Based on low power high speed CMOS EPROM technology, these fully static designed micros will work from 2.5V to 5.5V power rails, and consume

less than 2mA at 5V and at 4MHz.

These micros are suitable for personal care appliances, security systems, remote transmitters/receivers etc. The EPROM technology makes customising application programs (TX codes, appliance settings, RX frequencies etc.) extremely fast and convenient.

The PIC12C508-04/P (VQ98G) is a one-time programmable device; PIC12C508/JW (VQ99H) is an erasable, reprogrammable device

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 13403	Price each exc. VAT	inc. VAT each
VQ98G	PIC12C508-04/P	£1.380 £1.270	£1.990
VQ99H	PIC12C508/JW	£10.970 £9.220	£13.500

#### Device Programming Service

One of the most prohibitive aspects of using programmable logic and memory devices is often the price of the specialised programmers needed to store your design in the blank device.

In order to assist our customers with prototyping and with one off projects where the cost of a programmer cannot be justified, we now offer a programming service for any devices supplied by us.

If, at time of order, you supply us with a floppy disk (3.5 inch, PC XT/AT format), containing the device data to be programmed in Binary, Hex or similar recognised file format, we will undertake the programming of the ordered devices prior to dispatch. The initial set up charge for this service will be £10, with an additional charge of £1 for each device programmed (Bulk rates available, please ask for a quotation). Prices exclude VAT

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#### PICSTART Plus Development System

Arizona Microchip



This development system provides the development engineer with a highly flexible, low-cost Microcontroller design tool set for all PIC14000, PIC16C5x, PIC16Cxx and PIC17xx 8-bit OTP devices in standard 40-pin DIL packages. The system operates on any PC-compatible computers running under Windows 3, and is very easy to use, and features the highly acclaimed MLAB Integrated Development Environment from Microchip. This provides for full interactive control over the programmer. The MPASM macro assembler provides programmable memory data files, listing files and special files required for symbolic debug. The MPLAB-SIM software simulator allows the user to isolate code problems and debug firmware designs on PIC16/17 devices. It simulates the core functions as well as most of the peripherals of the PIC16/17 families. It is particularly suitable for optimising algorithms where real-time emulation is not required.

The programmer features a moulded plastic enclosure and special circuit design techniques to enhance ESD protection. Sample software programs are provided to help the development engineer to quickly become familiar with the PIC microcontrollers. A CD-ROM containing a complete databook and Embedded Control Handbook along with PIC16/17 device samples. Supplied with RS-232 cable 9V power supply and power cable.

Retail Unit Price Each (inc VAT)

Order Code	Type 13408	Price each exc. VAT	inc. VAT each
VH00A	PICSTART Plus	£127.650	£149.990

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## PIC 16C6X Series

This range of microcontrollers offers the designer a number of enhanced I/O facilities such as multiple timers (TMR), serial I/O and PCM output, programmable event capture and external interrupts. All members have a 35 single (14-bit) word instruction set and an eight level deep stack for interrupt handling.

Note that I/O pins are configurable as basic I/O or special functions such as Interrupt (IRQ) or Serial ports (SPI/I2C/SCI).

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 11835	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
LE38R	PIC16C61-04/P	£3.400	£3.150	£2.650	£4.690
LE39N	PIC16C61/JW	£12.890	£11.990	£9.990	£15.790
LE40T	PIC16C62-04/SP	£4.950	£4.490	£3.890	£6.990
LE41U	PIC16C62/JW	£16.250	£14.790	£12.650	£23.490
LE42V	PIC16C63-04/SP	£6.050	£5.550	£4.690	£8.290
LE43W	PIC16C63/JW	£18.600	£16.990	£14.500	£25.990

Part No.	I/O pins/features	EPROM words	RAM bytes	Max clock speed	Package	Order code
16C61-04	13/3 IRQ/TMR0	1k	36	4MHz	18 DIP	LE38R
16C61JW	13/3 IRQ/TMR0	1k	36	20MHz	18 DIP	LE39N
16C62-04	22/10 IRQ/SPI/I2C/TMR0,1,2	2k	128	4MHz	28 SDIP	LE40T
16C62JW	22/10 IRQ/SPI/I2C/TMR0,1,2	2k	128	20MHz	28 SDIP	LE41U
16C63-04	22/10 IRQ/SPI/I2C/SCI/TMR0,1,2	4k	192	4MHz	28 SDIP	LE42V
16C63-04	22/10 IRQ/SPI/I2C/SCI/TMR0,1,2	4k	192	4MHz	28 SDIP	LE43W

## PIC16C64

A low-cost, high performance CMOS, fully static, EPROM based 8-bit microcontroller that employs an advanced RISC-like architecture. The device has several peripheral features that are useful in many high performance applications. These features include: three timer/counters, capture, compare, PWM features and serial ports. The synchronous serial ports can be configured as either a 3-wire SPI or I<sup>2</sup>C. An 8-port parallel slave port is also provided. Special features are included that reduce external component count and enhance system reliability, such as four oscillator options, a highly reliable WDT with on-chip RC oscillator, SLEEP mode etc. There are 33 special function hardware registers, eight-level deep hardware stack and direct, indirect and relative addressing modes.

Part No.	I/O pins/features	EPROM bytes	RAM bytes	Max clock speed	Package	Order code
16C64-04	33	2k	128	4MHz	40-pin DIP	VQ89W
16C64-10	33	2k	128	10MHz	40-pin DIP	VQ90X
16C64JW	33	2k	128	10MHz	40-pin CERDIP	VQ91Y

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 13410	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
VQ91Y	PIC16C64/JW	£17.000	£13.070	£11.330	£20.560
VQ90X	PIC16C64-10/P	£5.920	£4.550	£3.940	£10.800
VQ89W	PIC16C64-04/P	£5.250	£4.890	£3.860	£7.290

## PIC 16C62X Series

To aid designers in interfacing their microcontroller circuits with an essentially analogue world, we are now able to offer a short range of the latest PICs which have built in analogue comparator circuits with input switching/multiplexing control and programmable voltage references. Comparator interrupts signal changes in comparator output level to the MCU and a set of registers allows control

and monitoring of each of the two comparators in each device.

The instruction set is the same as that for the 16C6X series already described, although these devices do not feature serial I/O.

They are equipped with single 8-bit timers and timer prescalers as well as featuring 'brownout' protection for added security in electrically noisy environments.

Oscillator type selection is programmable.

Part No.	I/O pins/features	EPROM words	RAM bytes	Max clock speed	Package	Order code
16C620-04	13	512	80	4MHz	18 DIP	LE44X
16C620/JW	13	512	80	20MHz	18 DIP	LE45Y
16C621-04	13	1k	80	4MHz	18 DIP	LE46A
16C621/JW	13	1k	80	20MHz	18 DIP	LE83E
16C622-04	13	2k	128	4MHz	18 DIP	LE47B
16C622/JW	13	2k	128	20MHz	18 DIP	LE84F

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 11832	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
LE44X	PIC16C620-04/P	£2.950	£2.690	£2.400	£4.190
LE45Y	PIC16C620/JW	£15.950	£14.600	£12.500	£22.490
LE46A	PIC16C621-04/P	£3.500	£3.250	£2.790	£4.690

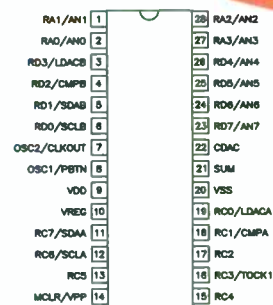
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 11832	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
LE83E	PIC16C621/JW	£17.890	£14.890	£14.490	£25.990
LE47B	PIC16C622-04/P	£3.950	£3.690	£3.250	£5.290
LE84F	PIC16C622/JW	£20.690	£17.240	£16.990	£29.990

## PIC14000 Mixed Signal Controller

Arizona Microchip

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PIC14000

The PIC14000 is a low-cost, high-performance, CMOS, fully-static, mixed signal, factory calibrated, 8-bit microcontroller. It features a medium to high resolution A/D converter (10 to 16 bits), temperature sensing, closed loop charge control, serial communication and low power operation. The PIC14000 is based on the high performance PIC16C74 core and uses a RISC-like Harvard architecture CPU with separate 14-bit instruction and 8-bit data buses. A two-stage instruction pipeline allows all instructions to execute in a single cycle, except for program branches which require two cycles. A total of 35 instructions are available, and a large register set is included.

The device is a 28-pin DIL package with the following features:

- Operating speed: DC to 20MHz clock input
- 4k of EPROM
- 192 bytes of RAM
- 20 I/O pins
- 38 special function hardware registers
- 6 internal/5 external interrupt sources
- Two 8-bit logarithmic D/As
- 8 external analog input channels, including 2 current sense input channels
- 6 internal analog input channels
- 2 charge-control channels with comparators
- A band gap reference
- An internal temperature sensor
- A programmable current source for dynamic range control of the A/D conversion

Additionally, the I<sup>2</sup>C serial port through a multiplexer supports two separate I<sup>2</sup>C channels. A special oscillator option allows either an internal 4MHz oscillator or an external crystal oscillator. The internal band-gap reference is used for calibrating the measurements of the analog peripherals. The calibration factors are stored in EPROM and can be used to achieve high measurement accuracy. The WDT includes its own on-chip RC oscillator providing protection against software lock-up. The TMR0 timer is a general purpose 8-bit timer/counter with an 8-bit prescaler, which can be clocked externally using the RC3/TOCK1 pin. The device fits perfectly in applications for battery charging, capacity monitoring uninterruptible power supply controllers, data logging etc. The PIC14000-04/SP (VR00A) is an OTP device, and PIC14000/JW (VR01B) is erasable and can be reprogrammable.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 11425	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
VR00A	PIC14000-04/SP	£9.200	£8.490	£7.360	£12.680
VR01B	PIC14000/JW	£17.950	£14.650	£13.980	£24.990

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### PIC16C7x Series

This family of PIC16C7x devices is equipped with an 8-bit analogue to digital converter connected to multiplexed inputs and three 8-bit timers (one on PIC16C71). This makes the family ideally suited for any application where a change in voltage or actual voltage level over fixed or variable periods of time needs to be monitored to make process control decisions. It uses the 35 member RISC instruction set. Oscillator type selection and code protection are set via a special configuration register. The 73 and 74 series feature a synchronous serial port (SSP) with SPI and I2C, and a USART/SCI. In addition, the 74 series has a 8-bit wide parallel slave port. The family of PIC16C7x devices is based on a fully static designed, low power, high speed CMOS EPROM technology, with enhanced core features, eight-level deep stack and multiple internal and external interrupt sources.

Part No.	I/O pins/features	EPROM words	RAM bytes	Max clock speed	A/D channels	Package	Order Code
16C71-04	13	1k	36	4MHz	4	18 DIP	DC19V
16C71-20	13	1k	36	20MHz	4	18 DIP	AD46A
16C71/JW	13	1k	36	20MHz	4	18 DIP	AD44X
16C73-04	22	4k	192	4MHz	5	28 DIP	VQ92A
16C73-10	22	4k	192	10MHz	5	28 DIP	VQ93B
16C73/JW	22	4k	192	10MHz	5	28 DIP	VQ94C
16C74-04	33	4k	192	4MHz	8	40 DIP	VQ95D
16C74-10	33	4k	192	10MHz	8	40 DIP	VQ96E
16C74/JW	33	4k	192	20MHz	8	40 DIP	VQ97F

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
		10+ 50+ 300+	1+
DC19V	PIC16C71-04P	£3.910 £3.610 £3.130	£6.950
AD46A	PIC16C71-20P	£6.250 £5.300 £4.600	£8.990
AD44X	PIC16C71-JWP	£19.580 £19.230 £16.660	£29.490
VQ92A	PIC16C73-04SP	£5.360 £4.950 £4.290	£7.540
VQ93B	PIC16C73-10P	£5.750 £5.300 £4.600	£8.600

Order Code	Type	Price each exc. VAT	inc. VAT each
		10+ 50+ 300+	1+
VQ94C	PIC16C73/JW	£15.700 £14.490 £12.560	£21.140
VQ95D	PIC16C74-04P	£6.580 £6.070 £5.260	£9.070
VQ96E	PIC16C74A-10P	£7.050 £6.500 £5.640	£9.360
VQ97F	PIC16C74/JW	£16.300 £15.040 £13.040	£29.320

### PIC16C84

This device is based on an electrically erasable ROM and may therefore be reprogrammed as many times as required. It is equipped with a single 8-bit timer/prescaler. The LC version is a low power device with an extended voltage range. A special configuration register allows the user to select oscillator type (RC, XT, LP or HS) as well as setting code protection.

Part No.	I/O pins/features	EEPROM words	EEPROM data bytes	Max clock speed	Package	Order Code
16C84-04	13	1k	64+36	4MHz	18 DIP	AY31J
16LC84-04	13	1k	64+36	4MHz	18 DIP	AD53H
16C84-10	13	1k	64+36	16MHz	18 DIP	AD50E

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
		10+ 50+ 300+	1+
AY31J	PIC16C84-04P	£4.780 £3.670 £3.180	£8.990
AD53H	PIC16LC84-04P	£5.320 £4.090 £3.540	£9.480
AD50E	PIC16C84-10P	£6.560 £5.040 £4.370	£10.790

### ICEPIC16CXX Real Time Emulator System For PIC16CXX / 12C50X

R.F Solutions



- Emulates all PIC16CXX & PIC12C50X devices
- Full speed, real time emulation to 20MHz
- Microchip emulation chip inside
- 8k (expandable to 16k) of 16CXX emulation memory
- High speed RS232 interface (57.6kbits/s)
- Source level debug in assembler or 'C'

The ICEPIC16CXX is a fully modular in-circuit emulator for use with Microchip's 16CXX or 12C50X microcontrollers. It has been designed to be a very comprehensive, but simple to use tool to get the target application working as quickly as possible.

Other salient features include: single step, Microsoft Windows compatible, same user interface for all PIC processors, 8k hardware break points, custom watch points and watch and modify multi-byte registers.

The system is supplied as a complete package comprising the emulator (requires separate daughter board- see below), power supply, RS232 cable, probe header, cable(s) to connect to the

application circuit, plus full supporting software including Microchip's MPASM. The emulator pod comprises the main emulator board which contains all the logic circuitry and serial communications. The personality daughter board contains the relevant emulation chipset, and the connections which feed through the front panel to the DIP header(s). In addition, each daughter board contains a 14-pin XTAL module that can be replaced with an equivalent type at any specific frequency the user desires within the frequency



range 32kHz to 20MHz. A kit containing six different frequency modules (32k, 1MHz, 2MHz, 8MHz, 16MHz and 20MHz) is available separately (order code GS40T). A jumper link is included which pulls the MCLR input of the emulator high so that the emulator can be used without a target application circuit being present.

The software has a simple to use toolbar with full context sensitive help and will display, and work, in HEX, Decimal or Binary. The minimum computer requirements are a 286 with EGA/VGA monitor, 4M RAM, mouse, free serial port, at least 4Mbytes of hard disk space and Windows 3.1 or DOS 3.3 or higher.

**Note:** The ICEPIC Emulator (VN99H) is supplied without a personality daughter board, which should be selected from the following list and ordered separately (only one daughter board may be fitted at any time).

Personality daughter board

Order Code	Suitable for PICs
VP00A	16C5X
GS52G	12C508, 12C509 (Requires VP00A)
VP01B	16C62, 63, 64, 65, 72, 73, 74
VP02C	16C71, 710, 711
VP03D	16C84, F83, F84
VP04E	16C62X

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
		2+	1+
VN99H	ICEPIC	£312.500	£440.630
GS40T	ICEPIC-OSC	£58.520	£73.340
VP00A	ICEPIC-DB5X	£175.000	£235.000
GS52G	ICEPIC-DBA12X	£23.750	£37.600
VP01B	ICEPIC-DB74A	£218.750	£313.340
VP02C	ICEPIC-DB711	£181.250	£266.340
VP03D	ICEPIC-DB84A	£181.250	£266.340
VP04E	ICEPIC-DB62X	£181.250	£266.000

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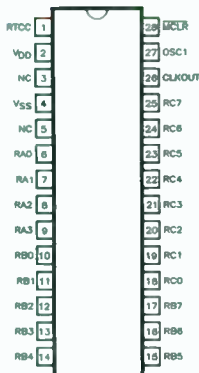
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## PIC16C57XT/SO

Arizona Microchip



A low-cost OTP high-performance 8-bit microcontroller with RISC-like instruction set consisting of 33 single word instructions. Supports direct, indirect and relative addressing modes. Features 7 special function hardware registers, 2-level deep stack, I/O ports with individual direction control, an 8-bit counter with 9-bit programmable prescaler, power-on reset, watchdog timer, sleep modes, security fuse for code protection and low-power CMOS architecture. 2K x 12 bytes of EPROM, 80 x 8 bytes of SRAM and 21 I/O lines. Maximum operating frequency 4MHz. 28-pin SOIC package.

**Specification** (typical VDD=5V, fosc=4MHz, 25°C)  
 Supply voltage, VDD: 5V  
 RAM data retention voltage: 1.5V (SLEEP mode)  
 Supply current: 3.3mA  
 Oscillator frequency: DC to 4MHz  
 Instruction cycle time: 200ns

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	200+	1+
AD43W	PIC16C57XT/SO	£2.990	£2.790	£2.690	£4.190

## PIC Books & Information

### A Beginner's Guide to the Microchip PIC - Revised Edition

by Nigel Gardner

This book describes how to get to grips with PIC devices and is intended for somebody who has never used such a device before. The reader is guided through the rudiments of selecting the correct device for a job, and how to begin programming it; together with a basic knowledge of how to debug source code, and a guide to the instruction set. The use of headers, look-up tables, reset vectors, real-time clock, watchdog timer, interrupts and development practices are covered with examples and diagrams along the way. This edition provides additional information on the A/D, E<sup>2</sup> and other devices in the 16Cxx family. The book is accompanied with an IBM/compatible 89mm (3.5-in.) DSHD disk (with compressed files) containing an assembler, simulator and various source code examples.



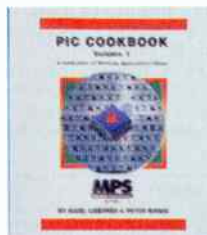
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	1+	1+	1+
AD31J	Beginners Gd To PIC	£19.950			£19.950NV

## PIC Cookbook - Volume 1

by Nigel Gardner and Peter Birnie

This collection of working application ideas is a natural progression from the Beginner's Guide to the Microchip PIC (order code AD31J), and includes a wide range of practical suggestions for using the Microchip PIC - 38 in all. Each idea includes a general description, circuit diagram and a flow chart, with all source code supplied on a 89mm (3.5mm) disk. All the applications have been graded from relatively simple (1) to more advanced (3). The authors are well versed in the use of PIC chips and this book will be a valuable addition to the PIC user and developers library. 1996. 210 x 155mm. 170 pages, illustrated.



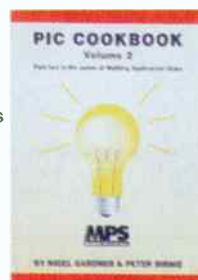
Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	1+	1+	1+
DT76H	PIC Cookbook	£19.990	NV		£19.990 NV

## PIC Cookbook Volume 2

by Nigel Gardner and Peter Birnie

The second book in the series of working applications, provides the reader with a general description of the application, circuit diagrams and flowcharts. The source code for all of the applications is provided on a 89mm/3.5in. disk that accompanies the book. The book covers in detail: square and pulse generator, 1200 baud modem, greenhouse watering system, electronic lock using the 16C84, program conversion between the 16C5x and the 16Cxx families and interfacing to DTMF encoders and decoders. Continuing the style of Volume 1, each application is graded for complexity. 1997. 150 ringbound pages approx., illustrated.



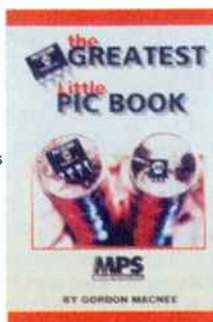
Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	1+	1+	1+
VO59P	PIC Cookbook Vol2	£19.990	NV		£19.990NV

## The Greatest Little PIC Book

by Gordon MacNee

This informative work covers the PIC12C5xx 8-pin microcontroller family from Microchip, and centres around applications requiring limited I/O. The book has been written to guide the reader through the device architecture and software modes, to show the benefits from using this family. Additionally, development tools device options and worked examples are covered and include: timers, sound generators, water descaler project, data logger, motor controls and light controls. Written by a very experienced design engineer who has worked with Microchip for many years, this book is an ideal training aid for any design engineer just starting to use the PIC12C5xx family. 1997. Ringbound pages, illustrated.



Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	1+	1+	1+
VO60C	Great Little PIC Bk	£19.990	NV		£19.990 NV

## Device Programming Service

One of the most prohibitive aspects of using programmable logic and memory devices is often the price of the specialised programmers needed to store your design in the blank device.

In order to assist our customers with prototyping and with one off projects where the cost of a programmer cannot be justified, we now offer a programming service for any devices supplied by us.

If, at time of order, you supply us with a floppy disk (3.5 inch, PC XT/AT format), containing the device data to be programmed in Binary, Hex or similar recognised file format, we will undertake the programming of the ordered devices prior to dispatch.

The initial set up charge for this service will be £10, with an additional charge of £1 for each device programmed (Bulk rates available, please ask for a quotation). Prices exclude VAT

## Microchip CD-ROM Technical Library

Arizona Microchip



- ★ PIC16/17 MCU data sheets and programming specifications
- ★ Serial/parallel EEPROM and EPROM data
- ★ Packaging diagrams and parameters
- ★ Development systems user's guides
- ★ Application specific standard products data sheets
- ★ Application notes

This dual medium (PC/Mac) CD-ROM contains a wealth of information on Microchip's products, and is easy to install and use. A menu screen offers a choice of product selection guide, data sheets, programming development systems and more. The desired topic is selected and a sub-menu appears that identifies the information in that section or goes to the technical document. Once in the selected document, the Adobe™ Acrobat™ Reader Quick Reference assists in navigating through the opened technical document.

### System Requirements

#### Windows PC

386, 486, or Pentium based PC with Windows 3.1, Windows 95, or Windows NT 3.5 or later. 4MB application RAM, 4MB hard disk space and a CD-ROM.

#### Macintosh:

68020 - 68040: Apple System 7.0 or later, 2MB application RAM, 4MB hard disk space and a CD-ROM

Power Macintosh: Apple System 7.0 or later, 4.5MB application RAM, 4MB hard disk space and a CD-ROM.

Note: This item is manufactured in limited runs and allocation of product world wide may result in shortages from time to time. Maplin will endeavour to supply the latest version.

Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	1+	1+	1+
DT75S	Microchip CD-ROM	£8.490	NV		£8.490NV

† This symbol beside an order code in the price block indicates WHILE STOCKS LAST





## PIC Starter Kit 54/55

**Bluebird Electronics**

- ★ Contains a ready made PCB
- ★ Includes components to get PIC's running
- ★ Kit 54 Works with 16C54/56/58/61/71/84
- ★ Kit 55 Works with 16C55/57



The hardware starter kit is intended to get PIC based projects up and running in a fraction of the time it takes to build a circuit from scratch. Once the board construction is completed, software development can begin in the sure knowledge that the hardware core is functional. A suitable programmer for use with this board is the PICSTART 16B1 (order as DM 79L) and the user will need some reprogrammable version of the chosen PIC for development purposes

Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
GT01B	PIC Hardware Kit 54	£19.560	£22.990
GT02C	PIC Hardware Kit 55	£21.260	£24.990

## PIC16C64/74 Hardware Starter Kit



**Bluebird Electronics**

This low-cost hardware kit has been designed to make prototyping, evaluation and development quick and easy for the 40-pin 16C64 and 16C74 family of PIC microcontrollers. The PCB contains all the necessary components

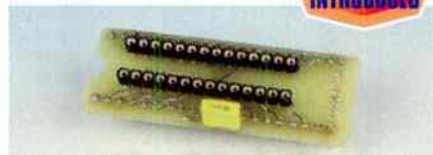
and is overlaid with component and port identification. There is on-board regulation for battery operation, RS232 interface, 8 LEDs, push buttons and a 200 hole patch area. A PIC software disk is included.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VP05F	PIC HWare Kit 64/74	£29.990	£33.990

## 16C63/73 Pin Conversion Adaptor

**Bluebird Electronics**



A pin conversion adaptor to allow the 16C63/73 28-pin devices to be used with the 16C64/74 Hardware Starter Kit (VP05F).

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VP06G	PIC 28 Pin Adaptor	£12.990	£16.990

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## PIC Software

**Bluebird Electronics**

This 89mm, 31/2in. high density disk contains the Microchip Simulator, Assembler, a Windows text editor and the majority of the application note source codes from the Microchip 'Embedded Control Handbook'. Additional software examples are included to run on the PIC16C64/74 Hardware Starter Kit (VP05F).



Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VP07H	PIC Software 2	£11.990	£14.990

## PIC Project Board and Software

**Bluebird Electronics**



**Project Board**

- ★ Contains circuit diagrams, PCB layout, etc.
- ★ Ready made PCB includes battery holder
- ★ Includes all project components (except PIC)
- ★ PIC programming and pinout date included
- ★ Works with 16C54/56/71/84 Software
- ★ Contains five different projects
- ★ Software and flowcharts included
- ★ Wiring instructions on disk supplied
- ★ Possible software modifications explained

The PIC Project Board is intended to show how the PIC Microcontroller works and how to interface it with the outside world. The board is supplied in a pack containing approximately 50 components including LEDs and a miniature sounder to monitor outputs as well as switch and potentiometer input components. A suitable programmer for use with this board is the PICSTART 16B1 (order as DM79L). The user will need some reprogrammable versions of the chosen PIC for development purposes.

The software pack supports the Project Board and details five possible applications, which will help to understand PICs. Projects include a timer counting in one second intervals; an A/D converter displaying in binary on LEDs; a two channel A/D based temperature sensor; a signal generator and electronic dice with sound effects. The five projects provide a flowchart, ready written software (provided on 3.5in. HD disk only, for PCs with PIC assembler programs) and wiring information. **Please note the Software Pack is not supplied with the Project Board.**

Retail Unit Price each (inc VAT)

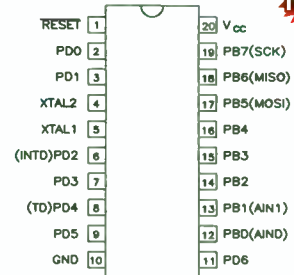
Order Code	Type	Price each exc. VAT	inc. VAT each
GT03D	PIC Software Pack	£12.720	£14.950
GT04E	PIC Project Board	£25.520	£29.990

See Stock Code Index For More Price Breaks

## Atmel AVR

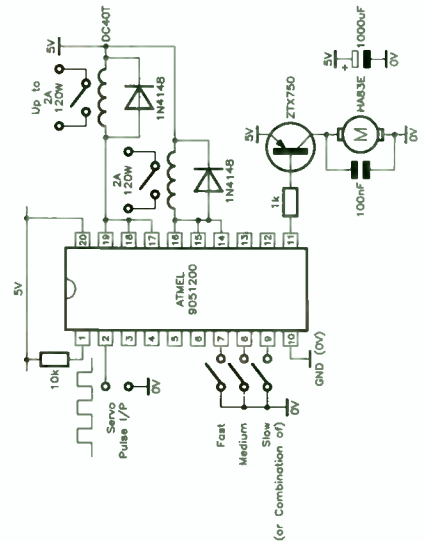
## AT90S1200 8-Bit AVR® Microcontroller with 1kbytes Flash

Atmel



AT90S1200

The AT90S1200 is a low-power CMOS 8-bit Microcontroller based on the AVR® enhanced RISC architecture. By executing powerful instructions in a single clock cycle, the device achieves throughputs approaching 1,000,000 ips per MHz, allowing the system design to optimise power consumption versus processing speed. The AVR® core combines an excellent instruction set with the 32 general purpose working registers. All the 32 registers are directly connected to the ALU, allowing two independent registers to be accessed in one single instruction, executed in one clock cycle. The resulting architecture is more code efficient while achieving throughputs up to 10x faster than conventional CISC microcontrollers.



The diagram shows a typical application, a motor/power controller.

The microcontroller has the following features: 1kbytes of Downloadable Flash, 64-bytes of EEPROM, 15 general purpose I/O lines, 32 general purpose working registers, internal and external interrupts, programmable watchdog timer with internal oscillator, an SPI serial port for program downloading and two software power saving modes. The 'idle mode' stops the CPU while allowing the registers, timer/counter, watchdog and interrupt system to continue functioning. The power-down mode' saves the register contents but freezes the oscillator, disabling all other chip functions until the next external interrupt or hardware reset. The AT90S1200 has a fully static operation from 0 to 16MHz, and requires a 4V to 6V supply rail. Supplied in a 20-pin package.

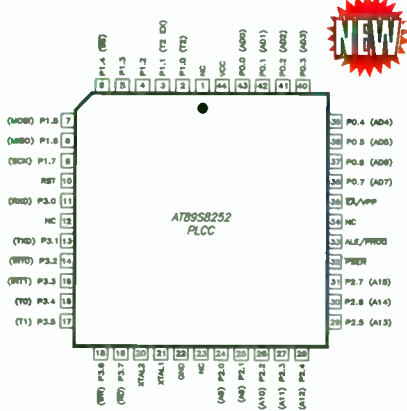
Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
NR25C	AT90S1200-16PCI	£4.410	£5.190
NR26D	AT90S1200-16SCE	£4.19	£4.930
NR27E	AT90S1200-16PCI	£4.410	£5.190
NR28F	AT90S1200-16JCO	£4.190	£4.930

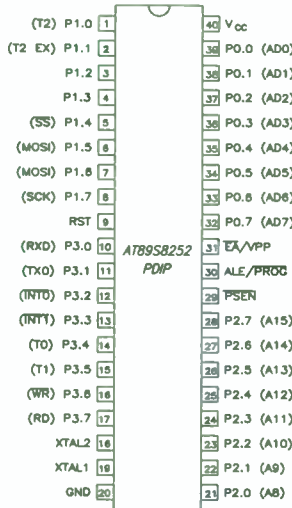


## AT89S8252 Microprocessor with Flash/EEPROM Memory

Atmel



The AT89S8252 is a low-power, high performance CMOS 8-bit microcomputer with 8kbytes of downloadable programmable and erasable read only memory (PEROM) and 2kbytes of EEPROM. The device is manufactured using Atmel's high density non-volatile memory technology and is compatible with the industry standard 80C51 instruction set and pinout. The on-chip downloadable Flash allows the program memory to be reprogrammed in-system through an SPI serial interface or by a conventional non-volatile memory programmer. As well as the Flash and EEPROM memory, there is 256 bytes of RAM, 32 I/O lines, programmable watchdog timer, two data pointers, three 16-bit timers/counters, a six vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator and clock circuitry.



The device is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The idle mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. The power-down mode saves the RAM contents but freezes the oscillator, disabling all other chip functions until the next interrupt or hardware reset. The downloadable Flash can be changed a single byte at a time and is accessible through the SPI serial interface. Holding RESET active forces the SPI bus into a slave input mode and allows the program memory to be written-from or read-to unless LOCK Bit 3 has been activated. The device requires a 4V to 6V power supply and is supplied in either a 44-pin PLCC package (NR39N) or 40-pin PDIP package (NR40T).

Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
NR39N	AT89S8252-24JC	£36.450	£42.840
NR40T	AT89S8252-24PC	£35.460	£35.170

## Atmel Nonvolatile Memory Databook

Atmel

With the nonvolatile memories available from Atmel, designers and engineers are given the ability to program devices late in a system's development cycle, or even after the system is complete. This feature allows the flexibility for meeting changing market conditions. The main products offered by Atmel are EPROMs, EEPROMs and Flash devices. This databook provides a comprehensive overview of such devices from Atmel.



Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
NR23A	Atmel Micro Databook	£11.750NV	£11.750NV

## Atmel AVR<sup>®</sup> Microcontroller Databook

Atmel

The AVR enhanced RISC microcontrollers from Atmel are based on a new RISC architecture that has been developed to take advantage of semi-conductor integration and software capabilities. This has resulted in microcontrollers offering the highest MIPS/milliwatt capability available in the 8-bit MCU market. Atmel's Flash-based microcontroller families incorporate advanced single-voltage Flash memory technology in the industry's broadest line of Flash and EEPROM based products. This comprehensive databook provides an excellent insight into the AVR enhanced RISC microcontrollers from Atmel.



Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
NR22Y	AVR Databook	£11.750NV	£11.750NV

## Explorer Training System

Kanda

The Explorer Training System is designed to allow you to quickly master a new microcontroller and includes the Explorer module which can be used to try out examples and exercises on 'real live' hardware.



The complete package includes training manuals and the Explorer Module, and is available in two versions - the Microchip PIC series (order code NR24B) and the Atmel AVR series (order code NR41U). The training system does not assume any previous knowledge of microelectronics or programming, but you should be computer literate. Where possible, the electronics required is covered, but additional reading might be required. The system is designed to cover as many sections of the BTEC and GNVQ Microelectronics syllabi as possible, and includes subjects such as the fetch-execute cycle, memory mapping, address decoding, addressing methods, subroutines and program design methods are covered as they naturally occur. In addition, seven segment displays, keypads, BCD, binary, decimal, hexadecimal, logic, timers, interrupts etc are all covered. The hardware module is intended for connection to

the parallel (printer) port. Software supplied on 3.5in high density disk.

Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
NR24B	PIC Explorer	£98.990	£116.320
NR41U	AVR Explorer	£98.990	£116.320

## Atmel CD ROM

Atmel

A CD-ROM giving comprehensive information on Atmel's range of non-volatile memory, microcontrollers and configurable logic devices. A copy of Adobe Acrobat Reader is included which is needed to view, print and search the information contained on the CD-ROM. System requirements are a 386 processor, or better, Windows 3.1, Windows 95 or Windows NT 3.5 or better, 4Mb of RAM and a CD-ROM drive. Includes AVR Risc Data.



Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
NR21X	Atmel CD Rom	£11.750NV	£11.750NV

## Zilog Z8

### Z8 Microcontrollers

Zilog

Those of you familiar with the venerable Z80 series CPUs and their assembly language need look no further for an entry into the modern world of microcontrollers. Zilog support this range of devices with software and hardware which make the transition from the older 'discrete' microprocessor technology to microcontrollers (which are practically a complete computer on a small chip) as painless as it could possibly be.



The Z8 series of microcontrollers from Zilog are a family of CMOS EPROM based compact devices with built in I/O and timing functions. They offer programmable low EMI (electromagnetic interference) operating modes for commercial applications coming under the scope of the new EMC/EMI regulations, as well as the flexible range of interfacing options you would expect from the industry's longest established and respected manufacturer. These low cost devices are based around a compact processor core incorporating two on-chip counter/timers with a number of selectable user modes, as well as two analogue comparators allowing easy interfacing with sensor circuits for process monitor and control applications where standard logic levels are not available. They have built in power-up reset circuits and are watchdog timer protected against software crashes. The devices are fully internally memory mapped in a similar fashion to the older Z80 series, in that the initial program memory locations contain the reset jump vector, followed by the interrupt vectors in familiar low byte/high byte order. Clock speed may be set by crystal, ceramic resonator, LC, or external clock drive. Six levels of interrupts are supported.

**Note that all program and data memory is internal except for the Z86E40, which can access up to 60k of external data memory.**

Full device data is available for these MCUs, including circuit diagrams for the adaptors allowing a standard EPROM programmer to program the E30/E40 devices. See below for details of ready built programming adaptors and the development kits/emulators for this range.

Price each shown, but sold only in multiples of 25.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE27F	Z86E04	£2.440	£2.390
LE28G	Z86E08	£2.440	£2.390
LE29G	Z86E30	£8.180	£6.540
LE30H	Z86E40	£11.080	£9.860

## Z86Exx Emulator/OTP Programmer

The Zilog Z86CCP00ZEM emulator contains all you will need to use any AT compatible PC (min system 286@12MHz with DOS 5.0 or above, Windows 3.0 or above, and 720k of hard disk free) to write and develop software for the Zilog range of processors and microcontrollers. Cross assembler software is provided for Z8, Z80 and Z8000 CPU cores allowing easy conversion from older assembly language source codes, or for those who are most comfortable writing for Z80.

This development system also includes a combined emulator/programmer board with RS232 interface for a standard PC Com port, and the 18-pin ZIF socket for programming the smaller MCUs. The board is pre-drilled to accept 28 and 40-pin ZIF sockets for programming the E30 and E40 MCUs, and an accessory kit (Z86CCP00ZAC) is available which contains all of the necessary ZIF sockets, emulation, power and Com leads. PSU requirement is 8V DC @ 1A.

The package contains very comprehensive data, including the full Z8 series databook and technical manual, emulator and cross assembler user guides, and other instruction guides.

### Retail Unit Price each (inc VAT)

Order Code	Type 11821	Price each exc. VAT 1+	inc. VAT each 1+
LE390 1	ICE System POOZEM	£254.460	£299.000
LE34M 1	Accs Kit for POOZEM	£92.760	£109.000

## Z86E04/E08 Application Board

This assembled circuit board is an ideal learning tool for those interested in using the Z86E04 or E08 MPUs for the first time. It includes a preprogrammed device, keypad and 4-digit LED display to demonstrate the versatility of these devices and their special functions, as well as showing how low cost A to D and D to A conversion techniques may be achieved. A 5V DC supply @ 50mA will be required.

The application board is supplied with application source code, Z8/Z80/Z8000 cross assembler, MOBJ link loader and full documentation.

### Retail Unit Price each (inc VAT)

Order Code	Type 11824	Price each exc. VAT 1+	inc. VAT each 1+
LE31J 1	E04/E08 Apps Kit	£169.360	£199.000

## Programming Adaptors

These adaptors allow the Z86E30 and E40 MCUs to be programmed as a 2764 on a standard EPROM programmer. Z86E3000ZDP is the 28-pin ZIF adaptor and Z86E4000ZDP is the 40-pin ZIF adaptor.

### Retail Unit Price each (inc VAT)

Order Code	Type 11825	Price each exc. VAT 1+	inc. VAT each 1+
LE32K 1	E30 Prog Adaptor	£64.410	£89.000
LE33L 1	E40 Prog Adaptor	£64.410	£89.000

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## SGS Thomson

### ST62 Microcontrollers

#### SGS Thomson

This range of HCMOS microcontrollers have been designed to monitor a large number of analogue voltage or sensor levels and are ideally suited to appliance, automotive and industrial control circuit applications where many process feedback sensors need to be monitored by the processor to formulate a control decision. I/O pins may be configured under software control as logic inputs with or without internal pull up resistors, interrupt generating inputs with pull up resistors or open drain or push-pull outputs. Many of the I/O pins may instead be programmed as analogue inputs for the internal 8-bit A-to-D converter.

The devices have built-in oscillator circuits requiring an external crystal or ceramic resonator @ 8MHz, digital watchdog circuits (hardware driven if the part no. includes the letters 'HWD' or software driven if the part no. includes 'SWD') to protect connected hardware from system crashes in electrically noisy environments and programmable timer facilities. Five interrupt levels are provided and selected I/O lines will sink up to 20mA for direct triac or LED driving.

Many dedicated control circuits will be used in harsh environmental conditions and one of the most variable is the ambient temperature, especially in control circuits housed outdoors or in automotive applications. Note that each device in the range with the letters B6 following the main part number is suitable for use in temperatures ranging from -40 to +85°C.

Part No.	I/O pins	EPROM Bytes	Data RAM bytes	A/D inputs	Features	Package	Order Code
62T10B6HWD	12	2K OTP	64	≤8	8-bit Timer	20 DIP	DC26D
62T10B6SWD	12	2K OTP	64	≤8	8-bit Timer	20 DIP	DC27E
62T15B6HWD	20	2K OTP	64	≤16	8-bit Timer	28 DIP	DC30H
62T15B6SWD	20	2K OTP	64	≤16	8-bit Timer	28 DIP	DC31J
62T20B6HWD	12	4K OTP	64	≤8	8-bit Timer	20 DIP	KU81C
62T20B6SWD	12	4K OTP	64	≤8	8-bit Timer	20 DIP	KU80B
62E20F1HWD	12	4K EPROM	64	≤8	8-bit Timer	20 DIP	KU74R
62E20F1SWD	12	4K EPROM	64	≤8	8-bit Timer	20 DIP	KU76H
62T25B6HWD	20	4K OTP	64	≤16	8-bit Timer	28 DIP	KU83E
62E25F1HWD	20	4K EPROM	64	≤8	8-bit Timer	28 DIP	KU77J
62E25F1SWD	20	4K EPROM	64	≤8	8-bit Timer	28 DIP	KU78K
62T60BB6	13	3868 OTP Prog 128 OTP Data	128	≤7	Timer, counter Serial port, 128-byte data EEPROM	20 DIP	AW56L
62E60BF1	13	3868 EPROM Prog 128 EPROM Data	128	≤7	Timer, counter Serial port, 128-byte data EEPROM	20 DIP	AW54J
62T65BB6	21	3868 OTP Prog 128 OTP Data	128	≤13	Timer, counter Serial port, 128-byte data EEPROM	20 DIP	AW57M
62E65BF1	21	3868 EPROM Prog 128 EPROM Data	128	≤13	Timer, counter Serial port, 128-byte data EEPROM	20 DIP	AW55K
62T45Q6	11+ 28 LCD	3868 OTP Prog 128 OTP Data	128	≤7	2 timers, 2 counters, Serial, LCD driver 96 seg	52 PQFP	AV75S
62E45G1	11+ 24 LCD	3868 EPROM Prog 128 EPROM Data	128	≤7	2 timers, 2 counters, Serial, LCD driver 96 seg	52 CQFP	AV74R

Note that the ST62T/E45 devices incorporate a full LCD display interface with 24 segment outputs and four backplane outputs, allowing up to 96 LCD segments to be independently driven.

Supplied in a 52-pin quad flat pack package (windowed for the EPROM version), and also including the versatile A-to-D and other I/O options included in the rest of the range, but with dual timers and counters, this device forms an almost complete control and display system on a single chip ideally suited to burglar alarm circuits or other complex monitor/control/display systems in both home and industrial applications.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11875	Price each exc. VAT 25+	100+	300+	inc. VAT each 1+
DC26D	62T10B6HWD	£4.540	£4.240	£3.970	£7.910
DC27E	62T10B6SWD	£4.320	£4.040	£3.780	£8.360
DC30H	62T15B6HWD	£5.390	£5.030	£4.710	£10.250
DC31J	62T15B6SWD	£5.210	£4.860	£4.560	£9.990
KU81C	ST62T20B6HWD	£4.750	£4.440	£4.160	£8.090
KU80B	ST62T20B6SWD	£5.020	£4.680	£4.390	£8.090
KU74R	ST62E20F1HWD	£16.190	£15.110	£14.160	£21.240
KU76H	ST62E20F1SWD	£15.000	£14.000	£13.120	£22.490
KU83E	ST62T25B6HWD	£5.840	£5.450	£5.110	£11.300
KU77J	ST62E25F1HWD	£17.950	£16.760	£15.710	£23.570
KU78K	ST62E25F1SWD	£16.710	£15.600	£14.620	£26.990
AW56L	Micro ST62T60BB6	£5.150	£4.810	£4.510	£10.340
AW54J	Micro ST62E60BF1	£8.310	£7.760	£7.270	£16.640
AW57M	Micro ST62T65BB6	£6.210	£5.800	£5.430	£12.590
AW55K	Micro ST62E65BF1	£9.270	£8.650	£8.110	£18.890
AV75S	OTP-ST62T45Q6 SGS	£8.220	£7.680	£7.200	£13.490
AV74R	MCU ST62E45G1 SGS	£66.420	£62.000	£58.120	£94.490

## Discrete Z8 Microcontrollers

### Zilog

This comprehensive data book from Zilog includes full specifications and information on the applications for their Z8 family of discrete Z8 microcontrollers for peripherals and consumer electronics and includes the Z86xxx series. The book takes the reader through the features, characteristics and applications of these versatile chips and the data is extensively supported by clear explanatory diagrams. Includes sections on applications and technical articles, support products and third party vendors, a Superintegration™ products guide and literature guide. 1994. Over 400 pages. 228 x 180mm. Illustrated.

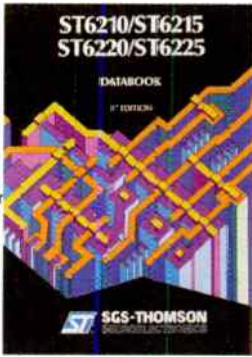


### Retail Unit Price each (inc VAT)

Order Code	Type 11886	Price each exc. VAT 1+	inc. VAT each 1+
LE85G	Zilog Z8 Databook	£3.990NVO	£3.990NV

**SGS-Thomson ST62XX Series Databook**

The ST6 family has been developed to meet the demands of flexible control systems, by incorporating the majority of the features in the device, so minimising external component count. For applications that require user input and feedback, the ST6 family provides efficient keyboard scanning configurations, direct LCD drive, as well as direct control via potentiometers.



Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
AV77J	ST6 Databook ST62	£3.990 NV	£3.990 NV

**ST6 Hardware Starter Kit**

This kit consists of a single-sided PCB with all the components necessary (except micro) to quickly and easily help develop projects based on the 20- and 28-pin DIL ST6 microcontrollers. The PCB provides access to all I/O lines including NMI, RESET and TIMER, and includes regulator, 8 LEDs for indication, 6MHz ceramic resonator, reset button and pin sockets.



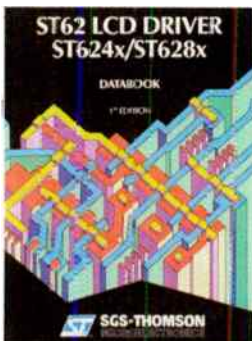
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Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
VP08J	ST6 Hardware Kit	£17.010	£19.940

**SGS-Thomson ST624X/ST628X Series with LCD Driver Databook**

The latest members of the ST62 family of microcontrollers include integrated LCD drivers making them ideal for shelf labelling, car radios and dashboards, thermostats, clocks, multimeters and any other applications requiring multi-digit LCD display and/or non-volatile memory storage.



Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
AV76H	Databook ST624X SGS	£3.990 NV	£3.990 NV

**Matra Harris (MHS)**

**80C31 Series Microcontrollers**

MHS

This range of microcontrollers maintain full software and hardware compatibility with the earlier and very popular 8031 MCUs, but is fabricated using CMOS technology to provide very substantial power savings over the older part. In addition to this, the 80C31 series incorporate two software invoked power saving modes which reduce power consumption in idle mode to approximately 15% of operating consumption, and "power down" mode which drops consumption to less than 10µA until the MPU is reawakened by interrupt. The 80C31 and 80C32 are ROMless devices which can separately address up to 64k of external program and data memory. The 80C52 has 8k of onboard mask ROM, which contains a Tiny Basic compiler, and the ability to address external memory. Each MCU is equipped with 32 I/O lines, a full duplex serial port, on chip oscillator and clock circuits. Note that clock speeds may run down to DC without loss of data.

Part No.	Data RAM	Timers	Interrupts	Max speed	Package	Order Code
80C31	128	2x16-bit	5/2 level	12MHz	40 DIP	AH46A
80C31-1	128	2x16-bit	5/2 level	16MHz	40 DIP	AH47B
80C32-1	256	3x16-bit	6/2 level	16MHz	40 DIP	AH50E

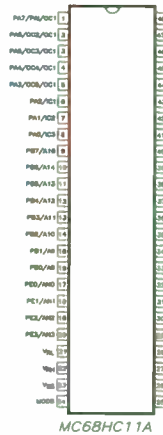
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AH46A	P-80C31	£1.610 100+ £1.520 300+ £1.430	£3.590
AH47B	P-80C31-1	£2.220 £2.100 £2.080	£2.630
AH50E	P-80C32-1	£2.870 £2.700 £2.550	£4.630

**Motorola**

**MC68HC11A1P 8-Bit Microcontroller**

Motorola



The MC68HC11A1P is a high performance microcontroller unit based on the M68HC11 family. This high-speed, low power consumption chip has multiplexed buses and a fully static design. It can operate at frequencies from 3MHz down to DC. The device includes power saving 'STOP' and 'WAIT' modes, 512 bytes of on-chip EPROM, and 256 bytes of on-chip static RAM (all saved during standby). It also has a 16-bit timer featuring 3 input capture channels and 5 output compare channels; an 8-bit pulse accumulator, real-time interrupt circuit and a Computer Operating Properly (COP) watchdog timer. I/O comprises a synchronous serial peripheral interface, asynchronous NRZ serial communications interface, an 8-channel, 8-bit A/D converter, 38 general-purpose I/O pins, of which 15 are bidirectional and 11 are input only and 12 are output only.

There are two operating modes. In single-chip mode, the device behaves as a microcontroller without external address or data buses. In expanded multiplexed mode, the MCU can access a 64K-byte address space. This space includes the same on-chip memory addresses used in single-chip mode, but also external peripheral and memory devices. The expansion bus is made up from ports B and C and control signals AS and R/W. These signals are active and valid for all bus cycles including accesses to internal memory locations. A recommended method for implementing multiplexed addressing and data access is to use PB0-PB7 for address lines A8 to A15, and PC0-PC7 giving the lower A0 to A7, which is latched into a 74373 non-inverting octal latch by AS, and then PC0-PC7 becomes a bidirectional data bus. Memory maps are the same for both single-chip

and expanded multiplex modes with 256 bytes of on-chip RAM initially located at \$0000, and the 64-byte register block at \$1000. This or the RAM can be relocated at any other 4K boundary after RESET. A 512-byte OTPROM is at \$B600 through to \$B7FF at RESET and an 8K-byte ROM is at \$E000 to \$FFFF. Hardware priority is built into the memory remapping. In special bootstrap mode, a boot loader ROM is enabled at \$BF40 to \$BFFF. The operating mode and memory map can be configured in a special OTPROM register programming mode. The chip is encapsulated in a 48-pin DIL package. Operating temperature range is -40 to +85°C.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

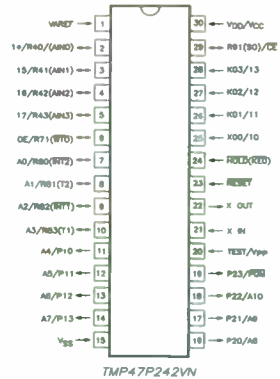
Order Code	Type	Price each exc. VAT	inc. VAT each
GX23A	MC68HC11A1P	£7.310 100+ £6.880 300+ £6.500	£13.720

**4 Bit Microprocessors**

**Toshiba**

**TMP47P242VN**

Toshiba



A 4-bit OTP single-chip microcontroller designed for ease of programming, versatility and low cost. Contains 2048 x 8 bits of OTP memory and 128 x 4 bits of random access memory. Programming is via a conventional EPROM programmer, enabling a fast turn-around for production volumes and a faster development cycle. Supplied in a 30-pin DIL package.

**Specification**

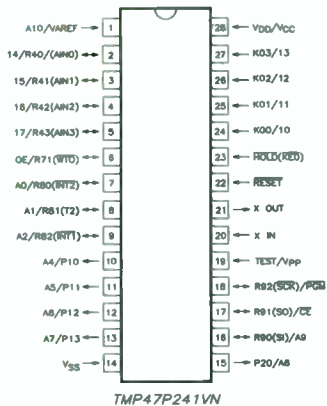
Supply voltage:	4.5V to 6V
Low voltage operation:	2.7V
Clock frequency:	0-4MHz to 4.2MHz
Instruction execution time:	1.9µs
Instruction cycle time:	1.9µs
Basic instructions:	90
I/O port:	23-pin
Address access time:	350ns max
Power dissipation:	600mW

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AW52G	Micro TMP47P242VN	£3.420 100+ £3.220 300+ £3.040	£6.790

## TMP47P241VN

Toshiba



A 4-bit OTP single chip microcontroller designed for ease of programming, versatility and low cost. Contains 2048 x 8 bits of OTP memory and 128 x 4 bits of random access memory. Programming is via a conventional EPROM programmer, enabling a fast turn-around for production volumes and a faster development cycle. Supplied in a 28-pin DIL package.

### Specification

Supply voltage:	4.5V to 6V
Low voltage operation:	1.7V
Basic instructions:	89
I/O port:	21-pin
Clock frequency:	0.4MHz to 6MHz
Power dissipation:	600mW
Instruction execution time:	1.3µs
Instruction cycle time:	1.9µs
Address access time:	350ns max

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AWS1F \$	Micro TMP47P241VN	25+ £2.680 100+ £2.520 300+ £2.380	1+ £5.030

## Digital Signal Processing DSP

### Analog Devices

## ADDS-21xx-EZLITE Development System

Analog Devices



The EZLITE Development System fulfils the need for a full-featured, low-cost DSP design tool, as this comprehensive kit lets the designer evaluate, develop, debug and prototype their DSP application. The kit includes a development board with 16-bit stereo audio I/O capability, assembler, linker and simulation software, PC host software, DSP algorithm source code and accessories. Preprogrammed demonstration programs, including MPEG audio decode and echo cancellation, highlight the performance of the ADSP-2100 architecture, and provides DSP designers with a clear insight as to the suitability of the DSP system. The board requires only a power source, an analogue input, a pair of amplified speakers to be able to run audio applications and demos. The board features a 16-bit stereo audio I/O capability, so making it ideal for evaluating and developing a wide range of audio applications from basic digital filtering to high performance MPEG

audio decode. Stereo audio input is provided by the on-board AD1847 codec which has the added flexibility of programmable gain and sample rates from 5.5kHz to 48kHz. The 16-bit ADSP-2181 DSP featured on the board has 32k words of RAM, DMA ports and power management on chip. Running the MPEG audio decode demonstration, the device plays approximately 7secs of audio without the need for external RAM, and with a glueless EPROM connection. Additional demonstrations include echo cancellation, ADPCM speech compression, FFT and DTMF tone generation. Code compatibility with the ADSP-2100 family means the board can be used to develop software applications for any of the devices in the family. The board can be connected to the RS-232 port of a PC, and a Windows based monitor program lets you interactively download programs and interrogate the ADSP-2181. The board comes with a socketed EPROM so that the monitor program, or demonstrations, can be run, or alternatively, a EPROM with your own code can be plugged in.

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP41U 1	ADDS-21XX-EZLITE	5+ £97.370 100+ £71.360	1+ £141.050

## SHARC™ EZ-Kit Lite

Analog Devices



Now with this easy-to-use development kit designers with no DSP experience, can soon master Analog Devices SHARC 32-bit floating point DSPs. The SHARC EZ-KIT Lite is a complete package for DSP evaluation and prototyping, containing all the essential tools for the development of a DSP design.

The DSP development board includes:

- ★ ADSP21061 SHARC processor running at 40MHz
- ★ UART - RS232 interface
- ★ AD1847 SoundPort audio CODEC
- ★ Line-in/out with stereo jacks
- ★ MIC in with stereo jack
- ★ Socketed EPROM - firmware includes a power on self-test with audio report and an RS232 based boot strap loader
- ★ Power regulator
- ★ Power LED and 4 flag LEDs

The powerful software and the SHARC's large on-chip memory allows the designer to run very sophisticated programs. Code development and prototyping tools included are:

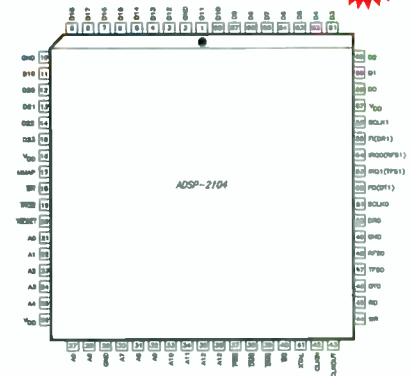
- ★ Assembler, linker, instruction level simulator, C compiler with numerical C extensions
  - ★ C source level debugger, and C runtime library
  - ★ A kernel for the SHARC for power on self-test and host interface
  - ★ A host-based Windows 3.1 uploader/downloader to allow the user to perform data uploads and downloads from/to the target SHARC EZ-KIT Lite
  - ★ Diagnostic utilities to control program operation and access DSP memory
- Supplied with RS-232 cable and 9V DC power supply with SHARC users manual and a comprehensive CD-ROM with SHARC development tools, EZ-KIT Lite manual and tutorial.

Retail Unit Price each (inc VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
NP42V 1	ADDS2106XE-EZLIT	1+ £155.00	£182.130

## ADSP-2104KP-80 Low-Cost DSP Microcomputer

Analog Devices



### Features

- ★ 16-bit fixed-point micro with on-chip memory
- ★ 512 words program RAM, 256 words data RAM
- ★ On-chip interval timer and two serial ports
- ★ 20MIPS, 50ns maximum instruction rate
- ★ Separate on-chip buses for program and data memory
- ★ Integrated I/O peripherals: serial ports and timers
- ★ Single cycle instruction execution and multifunction instructions

The ADSP-2104 is a single-chip microcontroller that is optimised for digital signal processing (DSP), and other high speed numeric processing applications. The processor combines the core DSP architecture - computation units, data address generators and program sequencer - with differential features such as on-chip program and data memory RAM, a programmable timer and two serial ports.

The ADSP-2100 family's flexible architecture and comprehensive instruction set support a high degree of parallelism. In one cycle the ADSP-2104 can perform all the following operations:

- Generate the next program address
- Fetch the next instruction
- Perform one or two data moves
- Update one or two data address pointers
- Perform a computation
- Rx and Tx data via one or two serial ports

The device requires a 5V supply and is housed in a 68-lead PLCC package.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP39N	ADSP2104KP-80	25+ £7.650 100+ £5.610	1+ £12.310



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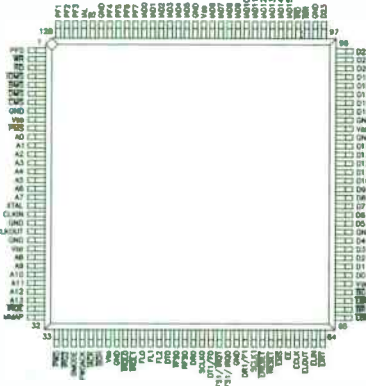
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**ADSP-2181KS-133 DSP  
Microcontroller**

Analog Devices



**Features**

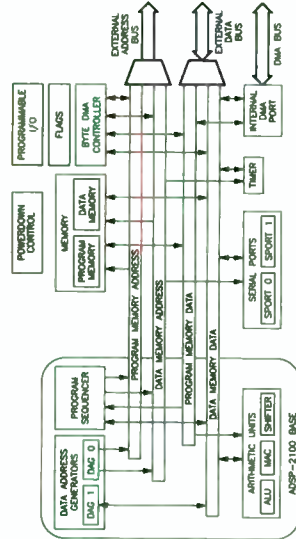
- ★ 30ns instruction cycle time
- ★ 3-bus architecture
- ★ Single-cycle instruction execution
- ★ Multifunction instructions
- ★ Power-down mode
- ★ 80k bytes of on-chip RAM
- ★ 16-bit internal DMA port
- ★ Six external interrupts

The ADSP-2181 is a single chip microcomputer optimised for digital signal processing (DSP), and other high speed numeric processing applications. The device combines the ADSP-2100 family base architecture (three computational units, data address generators and a program sequencer) with two serial ports, a 16-bit internal DMA port, a byte DMA port, a programmable timer, Flag I/O,

extensive interrupt capabilities and on-chip program and data memory.

The device has 80k bytes of on-chip memory configured as 16k words (24-bit) of program RAM, and 16k words (16-bit) of data RAM. Power down circuitry is provided to meet the low power needs of battery operated portable equipment.

In addition, the device supports new instructions which include bit manipulations - bit set, bit clear,



bit toggle, bit test - new ALU constants, new manipulation instruction (x squared), biased rounding, result free ALU operations, I/O memory transfers and global interrupt masking for increased flexibility. Fabricated in a high speed, double metal, 0.5µm CMOS process, the ADSP-2181 operates

with a 30ns instruction cycle/33.3MHz instruction rate. Every instruction is executed in a single processor cycle. The flexible architecture and comprehensive instruction set allows the processor to perform multiple operations in parallel. In one processor cycle the IC can:

- generate the next program address
- fetch the next instruction
- perform one or two data moves
- update one or two data address pointers
- perform a computational operation

This take place while the processor continues to:

- Rx and Tx data through the two serial ports
- Rx and/or Tx data through the internal DMA port
- Rx and/or Tx data through the byte DMA port
- decrement timer

The device requires a 5V supply and is housed in a 128-pin plastic quad flatpack (PQFP).

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 17382	Price each exc. VAT	inc. VAT each
NP40T 1	ADSP-2181KS-133	£59.090 25+ £43.300 100+	£85.600 1+

**Texas Instruments**

**TMS320 Digital Signal Processors**

The Texas Instruments TMS320 range of digital signal processors are without a doubt the best known DSPs in today's market, having been around since 1983 when they were awarded the "Product of the Year" award by Electronic Products magazine.

The versions selected for inclusion in the Maplin catalogue require no specialised programming or development system as they are designed to be used with external EPROM program memory with 50ns access time, organised as 4096 x 16 bits (2 x 2732), although programs used for commercial applications in large quantities may be ordered mask programmed by the manufacturer once the software is proved. Slower EPROMS may be used provided that the system clock is slowed to compensate for the increased access times (for example, a pair of 2732s with 150ns access time may be used with a DSP clocked at 4MHz). The devices contain a 32-bit arithmetic logic unit (ALU) and accumulator for supporting double precision two's complement arithmetic. The multiplier performs a 16x16-bit, 32-bit result multiplication in a single instruction cycle. The devices are also equipped with a hardware stack and PUSH/POP instructions. The instruction set has 60 members (84 for TMS320C25).

Part No.	Data words	Stack depth	Features	Pinout	Order Code
TMS320C10NL	144	4	5MHz clock oscillator	40 DIP	AW60Q
TMS320C10FNL	144	4	5MHz clock oscillator	44 PLCC	AW59P
TMS320C10NL25	144	4	6.25MHz clock oscillator	40 DIP	AW61R
TMS320C15NL	256	4	5MHz clock oscillator	40 DIP	AW63T
TMS320C15FNL	256	4	5MHz clock oscillator	44 PLCC	AW62S
TMS320C25GBL	544	8	10MHz clock, Serial I/O, Timer, 24 extra instructions	68 PGA	AW65V
TMS320C25FNL	544	8	10MHz clock, Serial I/O, Timer, 24 extra instructions	68 PLCC	AW64U

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11880	Price each exc. VAT	inc. VAT each
AW60Q	DSP TMS320C10NL	£4.400 25+ £3.360 100+ £3.520 300+	£5.280 1+
AW59P	DSP TMS320C10FNL	£4.400 25+ £3.360 100+ £3.520 300+	£5.280 1+
AW61R	DSP TMS320C10NL25	£4.490 25+ £4.080 100+ £3.630 300+	£5.440 1+
AW63T	DSP TMS320C15NL	£5.230 25+ £5.060 100+ £4.500 300+	£6.750 1+
AW62S	DSP TMS320C15FNL	£5.350 25+ £4.740 100+ £4.210 300+	£6.320 1+
AW65V	DSP TMS320C25GBL	£39.990 25+ £34.990 100+ £34.560 300+	£49.990 1+
AW64U	DSP TMS320C25FNL	£10.450 25+ £9.790 100+ £8.700 300+	£13.060 1+

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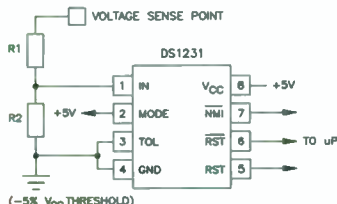
**e-mail: Sales@maplin.co.uk**

## CPU's & Support Devices

### DS1231 CPU PSU Monitor

Dallas Semiconductors

The DS1231 power monitor detects out of tolerance power supply conditions, and warns a processor based system of impending power failure by halting the processor to prevent spurious cycles and asserts Reset as Vcc falls below a selectable 5% (TOL to ground) or 10% (TOL to Vcc) threshold. When power returns, the processor is held inactive until well after power conditions have stabilised, safeguarding any memory in the system from inadvertent data changes.

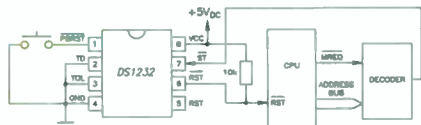


Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 11871	Price each exc. VAT	inc. VAT each
LE13P	CPU PSU Mon	10+ £3.290 25+ £3.090 100+ £2.990	1+ £3.990

### DS1232 CPU PSU Monitor/ Watchdog Timer

Dallas Semiconductors



The DS1232 power monitor detects out of tolerance power supply conditions and warns a processor based system of impending power failure by halting the processor, and asserts Reset as Vcc falls below a selectable 5% (TOL to ground), or 10% (TOL to Vcc), threshold. When power returns, the processor is held inactive until well after power conditions have stabilised. It also incorporates a watchdog timer circuit which forces the processor to a Reset state if the strobe input is not driven low prior to timeout (normally connected to an address decoder, MREQ or ALE signal in the system which would only become inactive in case of processor crashes. A separate push-button input is provided. Grounding this input by means of a push-button generates a clean reset signal at the Reset outputs (both active high and active low outputs are provided).

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11873	Price each exc. VAT	inc. VAT each
LE14Q	CPU PSU Mon+Rst	25+ £2.070 100+ £1.930 300+ £1.810	1+ £4.490

### DS1233 Econo Reset

Dallas Semiconductors

This compact device provides a complete CPU power monitor and Reset circuit with push-button override facility for 5V microprocessors and microcontrollers. It will generate a reset signal either upon closure of a connected push-button, which will be debounced and a 350ms signal generated, or upon Vcc dropping 10% below 5V. When power returns to normal levels, the Reset output will remain active for 350ms to allow the system to stabilise.



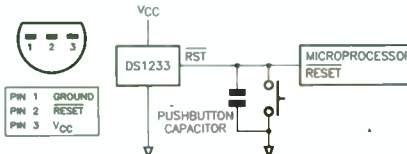
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11872	Price each exc. VAT	inc. VAT each
LE15R	EconoReset 5V	25+ £0.990 100+ £0.890 300+ £0.750	1+ £1.790

### DS1233A Econo Reset

Dallas Semiconductors

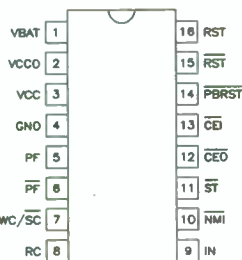
This compact device provides a complete CPU power monitor and Reset circuit with push-button override facility for 3-3V microprocessors and microcontrollers. It will generate a reset signal either upon closure of a connected push-button, which will be debounced and a 350ms signal generated, or upon Vcc dropping 10% below 3-3V. When power returns to normal levels, the Reset output will remain active for 350ms to allow the system to stabilise.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11852	Price each exc. VAT	inc. VAT each
LE16S	EconoReset 3.3V	25+ £0.971 100+ £0.907 300+ £0.850	1+ £1.790

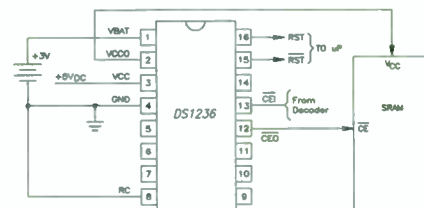
### DS1236 MicroManager



The DS1236 not only monitors CPU power supply to generate a Reset output in case of failure, but gates the system Chip Enable signal for RAM and controls 3V battery switching to effectively convert CMOS SRAM into non-volatile memory, which will retain its contents after the main power supply is removed. This makes it ideal for laptop or other portable processor based equipment as 'wake-up/sleep' controls with less than 100nA battery current consumption are also provided.

This device also provides the watchdog facility offered by the other members of the range as well

as a Non Maskable Interrupt output which can warn the processor of impending power failure before shutdown. In addition to these features, external power switching is also possible for high power applications and a 'freshness seal' may be invoked to electrically disconnect a back-up battery prior to any system failure.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11863	Price each exc. VAT	inc. VAT each
LE17T	DS1236	25+ £4.720 100+ £4.410 300+ £4.130	1+ £5.640

### DS1239 MicroManager

The DS1239 offers the highest level of PSU monitoring, control and system protection for any microprocessor or microcontroller based equipment. It monitors CPU power supply to generate a Reset output in case of failure or fluctuation, and also gates the system Chip Enable signal to protect RAM. It controls 3V battery switching to retain memory contents after the main power supply is removed. This makes it ideal for use with laptop or other portable processor based equipment - as 'wake-up/sleep' controls with less than 100nA battery current consumption are also provided.

This device also provides the hardware watchdog monitor facility offered by the other members of the range to restart the system after processor lock up and a Non Maskable Interrupt output which can warn the processor of impending power failure before shutdown. External power switching output control is provided for high power applications and a 'freshness seal' may be invoked to electrically disconnect a back up battery prior to any system failure.

In addition to this very comprehensive range of features, the power switching output may be toggled by a keypad or similar button to control an external mains power supply connection, via a low current opto-triac isolator and triac.

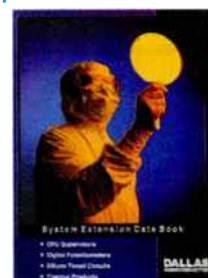
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11864	Price each exc. VAT	inc. VAT each
LE18U	DS1239	25+ £4.040 100+ £3.770 300+ £3.530	1+ £6.490

## System Extension Data Book

Dallas Semiconductor Corporation

This comprehensive reference book provides extensive data on the Dallas range of semiconductors, with sections on their battery management products, CPU supervisors, digital potentiometers, line interface chips, silicon timed circuits, system extension and thermal management products. Supported throughout by clear technical drawings and charts and with a



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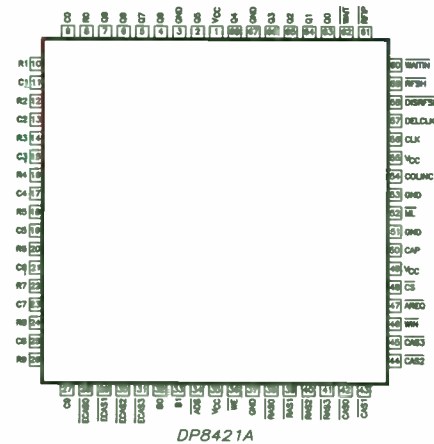


section of mechanical drawings at the back of the book.  
1994-95. 502 pages. 228 x 176mm. Illustrated.

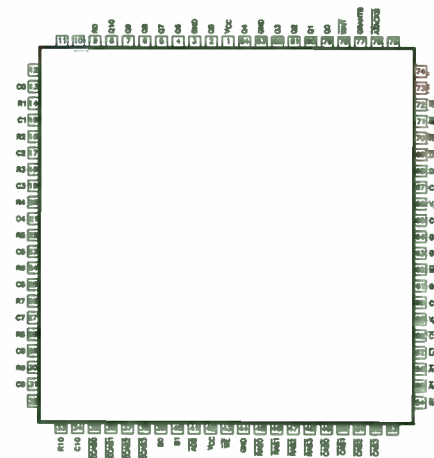
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LE88V	Dallas D'book	£4.990 NV	£4.990 NV

## DP8421A/22A Programmable DRAM Controllers



DP8421A



DP8422A

### Features

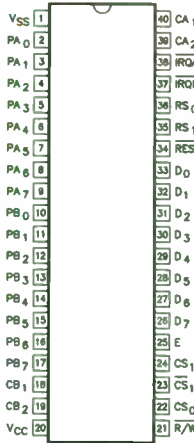
- ★ On chip high precision delay line to guarantee critical DRAM access timing parameters
  - ★ microCMOS process for low power operation
  - ★ High capacitance drivers for refresh lines and DRAM address on chip
  - ★ On-chip support for nibble, page and static column DRAMs
  - ★ Byte enable signals on-chip allow byte writing in a word size up to 32 bits with no external logic
  - ★ Selection controller speeds of 25MHz
  - ★ On-board Port A/Port B (DP8422A only) refresh arbitration logic
  - ★ Direct interface to all major microprocessors
  - ★ 4 RAS and 4 CAS drivers (all programmable)
- A choice of two Dynamic RAM Controller ICs for use in low cost, single chip interfaces between dynamic RAM and all 8-, 16- and 32-bit systems. Each chip generates all the required access control signal timing for DRAMs. All refreshes and accesses are arbitrated on chip. If necessary active low WAIT and DTACK outputs insert wait states into system access cycles, including burst mode accesses. All the usual refresh signals are supplied for DRAMs including on-chip precharge counters for each refresh output, thus avoiding delayed back to back accesses because of precharge. The DP8422A has two access ports to simplify dual accessing, can work with 4Mb DRAM, and as a direct drive memory capacity of 64Mb. Arbitration among these ports and refresh is done on-chip. The DP842A can work with 1Mb DRAM, and as a direct drive capacity of 16Mb.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AV87U	5 CMOS 1MB DRAM Cont	£19.250	£16.850
AV88V	1 CMOS 4MB DRAM Cont	£21.990	£20.390

## EF6821P (6521) Peripheral Interface Adaptor (PIA)

SGS Thomson



6821

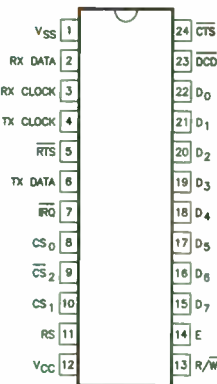
The IC provides a universal means of interfacing parallel data to a microprocessor. One chip is capable of interfacing the 8-bit data bus of the MPU to two 8-bit peripheral buses. Data is able to flow in either direction to and from either peripheral bus under the control of the microprocessor. The two peripheral bus output/inputs are slightly different from one another in that I/O A will drive TTL or the base of a transistor up to 1mA at 1.5V in output mode while i/o B has 3-state capability allowing interface with another MPU.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WQ46A	EF6821P	£1.490	£1.440

## EF6850P Asynchronous Communications Interface Adaptor

SGS Thomson



6850

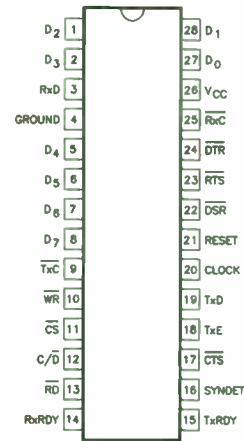
This IC will interface the microprocessor data bus to serial asynchronous data, both for input and output. The parallel data of the MPU bus is serially transmitted and received by this IC with proper formatting and error checking. A programmable control register provides variable word lengths (8 or 9-bit), clock division (/16, /64), transmit, receive and interrupt control. The device has optional even or

odd parity, and performs parity, overrun and framing error checking. Transmissions up to 500k bauds (kbps) are possible and three control lines are provided for control of a modem for line transmission (e.g. to cassette recorder or amateur radio transceiver).

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WQ48CE	EF6850P	£1.490	£1.440

## 8251A Programmable Communication Interface



8251A

This USART chip is programmed by the MPU to operate using virtually any serial data transmission technique presently in use. It interfaces the MPU's parallel data bus with any peripheral requiring serial data (e.g. cassette recorder, modem etc.). Features are: synchronous mode - 5- to 8-bit characters, internal or external character synchronisation and automatic sync insertion; asynchronous mode - 5- to 8-bit characters, clock rate (/16, /64), break character generation, 1, 1/2 or 2 stop bits, false start bit detection, automatic break detect and handling; up to 64k baud (kbps); full duplex double buffered transmitter and receiver; error detection-parity, overrun and framing; all inputs and outputs fully TTL compatible.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YH49D	8251	£2.490	£2.390

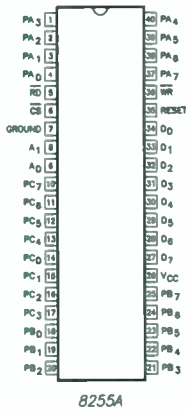
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e-mail: Sales@maplin.co.uk

## 8255A Peripheral Interface Adaptor



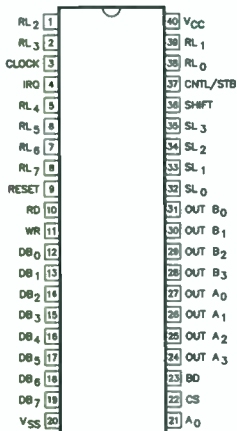
8255A

A general purpose I/O device having 24 I/O pins which may be individually programmed in two groups of 12 and used in 3 major modes of operation. In mode 0 each group of 12 I/O pins may be programmed in sets of four to be input or output. In mode 1 each group may be programmed to have 8 lines of I/O, and of the remaining 4, three are used for handshaking and interrupt control signals. Mode 2 is a bidirectional bus mode which uses 8 lines for the bus and 5 lines (one borrowed from the other group) for handshaking.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2732	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
YH50E	8255A	£2.900	£2.450	£1.990	£5.730

## 8279 Keyboard/Display Interface



8279

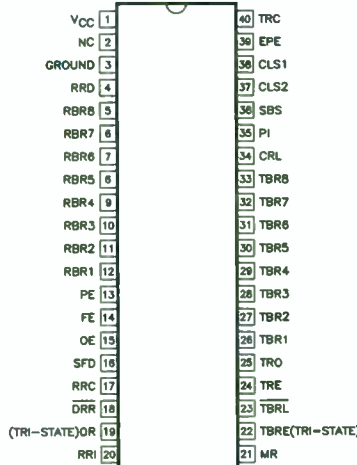
This IC is a general purpose keyboard and display I/O interface device for use with microprocessors. The IC will scan a 64-contact key matrix and perform 2-key lockout and N-key roll-over. Keyboard entries are debounced and strobed in an 8-character FIFO and if more than 8 characters are entered, overrun status is set. Key entries set the interrupt output line to the MPU. The display part of the IC provides a scanned interface for LED and other types of displays. Numeric and alphanumeric displays and simple indicators may be used. The IC has a 16x8 display RAM which can be organised into two 16x4. The RAM can be loaded or interrogated by the MPU. Right entry calculator and left entry typewriter display formats are possible. Both read and write of the RAM can be done with auto-increment of the RAM address.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2754	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
YH51F	8279	£4.380	£3.500	£3.320	£7.990

## CDP6402CE Universal Asynchronous Receiver/Transmitter

Harris



6402

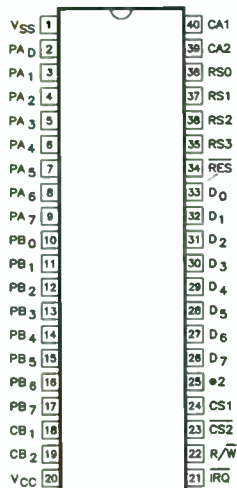
This industry standard UART will interface computers or microprocessors to asynchronous serial data channels. The receiver converts serial start, data parity and stop bits to parallel data, verifying proper code transmission, parity and stop bits. The transmitter converts parallel data into serial form and automatically adds start, parity and stop bits. The data word length can be 5, 6, 7 or 8-bits. Parity may be odd or even. Parity checking and generation can be inhibited. The stop bits may be one or two, or one and a half if transmitting 5-bit code. This IC is sometimes supplied coded CDP1854ACE. These two parts are identical.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2753	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
QQ04E	CDP6402CE	£4.120	£3.290	£3.130	£7.290

## RC6522P Versatile Interface Adaptor (VIA)

Rockwell



6522

A very flexible I/O device that contains a pair of very powerful 16-bit interval timers, a serial-to-parallel/ parallel-to-serial shift register and input data latching on the peripheral ports. Expanded handshaking capability allows control of bi-directional data transfers between VIAs in multiple processor systems. Control of peripheral devices is handled primarily through two 8-bit bi-directional ports. Each line can be programmed as either an input or an output. Several peripheral I/O lines can be controlled directly from the interval timers for generating programmable frequency square waves

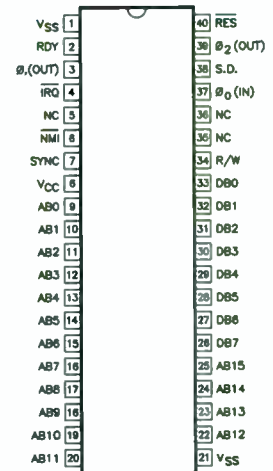
or for counting externally generated pulses. To facilitate control of the many powerful features of this chip, an interrupt flag register, an interrupt enable register and a pair of function control registers are provided.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2726	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
UF25C	RC6522P	£2.860	£2.290	£2.170	£4.690

## RC6502AP Microprocessor

Rockwell



6502

An 8-bit microprocessor in a 40-pin DIL package. The device requires only one +5V supply and the bus is directly compatible with MC6800 series ICs. The IC can address up to 64K bytes of memory directly with its 16-bit address lines. There are 13 addressing modes, 56 instructions and 7 internal registers. The 6502A requires a single phase TTL clock operating from a 2MHz crystal.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2727	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
QQ02C	RC6502AP	£3.060	£2.450	£2.320	£5.990

## Z80180

Zilog

The Zilog Z80180 Microprocessor/Microcontroller provides an ideal upgrade path for those designers who are already familiar with the Z80 instruction set, but have found that time and tide have passed the Z80 by and those hard learned assembly language skills and techniques seem obsolete unless a whole new set of mnemonics and addressing modes are memorized. The Z80180 maintains full software compatibility with the Z80, but offers the designer a complete computer system in one 64-pin device. The device incorporates the following features:

- ★ It generates the system clock (internal and external) from an external crystal. The clock speed is 10MHz which provides a five times speed increase over the most popular version of the Z80.
- ★ The Memory Management Unit allows the user to map the processors nominal 64k address range over an external 1Mbyte banked area.
- ★ The Asynchronous Serial Communications Interface provides two individual full-duplex UARTs with programmable baud rate and modem control signals.
- ★ Programmable Reload Timer - this logic consists of two separate 16-bit timers with count reload register.
- ★ The Clocked serial I/O channel provides a simple half-duplex serial transmitter and receiver.

In addition to these hardware features, the extended

Z80 instruction set includes 8-bit multiply and block I/O instructions, sleep mode and several other useful non-destructive test instructions. The device provides 8-bit refresh addresses and allows many instructions to execute in fewer machine cycles. An evaluation/development kit is available.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE36P	Extended Z80 10 Mhz	£7.560	£9.990

## Z80180 Evaluation Kit

Zilog

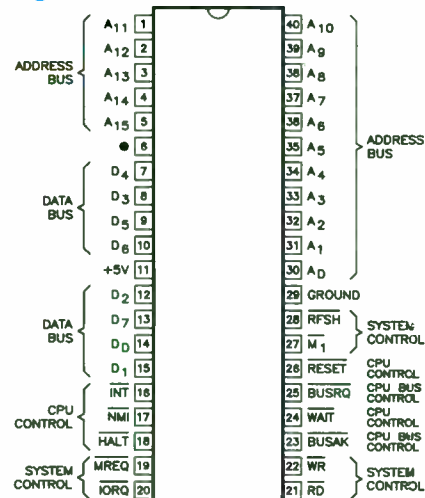
This kit is intended to provide all of the tools needed to develop, program and use the Zilog Z80180 extended microprocessor. The kit contains an assembled circuit board complete with Z80180 MPU, 8Kx8 EPROM containing Debug Monitor and Download software, 8Kx8 Static RAM, sockets for expansion connections and RAM/ROM, RS232 interface (9600 baud), NMI and Reset switches. The kit is provided with Z8/Z80/Z8000 Cross Assembler software (for IBM AT compatibles), Loader/Link software, Z80181 example software and the board Debug/Monitor source code. Full technical manuals and software user guides are included, as is a 25 pin RS232/Com cable. The package allows software to be written in standard Z80 code, assembled and downloaded to the RAM on the Evaluation PCB. The software may then be run and debugged via the monitor software on the board. The unit requires a regulated 5VDC power supply @ 0.65A.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LE37S	Z80181 Dev Kit	£119.140	£139.990

## Z80-CPU Microprocessor

Zilog



### Z80-CPU

This 40-pin DIL IC is an extremely powerful 8-bit microprocessor having 158 instructions including all of the 8080 instructions giving total software compatibility. Thus programs written for the 8080 may be run on the Z80 and later updated to make use of the powerful Z80 instruction set. Typically the Z80 requires 25% to 50% less memory space than the 8080 and gives 5 times the throughput of the 8080. There are 17 internal registers including two real index registers, and three modes of fast interrupt response. Static memories can be interfaced using only an external address decoder to provide the appropriate chip select signals. Another advantage of the Z80 is that it can provide all of the refresh control for dynamic memories up to 64K bytes directly, and will interface directly with most 18-pin and 22-pin 4K dynamic RAMs with virtually no additional external logic (16-pin types require only an external address multiplexer). The

Z80 requires only a single 5V supply as do all its support chips described below and a single-phase TTL clock operating from a suitable crystal.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QW00A	Z804004PSC	£2.600	£4.490

## DS1213 SmartSockets

The Dallas range of SmartSockets accepts standard CMOS static RAMs and monitor Vcc for an out of tolerance condition. When such a condition is detected, an internal lithium energy source is switched on and write protection is unconditionally enabled to protect RAM contents. Using a SmartSocket for memory protection saves PCB space since the combination of socket and RAM uses no more area than the memory alone. Data retention time is greater than 10 years with the correct RAM selection.

The DS1213B (LE24B) is suitable for use with 2K x 8 or 8K x 8 RAMs, the DS1213C (LE25C) is suitable for 32K x 8 RAMs and the DS1213D (LE26D) is for 32K x 8 or 128K x 8 RAMs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LE24B	DS1213B	£9.350	£10.990
LE25C	DS1213C	£9.350	£10.990
LE26D	DS1213D	£9.350	£10.990

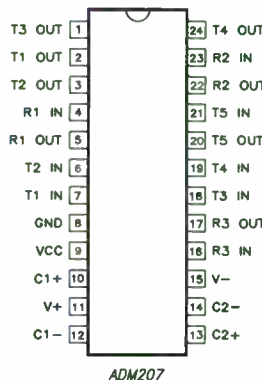
### The Abbreviations

- AD - Analog Devices
- ATM - Atmel
- BB - Burr-Brown
- DAL - Dallas
- EL - Elantec
- FA - Fagor
- HA - Harris
- HIT - Hitachi
- LT - Linear Technology
- MAX - Maxim
- ME - Micro Electronics
- MOT - Motorola
- NEC - NEC
- NSC - National Semiconductor
- PC - Philips Components
- RAY - Raytheon
- SAM - Samsung
- SEM - Semelab
- SIE - Siemens
- SIG - Signetics
- SLX - Siliconix
- ST - SGS-Thomson
- TFK - Temic
- TI - Texas Instruments
- TOSH - Toshiba
- ZET - Zetex

## Dataline Drivers/Receivers

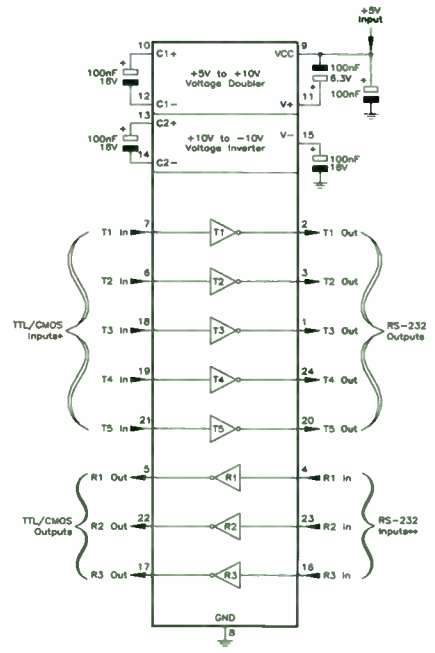
### ADM207AN RS-232 Drivers/Receivers

Analog Devices



The ADM207 is a 5-line drivers/3-receivers IC intended for all EIA-232-E and V.28 communications interfaces, especially in applications where ±12V is not available. The device includes two internal charge pump voltage converters to allow operation from a single +5V supply. These converters produce the ±10V required for the RS-

232 output levels from the single +5V. The device requires just four external capacitors to produce the ±10V supplies. Supplied in a 24-pin DIL package.



### Specification

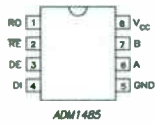
- Power supply: 5V, 5mA, no load
- I/P logic threshold low: 0.8V max
- high: 2V min
- Logic pull-up current: 10µA typ
- RS-232 input voltage range: -30V to +30V
- threshold low: 1.2V typ
- threshold high: 1.7V typ
- resistance: 5kΩ typ
- TTL/CMOS output voltage low: 0.4V max
- voltage high: 3.5V min
- leakage current: 0.05µA
- Propagation delay: 0.5µs
- Slew rate: instantaneous: 25V/µs
- transition region: 6V/µs
- O/P resistance: 300Ω
- RS-232 o/p s/c current: ±12mA typ, ±60mA max

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

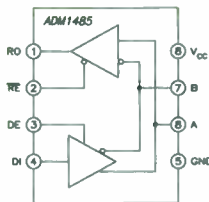
Order Code	Type	Price each exc. VAT	inc. VAT each
NP60Q	ADM207EAN	£2.510	£4.040

## ADM1485JN Low Power EIA RS-485 Transceiver

Analog Devices



The ADM1485 is a differential line receiver suitable for high speed bi-directional data communications on multipoint bus transmission lines. It is designed for balanced data transmission and complies with both EIA RS-485 and RS-422 standards. The IC contains a differential line driver and differential receiver, both being enabled independently, and when disabled, the outputs go to a tristate mode. Up to 32 transceivers may be connected simultaneously on a bus, but only one driver should be enabled at any time. Disabled drivers should not load the line, and the ADM1485 driver features high output impedance when disabled, and powered down. Additionally, the receiver goes to a logic high output state if the inputs are floating.



The device has extremely fast switching speeds, and with minimal driver propagation delays, allows data transmission rates of up to 30Mbits/s. Low skew minimises EMI interference.

The ADM1485 is suitable for low-power RS-485 systems, packet switching, LANs, data multiplexers, ISDN applications etc. Supplied in an 8-pin DIL package

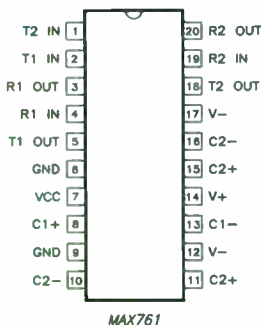
**Specification**  
 Power supply: 5V, 2.2mA max  
 Propagation delay driver: 10ns typ  
 receiver: 25ns typ  
 Skew: 5ns max  
 Diff o/p voltage: 5V max  
 Diff i/p threshold voltage:  $\pm 0.2V$   
 I/P resistance: 12k $\Omega$  min

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

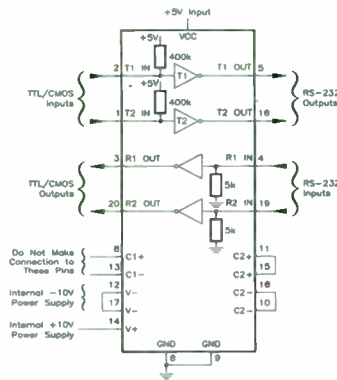
Order Code	Type	Price each exc. VAT	inc. VAT each
NP61R	ADM1485JN	£1.880 25+ £1.380 100+	£3.030 1+

## MAX233CPP + 5V Powered RS-232 Driver/Receiver

Maxim



The MAX233 is a 2-line driver/receiver IC intended for all EIA/TIA-232E and V.28/V.24 communication interfaces, especially where no  $\pm 12V$  supply is available. The device includes on-board voltage converters that require no external capacitors which makes the IC suitable for battery-powered systems, and applications where PCB space is critical. Data transfer rate is 120kbps. Supplied in a 20-pin DIL package.



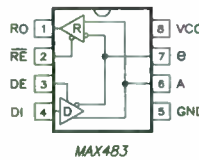
**Specification**  
 Power supply: 5V, 5mA typ  
 Rx i/p voltage range: -30V to +30V  
 RS232 i/p resistance: 5k $\Omega$  typ  
 Tx output resistance: 300 $\Omega$   
 TTL/CMOS output voltage low: 0.4V max  
 high:  $V_{CC} - 0.4V$   
 Transition slew rate: 4V/ $\mu s$  typ  
 Typical propagation delay RS232 in-TTL/CMOS out: 6 $\mu s$  typ

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NR45Y	MAX233CPP	£4.580 10+ £3.810 50+ £3.270 200+	£5.720 1+

## MAX483CPA Low-Power RS-485/RS-422 Transceiver

Maxim



The MAX488 is a low power transceiver for RS-485 and RS-422 communications, containing one drive and one receiver. The device features a reduced slew-rate driver that minimises EMI and reduces reflections caused by improperly terminated cables. This allows error-free data transmission up to 250kbps. The device requires a single +5V supply and draws 120 $\mu A$  quiescent current, in 'shutdown' mode this drops to only 0.1 $\mu A$ .

The driver is short-circuit current limited and is protected against excessive power dissipation by thermal shutdown circuitry that places the driver outputs into a high impedance state. The receiver input has a fail-safe feature that guarantees a logic-high output if the input is open-circuit. Supplied in an 8-pin DIL package.

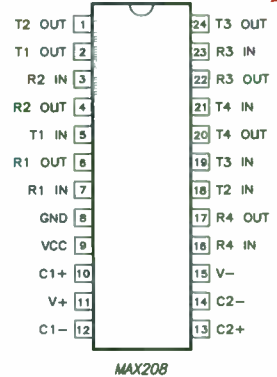
**Specification ( $V_{CC} = 5V$ )**  
 Supply voltage: 5V nom, 12V max  
 Differential driver output RS-422: 2V min  
 RS485: 1.5V min, 5V max  
 Driver common mode output: 3V max  
 Input voltage high: 2V min  
 low: 0.8V max  
 Rx diff. threshold voltage: -0.2V to +0.2V  
 Rx input impedance: 12k $\Omega$   
 I/P to O/P driver: 800ns typ  
 receiver: 250ns min to 2ms max  
 Driver o/p skew to o/p: 100ns  
 Driver rise/fall time: 250ns min, 2ms max  
 Max. data rate: 250kbps

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

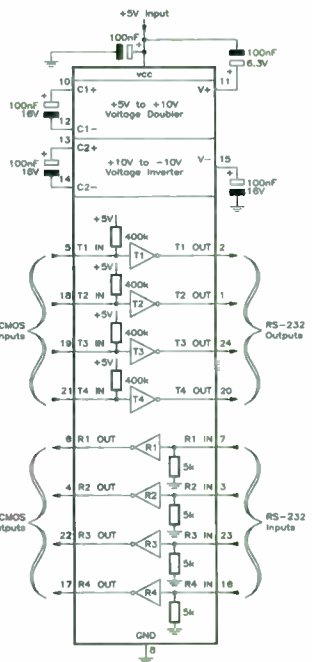
Order Code	Type	Price each exc. VAT	inc. VAT each
NR46A	MAX483CPA	£1.700 10+ £1.410 50+ £1.210 200+	£2.120 1+

## MAX208CNG + 5V RS-232 Transceiver

Maxim



The MAX208 transceiver is designed for RS-232 and V.28 communication interfaces where  $\pm 12V$  supplies are not available. On-board charge pumps convert the +5V input to the  $\pm 10V$  needed for RS-232, and require only four external 0.1 $\mu F$  capacitors for the conversion circuit. The four drivers and four receivers meet all EIA/TIA 232E and CCITTV.28 specifications at a data rate of 20kbts/sec. The drivers maintain the  $\pm 5V$  EIA/TIA-232E output signal levels at data rates in excess of 120kbts/sec when loaded in accordance with the EIA/TIA-232E specification. Supplied in a 24-pin DIL package.



**Specification (+5V supply)**  
 O/P voltage swing:  $\pm 8V$  typ  
 Supply current: 11mA typ  
 I/P logic threshold low: 0.8V max  
 high: 2V min  
 RS-232 i/p voltage: -30V to +30V  
 Receiver input threshold low: 1.2V typ  
 high: 1.7V typ  
 TTL/CMOS output voltage low: 0.4V max  
 high: 3.5V min  
 Rx propagation delay: 0.5 $\mu s$   
 Tx o/p resistance: 300 $\Omega$   
 Transition region slew rate: 5.5V/ $\mu s$   
 RS232 o/p short circuit current:  $\pm 10mA$

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NR55K	MAX38CPP	£4.640 10+ £3.310 50+ £2.990 200+	£5.990 1+

## DS14C88

National Semiconductor

A driver IC forming a complementary pair with DS14C89, for CMOS data transmission e.g., data terminal equipment etc. Conforming to EIA-232D and CCITT V.28 standards. This device is fabricated in low threshold CMOS metal gate technology, providing low-power operation compared to its bipolar equivalents. Simplifies designs by eliminating the need for external slew rate control capacitors. Supplied in a 14-pin DIL package.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type #643	Price each exc. VAT	inc. VAT each
AX69A	Drvr DS14C88N NSC	£0.445 25+ £0.356 100+ £0.338 300+	£0.890 1+

## DS14C89

National Semiconductor

A receiver IC forming a complementary pair with DS14C88 for CMOS data transmission e.g., data terminal equipment etc. Conforming to EIA-232D and CCITT V.28 standards. This device is fabricated in low threshold CMOS metal gate technology, providing low-power operation compared to its bipolar equivalents. Simplifies designs by eliminating the need for external slew rate control capacitors. Supplied in a 14-pin DIL package.

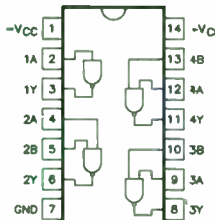
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type #644	Price each exc. VAT	inc. VAT each
AX70M	Drvr DS14C89N NSC	£0.720 25+ £0.650 100+ £0.620 300+	£0.890 1+

## MC1488P Quad RS232 Line Driver

SGS Thomson

A quad line driver IC which converts standard TTL levels through one stage of inversion to output levels which meet EIA standard RS232C and CCITT standard V24. The package contains three NAND functions and one inverter.



1488

### Characteristics

Supply voltage (max):	+15V, -15V
Input voltage (min/max):	-15V, +7V
Output voltage (max):	±15V
Power dissipation (max):	800mW
Input current ( $V_{in} = 0V$ ):	-1mA
( $V_{in} = +5V$ ):	5nA
Output voltage ( $V_{in} = 0.8V, R_L = 3K, V_S = \pm 9V$ ):	+7V
( $V_S = \pm 13.2V$ ):	+10.5V
( $V_S = \pm 9V$ ):	-6.8V
( $V_S = \pm 13.2V$ ):	-10.5V
Short-circuit current ( $V_{out} = 0V, V_{in} = 0.8V$ ):	-10mA
( $V_{in} = 1.9V$ ):	10mA
Output resistance:	300Ω

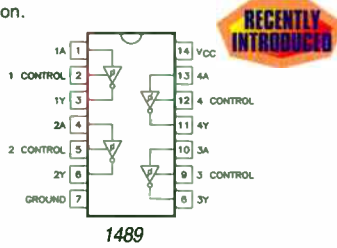
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2373	Price each exc. VAT	inc. VAT each
YH89W	MC1488P	£0.589 25+ £0.466 100+	£0.920 1+

## MC1489P Quad RS232 Line Receiver

SGS Thomson

A quad line receiver IC designed to interface data terminal equipment with data communications equipment. The devices meet the EIA standard RS232C specification.



1489

### Characteristics (typical)

Supply voltage (max):	10V (5V typical)
Input voltage (max):	±30V
Output load current (max):	20mA
Power dissipation (max):	800mW
Input high threshold voltage ( $V_{out} < 0.45V, I_{out} = 10mA$ ) max:	1V min, 1.5V max
Input low threshold voltage ( $V_{out} < 2.5V, I_{out} = -0.5mA$ ):	0.75V min, 1.25V max
Input current ( $V_{in} = +25V$ ):	+5.6mA
( $V_{in} = -25V$ ):	-5.6mA
( $V_{in} = +3V$ ):	+0.53mA
( $V_{in} = -3V$ ):	-0.53mA
Output high voltage ( $V_{in} = 0.75V, I_{out} = -0.5mA$ ):	3.8V
( $V_{in} = \text{Open}, I_{out} = -0.5mA$ ):	3.8V
Output low voltage ( $V_{in} = 3V, I_{out} = 10mA$ ):	0.33V
Output short-circuit current ( $V_{in} = 0.75V$ ):	3mA
Supply current ( $V_{in} = 5V$ ):	20mA
Power dissipation ( $V_{in} = 5V$ ):	100mW

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

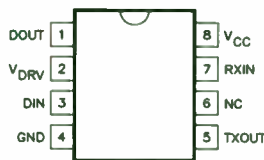
Order Code	Type 2380	Price each exc. VAT	inc. VAT each
YH90X	MC1489P	£0.589 25+ £0.466 100+	£0.930 1+

## DS1275

Dallas Semiconductor

The DS1275, line powered, three line RS232 transceiver provides a low cost, very low power interface to RS232 com ports, translating TTL levels to RS232 and vice versa. It employs a unique circuit which steals power from the incoming RS232 signal when the line is in a negative (mark) state. Since most com ports remain in the negative state when not actively transmitting data, this greatly reduces the DS1275's power consumption in comparison with the negative charge-pump system employed by other RS232 devices.

The device requires a single 5V power supply. The supply current of 5mA maximum (as little as 15µA in static mode) means that the DS1275 is ideally suited to battery powered applications where the line length is no greater than 3m, especially where a low cost, low component count solution is required.



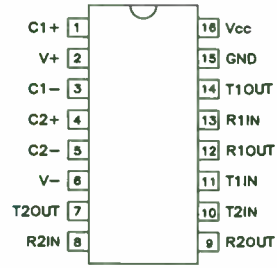
1275

Retail Unit Price each (inc. VAT).

Order Code	Type 1165	Price each exc. VAT	inc. VAT each
LE23A	RS-232 Dual TX/RX	£4.240 1+	£4.900 1+

## MAX202 RS232 Transceivers

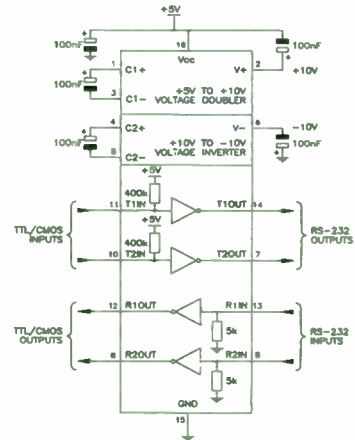
Maxim



MAX202

The MAX202 transceiver is designed for RS232 and V.28 communication interfaces where a ±12V supply is not available. On-board charge pumps convert the +5V input to the ±10V needed for RS232 output levels. The drivers and receivers meet all EIA/TIA-232E and CCITT V.28 specifications at a data rate of 20kbits/sec. The device requires just four external capacitors to provide the voltage conversion.

Supplied in either a 16-pin DIL package (MAX202CPE0) or a narrow small outline package (MAX202CPE).



### Specification

Input voltage:	+5V
Supply current:	8mA typical no load
Output voltage swing:	±8V typical
RS232 input voltage operating range:	-30V to +30V
Input logic threshold low:	0.8V max
high:	2V min
Receiver input threshold low:	1.2V typ
high:	1.7V typ
TTL/CMOS output voltage low:	0.4V max
high:	3.5V min

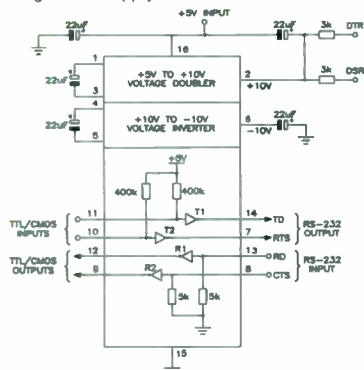
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 12167	Price each exc. VAT	inc. VAT each
VQ46A	MAX202CPE	£1.630 25+ £1.420 100+	£2.530 1+
VQ47B	MAX202CSE	£1.630 25+ £1.420 100+	£2.530 1+

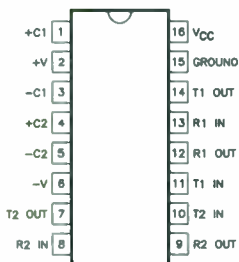
## MAX232CPE RS-232 Transmitter/Receiver

Maxim

A dual RS-232 receiver/transmitter that meets all the EIA RS-232C specifications while requiring only a single +5V supply. This significantly simplifies system design by removing the need to provide power supply voltages other than +5V. The IC has two on-board charge pump voltage converters which generate +10V and -10V power supplies from the single +5V supply.



The IC contains four level translators, two of which convert TTL/CMOS input levels into  $\pm 9V$  RS-232 outputs ready for transmission, and two of which convert RS-232 inputs to 5V TTL/CMOS levels. The receivers have a nominal threshold of 1.3V, a typical hysteresis of 0.5V, and can operate with up to  $\pm 30V$  inputs.



232

### Characteristics

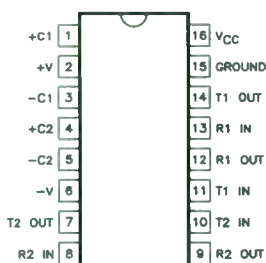
- Supply voltage:  $5V \pm 10\%$
- Output voltage swing:  $\pm 9V$
- RS-232 input voltage:  $\pm 30V$  max
- Propagation delay:  $0.5\mu s$
- Output resistance:  $300\Omega$  min
- RS-232 output short circuit current:  $\pm 10mA$

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
FD92A	MAX232CPE	£2.100 25+ £1.560 100+ £1.400 300+ £3.990 1+	

## MAX3232CPE 3V/5V RS232 Transceiver

Maxim



MAX3232CPE

The MAX3232CPE has a proprietary low-dropout transmitter stage enabling true RS232 performance from 3V to 5.5V DC supplies. The internal power

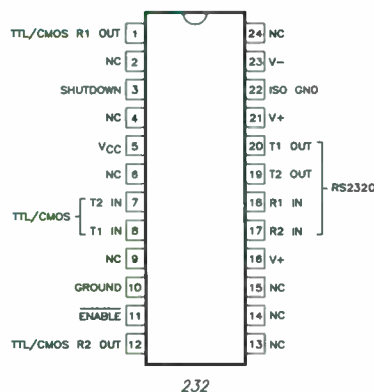
supply consists of a regulated dual charge pump that produces output voltages of +5.5V and -5.5V, from an input voltage range of 3V to 5.5V. Requiring only four  $0.1\mu F$  external capacitors, (for use with the charge pump circuitry) the device is guaranteed to run at data rates of 120kps while maintaining RS232 output levels. The MAX3232CPE has two receivers and two drivers and is ideal for 3.3V systems, mixed 3.3V/5V systems, or 5V systems that require true RS232 performance. The device consumes only  $250\mu A$ , has a  $4V/\mu s$  slew rate and is pin and functionally compatible with the industry standard MAX232. Applications include computers, notebooks, palmtops battery powered equipment, hand-held equipment and peripherals. Supplied in an 18-pin DIL package.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

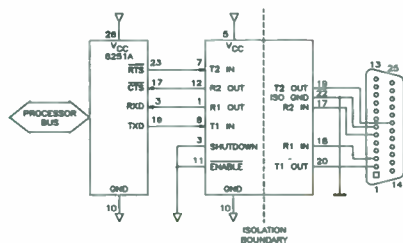
Order Code	Type	Price each exc. VAT	inc. VAT each
DT26D	MAX3232CPE	£2.250 25+ £2.120 100+ £1.990 300+ £4.290 1+	

## NM232DD Isolated Dual EIA-232D Transmitter and Receiver

Newport Components



232



An electrically isolated dual transmitter and receiver designed for use between standard UARTs and RS232 lines. The device provides two data receive and two data transmit channels, with no external components and one +5V supply. Each channel is EIA-232D and CCITT-V28 compatible at the interface and TTL/CMOS compatible at the logic connections. A low power shutdown mode and high impedance state for receiver outputs are effected via pins 3 and 11. Isolation is 1500V rms for 1 second.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

**Specification** (typical at  $V_{CC} = +5V$ )  
 Supply voltage:  $+5V \pm 10\%$   
 Input voltage at receivers:  $\pm 30V$  max  
 Output voltage at transmitter:  $\pm 15V$  max  
 Output voltage ( $R_L = 3k\Omega$ ):  $\pm 7V$   
 Transmission rate:  $>9600$  baud  
 Supply current:  $<110mA$   
 Supplied in a 24-pin package measuring  $32.3 \times 14.7 \times 7.2mm$  high with pins on a 2.54mm spacing in two rows 16.7mm apart.

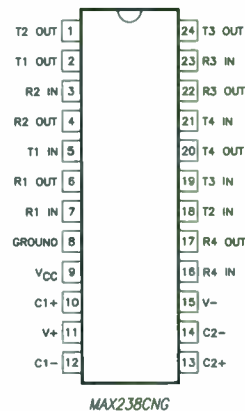
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL96E	NM232DD	£19.060 25+ £16.990 100+ £16.290 300+ £27.990 1+	

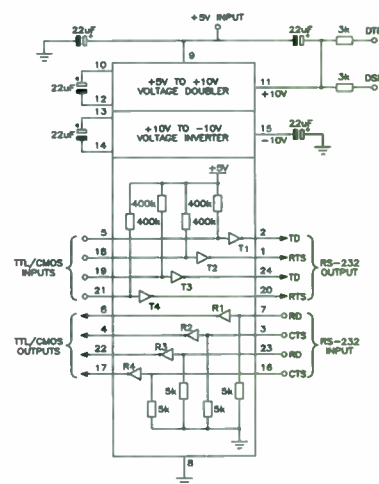
## MAX238CNG Quad RS232 Transmitter/Receiver

Maxim

A quad version of MAX232CPE described previously. All the data given are identical for both ICs except pinouts.



MAX238CNG



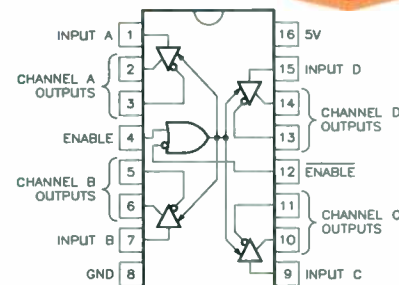
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CR21X	MAX238CNG	£3.690 25+ £3.580 100+ £3.490 300+ £4.400 1+	

## DS26LS31CN

National Semiconductor

RECENTLY INTRODUCED



DS26LS31CN

A quad differential line driver IC designed for digital data transmission over balanced lines. Meets all the requirements of EIA Standard RS-422. The circuit provides an enable and disable function common to all four drivers. Other features include tri-state outputs and logically ANDed complementary outputs. The inputs are all LS compatible and are all one unit load. Supplied in a 16-pin DIL package.

### Features

- ★ Output skew 2ns typ.
- ★ Input to output delay 10ns typ.
- ★ Operation from single 5V supply

- ★ Outputs won't load line when Vcc=0V
- ★ Four line drivers in one package for maximum device density
- ★ Output short-circuit protection
- ★ Complementary outputs
- ★ Pin compatible with AM26LS31 devices

**Specification**

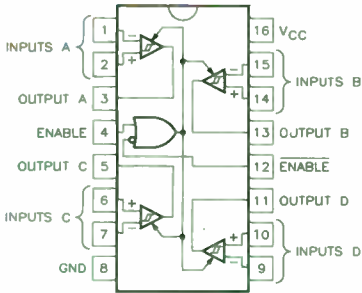
Supply voltage: 7V max.  
Supply current: 35mA typ.  
Maximum input voltage: 7V  
Maximum output voltage: 5.5V  
Maximum power dissipation: 1476mW

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

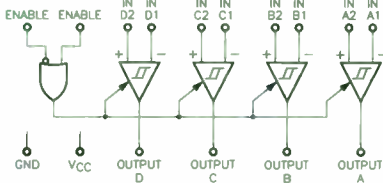
Order Code	Type 8045	Price each exc. VAT	inc. VAT each
		25+ 100+ 300+ 1+	
AX71N	5 Dvr DS26LS31CN NSC	£0.860	£0.700 £0.650 £1.080

## DS26LS32CN

National Semiconductor



DS26LS32CN



A quad differential line receiver IC designed to meet the RS-422 Standards for balanced and unbalanced digital data transmission. High input sensitivity of 200mV over an input voltage range of ±7V. Provided with an enable and disable function common to all four receivers and features tri-state outputs with 8mA sink capability. Constructed using low power Schottky design. Supplied in a 16-pin DIL package.

**Features**

- ★ High differential or common-mode input voltage ranges of ±7V
- ★ ±0.2V sensitivity over the input voltage range
- ★ Meets all the requirements of RS-422
- ★ 6KΩ input impedance
- ★ 100mV input hysteresis
- ★ Operation from a single 5V supply
- ★ Tristate outputs with choice of complementary outputs enables for receiving directly onto a data bus

**Specification**

Supply voltage: 7V max.  
Supply current: 52mA typ.  
Input sink current: 50mA  
Common-mode range: ±25V  
Differential input voltage range: ±25V  
Power dissipation: 1362mW

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 8048	Price each exc. VAT	inc. VAT each
		25+ 100+ 300+ 1+	
AX72P	5 Dvr DS26LS32CN NSC	£0.860	£0.700 £0.650 £1.080

## MAX485 Low Power RS485/RS422 Transceivers

Maxim

The MAX485 is a half duplex, low power transceiver for RS485 and RS422 communications, and contains one driver and one receiver. The driver slew rate is not limited allowing the device to transmit upto 2.5Mbps.

The device draws 300µA of supply current when unloaded or fully loaded with disabled drivers. Drivers are short-circuit current limited and are protected against excessive power dissipation by thermal shutdown circuitry. The receiver input has a fail-safe feature that guarantees a logic high output if the input is open circuit. MAX485CNA is supplied in a 8-pin DIL package, and MAX485CSA is 8-pin SO package.

**Specification**

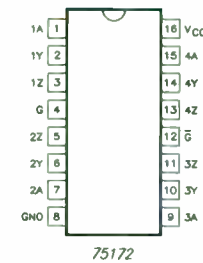
Supply voltage: 12V DC max.  
Differential driver output no load: 5V max  
load R=50Ω:(RS422): 2V  
load R=27Ω (RS485): 1.5V to 5V  
Input current (A,B): 1mA (VIN=12V)  
Receiver input resistance: 12kΩ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

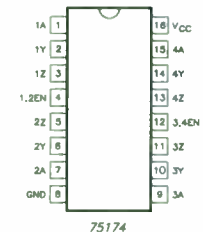
Order Code	Type 13114	Price each exc. VAT	inc. VAT each
		25+ 100+ 300+ 1+	
VR46A	MAX485CPA	£1.450	£1.350 £1.240 £2.420
VR47B	MAX485CSA	£1.690	£1.460 £1.350 £2.140

## SN75172N & SN75174N Quad Differential Line Drivers

Texas Instruments



75172



75174

A pair of quad differential line drivers with tri-state output, meeting EIA Standards RS-422-A and RS-485 and CCITT Recommendations V.11 and X.27. The devices have been optimised for balanced multipoint communications up to 4Mbps. Amongst their many features are positive and negative common-mode output voltage in the range of -7V to 12V, and therefore makes them ideal for supporting party-line applications in noisy environments. Both positive and negative current limiting are supported to guard against faulty conditions on the transmission bus line. The 75172 supports both active low and active high enables, which can be used to control data flow out of the device as well as the tri-state capability (by holding both enables in the inactive state gives high impedance outputs). The 75174 device offers separate active high enables, one for inputs 1 & 2, and another for inputs 3 & 4. This means that each pair of inputs can be controlled totally independently of the other. Optimum performance is offered when used in conjunction with devices SN75173 & SN75175, both

quad differential line receivers.

**Specification**

Supply voltage, VCC: 4-7.5V to 5-25V, 5V typ  
High-level input voltage, VIH: 2V  
Low-level input voltage, VIL: 0-8V  
Common-mode output voltage: -7V to 12V  
High-level output current, IOH: -60mA  
Low-level output current, IOL: 60mA  
Ambient operating temperature: 0°C to 70°C

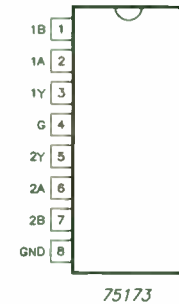
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 8037	Price each exc. VAT	inc. VAT each
		25+ 100+ 300+ 1+	
AE05F	SN75172N	£1.670	£1.430 £1.250 £2.490
AE06G	SN75174N	£1.360	£1.170 £1.020 £3.230

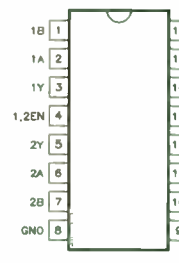
## SN75173N & SN75175N Quad Differential Line Receivers

Texas Instruments

A pair of quad line receivers with tri-state outputs, designed to meet the requirements of EIA Standards RS-422-A, RS-423-A, RS-485 and several CCITT recommendations. These devices are optimised for communications up to 10Mbps and perform optimally when used with devices SN75172 or SN75174, quad differential line drivers. The 75173 device has both active high and active low enables, which can be used to both control the flow of data out of the device and also its high impedance state. On the 75173, all the four receivers in the package share a common pair of control lines. In the 75175 device there are two active high enables, one controlling inputs 1 & 2, the other controlling inputs 3 & 4. This makes the 75175 more versatile in a control aspect, but removes the ability to control the device with positive and negative logic enables.



75173



75175

**Specification**

Supply voltage, VCC: 4-7.5V to 5-25V, 5V typ  
High-level enable-input voltage, VIH: 2V  
Low-level enable-input voltage, VIL: 0-8V  
Common-mode input voltage, VIC: ±12V  
Differential input voltage, VID: ±12V  
High-level output current, IOH: -400µA  
Low-level output current, IOL: 16mA  
Ambient operating temperature: 0°C to 70°C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 8326	Price each exc. VAT	inc. VAT each
		25+ 100+ 300+ 1+	
AE07H	SN75173N	£1.640	£1.410 £1.230 £3.280
AE08J	SN75175N	£1.360	£1.170 £1.020 £3.280

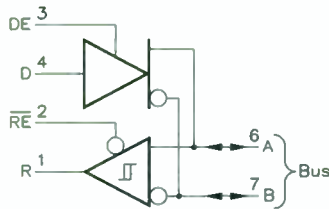
**Business Account Holders**  
No Delivery Charges for any order

## SN75176B & SN75LBC176 Bidirectional Transceiver

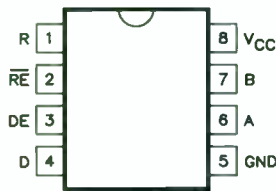
Texas Instruments

Two bidirectional transceiver ICs meeting with EIA Standards RS-422/RS-485/CCITT V.11/CCITT V.27 and EIA Standards RS-485/ISO 8482:1987(E) respectively. Designed for bidirectional data communications on balanced multipoint transmission lines. Each device combines a tri-state differential line driver and differential input line receiver operating from a single 5V supply. The driver and receiver have active-high and active-low enables, respectively, which can be connected together to act as a direction control. The driver and receiver are connected in such a way as to minimise bus loading when the driver is disabled or VCC=0V. A wide positive and negative common-mode range makes these devices ideal for party-line applications.

The 75LBC176 device offers the same features with high-speed low-power operation and a very low disabled supply current of 200µA. Both devices offer thermal shutdown protection, driver positive and negative current limiting, operate from a single 5V supply and have a driver output capacity of ±60mA.



SN75LBC176



SN55LBC176

### Specification

Supply voltage, V<sub>CC</sub>: 4.75V to 5.25V, 5V typ  
 Voltage at any bus terminal (separately or common-mode), V<sub>I</sub>: 12V  
 V<sub>IC</sub>: 27V  
 High-level input voltage, V<sub>IH</sub>: 2V  
 Low-level input voltage, V<sub>IL</sub>: 0.8V  
 Differential input voltage, V<sub>ID</sub>: ±12V  
 High-level output current, I<sub>OH</sub>  
 Driver: 260mA  
 Receiver: 2400µA  
 Low-level output current, I<sub>OL</sub>  
 Driver: 60mA  
 Receiver: 8mA  
 Operating temperature, T<sub>A</sub>: 0°C to 70°C

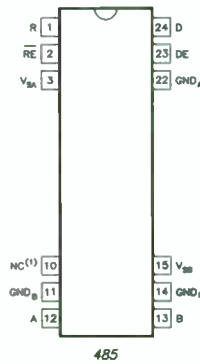
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5542	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AE09K	SN75176B	£0.917	£0.786	£0.688	£1.990
AE10L	SN75LBC176	£1.710	£1.470	£1.280	£2.990

## ISO485P

Burr-Brown

The ISO485 is a differential, isolated bus RS485/RS422A transceiver using capacitively coupled isolation to provide high speed low cost isolation rated to 1500Vrms. It uses high voltage 0.4pF capacitors with Faraday shielding to couple data with a maximum throughput of 35M-bit/s typical. The device represents one unit load, conforms to the EIA standards and is recommended for use in control and monitoring instrumentation to be used in close proximity to heavy electrical supply switching.



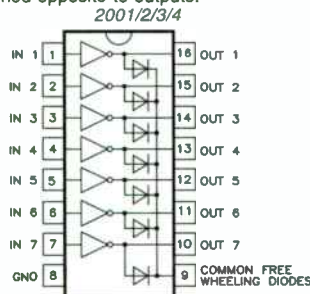
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11948	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
LE63T	ISO485P	£10.380	£8.900	£7.780	£14.990

## ULN2001A, ULN2002A, ULN2003A & ULN2004A Darlington Arrays

SGS Thomson

A range of high-current Darlington arrays for driving a number of families of logic and loads. These versatile devices can be used for driving loads including solenoids, motors, LEDs, thermal printheads, etc. Each device contains seven separate Darlington pairs with common emitters. Each pair is rated at 500mA continuous, and can withstand surges up to 600mA. Suppression diodes are also provided so that inductive loads like motors and relays can be driven without the need for extra protective components. The ULN2001A is designed for use with general purpose, DTL, TTL, PMOS and CMOS loads. The ULN2002A is used with 14V to 25V PMOS, the ULN2003A with 5V TTL and CMOS, and the ULN2004A is used with 6V to 15V CMOS and PMOS. All devices are supplied in standard 16-pin DIP packages. Other features include: withstanding output voltages of 50V; outputs can be paralleled to give higher output current; TTL/CMOS/PMOS/DTL compatible inputs; and inputs pinned opposite to outputs.



### Specification (All figures are absolute maximums)

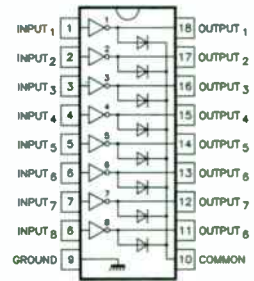
Output voltage, V<sub>O</sub>: 50V  
 Input voltage, V<sub>I</sub>: 30V  
 Continuous collector current, I<sub>C</sub>: 500mA  
 Continuous base current, I<sub>B</sub>: 25mA  
 Operating temperature ambient range, T<sub>A</sub>: -20°C to 85°C  
 Junction temperature, T<sub>J</sub>: 150°C  
 Thermal resistance junction-ambient, R<sub>thj-amb</sub>: 70°C/W

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5502	Price each exc. VAT			inc. VAT each
		25+	250+	1000+	1+
AD91Y	ULN2001A	£0.450	£0.360	£0.318	£0.970
AD92A	ULN2002A	£0.450	£0.360	£0.318	£0.790
AD93B	ULN2003A	£0.282	£0.226	£0.199	£0.790
AD94C	ULN2004A	£0.263	£0.211	£0.186	£0.790

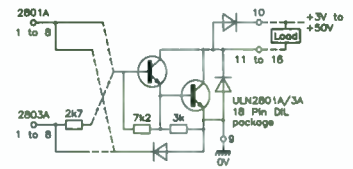
## ULN2801A/3A Octal Darlington Driver Arrays

SGS Thomson



2801

Eight separate Darlington amplifiers in one 18-pin package, each capable of supplying 500mA at up to 50V. Outputs may be paralleled to give up to 4A at 50V (at 23% duty cycle and 25°C). Internal diodes are provided for inductive loads. Type 2801 may be used with standard bipolar digital logic or CMOS, while type 2803 has a 2k7 base resistor to enable direct connection to TTL and 5V CMOS.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2885	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
QY78K	ULN2801A	£0.384	£0.329	£0.288	£0.990
QY79L	ULN2803A	£0.440	£0.270	£0.240	£0.990

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**MEMORY**

**SRAM**

**Memory ICs Device Listing SRAM**

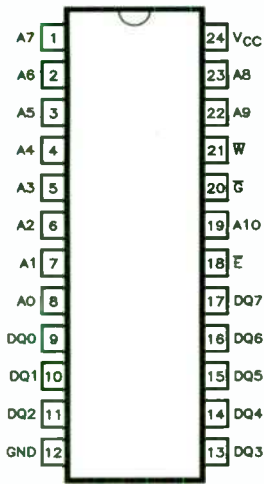
Type	Size (bits)	Speed (ns)	Organisation	Package	Order Code	Price each exc. VAT			Price each inc. VAT	
						1+	25+	100+	1+	
2114	4K	250	1024 x 4-bit words	18 pin DIL	—	QW12N	£3.39	£2.33	£2.00	£3.99
6116	16K	100	2048 x 4-bit words	24 pin DIL	—	UF33L	£2.545	£1.89	£1.79	£2.99
6264	64K	100	8192 x 8-bit words	28 pin DIL	—	UL01B	£3.22	£2.89	£2.39	£3.99
62256	256K	100	32768 x 8-bit words	28 pin DIL	—	UH40T	£4.247	£1.80	£1.45	£4.99
431000	1M	85	131072 x 8-bit words	32 pin DIL	—	UM72P	£8.50	£6.99	£4.25	£9.99

4M devices are now available, please contact our technical support line for prices and further information

**NON VOLATILE SRAM**

**MK48T02B20 16384 Bit CMOS Timekeeper SRAM**

SGS Thomson



MK48T02B20

An ultra low power 16384 bit (2K x 8) SRAM IC that features a real time clock, crystal, power-fail control circuit and a long life lithium battery. The device is a non-volatile pin, and function, equivalent to any JEDEC standard 2K x 8 SRAM. Also, it will fit in to many EPROM and EEPROM sockets and will provide the non-volatility of PROMs without the need for special write timing, or the limitations on the number of writes that can be performed. Access to the clock is simple. 'Timekeeper' registers are located in the upper eight RAM locations. The registers contain year, month, date, day, minutes and seconds data in 24-hour BCD format. Corrections for 28, 29, 30 and 31 day months are made automatically. These registers are not the actual clock counters but read/write Static RAM memory locations. A clock control circuit is included, that once every second transfers the counters into RAM. Updates to the 'Timekeeper' registers should be halted before clock data is read to prevent reading data that is in transition. The device includes a power-fail detect circuit. The circuit deselected the device whenever VCC is out of range (4.75V ≥ VPFD ≥ 4.50V), and write protects itself, providing a high degree of data security. Below 3V, the device switches to internal battery back-up. A mid-write cycle power failure may corrupt data at the currently addressed location, but does not affect the rest of the RAM's content. Normal operation is resumed when VC exceeds 4.5V. The device is driven by a quartz controlled oscillator with a normal frequency of 32768Hz, and provides an accuracy of ±1m per month. Clock calibration can be software controlled, to allow the end-user to calibrate the clock to suit the working environment. If necessary, the oscillator can be turned off if the device is to spend a significant amount of time 'on the shelf'. The predicted worst case battery life is 11 years at 70°C.

**Specification**  
Voltage supply: 4.75V to 5.5V  
Average power supply

current: 80mA  
TTL standby current: 5mA  
CMOS standby current: 3mA  
Read cycle time: 200ns  
Write cycle time: 200ns  
Power-fail deselect voltage: 4.5V to 4.75V, 4.6V typical  
Battery back-up switchover voltage: 3V

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
DC01B	MK48T02B20	25+ £13.280 100+ £11.380 300+ £9.960	1+ £18.990

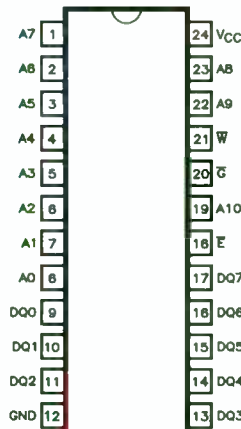
Average power supply current: 80mA  
TTL standby current: 5mA  
CMOS standby current: 1mA  
Read cycle time: 250ns  
Write cycle time: 250ns  
Power-fail deselect voltage: 4.5V to 4.75V, 4.6V typical  
Battery back-up switchover voltage: 3V

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
DC02C	MK48Z02B25	25+ £6.250 100+ £5.360 300+ £4.690	1+ £8.990

**MK48Z02B25 16384 Bit SRAM with Battery Back-up**


SGS Thomson




MK48Z02B25

An ultra low power 16384 bit (2K x 8), non-volatile, static RAM IC that features a power-fail control circuit and a long life lithium battery. The device has the characteristics of a CMOS static RAM, with the added advantage of data being retained in the advent of power failure. The IC can replace existing 2K x 8 static RAMs and also has the same pin configuration as a 2716 EPROM and 2K x 8 EEPROMs. As with other static RAMs, there is no limit to the number of write cycles that can be performed. The access time, read cycle and write cycle is 250ns, and no additional support circuitry is needed to interface to the microprocessor. The device includes a power-fail detect circuit. The circuit deselected the device whenever VCC is out of range (4.75V ≥ VPFD ≥ 4.50V), and write protects itself, providing a high degree of data security. Below 3V, the device switches to internal battery back-up. A mid-write cycle power failure may corrupt data at the currently addressed location, but does not affect the rest of the RAM's content. Normal operation is resumed when VC exceeds 4.5V. The predicted worst case battery life is 11 years at 70°C.

**Specification**  
Voltage supply: 4.75V to 5.5V



**RS12750**  
**BS EN ISO 9002**  
Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

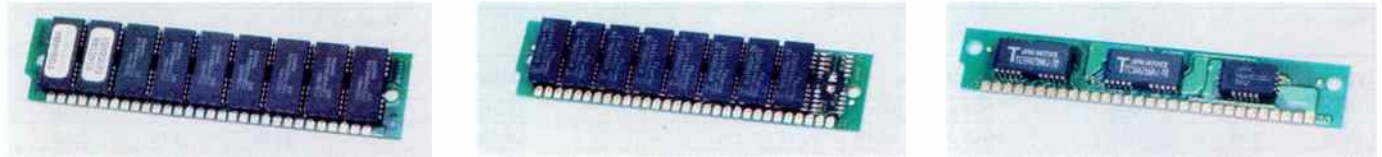


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## SIMM MEMORY MODULES

### Memory Modules

A range of DRAM modules for use as memory expansion in computers, including PCs, Apple MAC, Amiga, etc. The range offers the latest high speed technology at the lowest possible cost. SIMMs supplied by Maplin will be original (branded) manufacturers chips on selected third party boards. Modules are available in SIMM (edge connector type) only. The following types are available:



Please note that most modern motherboards require that each memory bank in use is completely filled with SIMMs. Memory banks are usually configured in blocks of one, two or four SIMM sockets. It is not usually possible to fit a single 9-pin SIMM, or an odd number of 9-pin SIMMs, to a motherboard. Many modern motherboards will only accept 72-pin SIMMs, although some of them will also accept the older SIMMs, which have 30 pads on the edge connector. It is advisable to use faster SIMM modules on PCs running at 50MHz or above. Please check your motherboard booklet before ordering SIMMs for memory expansion as various restrictions usually apply to combining SIMM types and sizes on a motherboard.

7667

Type	Size (bits)	Speed (ns)	Organisation	Package	Manufacturer	Order Code	Price each exc. VAT			Price each inc. VAT
							1+	25+	100+	1+
SIMM 1M x9	1M	60	1M x 9-bit words	SIMM	-	ZG53H	£17.012	POA	POA	£19.990
SIMM 1M x9	1M	70	1M x 9-bit words	SIMM	-	UR58N	£9.940	POA	POA	£11.680
SIMM 4M x9	4M	60	4M x 9-bit words	SIMM	-	ZG55K	£17.012	POA	POA	£19.990
SIMM 4M x9	4M	70	4M x 9-bit words	SIMM	-	UR65V	£32.332	POA	POA	£37.990
SIMM 1M x32	4M	70	1M x 32-bit words	SIMM	-	AR19V	£12.757	POA	POA	£14.990
SIMM 1M x36	4M	70	1M x 36-bit words	SIMM	-	AD98G	£29.779	POA	POA	£34.990
EDO SIMM 1M x 32	4M	60	1M x 32-bit words	SIMM	-	NT03D	£15.290	POA	POA	£17.970
SIMM 2M x32	8M	70	2M x 32-bit words	SIMM	-	AR20W	£21.268	POA	POA	£24.990
SIMM 2M x36	8M	60	2M x 36-bit words	SIMM	-	AR17T	£49.000	POA	POA	£57.580
EDO SIMM 2M x 32	8M	60	2M x 32-bit words	SIMM	-	NT04E	£25.880	POA	POA	£30.410
SIMM 4M x36	16M	70	4M x 36-bit words	SIMM	-	AR18U	£68.077	POA	POA	£79.990
EDO SIMM 4M x 32	16M	60	4M x 32-bit words	SIMM	-	NT05F	£50.580	POA	POA	£59.440
EDO SIMM 8M x32	32M	60	8M x 32-bit words	SIMM	-	NT06G	£101.170	POA	POA	£118.880

Our memory prices are regularly updated. Please phone for our best price. All parts supplied are original and unused.

## DRAM

Type	Size (bits)	Speed (ns)	Organisation	Package	Manufacturer	Order Code	Price each exc. VAT			Price each inc. VAT
							1+	25+	100+	1+
4164	64K	150	64K x 1-bit words	16 pin DIL	SAM, TI, TOSH	QQ06G	£4.240	£2.070	£1.930	£4.990
4464	256K	100	64K x 4-bit words	18 pin DIL	SAM, TI, TOSH	UH93B	£4.920	£3.710	£3.460	£5.790
41256	256K	100	256K x 1-bit words	16 pin DIL	SAM, TI, TOSH	QY74R	£3.220	£2.140	£2.000	£3.790
511000	1M	70	1M x 1-bit words	18 pin DIL	SAM, TI, TOSH	AD05F	£5.190	POA	POA	£6.100
511000	1M	70	1M x 1-bit words	ZIP & SOJ	SAM, TI, TOSH	AD06G	£5.190	POA	POA	£6.100
514256	1M	70	256K x 4-bit words	20 pin DIL	SAM, TI, TOSH	AD04E	£5.400	POA	POA	£6.350
514256	1M	70	256K x 4-bit words	SOJ	SAM, TI, TOSH	AD03D	£7.480	POA	POA	£8.790
514100	4M	70	4M x 1-bit words	SOJ	SAM, TI, TOSH	AD13P	£15.310	POA	POA	£17.990
514400	4M	70	1M x 4-bit words	ZIP	SAM, TI, TOSH	AD09K	£15.000	POA	POA	£17.630
514400	4M	70	1M x 4-bit words	SOJ	SAM, TI, TOSH	AD10L	£17.010	POA	POA	£19.990
514800	4M	70	4M x 1-bit words	SOJ	SAM, TI, TOSH	AD16S	£15.310	POA	POA	£17.990
441100	4M	80	4M x 1-bit words	20 pin ZIGZAG	SAM, TI, TOSH	UM68Y	£29.770	£22.250	£20.650	£34.990
FPM	4M	60	4M x 1-bit words	SOJ	SAM, TI, TOSH	NT08J	£3.060	POA	POA	£3.600
EDO	4M	60	4M X 1-Bit words	SOJ	SAM, TI, TOSH	NT09K	£3.060	POA	POA	£3.600
FPM	4M	60	1M x 4-bit words	SOJ	SAM, TI, TOSH	NT10L	£3.060	POA	POA	£3.600
EDO	4M	60	1M x 4-bit words	SOJ	SAM, TI, TOSH	NT11M	£3.060	POA	POA	£3.600
FPM	4M	60	256k x 16-bit words	SOJ	SAM, TI, TOSH	NT12N	£3.060	POA	POA	£3.600
EDO	4M	60	256k x 16-bit words	SOJ	SAM, TI, TOSH	NT13P	£3.060	POA	POA	£3.600
FPM	4M	60	512k x 8-bit words	SOJ	SAM, TI, TOSH	NT14Q	£3.060	POA	POA	£3.600
FPM	16M	60	16M x 1-bit words	SOJ	SAM, TI, TOSH	NT15R	£9.200	POA	POA	£10.810
EDO	16M	60	16M x 1-bit words	SOJ	SAM, TI, TOSH	NT16S	£9.200	POA	POA	£10.810
FPM	16M	60	4M x 4-bit words	SOJ	SAM, TI, TOSH	NT17T	£9.200	POA	POA	£10.810
EDO	16M	60	4M x 4-bit words	SOJ	SAM, TI, TOSH	NT18U	£9.200	POA	POA	£10.810
FPM	16M	60	1M x 16-bit words	SOJ	SAM, TI, TOSH	NT19V	£9.200	POA	POA	£10.810
EDO	16M	60	1M x 16-bit words	SOJ	SAM, TI, TOSH	NT20W	£9.200	POA	POA	£10.810

All parts supplied are original and unused from one of the following manufacturers: Samsung (Sam), Texas Instruments (TI), Toshiba (Tosh), Micron (Mic), Alliance (All), Goldstar (LG)

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**EPROMS**

**EPROMs – NMOS Type**

Type	Size (bits)	Speed (ns)	Organisation	Package	Manufacturer	Order Code	Price each exc. VAT	1+	25+	100+	Price each inc. VAT
M2716-1F1	16K	350	2048 x 8-bit words	24 pin DIL	ST	Q007H	£4.786	£4.467	£4.188	£11.290	
M2732A-2F1	32K	200	4096 x 8-bit words	24 pin DIL	ST	UH88V	£4.127	£3.852	£3.611	£11.150	
M27256F1	256K	250	32768 x 8-bit words	28 pin DIL	ST	QY75S	£4.087	£3.815	£3.577	£6.990	
M2764AF1	64K	250	8192 x 8-bit words	24 pin DIL	ST	Q009K	£3.314	£3.093	£2.900	£7.490	
M27128AF1	128K	150	136384 x 8-bit words	28 pin DIL	ST	YH88V	£3.000	£2.800	£2.625	£6.490	
M27512F1	512K	250	65535 x 8-bit words		ST	UH42V	£5.078	£4.740	£4.444	£9.990	

**MicroROM EPROM Emulator**



- ★ Replaces standard 27xx series EPROMs
- ★ Programs in approx 2 seconds
- ★ Non-volatile program storage
- ★ Connects directly to host PC

The MicroROM EPROM Emulator is a simple and easy to use economic development tool which avoids time wasting on testing and erasing EPROMs when developing EPROM data. It is a very effective assistance to the tedious task of writing and debugging microprocessor software. The MicroROM is a module only 11mm high, it plugs into the EPROM socket and is compatible with standard EPROMs.

There is no need to remove, erase and reprogram an EPROM each time data is changed. Simply plug the module into the EPROM socket, downloading data from any IBM PC or compatible printer port, via a 4mm diameter cable which plugs into the emulator. Downloading is very fast, a typical downloading time for a 27512 file is 2 seconds. Command line arguments are used to define EPROM size, data type, offsets, printer port number and other options.

The device accepts industrial file formats such as Intel Hex, Motorola S-records, Hex and Binary. A positive or negative reset signal is also provided, which can be used to reset a microprocessor during downloading. Once programming is completed and computer connection removed, the Emulator can remain in circuit like a standard EPROM due to its non-volatile storage capability. Comes complete in its own box together with software and cable – ready to plug in and go.

**Specification**

Logic compatibility: CMOS and TTL  
 Access time: 120ns  
 Power: 5V 100mA  
 EPROM emulated: 2764, 27128, 27256 and 27512

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
G700A 1	Eprom Emulator	£127.650	£149.390

**All Customers**  
 No additional freight charges for heavy items

**AMD EPROM Databook**

Advanced Micro Devices (AMD) are at the forefront of non-volatile memory technology, and manufacture a wide range of high performance memory products. This databook covers the traditional windowed EPROMs, plastic OTP EPROMs and AMD's ExpressROM devices.



(OE - access time 35ns).

The flash memory is pin and command set compatible with JEDEC standard 4Mbit EEPROMs, with commands written to the command register using standard microprocessor write timings. Register contents serve as input to an internal state-machine which controls the erase and programming circuitry. Write cycles also internally latch addresses and data needed for the programming and erase operations. Reading data out of the device is similar to reading from 12V flash or EPROM devices. The entire chip, or any individual sector is typically erased and verified in 1.5s (if already completely preprogrammed).

Retail Unit Price each (inc. VAT).

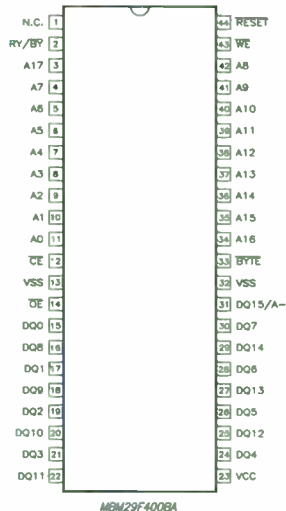
Order Code	Type	Price each exc. VAT	inc. VAT each
NR72P	18041	£14.460	£16.990

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AX00A †	Eprom Products Bk	£3.990	£3.990 NV

**MBM29F400BA-90PF**  
**4M CMOS Flash Memory**

Fujitsu



- ★ Single 5V read, write, erase
- ★ Compatible with JEDEC-standard commands
- ★ Minimum 100,000 write/erase cycles
- ★ Sector erase architecture - 1 x 16k byte, 2 x 8k bytes, 1 x 32k byte, 7 x 64k bytes.
- ★ Bottom sector boot code architecture
- ★ Embedded erase algorithms
- ★ Embedded program algorithms
- ★ Low power consumption

The MBM29F400BA-90PF is a 4Mbit, 5V flash memory organised as 512kbytes of 8-bits each, or 256k words of 16-bits each, and is supplied in a 44-pin small outline package. The device is designed for in-system programming with the standard 5V V<sub>CC</sub> supply. A 12V V<sub>pp</sub> supply is NOT required for write or erase operations. The device can be reprogrammed in a standard EPROM programmer. With an access time of 90ns, it can be used with high speed microprocessors without the need for wait states. To avoid bus conflict problems, the device has separate chip enable (CE - access 90ns), write enable (WE) and output enable

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## EPROMS – CMOS Type

Type	Size (bits)	Speed (ns)	Organisation	Package	Manufacturer	Order Code	Price each exc. VAT			Price each inc. VAT
							25+	100+	300+	1+
27C64	64K	120	8192 x 8-bit words	28 pin DIL	AMD	AW01B	£2.771	£2.587	£2.425	£4.790
27C64	64K	150	8192 x 8-bit words	28 pin DIL	AMD	AW02C	£2.771	£2.587	£2.425	£4.790
27C64	64K	150	8192 x 8-bit words		ST	AW07H	£1.992	£1.859	£1.743	£3.290
27C64	64K	200	8192 x 8-bit words	28 pin DIL	ST	UH43W	£2.786	£2.600	£2.438	£5.990
27C256	256K	100	32768 x 8-bit words		ST	AW18U	£2.229	£2.080	£1.950	£4.990
27C256	256K	120	32768 x 8-bit words	28 pin DIL	TI	UH44X	£2.743	£2.560	£2.400	£5.790
27C256	256K	120	32768 x 8-bit words	28 pin DIL	AMD	AW15R	£2.686	£2.507	£2.350	£4.790
27C256	256K	150	32768 x 8-bit words	28-pin DIL	AMD	AW16S	£2.647	£2.471	£2.316	£4.590
27C256	256K	150	32768 x 8-bit words		ST	AW19V	£2.114	£1.973	£1.850	£5.290
27C256	256K	120	32768 x 8-bit words		NSC	AW20W	£3.629	£3.387	£3.175	£4.890
27C512	512K	120	65536 x 8-bit words	28 pin DIL	AMD	AW23A	£2.250	£2.100	£1.969	£5.990
27C512	512K	120	65536 x 8-bit words		ST	AW26D	£1.648	£1.538	£1.442	£6.490
27C512	512K	120	65536 x 8-bit words		NSC	AW28F	£4.886	£4.560	£4.275	£7.290
27C512	512K	150	65536 x 8-bit words	28 pin DIL	AMD	AW24B	£2.400	£2.240	£2.100	£5.790
27C512	512K	200	65536 x 8-bit words		NSC	AW30H	£3.500	£3.267	£3.063	£5.290
27C512	512K	250	65536 x 8-bit words	28 pin DIL	ST	UM57M	£3.286	£3.067	£2.875	£6.790
27C1001	1M	100	131072 x 8-bit words		ST	AW34M	£3.500	£3.267	£3.063	£5.990
27C010	1M	120	131072 x 8-bit words	32 pin DIL	AMD	AW31J	£4.015	£3.740	£3.513	£7.490
27C1001	1M	120	131072 x 8-bit words		ST	AW35Q	£2.242	£2.090	£1.961	£5.790
27C010	1M	120	131072 x 8-bit words		NSC	AW36P	£4.886	£4.560	£4.275	£7.990
27C1001	1M	150	131072 x 8-bit words	32 pin DIL	ST	UM59N	£6.920	£6.460	£6.060	£15.99
27C010	1M	150	131072 x 8-bit words	32 pin DIL	AMD	AW32K	£3.229	£3.010	£2.825	£5.490
27C010	1M	150	131072 x 8-bit words		NSC	AW37S	£4.757	£4.440	£4.163	£6.990
27C010	1M	200	131072 x 8-bit words	32 pin DIL	AMD	AW33L	£3.229	£3.010	£2.825	£5.290
27C010	1M	200	131072 x 8-bit words		NSC	AW38R	£4.757	£4.440	£4.163	£6.690
27C2001	2M	100	262144 x 8-bit words		ST	AW40T	£5.957	£5.560	£5.213	£19.99
27C2001	2M	120	262144 x 8-bit words		ST	AW41U	£5.700	£5.320	£4.988	£15.79
27C2001	2M	150	262144 x 8-bit words	32 pin DIL	ST	UM59P	£6.929	£6.467	£6.063	£15.99
27C020	2M	150	262144 x 8-bit words	32 pin DIL	AMD	AW39N	£5.557	£5.187	£4.863	£12.99
27C020	2M	150	262144 x 8-bit words		NSC	AW42V	£8.757	£8.173	£7.663	£15.99
27C4001	4M	100	524288 x 8-bit words		ST	AW45Y	£10.543	£9.840	£9.225	£42.99
27C4001	4M	120	524288 x 8-bit words		ST	AW46A	£10.043	£9.373	£8.788	£39.99
27C4001	4M	150	524288 x 8-bit words	32 pin DIL	ST	UM60Q	£14.071	£13.133	£12.313	£23.99
27C040	4M	200	524288 x 8-bit words	32 pin DIL	AMD	AW44X	£7.828	£7.306	£6.849	£21.49
27C801	8M	120	1048576 x 8-bit words	32 pin DIL	ST	AX58N	£20.086	£18.747	£17.575	£44.99
27C801	8M	200	1048576 x 8-bit words	32 pin DIL	ST	AX60P	£20.086	£18.747	£17.575	£48.99
27C160	16M	200	2M x 8 or 1M x 16-bit words	42 pin DIL	ST	AX61R	55.771	£52.053	£48.800	£99.99

## Serial EEPROMs

Type	Size (bits)	Speed (ns or Hz)	Organisation	Package	Manufacturer	Order Code	Price each exc. VAT			Price each inc. VAT
							1+	25+	100+	1+
ST24C02AB1	2K	I <sup>2</sup> C protocol	256 x 8-bit words	8 pin DIL	ST	AH60Q	£1.100	£1.100	£0.970	£1.690
ST24C08B1	8K	I <sup>2</sup> C protocol	256 x 8-bit words	8 pin DIL	ST	AH62S	£2.880	£1.980	£1.850	£3.390
24LC16B/P	16K	400kHz	256 x 8-bit words	8 pin DIL	Microchip	AD23A	£2.970	£0.920	£0.870	£3.490
24LC65/P	64K	400kHz	8192 x 8-bit words	8 pin DIL	Microchip	AD25C	£8.160	£2.770	£2.580	£9.590
24AA65/P	64K	400kHz	8192 x 8-bit words	8 pin DIL	Microchip	AD26D	£9.770	£6.270	£5.850	£11.490
ST93C06B1	256	-	16 x 16-bit words or 32 x 8-bit words	8 pin DIL	ST	AH58N	£0.840	£0.397	£0.361	£0.990
ST93C46AB1	1K	-	64 x 16-bit words or 128 x 8-bit words	8 pin DIL	ST	AH59P	£1.101	£0.420	£0.370	£1.190
ST93CS66B1	4K	-	256 x 16-bit words	8 pin DIL	ST	AH61R	£2.280	£1.480	£1.380	£2.690

## DV243001 Serial EEPROM Designer's Kit

Artizona Microchip

Now designers of Serial EEPROM-based applications can enjoy the increased productivity, reduced time to market, and the ability to create a rock-solid design that only a well thought out development system can provide. Microchip's new Serial EEPROM Designer's Kit includes everything necessary to quickly develop a robust and reliable Serial EEPROM-based design and greatly reduces the time required for system integration and hardware/software debug. The Total Endurance Software Model enables designers to quickly choose the best Serial EEPROM for the specific application and perform



trade-off analysis with voltage, temperature, write cycle and other system parameters in order to achieve the desired Erase/Write endurance (specific ppm rate) or product lifetime. Total Endurance is the new standard of excellence in understanding and predicting the Erase/Write endurance of Serial EEPROMs. An online endurance tutorial is included, along with hypertext help files. SEEVAL (the support software) also provides the following advanced features to aid in system integration and debugging:

- ★ Program special user function like Smart Serial configurations
- ★ Hexadecimal display of array contents
- ★ Pre-set or user-definable functions like continuous read/write, programmable delay, etc.
- ★ Upload/download files between the Serial

EEPROM and disk. Supplied with a Serial EEPROM Handbook giving information about Microchip the company, product specifications for 24, 93 and other series of device, information on application and development tools, qualification reports for products, article reprints and full sales information together with contact lists. The kit comprises a power supply unit, serial cable, application development board, a range of 24 and 93 series devices (to get you going immediately), with Total Endurance and SEEVAL software supplied on 89mm (3 1/2in.) disk.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AW67X1	Designs Kit DV243001	£129.990	£169.990

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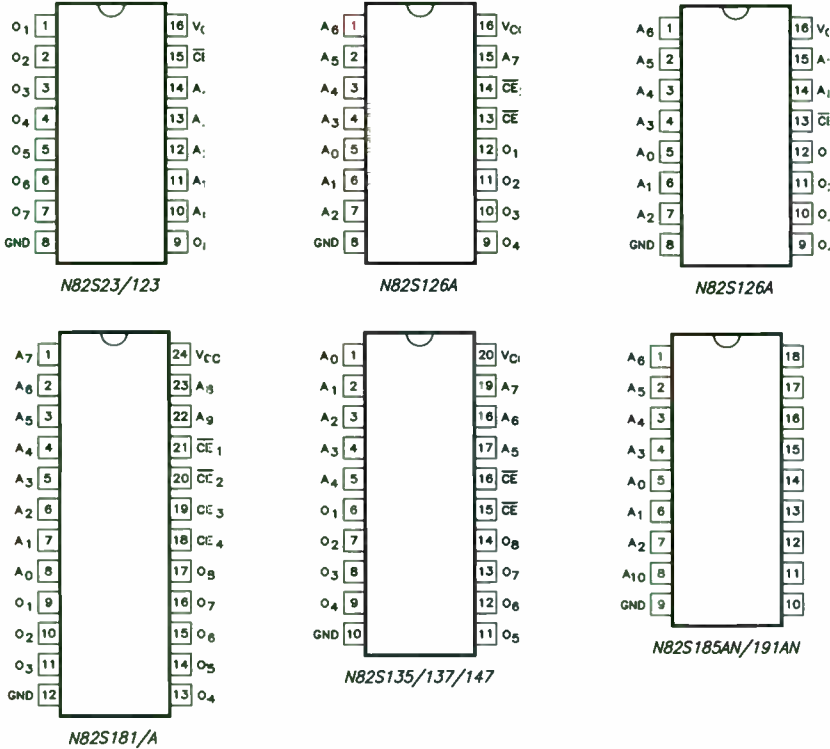
Export carriage charges (1,2 etc.) and price information see back of catalogue. † symbol in price block indicates While Stocks Last.

**BIPOLAR PROMS**

**82S1XX Series Bipolar PROMs**

Philips

A range of TTL bipolar field programmable PROMs with many applications including prototyping, volume production, sequential controllers, format conversion, hardwired algorithms, random logic and code conversion. Supplied with all outputs low, and programmable in accordance with the Signetics Generic I Fusing procedure, by fusing the Ni-Cr link matrix. Features include tri-state outputs, no separate fusing pins, fully TTL compatible, on-chip address decoding, one chip-enable input for memory expansion with unprogrammed outputs defaulting to low level.



Device	Size (bits)	Organisation	Speed (ns)	Package	Supply Voltage (V)	Supply Current (mA)	Output Current (µA)	Short Circuit Current (mA)	Order Code
82S123A	256	32 x 8-bit words	25	16 pin DIL	4.75V to 7V	96	40	90	AV90X
82S129A	1K	256 x 4-bit words	30	16 pin DIL	4.75V to 7V	120	40	70	AV91Y
82S131A	2K	512 x 4-bit words	35	16 pin DIL	4.75V to 7V	140	40	70	AV92A
82S135N	2K	256 x 8-bit words	45	20 pin DIL	4.75V to 7V	135	40	75	AV93B
82S137A	4K	1K x 4-bit words	45	20 pin DIL	4.75V to 7V	155	40	70	AV94C
82S147A	4K	512 x 8-bit words	45	20 pin DIL	4.75V to 7V	155	40	70	AV95D
82S181A	8K	1K x 8-bit words	55	24 pin DIL	4.75V to 7V	175	40	70	AV96E
82S185A	8K	2K x 4-bit words	50	18 pin DIL	4.75V to 7V	155	40	70	AV97F
82S191A	8K	2K x 8-bit words	55	24 pin DIL	4.75V to 7V	155	40	70	AV98G

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	
AV90X	32x8-25ns PROM PC	£0.990	£0.700	£0.650	£1.990
AV91Y	256x4-30ns PROM PC	£1.290	£0.960	£0.890	£4.490
AV92A	512x4-35ns PROM PC	£1.890	£1.690	£1.590	£3.590
AV93B	256x8-45ns PROM PC	£1.400	£1.270	£1.190	£6.290
AV94C	1024x4-45ns PROM PC	£1.620	£1.480	£1.380	£7.290
AV95D	512x8-45ns PROM PC	£1.620	£1.460	£1.370	£7.290
AV96E	1024x8-55ns PROM PC	£2.850	£2.530	£2.370	£11.990
AV97F	2048x4-50ns PROM PC	£4.100	£3.720	£3.480	£13.990
AV98G	2048x8-55ns PROM PC	£3.580	£3.200	£3.000	£15.990

**The Abbreviations**

- AD - Analog Devices
- ATM - Atmel
- BB - Burr-Brown
- DAL - Dallas
- EL - Elantec
- FA - Fagor
- HA - Harris
- HIT - Hitachi
- LT - Linear Technology
- MAX - Maxim
- ME - Micro Electronics
- MOT - Motorola
- NEC - NEC
- NSC - National Semiconductor
- PC - Philips Components
- RAY - Raytheon
- SAM - Samsung
- SEM - Semelab
- SIE - Siemens
- SIG - Signetics
- SLX - Siliconix
- ST - SGS-Thomson
- TFK - Temic
- TI - Texas Instruments
- TOSH - Toshiba
- ZET - Zetex

**PROGRAMMERS**

**EPROM Programmer EPP1-F**



- ★ Low cost
- ★ Integral 240V AC 50Hz PSU
- ★ Connects to any computer with RS232 port and terminal software

An EPROM programmer that will program PROMs, EPROMs and EEPROMs up to 1M-bit (128kx8). The EPROMs are programmed by inserting them into the 28-pin Zero Insertion Force socket on top of the case. The Programmer contains a single chip microcomputer which can be controlled easily from a terminal connected over an RS232 serial link at seven different baud speeds up to 19200. The Programmer has just 9 commands which are used to control it. The EPROM type and programming command is selected from a simple pop up menu screen. IBM PC compatible software is included, and an 89mm (3 1/2in.) disk containing text files with a comprehensive range of EPROMs listed with their 16-bit selection codes. The source code files are sent from the host computer to the Programmer which supports Motorola s1f, s2f and s3f data formats. A simple program for writing to EPROMS is supplied on the disk, and allows for editing and file storage. The software allows most EPROMs to be selected and programmed very easily. Options for checking the EPROMs are empty are also supported through the programmer software. The Programmer supports the 27 series EPROMs up to 1M-bit (27C010/27C1001), as well as the EEPROM type 2864. Instructions are included as part of the software, and from this an EPROM from a manufacturer not mentioned in the disk text file can easily be programmed. Just determine its programming characteristics and select the correct 16-bit code to be sent. Leads are not supplied; the stock number for a suitable mains lead is BW99H and a 13A plug RW67X, the serial lead required is JC13P.

**Specification**

- Supply voltage: 230V AC
- Power consumption: 4.5W
- Power connector: IEC Euro connector
- Fuses: 2 x 225mA, slow blow
- Interface: RS232
- Interface connector: DB25 (female)
- EPROM socket: ZIF-28
- Memory: up to 1M-bit
- Data formats: Motorola s1f, s2f, s3f
- Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200 (9600 def)
- Data bits: 8 (bit 7 = 0)
- Parity: None, Even, Odd (Default None)
- Flow control: None, RTS/CTS, XON/XOFF (Default RTS/CTS)
- Start/Stop bits: 1
- Enclosure: Anodised aluminium
- Dimensions: 175 x 103 x 65mm (L x W x H)
- Weight: 630g

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT		inc. VAT each
		2+	5+	
YTS8N 1	EPP1-F	£122.000	£110.000	£164.990

This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

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## EPROM Programmer 'EPP-2'



### Features

- ★ **Extended device support to 8Mbit**
- ★ **RS232 comms for connection to any computer**

An EPROM programmer that will program PROMs, EPROMs from 2K-bytes to 512K-bytes (8Mbit) and all current EEPROMs up to 8 Mbit. The EPROMs are programmed by inserting them into the 32-pin ZIF socket on the front panel. The programmer supports either 'Motorola.s1f', '.s2f' or '.s3f' files being used and they can be both up or downloaded to the PROM. The unit contains a single chip microcontroller and therefore is an intelligent device, which can be controlled easily from a terminal connected over an RS232 serial link.

In addition to a simple to use menu driven control program which makes programming of most devices very simple, the EPP-2's command line interpreter enables the user to enter single character commands, or even multiple commands and has 16 commands which are used to communicate with it. Execution begins after a carriage return is received. The EPP-2 can program the 27 and 28 series PROMs up to 512K-bytes (EG 27C4001).

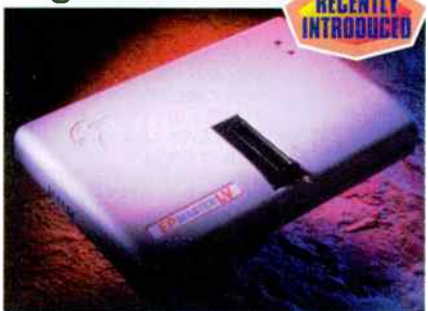
Software is included for IBM PCs and compatibles, and the EPP-2 can operate from RS232 at baud speeds of up to 19200.

Dimensions: 175 x 103 x 65mm; weight, 780g. Leads are not supplied. Use mains lead BW99H and 13A plug RW67X, and serial comms lead JC13P.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type 2821	Price each exc. VAT	inc. VAT each
ZF38R 2	EPP-2	2+ 5+ £122,000 £111,000	1+ £199,990

## EPMaster LV EPROM Programmer



- ★ **Full 8/16-bit support upto 8Mbit with no additional modules**
- ★ **Interfaces to standard printer port (LPT1-3) 25-pin M/M Centronics cable supplied**
- ★ **Works from batteries or adapter/charger supplied**
- ★ **Supports low voltage devices with real 1.3V 3.3V and 5V logic levels**
- ★ **User friendly software works under DOS or Windows**
- ★ **High speed programme/verify**

This low-cost programmer is supplied with intelligent software that can interrogate the device in the socket and select the correct manufacturer and part number automatically. In addition it is intelligent enough to select the correct voltage

(1.8V, 3.3V or 5V) for the particular part and verify the device at its nominal operating voltage. The programmer is capable of programming any part on its support list without the need for add-on modules adapters etc. All devices upto and including 40-pin DIL are supported i.e. 8/16-bit EPROMs upto 8Mbit, paged EPROMs, serial and parallel EEPROMs, FPGA configured serial PROMs and FLASH types.

The programmer will work from 8 x 'AA' batteries (standard or rechargeable) or the adapter / recharger supplied, and comes with built-in recharging circuit. The programmer automatically powers down during periods of inactivity, and powers up only during active operations - ideal for use with laptops

The programmer is very fast

Device	Type	Time
27C256	32k x 8 EPROM	5 secs
27C010	128k x 8 EPROM	21 secs
27C040	512k x 8 EPROM	84 secs
29F040	4-bit Flash	90 secs
93C46	Serial EEPROM	2 secs

Retail Unit Price each (inc. VAT).

Order Code	Type 13194	Price each exc. VAT	inc. VAT each
GS15R	EPMaster LV	1+ £255,310	1+ £299,990

## EPROM Eraser



A neatly styled and compact EPROM eraser with built in safety interlock and timer. The unit requires +12V DC to operate (3.5mm jack socket) and incorporates a 4W UV tube. The unit can erase two EPROMs simultaneously. The timer can be adjusted by rotating a front panel preset using a small screwdriver. The erasing cycle is initiated by pressing the start switch. A green LED indicates power ON-Stand by and Power ON-Erasing, when in standby the LED glows at half brightness and when erasing the LED glows at full brightness. Dimensions 75 x 42 x 155mm (excluding feet and controls).

**WARNING:** As this unit produces UV light, read safety instructions before use. When this unit is used in accordance with instructions, user will not be exposed to UV light.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type 2823	Price each exc. VAT	inc. VAT each
YU85D 1	Eprom Eraser	2+ 5+ 10+ £59,500 £51,750 £48,750	1+ £84,990

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## EPROM Eraser UV Tube

A replacement 4W UV tube is available for the above EPROM Eraser.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type 2824	Price each exc. VAT	inc. VAT each
JP43W	UV Tube	2+ 5+ 10+ £15,950 £14,700 £13,900	1+ £19,990

## S4 PROM Programmer



### Features

- ★ **RS232 ready**
- ★ **Ni-Cd battery powered, charger included**
- ★ **Battery backed internal data memory**
- ★ **PROM emulator lead for target system development**
- ★ **Programs 27 series EPROMs, and 28, 52, 55, 98 series FLASH EPROMs and EEPROMs**

The S4 is a battery powered PROM programmer for microsystem designers, that fits into a pocket. The programmer contains 1M of RAM (upgradable to 4M) which retains data and configuration even when switched off. The RAM can be downloaded with data and manipulated either remotely from a computer via RS232 interface or directly from the keypad. The S4 can program EPROMs of the 27 series, FLASH EPROMs and most (E)EPROMs, including 28, 52, 55 & 98 series. Choose the manufacturer and device from a menu and S4 will select the algorithm to use. S4's software program comes in a supplied library ROM, which is simply placed into the 32-pin ZIF socket and then loaded. There are two ways of using S4, either by entering commands by pressing keys on the 45 colour coded rubber keypad, and reading the LCD, or by entering commands from your computer via a RS232 interface lead (not supplied). Terminal software and utilities are not supplied for use with an IBM PC and S4. The S4 DRIVER program has online help and will work at speeds up to 115200 baud. The S4 can also function as a memory emulator, and if used with a cross-assembler and a computer will give you a complete microprocessor development system.

S4 continuously monitors battery voltage and temperature, and can display battery charge. If the battery charger is connected and turned on, S4 will charge the batteries as necessary as internal circuitry prevents the batteries overcharging. Recharge time is about one hour, although a reasonable working capacity will be restored in much less time. Supplied with comprehensive manual, write lead (2mm plug to minihook 500mm overall length), EMU lead (ribbon cable with 32-pin DIL plug 500mm overall length), library ROM, disk with terminal driver program and utilities, and mains charger. Size: 185 x 112 x 46mm. Weight 500g.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type 2827	Price each exc. VAT	inc. VAT each
CR11M3	S4 Programmer	2+ 5+ £479,000 £464,000	1+ £579,990

## Dataman S4 Personal EPROM Programmer



The S4 is a battery powered PROM programmer for microsystem designers, that fits into a pocket. The programmer contains 1M of RAM (upgradable to 4M) which retains data and configuration even when switched off. The RAM can be downloaded with data and manipulated either remotely from a computer via RS232 interface or directly from the keypad. The S4 can program EPROMs of the 27 series, FLASH EPROMs and most (E)EPROMs, including 28, 52, 55 & 98 series. Choose the manufacturer and device from a menu and S4 will select the algorithm to use. S4's software program comes in a supplied library ROM, which is simply placed into the 32-pin ZIF socket and then loaded. There are two ways of using S4, either by entering commands by pressing keys on the 45 colour coded rubber keypad, and reading the LCD, or by entering commands from your computer via a RS232 interface lead (not supplied). Terminal software and utilities are supplied for use with an IBM PC and S4. The S4 DRIVER program has online help and will work at speeds up to 115200 baud. The S4 can also function as a memory emulator, and if used with a cross-assembler and a computer will give you a complete microprocessor development system. S4 continuously monitors battery voltage and temperature, and can display battery charge. If the battery charger is connected and turned on, S4 will charge the batteries as necessary as internal circuitry prevents the batteries overcharging. Recharge time is about one hour, although a reasonable working capacity will be restored in much less time. Supplied with comprehensive manual, write lead (2mm plug to minihook 500mm overall length), EMU lead (ribbon cable with 32-pin DIL plug 500mm overall length), library ROM, disk with terminal driver program and utilities, and mains charger. Size: 185 x 112 x 46mm. Weight 500g.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CE63T 1	S4 Programmer 4 Mb	£553.180	£649.990
CE65V 1	S4 Upgrade 1Mb-4Mb	£59.550	£69.990
CE66W	S4 Carry Case	£24.670	£28.990

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CR11M 3	S4 Programmer	£479.000-£464.000	£579.990

## Portable EPROM Copier (Leaper 3)



This powerful, fast and handy EPROM programmer can copy EPROMs by pressing just one button. The built-in clear display shows the relevant information

of the inserted EPROM. The ROMs (Master & Slave) are installed in ZIF sockets. The copier automatically recognises the EPROM of the 2732B - 27080 series. The programmer automatically sets the burn in voltage and time. The Leaper 3 is very fast: copying a 27512 EPROM takes only 9.6 seconds. The copier provides different program algorithms which can be automatically or manually selected. Due to its portable design it is possible to copy EPROMs anywhere.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CE61R 1	Portable EPROM Copier	£280.840	£329.990

## Micromaster LV & LVE PC Based Programmers

ICE Technology



★ Supports full range of memory devices, PLDs and over 130 micros

★ Connects directly to PCs parallel port

★ Operates from battery or mains

★ Test 74 series, 4000 series, DRAM and SRAM devices

★ LVE supplied with 128k x 8 ROM/RAM emulator

★ Free software updates via BBS/Internet

★ Supports 1.8V, 3.3V and 5V devices

The Micromaster LV is a professional programmer which provides all the facilities you need at a fraction of the cost. The programmer supports the full range of EPROMs, EEPROMs, flash NVRAMs, serial PROMs, BPROMs, PALs, GALs, EPLDs, PEELs, high density logic and over 130 microcontrollers including PICs, ST6, Motorola MC68XXX, Intel MCS-51 and MCS-96 families, Philips 87CXXX, Zilog Z86, Atmel 89C5X etc. In addition, the programmer supports 1.8V and 3.3V devices, with verification at 3V. The unit plugs directly into the parallel port of a PC and works from either the mains or batteries, making it extremely versatile and portable. A chipset for 74 series, 4000 series, SRAM and DRAM is built-in, and the LVE version comes complete with a 128k x 8bit ROM/RAM 100ns emulator. Note that two emulator formats are also available separately as GS17T and GS18U.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
ADH5D	Micromaster LV	£576.000-£508.000	£735.000
ADH6E	Micromaster LVE	£690.000-£610.000	£879.000

## Speedmaster LVE PC Based Programmer



★ Supports full range of memory devices, PLDs and 8748/51 micros

★ Connects directly to PCs parallel port

★ Operates from battery or mains

★ Test 74 series, 4000 series, DRAM and SRAM devices

★ Supplied with 128k x 8 bit ROM/RAM emulator

★ Free software updates via internet

The Speedmaster LVE is a low-cost universal programmer supporting a comprehensive range of devices. The programmer supports both 3.3V and 5V parts fully with verification at the correct voltage for the part. It connects to the parallel port of any PC and works from the mains or batteries. This makes the Speedmaster LVE ideal for off-site applications and for use with laptops and notebooks. Supplied with 128k x 8bit emulator for 3.3V/5V ROM/RAMs. Software updates are free for life on BBS/Internet.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
ZF57M 2	Speedmaster LVE	£599.000	£729.990

## Emulators For Single Socket Programmers

ICE Technology

These emulators are designed to fit inside the ICE PC based single socket programmers (EPMasterLV, SpeedmasterLV, and Micro-masterLV) and come with plug-in emulator card, ROM/RAM emulator cable with 34-pin IDC connector and 32-pin DIL header plus two special function flying leads, software and manuals. The 16-bit option is supplied with an additional cable and 40-pin adapter.

Type	Emulates ROMs upto	Emulates RAMs upto
EMUL-8	128k by 8	128k by 8
EMUL-16	128k by 16 256k by 8 2 x 128 by 8	128k by 8

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
GS17T	128K X 8 Emulator	£109.000	£139.000
GS18U	128/16 Or 256/8 Emul	£159.000	£199.000

## LV40 Portable Universal Programmer

ICE Technology

- ★ Universal device support
- ★ Built-in 40 x 2 LCD display
- ★ 30-button keypad
- ★ 4Mbit of data memory - upgradeable to 8Mbit
- ★ Supports low voltage devices with real 1.8V 3.3V and 5V logic levels
- ★ User friendly PC software works under DOS or Windows
- ★ Works from battery or adapter/recharger supplied
- ★ Interfaces to printer port (LPT1-3) 25-pin M/M Centronics cable provided. Serial port connection provided for file download



A powerful portable universal programmer with LCD display and keypad which works of batteries and supports all devices upto and including 40-pin DIL types. The programmer supports:

8/16bit memory: EPROM, Paged EPROM, parallel & serial EEPROM, FPGA, configuration serial PROM and Flash up to 8Mbit

Bipolar memory

Programmable logic: PAL & GAL, PALCE, PEEL etc.

Complex PLDs: AMD MACH, Altera MAX, Xilinx EPLD, etc.

Peripheral devices: PSD

Microcontrollers: over 180 including MCS-48/51/196, 8951, PIC, COP8, ST6, H8, Z86, TMS320/370, MC705/711 etc.

All on-chip features are supported including security, oscillator settings, watch-dog timer, RAM size, brown-out etc. In addition to the standard supported devices, user defined parts can be added to a custom database providing the device uses a supported algorithm.

The programmer will work from 8 x 'AA' batteries (standard or rechargeable) or the adapter / recharger supplied, and comes with built-in recharging circuit. The programmer automatically powers down during periods of inactivity, and powers up only during active operations - ideal for use with laptops

The programmer is very fast

Device	Type	Time
27C256	32k x 8 EPROM	5 secs
27C010	128k x 8 EPROM	21 secs
27C040	512k x 8 EPROM	84 secs
29F040	4-bit Flash	90 secs
93C46	Serial EEPROM	2 secs
PSD311	Peripheral	28 secs

The LV40 is not just a fully portable professional programmer but also a tester for TTL, CMOS, DRAM and SRAM devices

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
GS16S	LV40 Portable	2+ £899.000	1+ £1,099.000

## Speedmaster GLV-32

Ice Technology

- ★ 8-way gang/set programmer
- ★ 32-pin sockets as standard
- ★ Supports EPROMs and FLASH (28 and 29 series) up to 8Meg
- ★ True 3.3V and 5V support
- ★ PC or standalone (copying) operation
- ★ PC based software as standard
- ★ Connects to parallel port of PC
- ★ Free software updates



The Speedmaster GLV-32 gang/set programmer supports EPROMs and Flash (28 and 29 series) devices up to 8Meg. Like our other LV series programmers, the GLV-32 has full support for 3.3V as well as 5V devices. This is so important when programming devices in a production environment, as programming and verifying 3V devices at 5V places potential damaging stresses on the silicon which can return and cause problems later in the product's life. The GLV-32 is the only true 3.3V and 5V gang programmer on the market.

This is a high-speed programmer with full editing capabilities, set programming features, reading, verifying and programming functions. In standalone mode, operation is done using only two buttons, making the programmer easy to use in production. In addition, free batch software is available to allow you to setup user defined screens. In addition to its excellent device support, the GLV-32 flies through device programming so fast you will scarcely believe your eyes! Programming cycle times for the 27256 of only five seconds for eight devices include download, program and verify. This low-cost production programmer really gets down to business!

Adaptor (AW50E) is an add-on device to the GLV-32 to allow 40-pin EPROMs to be programmed.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
RC74R	Speedmaster GLV-32	2+ £599.000	1+ £759.990
AW50E1	Adaptor AD8EP-40DIL	£297.860	£349.990

## DS1920 Touch Thermometer

Dallas Semiconductor

- ★ Digital Thermometer measures -55°C to +100°C in typically one second
- ★ ±0.5°C accuracy within 0°C to +70°C
- ★ No calibration or reference required
- ★ Zero stand-by power
- ★ 0.5°C resolution
- ★ Two bytes of EEPROM to be used either as alarm triggers or user memory
- ★ Alarm search directly indicates which device senses alarming temperature
- ★ Supplied in F5 package

The Touch Thermometer provides 9-bit temperature readings which indicate the temperature of the device. Information is sent to/from the DS1920 over the Dallas 1-wire interface system. Power for reading, writing, and performing temperature conversion is derived from the data line itself. Because each DS1920 contains a unique silicon serial number, multiple DS1920s can exist on the same 1-wire bus. This allows for placing temperature sensors in many different places Applications where this feature is useful include HVAC environmental controls, sensing temperatures inside buildings, equipment or machinery, and in process monitoring and control.



Specification

Pullup voltage $V_{PUUP}$ :	5V typical
Logic 1:	2.2V to $V_{PUUP} + 0.3$
Logic 2:	-0.3V to +0.8V
Temperature conversion:	1.2 seconds
Operating temperature:	-55°C to +100°C
Temperature error	
0°C to 70°C:	±0.5°C
-40°C to +0°C:	±1°C
70°C to 85°C:	±1°C
-55°C to -40°C:	±2°C
85°C to 100°C:	±2°C

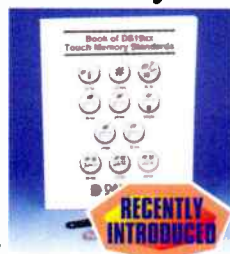
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VR72P	DS1920-F5	10+ £7.220	50+ £6.630
		100+ £6.070	1+ £9.620

## DS9092K Touch Memory Starter Kit

Dallas Semiconductor

This Starter Kit is the ideal way to quickly evaluate (and program where necessary) any of the Dallas Touch memory family using a PC compatible DOS computer. The kit includes Touch memory



devices, a DS9092 and DS9092GT Touch Probe, a PC serial port adaptor, an assortment of attachment accessories, demonstration software and utility programs. (on 89mm/3.5in disk). The demonstration programs can be executed to read or write a Touch Memory device through the serial port via a 25-pin adapter which connects to the DS9092 probes. The utility disk allows quick and easy development of Touch Memory programs from the code provided. Also included are data sheets, application notes, and a book of DS191xx Touch Memory standards. Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VR38R	DS9092KIT	1+ £72.3000	1+ £84.9900

## DS9091K MicroLAN Starter Kit

Dallas Semiconductor



This MicroLAN Evaluation Kit provides hardware, software and documentation for evaluation of Dallas 1-Wire MicroLAN technology using ICs and Touch Memories. The software included in the Kit runs under Windows on a PC and includes C++ source code listings and is supplied on 89mm (3 1/2in) disks. Five hands-on experiments are included which interactively demonstrate typical MicroLAN applications:

1. Window/door monitor with DS2401.
2. Window/door monitor with DS2405.
3. Temperature logger with DS1820.
4. Simulated room temperature control with DS1820 and DS2405.
5. Burglar alarm with simulated room temperature control.

The kit includes all special electrical and mechanical components required for the experiments. Not included are unshielded twisted pair cable, mechanical switches and battery (3V to 6V). Experiments 4 & 5 allow controlling an electric heater and air conditioning equipment via suitable power switching relays (not supplied). For demonstration and electrical safety, these applications are represented by battery operated LEDs.

Detailed manuals explain experiments, communication protocol, MicroLAN components, theory of operation, network optimisation and interfacing. Also included is a book of DS91xx Touch Memory standards, automatic identification data book and Touch connections catalogue, plus an assortment of LEDs, resistors and capacitors.

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VR39N	DS9091K	2+ £44.990	1+ £57.980

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## DALLAS TOUCH MEMORY

### Touch Memory Technology

Dallas Semiconductor



#### Applications

- ★ Vehicle alarms and immobilisers
- ★ Public service vehicle (PSV) equipment protection
- ★ Home/business security systems
- ★ Personal computer (PC) locking/protection devices
- ★ Electronic door locks
- ★ Electronic cabinet/safe/deposit box locks
- ★ Cash register access
- ★ Security access of control panel functions
- ★ Almost any application requiring high security electronic switching or control

The Dallas range of Touch Memory devices are miniature, low cost, coin shaped data carriers that can be read by a micro with momentary contact. The electrical interface has been reduced to a minimum: one data line, plus ground. Packaged in a stainless MicroCan, the durable package is highly resistant to environmental hazards and makes a virtually indestructible key. Each Touch Memory has an internal ROM with a unique, factory-lasered and tested 64-bit registration number that is accessed via a single data line. The 64-bit number is made up of an 48-bit serial number, a 8-bit family code, and 8-bit CRC.

The range includes read/write non-volatile memory types with in-built lithium battery and 'add-on' types that feature EPROMs with various amounts of extra memory for additional data to be programmed in, without disturbing the existing data

Type	Memory	Size	Order Code	Features
DS1990A	64-bit ROM	F3	GS89W	
DS1990A	64-bit ROM	F5	VR31J	
DS1991L	1152-bit	F5	VR32A	Secure read/write non-volatile memory 3 x 384-bit blocks
DS1992L	10214-bit	F5	VR65V	Read/write non-volatile memory with 256-bit scratchpad
DS1993L	4096-bit	F5	VR66W	Read/write non-volatile memory with 256-bit scratchpad
DS1994L	4096-bit	F5	VR67X	As above plus time keeping functions
DS1995L	16384-bit	F5	VR68Y	Read/write non-volatile memory with 256-bit scratchpad
DS1996L	65536-bit	F5	VR69A	Read/write non-volatile memory with 256-bit scratchpad
DS1982	1024-bit EPROM	F5	VR70M	Allows additional data to be programmed, 4 x 256-bit
DS1985	16384-bit EPROM	F5	VR71N	Allows additional data to be programmed, 64 x 256-bit

Scratchpad is an additional page that acts as a buffer when writing to memory. Data is first written to the scratchpad where it can be read back. After the data has been verified, a copy scratchpad command will transfer the data to memory. This process insures data integrity when modifying the memory. DS1994L with the additional time keeping function includes real time clock/calender, interval timer, cycle counter and programmable interrupts are available. the internal clock can be programmed to deny memory access based on absolute time/date, total elapsed time or the number of accesses. These features allow the DS1994 to be used to create a stop-watch, alarm clock, time and date stamp, logbook, hour meter, calender, system power cycle timer, interval timer and event scheduler.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

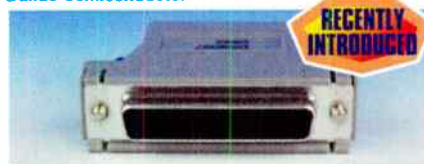
Order Code	Type	Price each exc. VAT	inc. VAT each
GS89W	DS1990A-F3	£1.970	£2.570
VR31J	DS1990A-F5	£1.970	£2.570
VR32K	DS1991L-F5	£8.470	£11.150
VR65V	DS1992L-F5	£5.190	£6.740
VR66W	DS1993L-F5	£6.250	£8.170
VR67X	DS1994L-F5	£5.890	£7.670
VR68Y	DS1995L-F5	£9.970	£13.220
VR69A	DS1996L-F5	£12.450	£16.270
VR70M	DS1982-F5	£2.650	£3.490
VR71N	DS1985-F5	£5.850	£7.580

#### Features

- ★ Ultra high security - over 200,000 billion key differs
- ★ Laser etched codes - no code numbers ever repeated, so there will never be two keys the same
- ★ Digital identification by momentary contact
- ★ Data can be accessed while affixed to an object
- ★ Memories are passive - no battery required
- ★ Memories are virtually indestructible
- ★ Standard 16mm diameter and 1-wire protocol ensures compatibility with Touch Memory family
- ★ Button shape is self-aligning with cup-shaped probes
- ★ Communicates to bus via a single digital signal at 16.3Kbits/s
- ★ Since Touch Memories are a contact device - not radio or infra-red - they are not 'grabbable'
- ★ Durable stainless steel case engraved with registration number withstands harsh environments.
- ★ Presence detector acknowledges when reader first applies voltage
- ★ Easily attached using self-adhesive backing, latched by its flange or locked by a ring pressed onto its rim.

### DS9097 Touch COM Port Adaptor

Dallas Semiconductor



This Adaptor provides a simple, low-cost interface to a RS232C COM port for reading and writing Touch Memory devices. The DS9097E has the additional feature of supplying the 12V necessary to program the EPROM based Touch Memory products. The Adaptors are connected to a serial port that must support a data transmission rate of 115,200 bits/s in order to create the 1-Wire time slots correctly. A selection of software examples illustrates how to communicate with Touch Memories using the DS9097 and DS9097E is provided in the DS9092K Touch Memory Starter Kit. The adaptors are powered from the RS232 interface and have a standard DB-25 connector and a RJ-11 connector for easy attachment to a Touch Memory probe. When DS9097E is combined with the appropriate software the Adaptor can be used in a stand alone mode where all the programming current is supplied

by the serial port. The maximum number of EPROM bits that can be programmed simultaneously is four. By using an auxiliary regulated 12V supply, that is plugged in to power jack on the adaptor, then up to eight EPROM bits can be programmed simultaneously (using the appropriate software).

Price each is shown. Order quantities less than 2 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VR33L	DS9097	£15.990	£18.990
VR34M	DS9097E	£23.990	£29.000

### DS9092 Touch Memory Probe

Dallas Semiconductor

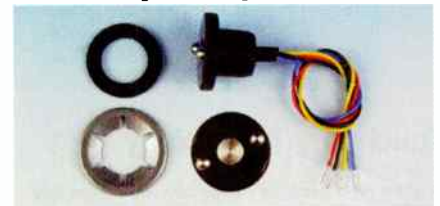
This Touch Memory Probe provides the electrical contact necessary for the transfer of data to/from the DS19xx family of Touch Memories. The round probe shape provides a self-aligning interface that readily matches the circular rim of the Touch Memory Metal contacts resist wear and are easy to keep clean. The probe is pre-wired and easy to install.



Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VR77J	DS9092	£5.200	£7.050

### Touch Key Receptacles



These receptacles provide a neat, durable and easy-to-install single-hole solution in Touch Systems. Intended for use with ERD's Touch Key Hybrid (CK41U) and Dallas' Touch Key (CK42V). Available in two versions: without LED (CK43W) and with LED (CK44). Supplied complete with pre-attached leadouts and mounting hardware.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK43W	Touch Key Receptacle	£6.510	£7.650
CK44X	Touch Key ReceptLED	£7.870	£9.250
NV11M	Touch Key ReceptLED	£7.870	£9.250

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## Touch Memory Accessories

Dallas Semiconductor



A range of accessories for use with the Touch Memory and Touch Thermometer system.

**DS9096P:** A double-sided adhesive pad that is pre-cut to match the diameter of Touch Memory devices. The pads can be attached to virtually any smooth surface, to provide a permanent attachment method.

**DS9101:** A multi-purpose clip that offers a low-cost method of fixture to a plastic badge or, using an additional wire/tie wrap, any object that provides a hole for strap mounting. This allows Touch Memories to be attached to bags or other soft surface objects. Using a DS9093RA Lock Ring the clip can hold a Touch Memory permanently and still allow the flexibility of strap mounting.

**DS 9093RA:** A stainless steel lock ring fastener which provides an inexpensive method for firmly attaching a Touch Memory to any item with a pre-punched hole.

**DS9093A** An angled plastic fob with recess for holding a standard touch memory device

**DS9093F:** This plastic snap-in fob offers the simplest way to mount a Touch Memory for applications that require only momentary contact. The fob can be attached to a keyring.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 12006	Price each exc. VAT			inc. VAT each
		10+	50+	100+	
VR73Q	DS9096P	£0.390	£0.340	£0.290	£0.490
VR74R	DS9101	£0.380	£0.320	£0.280	£0.530
VR75S	DS9093RA	£0.380	£0.320	£0.280	£0.530
VR78K	DS9093A	£0.840	£0.750	£0.680	£1.160
VR76H	DS9093F	£0.820	£0.780	£0.700	£1.160

## Touch Key Technology

### Features

- ★ Ultra high security - over 200,000 billion key differs
- ★ Laser etched codes - no code numbers ever repeated, so there will never be two keys the same
- ★ Keys are passive - no battery required
- ★ Keys are virtually indestructible
- ★ System can learn up to eight keys at any one time
- ★ Lost keys can be 'locked out' by authorised personnel - without any specialised equipment
- ★ Replacement keys can be taught by authorised personnel - without any specialised equipment
- ★ Since Touch Keys are a contact device - not radio or infra-red - they are not 'grabbable'
- ★ Hybrid provides easy entry route for OEMs and individuals to utilise Touch Key Technology with minimal development work
- ★ System remembers and returns to last state when power is disconnected/reconnected
- ★ Hybrid incorporates full spec. alarm system!
- ★ System provides selectable passive arming
- ★ System can 'slave arm' - hybrid follows a master system arm command and provides an alternative method of disarm.

### Applications

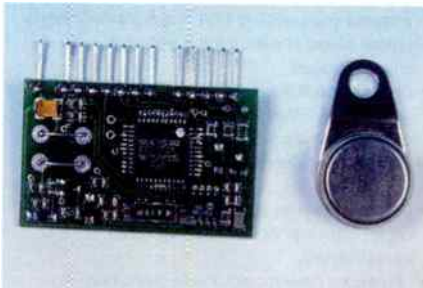
- ★ Vehicle alarms and immobilisers
- ★ Public service vehicle (PSV) equipment protection
- ★ Home/business security systems
- ★ Personal computer (PC) locking/protection devices
- ★ Electronic door locks
- ★ Electronic cabinet/safe/deposit box locks
- ★ Cash register access
- ★ Security access of control panel functions
- ★ Almost any application requiring high security electronic switching or control

The Dallas DS19xx Touch Key devices are miniature, low cost, coin shaped data carriers that can be read by a micro with momentary contact. The electrical interface has been reduced to a

minimum: one data line, plus ground. Packaged in a stainless MicroCan, the durable package is highly resistant to environmental hazards and makes a virtually indestructible key. ERD have developed a custom chip to decode these Touch Key devices and have produced a hybrid circuit incorporating the chip, with many outstanding features, to utilise this exciting technology. The ERD Touch Key Decoder Hybrid, Dallas DS1990A Touch Key and support products are now available from Maplin.

## Pre-Taught Touch Hybrid with Master Touch Key

ERD & Dallas



This compact and highly versatile hybrid is ideal for a wide range of security applications and forms the 'kernel' around which complete systems can be developed.

The hybrid contains processor-based circuitry and on-board E<sup>2</sup> memory, enabling it to be taught the codes of User Touch Keys under control of the Master Touch Key supplied. User Touch Keys, once taught, can then be used to arm/disarm or lock/unlock whatever security or access control system the hybrid is incorporated into.

If desired the program contained within the hybrid's processor can be used to provide a complete alarm system in its own right, requiring a relatively small number of external components to realise this function.

For minimum development/installation time the ERD Touch Hybrid is supplied with a Master Touch Key factory pre-taught. The hybrid can be taught up to eight User Touch Keys, these must be purchased separately (CK42V); please note that the Master Touch Key supplied with the hybrid cannot be used as a User Touch Key.

Suitable Touch Key Receptacles (CK43W and CK44X) are also available to facilitate 'reading' of the touch keys by the hybrid.

Connection to the hybrid is by means of a 15-way 2.54mm (0.1in.) spaced pin-strip. 2-ways are missing so that 'keying' can be provided to prevent incorrect insertion. The hybrid can be directly soldered into a circuit board (requires 1mm dia holes) or connected by means of a suitable PCB connector (e.g. 2 x YW30H cut down to provide 15 ways).

The hybrid can be configured to operate in a number of different ways by means of on-board programming links.

Links: passive arm enable/disable; passive arm time 30 secs/1 sec; and user keys 8/4.

Interfacing to the hybrid is very straightforward using standard 5V logic - inputs and outputs are either high or low - no complicated clocked serial data streams! A dedicated flashing status LED output is also provided.

Inputs pins: touch key receptacle input (2-wire); user touch key learn enable input; trig.1 & trig. 2 alarm inputs; and slave arming input.

Output pins: LED status indicator output (2-wire); siren control output; beep control output; and arm disarm output.

Supply pins: +5V and 0V.

### Specifications

Supply voltage: +5V DC ± 0.5V DC  
 Supply current (typical):  
 Armed: 1.2mA (excluding LED)  
 Disarmed: 1.0mA  
 Output drive current:  
 Source: 10mA  
 Sink: 15mA  
 Operating temperature: -10°C to +60°C  
 Full data available.

Retail Unit Price each (inc. VAT).

Order Code	Type 12457	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CK41U	Touch Hybrid & Mstr	£19.990	£18.990	£17.990	£23.490

## DS 1990A-F3 Touch Key

Dallas

A touch key for use with ERD's Touch Key Decoder Hybrid (CK41U). The stainless, virtually indestructible key incorporates a punched metal tab so that the touch key can be attached to a bunch of 'conventional keys'. Each key is individually laser etched with its code; there are 200,000 billion 'key differs' and no code is ever repeated.



Retail Unit Price each (inc. VAT).

Order Code	Type 12006	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CK42V	Touch Key	£4.750	£4.500	£4.100	£5.500

## SGS Op-Amps and Comparators



**LM308N (NP82D)** - A single precision op-amp featuring extremely low input currents, and very low power requirements, ideal for battery operation.

**LM741CN (NP83E)** - Industry standard general purpose op-amp with internal frequency compensation.

**LF347N (NP84F)** - Quad J-FET op-amps with low distortion, high slew rate and wide bandwidth.

**LF353N (NP85G)** - Dual J-FET op-amps with low distortion, high slew rate and wide bandwidth.

**MC33171N (NR62S)** - A single bipolar op-amp featuring low-power, single supply operation with wide bandwidth and high slew rate.

**MC33172N (NR63T)** - A dual bipolar op-amp featuring low-power, single supply operation with wide bandwidth and high slew rate.

**MC33174N (NR64U)** - A quad bipolar op-amp featuring low-power, single supply operation with wide bandwidth and high slew rate.

**LM2901N (NR65V)** - A quad low offset voltage comparator featuring low-power and single supply rail operation.

**LM2902N (NR66W)** - A quad low-power op-amp with internal frequency compensation, wide bandwidth, large voltage gain and designed to operate from a single supply rail.

**LM2903N (NR67X)** - A dual low offset voltage comparator featuring low-power and single supply rail operation.

**LM2904N (NR68Y)** - A dual low-power op-amp with internal frequency compensation, wide bandwidth, large voltage gain and designed to operate from a single supply rail.

**LM239N (NR69A)** - Four independent precision low power voltage comparators designed to operate from a single supply rail, and will directly interface with TTL and CMOS.

**MC33078N (NR70M)** - A dual low noise bipolar op-amp designed for high quality audio and data signal processing. Features include low input voltage noise, high gain bandwidth products and high slew rate.

**MC33079N (NR71N)** - A quad low noise bipolar op-amp designed for high quality audio and data signal processing. Features include low input voltage noise, high gain bandwidth products and high slew rate.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 17188	Price each exc. VAT			inc. VAT each
		25+	100+	500+	
NP82D	LM308N	£0.720	£0.600	£0.554	£1.050
NP83E	LM741CN	£0.192	£0.160	£0.148	£0.280
NP84F	LF347N	£0.460	£0.383	£0.354	£0.670
NP85G	LF353N	£0.460	£0.383	£0.354	£0.670
NR62S	MC33171N	£0.500	£0.417	£0.385	£0.730
NR63T	MC33172N	£0.700	£0.583	£0.538	£1.020
NR64U	MC33174N	£0.840	£0.700	£0.646	£1.230
NR65V	LM2901N	£0.260	£0.217	£0.200	£0.380
NR66W	LM2902N	£0.260	£0.217	£0.200	£0.380
NR67X	LM2903N	£0.260	£0.217	£0.200	£0.380
NR68Y	LM2904N	£0.260	£0.217	£0.200	£0.380
NR69A	LM239N	£0.280	£0.233	£0.215	£0.410
NR70M	MC33078N	£0.440	£0.367	£0.338	£0.640
NR71N	MC33079N	£0.660	£0.550	£0.508	£0.960

**ANALOGUE /DIGITAL IC'S**

**BIPOLAR OPERATIONAL  
AMPS**

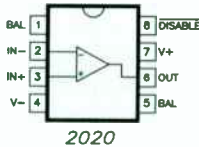
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Export carriage charges (1.2 etc.) and price information see back of catalogue. † symbol in price block indicates Whittie Stocks List.

Device Part Number	Manufacturer	Voltage Supply (Vcc) (V)	Power Dissipation (W)	Differential I/p Volts (max) (V)	Maximum Input Voltage -- one I/p earthed (V)	Input Offset Voltage (mV)	Input Offset Current (nA)	Input Bias Current (nA)	Input Resistance (MΩ)	Common Mode Rejection Ratio (dB)	Supply Voltage Rejection Ratio (dB)	Large Signal Voltage Gain (dB)	Output Voltage Swing (V)	Slew Rate (V/μS)	Unity Gain Bandwidth (MHz)	Full Power Bandwidth (kHz)	Supply Current (mA)	Order Code	Price each exc. Vat 25+	100+	300+	inc. Vat 1+
EL2020CN	EL	±18V to 36V	-	±10	-	3	+5/-10μA	-	5	60	75	-	±13	500	50	-	9	UR06G	£2.990	£2.051	£2.000	£4.640
EL2044CN	EL	±2V to ±18V or 2.5V to 36V	0.5	±18	18	0.5	50	2.8μA	150kΩ	90	80	6	±13.6	325	60	5.2MHz	5.2	UJ55K	£0.550	£0.440	£0.293	£1.390
EL2045CN	EL	±2V to ±18V or 2.5V to 36V	0.5	±18	18	0.5	50	2.8μA	150kΩ	95	85	6	±13.6	275	100	4.4MHz	5.2	AJ57M	£2.183	£1.871	£1.747	£3.316
EL2244CN	EL	±2V to ±18V or 2.5V to 36V	1	±18	18	0.5	50	2.8μA	150kΩ	90	80	6	±13.6	325	60	5.2MHz	10.4	AJ56L	£3.990	£3.390	£2.867	£5.890
EL2245C	EL	±2V to ±18V or 2.5V to 36V	1	±18	18	0.5	50	2.8μA	150kΩ	95	85	6	±13.6	275	100	4.4MHz	10.4	AJ58N	£3.583	£3.071	£2.867	£5.890
LM301AN	ST	±5V to ±18V	0.5	30	15	2	3	70	2	90	96	104	±13	0.4	1	10	1.8	QH36P	£0.408	£0.327	£0.314	£0.741
LM308N	ST	±5V to ±18V	0.5	30	15	2	0.2	1.5	40	100	96	110	±14	0.2	1	10	0.3	QH37S	£0.550	£0.440	£0.423	£0.931
LM324N	NSC	±1.5 to ±16V or 3V to 32V	0.57	32	32	2	±5	45	-	70	70	100	±14.5	0.5	1	15	1	AV42V	£0.150	£0.129	£0.120	£0.466
LM324N	ST	±1.5 to ±16V or 3V to 32V	0.57	32	32	2	±5	45	-	70	70	100	±14.5	0.5	1	15	1	UF26D	£0.250	£0.132	£0.123	£0.620
LM348N	NSC	±1.5V to ±18V	0.75	±36	-	1	4	30	2.5	90	96	15	±13	0.5	1	-	2.4	AV43W	£0.275	£0.236	£0.220	£0.751
LM348N	ST	±1.5V to ±18V	0.75	±36	-	1	4	30	2.5	90	96	15	±13	0.5	1	-	2.4	AV44X	£0.325	£0.279	£0.260	£0.751
LM358N	NSC	±1.5 to ±15V or 3V to 30V	0.5	32	32	2	5	45	-	70	100	100	28	0.5	1	10	1.5	AV40T	£0.317	£0.271	£0.253	£0.561
LM358N	ST	±1.5 to ±15V or 3V to 30V	0.5	32	32	2	5	45	-	70	100	100	28	0.5	1	10	1.5	UJ34M	£0.186	£0.139	£0.124	£0.613
LM741CN	ST	±5V to ±18V	0.5	30	15	1	30	200	1	90	96	104	±13	0.5	1	10	1.7	QL22Y	£0.270	£0.210	£0.170	£0.570
LM741CN-8	NSC	±5V to ±18V	0.5	30	15	1	30	200	1	90	96	104	±13	0.5	1	10	1.7	AV39N	£0.250	£0.190	£0.120	£0.540
LM747CN	NSC	±5V to ±18V	0.8	30	15	1	80	200	1	90	96	104	±13	0.5	1	10	3	QL24B	£0.590	£0.514	£0.480	£0.789
LM748CN	NSC	±1.25V to ±22V	0.5	30	15	1	40	120	800kΩ	90	90	104	±13	0.5	1	10	1.75	QL25C	£0.574	£0.500	£0.467	£0.760
LM833N	NSC	±5V to ±18V	0.5	30	15	0.3	10	500	-	100	100	110	±13.5	7	9	120	5	UF49D	£1.094	£0.953	£0.890	£1.378
LM837N	NSC	±5V to ±18V	1.2	30	15	0.3	10	500	-	100	100	110	±13.5	10	25	200	10	UL33L	£2.081	£1.600	£1.560	£2.890
LM1458N	NSC	±2.5V to ±18V	0.5	30	15	1	80	200	1	90	96	104	±13	0.5	1	10	3	AV41U	£0.317	£0.271	£0.253	£0.466
LM1709CN	NSC	±5V to ±18V	0.25	5	10	2	100	300	250kΩ	90	92	93	±13	0.25	5	200	2.5	QL20W	£0.699	£0.559	£0.538	£1.045
LM3900	NSC	±2V to ±16V or 4V to 36V	0.57	-	-	-	-	30	1	-	-	70	±15	0.5	2.5	35	20	QH42V	£0.782	£0.625	£0.601	£1.074
MC1458CN	ST	±2.5V to ±18V	0.5	30	15	1	80	200	1	90	96	104	±13	0.5	1	10	3	QH46A	£0.270	£0.190	£0.160	£0.530
MC3403N	ST	±1.25V to ±18V or 2.5V to 36V	0.5	36	36	2	±30	150	-	90	90	100	±14	1.2	1	40	3	QH51V	£0.630	£0.420	£0.365	£1.090
MC3403N	TI	±1.25V to ±18V or 2.5V to 36V	0.5	36	36	2	±30	150	-	90	90	100	±14	1.2	1	40	3	AV45Y	£0.498	£0.427	£0.398	£0.941
MC3307B	MOT	±5V to ±18V	0.7	±18 or V	±18 or V	0.15V	25	300	175kΩ	100	105	110	±13	7	16	120	4.1	AE02C	£0.532	£0.541	£0.505	£1.416
MC33079	MOT	±5V to ±18V	0.95	±18 or V	±18 or V	0.15V	25	300	175kΩ	100	105	110	±13	7	16	120	8.4	AE03D	£0.728	£0.624	£0.582	£1.891
NE531N	SIG	±5V to ±22V	0.5	15	15	2	50	400	20	100	100	96	±13	35	1	500	5.5	WQ54J	£1.272	£0.978	£0.954	£2.128
NE5532N	SIG	±3V to ±20V	0.5	±0.5	13	0.5	10	200	300kΩ	100	100	100	±13	9	10	140	10	UH35Q	£0.536	£0.467	£0.436	£0.670
NE5534AN	SIG	±3V to ±20V	0.5	±0.5	13	0.3	-	500	100kΩ	100	100	100	±13	13	10	200	4	YY68Y	£0.590	£0.458	£0.446	£0.180
NJM4558	JRC	±5V to ±18V	0.5	30	15	1	5	25	1	90	90	104	±13	1	3	10	1.7	DT32K	£0.238	£0.204	£0.190	£0.561
OP-07CNB	RAY	±9V to ±22V	0.5	30	15	5	60μV	0.8	±1.8	33	120	104	±13	0.17	0.5	3.4	2.7	RA73Q	£1.490	£1.299	£1.212	£2.366
OP-27GNB	AD	±3V to ±22V	0.658	0.7	±15	30μV	12	±15	4	120	118	123	±13.5	2.8	8	34	3.5	RA74R	£1.900	£1.656	£1.546	£2.404
OP-37GP	AD	±4V to ±20V	0.5	±0.7	±12.3	30μV	12	±15	4	120	114	123	±13.5	13.5	6.3	200	3	UL04E	£1.857	£1.547	£1.326	£3.228
OP-77GP	AD	±3V to ±20V	0.5	30	±14	50μV	0.3	1.2	45	140	123	135	±13	0.3	0.6	3.4	1.7	UL05F	£1.467	£1.128	£1.100	£2.461
OP177	SGS	±3V to ±22V	0.06	±30	±30V	20μV	0.5	2.4	45	140	115	400V/mV	±13V	0.3	0.6	-	2	AD56L	£1.117	£0.957	£0.893	£1.387
OPA-177GP	BB	±3V to ±18V ±22V max	0.06	±30	±30	4μV	4.5	±6	45	140	115	4000V/mV	±14	0.3	0.6	-	1.3	LE67X	£3.400	£2.720	£2.615	£4.741
OPA650P	BB	±4.5V to ±8.75V	0.05	±2.8	±2.8	±3	1500	5500	-	80	70	51	±2.7	180	560MHz	-	±8.75	LE68Y	£1.950	£1.560	£1.500	£5.406
OPA658P	BB	±4.5V to ±8.5V	0.047	±3	3	±5.5	-	-	-	50	58	-	2.9	2000	900MHz	-	±8.5	LE65V	£5.433	£4.347	£4.179	£7.581
OPA2650P	BB	±4.5V to ±17.5V	0.05	±2.8	2.8	±3	1500	5000	-	57	70	51	±2.75	180	560MHz	-	±17.5	LE66W	£5.433	£4.347	£4.179	£7.876
OPA2658P	BB	±4.5V to ±8.5V	0.047	±3	3	±8	-	-	-	62	70	-	±2.75	1700	900MHz	-	17	XX01B	£0.583	£0.449	£0.438	£1.186
RC4136N	RAY	±18V	0.8	30	15	0.5	5	40	5	100	100	110	±13	1	3	25	7	UR18U	£2.383	£1.833	£1.788	£3.078
RC4227GN	RAY	±3V to ±18V	0.468	30	±15	30μV	5	±7.5	4	120	118	118	±13.8	2.7	8	25	6	UR19V	£0.433	£0.333	£0.325	£0.656
RC4559N	RAY	±3V to ±18V	0.468	30	±15	2	5	40	1	100	100	110	±14	2	4	32	3.3	CP85T	£0.989	£0.848	£0.791	£2.651
TLE2027CP	TI	±4V to ±22V	1	±1.2	±11	20μV	6	15	-	131	144	153	±13	2.8	13	30	3.8	CP87U	£0.977	£0.837	£0.782	£2.651
TLE2037CP	TI	±4V to ±22V	1	±1.2	±11	20μV	6	15	-	131	144	153	±13	7.5	76	80	3.8	AV38R	£0.390	£0.190	£0.170	£0.990
TS521AIN	SGS	±18V	0.5	±17	18	0.5	20	50	1	90	90	100	±3	1.5	3	3	0.7	NP87U	£0.830	£0.690	£0.640	£1.040

## EL2020CN

Elantec



A fast settling, wide bandwidth amplifier optimised for gains between -10 and +10. The amplifier will drive two double terminated 75Ω co-ax cables to video levels with low distortion (it can deliver  $\pm 2.4V$  at  $\pm 33mA$  into 75Ω). The device is short circuit protected and settles to 1% in 50ns for a 10V step.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

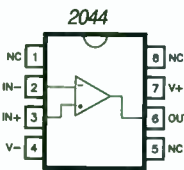
Order Code	Type 2849	Price each exc. VAT	inc. VAT each
UR06G	EL2020CN	25+ £2.990 100+ £2.050 300+ £2.000 1+ £4.640	1+

## EL2044CN

Elantec

The EL2044C is a high-speed, low power, low-cost monolithic op amp built using a complementary bipolar process. It is unity-gain stable and features a 325V/μs slew rate and a 60MHz gain-bandwidth product while requiring only 5.2mA of supply current. Supply operating range is from  $\pm 18V$  down to as little as  $\pm 2V$ . For single supply operation, the device operates from 36V down to 2.5V. The excellent power supply range makes the device an obvious choice for a single +5V supply.

The EL2044C also features an extremely wide output voltage swing of  $\pm 13.6V$  with a supply of  $\pm 15V$  and a load of 1kΩ. At  $\pm 5V$ , output voltage swing is a wide  $\pm 3.8V$  into 500Ω and 3.2V into 150Ω. With a single-ended 5V supply output swing is an excellent 0.3V to 3.8V into a 500Ω load. With unity gain the EL2044C has a -3dB bandwidth of 120MHz with a phase margin of 50°. It can drive unlimited load capacitance, and because of its conventional voltage feedback topology, it allows the use of reactive or non-linear elements in its feedback network. This versatility, combined with 75mA of output drive capability, makes it ideal for applications requiring low power consumption with high-speed.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2850	Price each exc. VAT	inc. VAT each
AJ55K	EL2044CN	25+ £2.180 100+ £1.870 300+ £1.740 1+ £3.330	1+

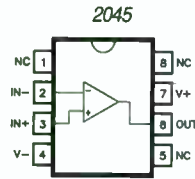
## EL2045C

Elantec

The EL2045C is a low power, wideband, gain-of-2 stable monolithic op amp built using a high-speed complementary bipolar process. It uses a classical voltage-feedback topology which allows it to be used in a variety of applications where current-feedback amplifiers are not appropriate because of restrictions placed upon the feedback element used with the amplifier. It allows, for example, a capacitor to be placed in the feedback path, making it an excellent choice for applications such as active filters, sample-and-holds, or integrators. Similarly, because of the ability to use diodes in the feedback network the device is an excellent choice for applications such as fast log amplifiers.

The EL2045C has a gain-bandwidth product of 100MHz while using only 5.2mA of supply current. For gains greater than 4, its closed loop -3dB bandwidth is approximately equal to the gain-bandwidth product divided by the noise of the

circuit. For gains less than 4, higher-order poles in the amplifier's transfer function contribute to even higher closed loop bandwidths. The EL2045C has a -3dB bandwidth of 100MHz at a gain of +2, dropping to 20MHz at a gain of +5. This does not come at the expense of stability.

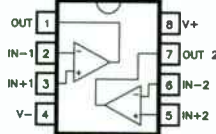


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2842	Price each exc. VAT	inc. VAT each
AJ57M	EL2045CN	25+ £2.180 100+ £1.870 300+ £1.740 1+ £3.310	1+

## EL2244CN

Elantec



EL2244CN

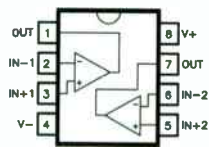
The EL2244C is a dual version of the EL2044C and has all of the same electrical characteristics. Total supply current consumption is 10.4mA and the package is 8-pin DIL.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2841	Price each exc. VAT	inc. VAT each
AJ56L	EL2244CN	25+ £3.990 100+ £3.390 300+ £2.860 1+ £5.890	1+

## EL2245C

Elantec



2245

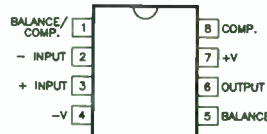
The EL2245C is a dual version of the EL2045C and has all of the same electrical characteristics. Total supply current consumption is 10.4mA and the package is 8-pin DIL.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2844	Price each exc. VAT	inc. VAT each
AJ58N	EL2245CN	25+ £3.580 100+ £3.070 300+ £2.860 1+ £5.890	1+

## LM301AN

SGS Thomson



301

A general purpose op-amp featuring low input currents and low temperature drift on input currents. The amp is overload protected on input and output with no latch-up when the common mode range is exceeded. External compensation capacitor (33pF approx) is required for stability, but this value can

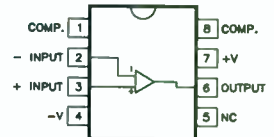
be varied depending on application such that slew rates of 10V/μs and bandwidths of 10MHz can be achieved.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2853	Price each exc. VAT	inc. VAT each
QH36P	LM301AN	25+ £0.408 100+ £0.327 300+ £0.314 1+ £0.740	1+

## LM308N

SGS Thomson



308

A precision op-amp featuring extremely low input currents. The circuit is directly interchangeable with the LM301AN in low frequency circuits and incorporates the same protective features. In addition it has very low power consumption making it suitable for battery operation and owing to its very high input resistance operates with less error on 10MΩ sources than a 709C with 10KΩ source.

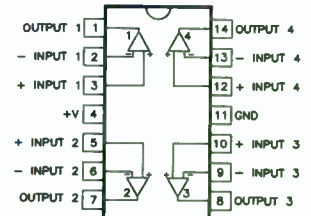
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2854	Price each exc. VAT	inc. VAT each
QH37S	LM308N	25+ £0.550 100+ £0.440 300+ £0.423 1+ £0.930	1+

## LM324N

SGS-Thomson

National Semiconductor



324

Four independent, high gain, internally frequency compensated op-amps specifically intended to operate from a single power supply over a wide range of voltages. Application areas include transducer amplifiers, DC gain blocks and all conventional op-amp circuits which are designed for single power supply systems. The device will work from standard +5V rails found in digital systems and provide the required 'interface' electronics. Additionally, the device features a large DC voltage gain (100dB), 1MHz unity gain bandwidth, 120dB channel separation, and class AB outputs with virtually no crossover distortion. The device will operate from a +3 to +32V DC rail, or from a dual  $\pm 1.5V$  to  $\pm 16V$  DC supply.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2856	Price each exc. VAT	inc. VAT each
UF26D	LM324N	25+ £0.250 100+ £0.132 300+ £0.123 1+ £0.620	1+
AV42V	Op-Amp LM324N NSC	£0.150 £0.129 £0.120 £0.460	

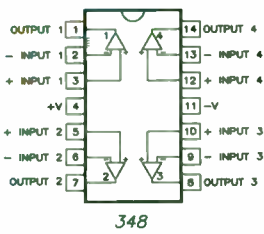
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## LM348N

National Semiconductor  
SGS-Thomson



348

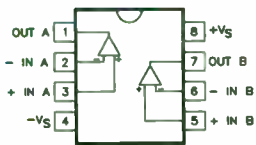
A low power, quad version of the 741 op-amp featuring high gain, and internal compensation with a total supply current requirement for the IC that is less than a single conventional 741. Each op-amp has a class AB output stage and so has virtually no crossover distortion. Additional features include a low input offset voltage (1mV), low input offset current (typically 4nA), low input bias current (typically 30nA) and a unity gain bandwidth of 1MHz. Channel separation is 120dB with a maximum operating voltage of  $\pm 18V$  DC.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AV43W	Op-Amp LM348N NSC	£0.275	£0.236	£0.220	£0.75C
AV44X	Op-Amp LM348N SGS	£0.325	£0.279	£0.260	£0.75C

## LM358N

SGS-Thomson  
National Semiconductor



358

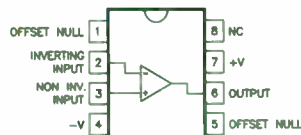
Two independent high gain internally frequency compensated op-amps designed specifically to operate from a single power supply. The output voltage can swing to ground even on single rail power supplies. Channel separation 120dB.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
UJ34M	LM358N	£0.196	£0.139	£0.124	£0.610
AV40T	Op-Amp LM358 NSC	£0.317	£0.271	£0.253	£0.560

## LM741CN

SGS-Thomson  
National Semiconductor  
Philips Components



741 8pin DIL

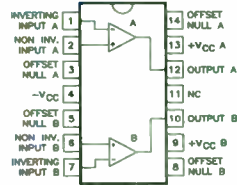
The industry standard general purpose op-amp featuring internal frequency compensation. The amp is overload protected on input and output with no latch-up if common mode range is exceeded.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
QL22Y	LM741CN	£0.270	£0.210	£0.170	£0.570
AV39N	Op-Amp LM741CN-8 NSC	£0.250	£0.190	£0.120	£0.540
AV38R	Op-Amp UA741CN PC	£0.390	£0.190	£0.170	£0.590

## LM747CN

National Semiconductor



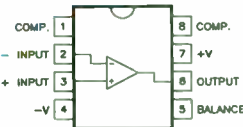
Two 741 op-amps in one 14-pin DIL package. The two amps share a common bias network and power supply leads, but otherwise are completely separate. Channel separation: 98dB at 1kHz.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
QL24B	LM747CN	£0.590	£0.514	£0.480	£0.780

## LM748CN

National Semiconductor



748

A general purpose op-amp very similar to the 741, but with external frequency compensation required allowing best high frequency performance to be achieved for any gain.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
QL25C	LM748CN	£0.574	£0.500	£0.467	£0.760

## LM833N

National Semiconductor



833

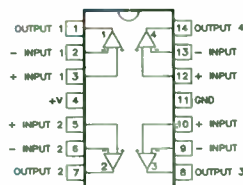
A dual op-amp designed specifically for use as sensitive pre-amps in audio circuits. The amps feature very low noise characteristics, typically 4.5nV/√Hz, total harmonic distortion of 0.002% from 20Hz to 20kHz and dynamic range >140dB. Channel separation 120dB from 20Hz to 20kHz.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
UF49D	LM833N	£1.090	£0.953	£0.890	£1.370

## LM837N

National Semiconductor



837

A quad op-amp designed for low noise, high speed and wide bandwidth performance. The output can

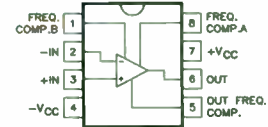
drive a 600Ω load and is ideal for digital audio, graphic equalisers, pre-amplifiers and professional audio applications. It can be used to upgrade existing systems with little or no change to the circuit. The amps feature low noise 4.5nV/√Hz typically, total harmonic distortion of 0.0015% from 20Hz to 20kHz, output drive capability  $\pm 40mA$ , and channel separation 120dB from 20Hz to 20kHz.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
UL33L	LM837N	£2.080	£1.600	£1.560	£2.890

## LM1709CN

National Semiconductor



1709

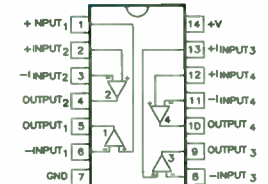
A general purpose op-amp featuring wide flat frequency response capabilities at reasonably high gains owing to the input and output compensation capacitors being able to be varied.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
QL20W	LM1709CN	£0.699	£0.559	£0.538	£1.040

## LM3900N

National Semiconductor



3900

Four dual input, internally compensated amplifiers designed primarily for single power rail operation. These current differencing amplifiers use a current mirror to achieve the non-inverting function. When driving from a low impedance source a resistor should be placed in series to limit the peak input current to less than 20mA.

### Absolute max ratings

Supply voltage range: 4V to 32V or  $\pm 2V$  to  $\pm 16V$   
Power dissipation max: 570mW  
Input current max: 20mA

### Typical ratings at 25°C

Open loop voltage gain: 70dB  
Input resistance: 1MΩ  
Out resistance: 8Ω  
Unity gain bandwidth: 2.5MHz  
Input bias current: 30nA  
Slew rate positive output swing: 0.5V/μs  
Slew rate negative output swing: 20V/μs  
Supply current: 6-2mA  
Output voltage swing: 29-4V  
Output current capability

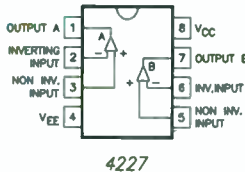
Source: 1-8mA  
Sink: 1-3mA  
Power supply rejection ratio: 70dB  
Mirror gain: 1μA/μA  $\pm 10\%$   
Mirror current: 10μA (500μA max)  
Negative input current: 1mA  
Full power bandwidth: 35kHz

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
QH42V	LM3900N	£0.782	£0.625	£0.601	£1.070

## MC1458CN

SGS Thomson



4227

Two 741 op-amps in one 8-pin DIL package. The two amps share a common bias network and power supply leads, but otherwise are completely separate. Channel separation: 98dB at 1kHz.

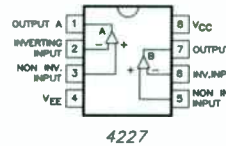
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2897	Price each exc. VAT	inc. VAT each
QH46A	MC1458CN	25+ £0.270 100+ £0.190 300+ £0.160	1+ £0.530

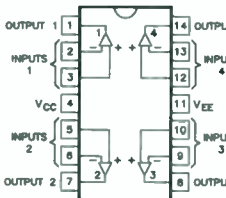
## MC3403N

SGS Thomson

A high performance circuit containing four op amps in one 14-pin DIL package. The amp features a wide full power bandwidth and slew rate better than 741. The outputs are class AB with no crossover distortion. Channel separation: 120dB at 1kHz to 20kHz.



4227



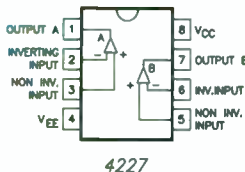
3403

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2899	Price each exc. VAT	inc. VAT each
QH51F	MC3403N	25+ £0.630 100+ £0.420 300+ £0.365	1+ £1.090

## MC1458CN

SGS Thomson



4227

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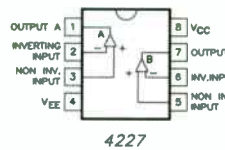
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2897	Price each exc. VAT	inc. VAT each
QH46A	MC1458CN	25+ £0.270 100+ £0.190 300+ £0.160	1+ £0.530

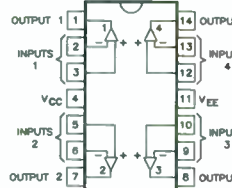
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4227



3403

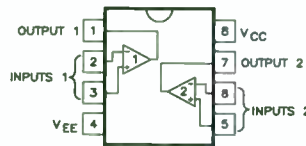
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2899	Price each exc. VAT	inc. VAT each
QH51F	MC3403N	25+ £0.630 100+ £0.420 300+ £0.365	1+ £1.090

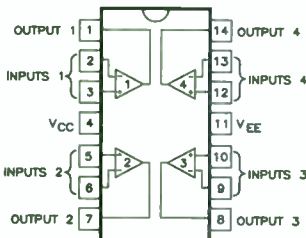
## MC33078 & MC33079

Motorola

A pair of high-quality bipolar op amps featuring high performance for quality audio and data signal processing applications. These amplifiers exhibit low input voltage noise with high gain bandwidth products and high slew rate. The output exhibits no dead band crossover distortion, large output voltage swing, excellent phase and gain margins, low open-loop high-frequency output impedance and symmetrical source and sink AC frequency performance. The MC33078 is a dual device, while the MC33079 is a quad device.



33078



33079

### Specification

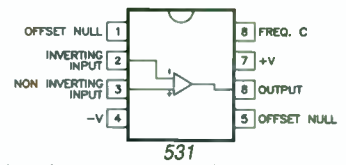
Supply voltage  $V_{CC}$  to  $V_{EE}$ ,  $V_S$ : +36V max  
 Input differential voltage range,  $V_{IDR}$ :  $V_{EE}$  min,  $V_{CC}$  max  
 Power dissipation,  $P_D$ : 1.2W max at 25°C  
 Slew rate, SR: 7V/ $\mu$ s  
 Gain bandwidth product, GBW: 16MHz typ  
 Total harmonic distortion, THD: 0.002%  
 Equivalent input noise voltage,  $e_n$ : 4.5nV/ $\sqrt$ Hz

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5507	Price each exc. VAT	inc. VAT each
AE02C	MC33078P Dual Op-Amp	£0.632	£0.541
AE03D	MC33079P Dual Op-Amp	£0.728	£0.624
		300+ £0.505	1+ £1.410
		300+ £0.582	1+ £1.890

## NE531N

Philips



531

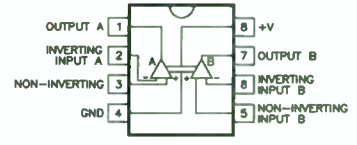
A high performance op-amp with a very high slew rate capability yet keeping the DC performance of the 741. External compensation capacitor (100pF) is required for stability, but this can be reduced to very low values (1.8pF) to give wide flat frequency responses at very high gains.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2897	Price each exc. VAT	inc. VAT each
WC54J	NE531N	25+ £1.270 100+ £0.978 300+ £0.954	1+ £2.120

## NE5532N

Philips



NE5532

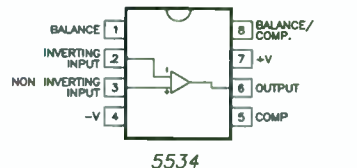
A dual op-amp designed for use in high quality and professional audio equipment. The IC has a typical input noise voltage at 1kHz of 5nV/ $\sqrt$ Hz. In addition it has better output drive capabilities and much higher small signal and power bandwidths than most other dual op-amps, yet is a direct pin-for-pin replacement for a 1458.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

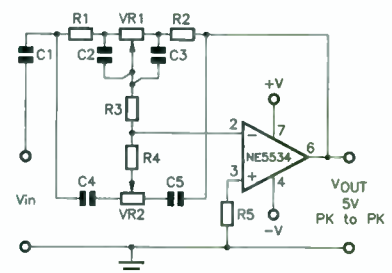
Order Code	Type 2893	Price each exc. VAT	inc. VAT each
UH35Q	NE5532N	25+ £0.536 100+ £0.467 300+ £0.436	1+ £0.670

## NE5534AN

Philips



5534



A high performance, low noise op-amp especially suited for professional and high quality audio equipment, as well as instrumentation and control circuits, and telephone channel amplifiers. Compared to standard 741/TL081 op-amps, the device offers better noise figures, improved output drive capability and considerably higher small signal and power bandwidths. The op-amp is internally compensated, and the frequency response can be optimised with an external compensation capacitor, to suit specific applications.

### Specification

Typical input noise voltage: 3.5nV/ $\sqrt$ Hz  
 Slew rate: 13V/ $\mu$ s

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

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Business Account Holders  
 No Delivery Charges for any order

Small signal bandwidth: 10MHz  
Power bandwidth: 200kHz  
Output drive capability (600Ω): 10V rms ( $V_S = \pm 18V$ )

### Tone Control Circuit

Turnover frequency is 1kHz:  
Treble  $\pm 20dB$  at 20kHz  
Bass  $\pm 20dB$  at 20Hz

### Suggested Parts List

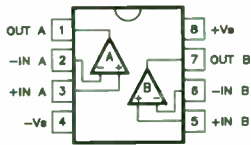
R1,2,3	Min Res 10k	(M10K)
R4	Min Res 3.3k	(M3K3)
R5	Min Res 68k	(M68K)
VR1,2	Pot Lin 100k	(FW05F)
	(for stereo use FW88V)	
C1	Tant 1µF 35V	(WW60Q)
C2,3,4,5	Polyester 0.033µF	(BX73Q)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YY68Y	NE5534AN	£0.595 100+ £0.458 300+ £0.446 1+	£0.990

## NJM4558

JRC



NJM4558D

A pair of 741 op-amps on a monolithic chip with closely matched characteristics and tracking, and offering excellent channel separation. Especially suited for differential amplifiers, as well as potentiometric amplifiers and applications where gain and phase matched channels are particularly required. Supplied in an 8-pin DIL package (DT32K), or single in-line (DT33L).

### Specification

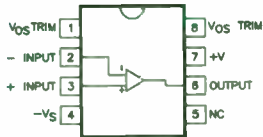
Supply voltage:  $\pm 18V$  DC  
Supply current: 3.5mA typical  
Differential input voltage:  $\pm 30V$   
Input offset current: 5nA typical  
Input bias current: 25nA typical  
Common mode rejection: 90dB  
Supply voltage rejection: 90dB  
Slew rate: 1V/ $\mu s$   
Equivalent input noise voltage: 1.4µV rms  
Unity gain bandwidth: 3MHz

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
DT32K	NJM4558D	£0.238 100+ £0.204 300+ £0.190 1+	£0.550
DT33L	NJM4558L	£0.344 100+ £0.229 300+ £0.215 1+	£0.750

## OP-07CNB

Raytheon



OP-07

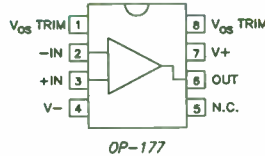
A precision instrumentation grade op-amp featuring ultra-low offset voltage and very low bias currents. Low frequency noise is minimised.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
RA73Q	OP-07CNB	£1.490 100+ £1.290 300+ £1.210 1+	£2.360

## OP-177GP Ultra-Precision Op-amp

Analog Devices



OP-177

This low-cost, high performance, precision op-amp with exceptionally low offset voltage and drift ensures accurate performance in high closed-loop gain applications. The low noise, bipolar input allows the op-amp to be used as a cost effective alternative to chopper-stabilised amplifiers. The OP-177 provides chopper-type performance without the usual problems of high noise, low frequency chopper spikes, large physical size, limited common-mode input voltage range and bulky external storage capacitors. Supplied in an 8-pin DIL package.

### Specification

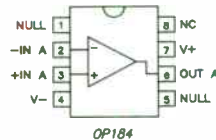
Supply voltage:  $\pm 22V$  max.  
Differential i/p voltage:  $\pm 30V$   
I/P voltage:  $= \pm V_S$   
Supply current: 1.6mA typ ( $V_S = \pm 15V$ )  
Offset voltage: 10µV max  
Offset voltage drift: 0.1µV/ $^{\circ}C$  max  
CMRR: 130dB min  
PSRR: 120dB min  
Open loop gain: 12V/ $\mu V$   
Slew rate: 0.1V/ $\mu s$   
Closed loop bandwidth: 600kHz

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP16S	OP177GP	£1.100 100+ £0.800 300+ £0.760 1+	£1.760

## OP184EP Precision Rail-to-Rail Input/Output Op-Amp

Analog Devices



OP184

A single 4MHz bandwidth amplifier featuring rail-to-rail inputs and outputs, and designed to operate from a +3V to +36V (or  $\pm 1.5V$  to  $\pm 18V$ ) rail. The IC will function from a single supply as low as +1.5V, making it ideal for battery powered applications. The op-amp is ideally suited for single supply applications requiring both AC and precision DC performance. The combination of bandwidth, low noise and precision makes the device useful in a wide variety of applications including filters and instrumentation.

Other applications include portable telecom equipment, power supply control and protection, and as amplifiers or buffers for transducers with wide output ranges. Sensors that require a rail-to-rail input amplifier include Hall effect, piezo electric and resistive transducers. This ability to swing rail-to-rail at both the input and output enables designers to build multistage filters in single-supply systems and still maintain high S/N ratios.

### Specification ( $V_S = 5V$ )

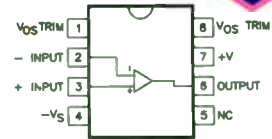
Supply current: 1.45mA max  
Large signal voltage gain: 240V/mV  
PSRR: 76dB typ  
CMRR: 60dB typ  
Slew rate: 2.4V/ $\mu s$   
Noise: 3.9nV/ $\sqrt{Hz}$   
Offset voltage: 65µV  
GBP: 3.25MHz

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP19V	OP184EP	£2.600 100+ £1.920 300+ £1.860 1+	£4.260

## OP-27GNB

Analog Devices



OP-27

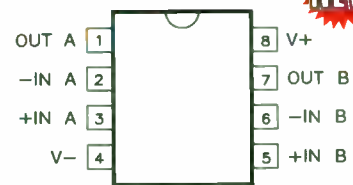
An instrumentation grade op-amp featuring very low noise, wide bandwidth, high slew rate and ultra-low offset voltage. The op-amp is ideal for professional quality audio systems giving a performance adequate for the most demanding high fidelity applications. The OP-27 has an undistorted power bandwidth of 34kHz and at 8V peak-to-peak is undistorted to 100kHz. Input noise levels are typically less than 3.8nV/ $\sqrt{Hz}$  at 10Hz and less than 3.3nV/ $\sqrt{Hz}$  from 30Hz upwards.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
RA74R	OP-27GNB	£1.900 100+ £1.650 300+ £1.540 1+	£2.400

## OP-275GP Butler Front-End Op-Amp

Analog Devices



OP-275

This is the first amplifier to feature the Butler amplifier front-end. This front-end design combines both bipolar and JFET transistors to produce amplifiers with the accuracy and low noise of bipolar transistors, and the speed and sound quality of JFETs. Distortion and noise is very low, as previous audio amplifiers, but at much lower supply currents. The JFET portion of the input stage gives the device its high slew rate (22V/ $\mu s$ ), even when large output swings are required. This low noise and high speed are achieved using less than 5mA of supply current.

Bias and offset currents are greatly reduced over purely bipolar designs with offset voltage typically less than 200µV. This allows the OP-275 to be used in many DC coupled or summing applications without the need for special selections or the added noise of additional offset adjustment circuitry. The output is capable of driving 600Ω loads to 10V rms while maintaining low distortion - at 3V rms this is typically 0.0006%.

Typical applications include high performance audio, active filters, fast amplifiers, integrators etc. Supplied in an 8-pin DIL package.

### Specification

Supply voltage:  $\pm 4.5V$  to  $\pm 22V$  max  
Supply current: 4mA typ at  $\pm 18V$   
PSRR: 111dB typ  
CMRR: 106dB typ  
Slew rate: 22V/ $\mu s$   
Bandwidth: 9MHz  
Noise: 6nV/ $\sqrt{Hz}$   
Distortion: 0.0006% typ  
Offset voltage: 1mV  
Offset current: 2nA

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

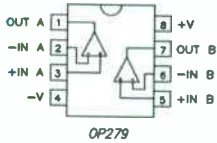
Order Code	Type	Price each exc. VAT	inc. VAT each
NP17T	OP275GP	£1.310 100+ £0.960 300+ £0.920 1+	£2.110

See Stock Code Index For More Price Breaks

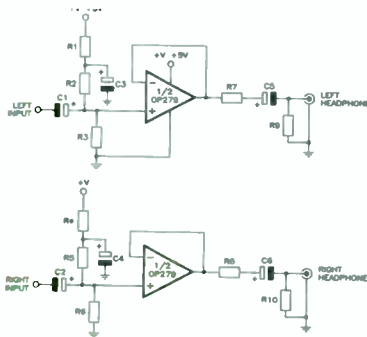
Account Enquiries: 01702 554187

## OP-279GP Dual Rail-to-Rail High Output Current Op-Amp

Analog Devices



A dual rail-to-rail, high output current, single supply amplifier that is designed for low voltage applications requiring either current or capacitive load drive capability. The device can sink and source currents of typically  $\pm 80\text{mA}$ , and is stable with capacitive loads to  $10\text{nF}$ . This makes the IC ideal for driving headphones, displays, transformers and power transistors. The powerful output is combined with a unique input stage that maintains very low distortion with wide common-mode range, even in single supply designs. The device can be used as a buffer to provide much greater drive capability than can be provided by CMOS outputs. The excellent specifications - bandwidth, slew rate, noise and distortion - make the OP-279 suitable for single supply, audio bandwidth applications with high gain configurations. e.g. multimedia, telecom, DAA transform driver, LCD driver, low voltage servo control etc.



### Suggested Parts List

R1,2,4,5,9,10	Min Res 51k	(M51K)
R3,6	Min Res 102k	
	2 x 51k in series	(M51K)
R7,8	Min Res 16 $\Omega$	(M16R)
C1,2,3,4	ERC 10 $\mu\text{F}$ 16V	(AN95D)
C5,6	ERC 220 $\mu\text{F}$ 10V	(AS88V)

### Specification

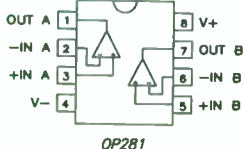
Supply voltage:	16V max
PSRR:	88dB
CMRR:	66dB typ at +5V rail
Slew rate:	3V/ $\mu\text{s}$
GBP:	5MHz
THD:	0.01%
Capacitive load:	10nF
Output current:	$\pm 80\text{mA}$
Noise:	21nV/ $\sqrt{\text{Hz}}$
Offset voltage:	4mV
Offset voltage drift:	4 $\mu\text{V}/^\circ\text{C}$

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NP18U	OP279GP	£1.860 25+ £1.360 100+ £1.000	£2.190 1+

## OP281 Ultralow Power Rail-to-Rail Output Op-Amp

Analog Devices



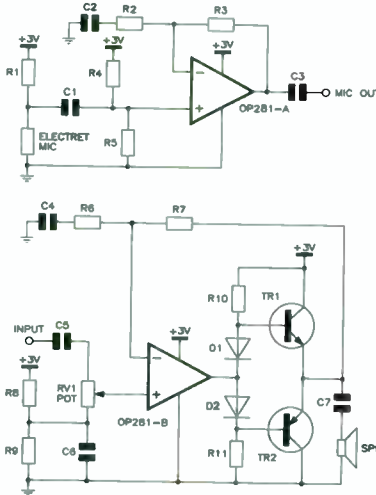
The OP281 is a dual ultralow power, single-supply amplifier featuring rail-to-rail outputs. The device will operate from supplies as low as 2V, and features a precision bipolar input and an output that swings to within millivolts of the supplies, and continues to

sink/source current all the way to the supplies. This feature allows the IC to be used as comparators in very low power systems, with the added advantage of a very fast recovery time, with propagation delays of just 250 $\mu\text{s}$ .

Applications include safety monitoring, portable equipment, battery and power supply control and signal conditioning and interface for transducers in very low power systems.

The circuit shows the OP218 used as a two-way amplifier in a telephone headset. The mic amp has a gain of 29dB (x28) which yields a -3dB roll-off at 3.4kHz - acceptable for telephone audio. The speaker should have an impedance of 600 $\Omega$ . The circuit draws around 250 $\mu\text{A}$  of current so small 3V lithium battery (ZB74R) could run this circuit continuously for 640 hours!

Supplied in an 8-pin DIL package.



### Suggested Parts List

R1,	Min Res 2.2k	(M2K2)
R2	Min Res 11k	(M11K)
R3	Min Res 300k	(M300K)
R4,5,8,9	Min Res 1M	(M1M)
R6	Min Res 10k	(M10K)
R7	Min Res 51k	(M51K)
R10,11	Min Res 20k	(M20K)
VR1	Eco Pot 10k	(VQ02C)
C1,3,4,5,6,7	ERC 1 $\mu\text{F}$ 50V	(AN89W)
C2	ERC 0.1 $\mu\text{F}$ 50V	(AN85G)
D1,2	1N4148	(QL80B)
TR1	BC547	(QL14Q)
TR2	BC557	(QQ14S)
SPKR	Piezo Tx 600 $\Omega$	(YU83E)
MIC	Electret Mic	(QY62S)

### Specification (at $V_S = 3V$ )

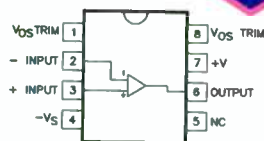
Voltage supply:	2.7V to 12V (16V max)
Supply current:	3 $\mu\text{A}$ /amplifier typ
CMRR:	95dB typ
PSRR:	95dB typ
Slew rate:	25V/ms typ
Noise:	75nV/ $\sqrt{\text{Hz}}$
GPB:	95kHz
Offset voltage:	1.5mV max
Offset voltage drift:	10 $\mu\text{V}/^\circ\text{C}$

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP20W	OP281GP	£2.830 25+ £2.090	£4.580 1+

## OP-37GP

Analog Devices



OP-37

The op-amp provides the same performance as the OP-27, but with slew rate and gain-bandwidth product improved for gains greater than 5. Noise levels are also improved down to 3.5nV/ $\sqrt{\text{Hz}}$  at 10Hz and 3.0nV/ $\sqrt{\text{Hz}}$  from 30Hz upwards.

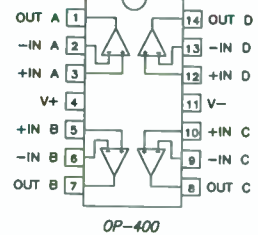
Applications include microphone, tape-head and magnetic pick-up pre-amplifiers, data acquisition systems, and wide bandwidth instrumentation.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL04E	OP-37GP	25+ £1.850 100+ £1.540	1+ £3.220

## OP-400GP Quad Low-Offset, Low-Power Op-Amp

Analog Devices



The OP-400 quad op-amp offers the excellent features of the OP-77 but with a total current consumption of only 2.9mA. On-chip zener-zap trimming is used to obtain a low input offset voltage of 150 $\mu\text{V}$ , and a drift of under 1.2 $\mu\text{V}/^\circ\text{C}$ , which eliminates the need for offset nulling. The IC can be used to upgrade systems using similar devices (OP-11, LM148, HA4741, LT1014 and RM4156) and is an ideal choice for applications requiring multiple precision op-amps where low power consumption is critical. Supplied in a 14-pin DIL package.

### Specification ( $V_S = \pm 15V$ )

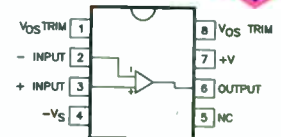
Supply voltage:	$\pm 20V$ max
Supply current:	775 $\mu\text{A}$ /amp max
CMRR:	135dB typ
PSRR:	0.2 $\mu\text{V/V}$
I/P offset voltage:	70 $\mu\text{V}$ typ
I/P offset voltage drift:	0.3 $\mu\text{V}/^\circ\text{C}$ typ
Large signal voltage gain	
load 10k $\Omega$ :	5000V/mV
Slew rate:	0.15V/ $\mu\text{s}$
GBP:	500kHz
Channel separation:	135dB
Noise:	11nV/ $\sqrt{\text{Hz}}$

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP23A	OP400GP	25+ £6.440 100+ £4.720	£10.360 1+

## OP-77GP

Analog Devices



OP-77

An improved version of the OP-07, offering 135dB large signal voltage gain, unity gain bandwidth of 600kHz and a supply current requirement of just 1.7mA. It can be used as a direct replacement upgrade for the OP-07, 308 and 741.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL05F	OP-77GP	25+ £1.460 100+ £1.120 300+ £1.100	1+ £2.460

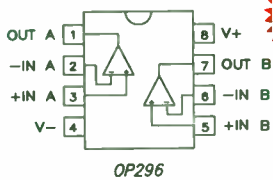
## Urgent Requirement?

Call and collect from your local Maplin store.



**OP296GP Micropower Rail-to-Rail Input/Output Op-amp**

Analog Devices



This dual micropower op-amp with rail-to-rail input and output stages is guaranteed to work from +3V to +12V, and is ideal for battery monitoring and control charging applications. Additionally, the excellent dynamic specifications make them suitable for battery powered audio applications. The op-amp can drive loads up to 200pF without oscillation.

**Specification (V<sub>S</sub> = 5V)**

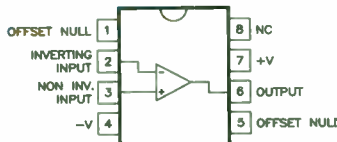
- Supply voltage: +3V to +12V
- Supply current: 40µA/amplifier typ
- PSRR: 85dB min
- CMRR: 65dB
- Slew rate: 0.25V/µs
- GBP: 350kHz
- Noise: 26nV/√Hz
- Offset voltage: 35µV typ
- Offset voltage drift: 1.5µV/°C
- Open loop gain: 500V/mV

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
NP22Y	OP296GP	£1.780	£1.310		£2.870

**LM741CN**

SGS-Thomson  
National Semiconductor  
Phillips Components



741 8pin DIL

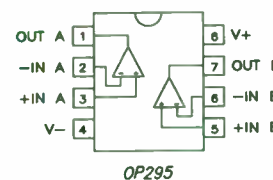
The industry standard general purpose op-amp featuring internal frequency compensation. The amp is overload protected on input and output with no latch-up if common mode range is exceeded.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
QL22Y	LM741CN	£0.270	£0.210	£0.170	£0.570
AV39N	Op-Amp LM741CN-8 NSC	£0.250	£0.190	£0.120	£0.540
AV38R	Op-Amp UA741CN PC	£0.390	£0.190	£0.170	£0.990

**OP295GP Dual Rail-to-Rail Op-Amp**

Analog Devices



This dual op-amp features rail-to-rail output swing, excellent DC accuracy, a bipolar front-end and low noise. All these features make the IC superior to standard CMOS designs, and with the added advantage of both input and output ranges including the negative supply, provides the user with 'zero-in/zero-out' capability.

The OP295 can supply 15mA into a load making it an ideal driver for power transistors and 'H' bridges. This allows designs to achieve higher efficiencies and to transfer more power to the load without the use of discrete components. For applications that require driving inductive loads, i.e. transformers, increases in efficiency are also possible.

Additionally, the IC can drive capacitive loads such as co-ax cable or large FET transistors. The OP295 is stable with loads in excess of 300pF. Typical applications include battery operated instrumentation, servo amplifiers, actuator drives, sense conditioners and power supply control. Supplied in an 8-pin DIL package.

**Specification (V<sub>S</sub> = +5V)**

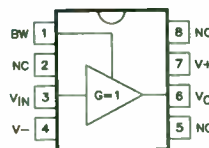
- Power supply: +3V to +36V or up to ±18V max
- Supply current: 150µA/amplifier
- Offset voltage: 30µV typ
- Offset voltage drift: 1µV/°C
- CMRR: 110dB typ
- PSRR: 110dB typ
- Noise: 51nV/√Hz
- Slew rate: 0.03V/µs
- GBP: 75kHz
- Open loop gain: 1000V/mV

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
NP21X	OP295GP	£2.410	£1.770		£3.880

**OPA177GP**

Burr-Brown®



634

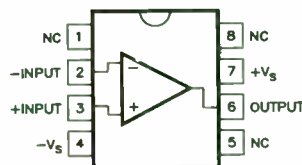
The OPA177 is a precision bipolar op amp which features very low offset voltage of 20µV typical, and low drift of 1-2µV/°C. The high performance and low cost make it ideally suited to a wide range of precision instrumentation, test equipment, bridge and thermocouple amplifiers.

The low quiescent current of 2mA, dramatically reduces warm-up drift and errors due to thermoelectric effects in input connections. It provides an effective alternative to chopper-stabilised amplifiers. The low noise of the OPA177 maintains accuracy.

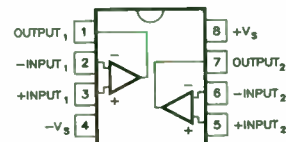
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AD56L	OPA177GP	£1.110	£0.957	£0.893	£1.380

**OPA650P/OPA2650P**



650



2650

The OPA650 (LE67X) is a low power, wideband voltage feedback op-amp with a unity gain bandwidth of 560MHz and a settling time of 20ns to 0-0.1%. The low input bias current and true

differential inputs, combined with low power consumption of just 50mW make it suitable for high resolution video amplification, active filter circuits or other applications requiring high speed and accuracy, such as ultrasound signal processing. Minimum closed loop bandwidth at G=10 is 18MHz. The OPA2650 (LE65V) contains two OPA650 amplifiers in a single 8-pin package. Both types require a ±5V supply.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

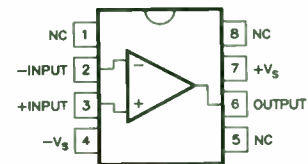
Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
LE65V	OPA2650P	£5.430	£4.340	£4.170	£7.580
LE67X	OPA650P	£3.370	£2.810	£2.490	£4.990

**OPA658P/OPA2658P**

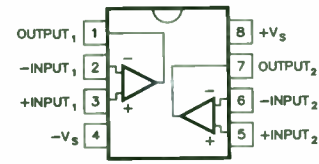
Burr-Brown

The OPA658 (LE68Y) is an ultra-wideband low power current feedback op-amp with a unity gain bandwidth of 750MHz and a very high slew rate of 2000V/µs. The gain is flat to within 0.1dB up to 200MHz and gain/phase errors amount to no more than 0.01%/0.01°. This device is suitable for high resolution video, or pulse amplification, ADC/DAC gain amplifiers or any application where high frequency signals must be accurately amplified. Minimum closed loop bandwidth at G=10 is 195MHz, making this device suitable for use where op-amps were previously considered as too slow.

The OPA2658 (LE66W) contains two OPA658 amplifiers in a single 8-pin package. Both types require a ±5V supply and dissipate 47mW per amplifier.



658



2658

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
LE66W	OPA2658P	£5.430	£4.340	£4.170	£7.870
LE68Y	OPA658P	£1.950	£1.560	£1.500	£5.400

## RC4136N

Raytheon

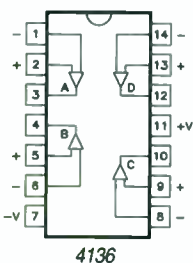
A high performance circuit containing four op-amps in one 14-pin DIL package. The amp features low noise input transistors making it specially suitable for use in audio preamplifiers and signal processing applications.

The outputs are class AB with a very low crossover distortion.

Channel separation: 123dB at 1kHz, >100dB at 20Hz to 25kHz.

Total harmonic distortion typically <0.5%.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.



4136

Order Code	Type	Price each exc. VAT	inc. VAT each
XX01B	RC4136N	£0.583 100+ £0.449 300+ £0.438	1+ £1.180

## RC4227GN

Raytheon

Two OP-27 op-amps in one package. It provides a superior performance for audio applications and input noise is a very low 3nV/√Hz. Channel separation is typically 155dB.



4227

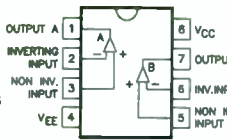
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UR18U	RC4227GN	£2.380 100+ £1.830 300+ £1.780	1+ £3.070

## RC4559N

Raytheon

Two independent op-amps whose performance far exceeds that of 741 type amplifiers. With an input noise level of just 1.4µV rms, this device is ideal for use in low noise audio preamplifiers. The outputs can drive 600Ω loads. Total harmonic distortion is typically 0.05% and channel separation is 90dB.



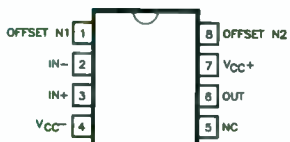
4227

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UR19V	RC4559N	£0.433 100+ £0.333 300+ £0.325	1+ £0.650

## TLE2037CP

Texas Instruments



2037

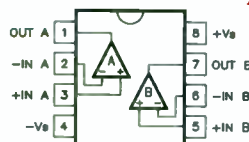
A decompensated version of 2037, offering a much wider frequency response and stable to a close-loop gain of 5. All other parameters are the same as 2027.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CP87U	TLE2037P	£0.977 100+ £0.837 300+ £0.782	1+ £2.650

## TS512AIN

SGS-Thomson



TS512

The TS512 is a high performance dual op-amp with frequency and phase compensation built-in. The device has low distortion and noise, excellent channel separation and high gain bandwidth product, and includes internal ESD protection. Ideal for professional and telecom applications. Supplied in a 8-pin DIL package.

### Specification (V<sub>SS</sub> = ±15V)

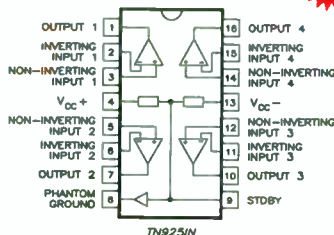
Supply voltage: ±18V max  
 Supply current: 0.7mA typ  
 I/P offset voltage: 0.5mV typ  
 I/P offset voltage drift: 5µV/°C  
 I/P resistance: 1MΩ  
 GBP: 3MHz  
 Large signal voltage gain: 100dB typ  
 Noise: 8nV/√Hz  
 THD: 0.03% typ  
 Slew rate: 1.5V/µs  
 CMRR: 90dB min  
 PSRR: 90dB min  
 Channel separation: 120dB typ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP87U	TS512AIN	£0.708 100+ £0.590 500+ £0.545	1+ £1.040

## TS925IN

SGS-Thomson



TS925IN

The TS925 is a rail-to-rail quad BiCMOS op-amp designed to operate at 3V or 5V in low power and battery operated applications. It includes a high output current and low impedance 'phantom ground' (V<sub>CC</sub>/2) that requires no external reference.

The device features very low noise and distortion, with high output current capability, and is ideal for high quality audio applications. The IC is stable into a 100pF capacitive load.

The TS925 can be used as a headphone amplifier, soundcard amplifier, MPEG boards, multimedia systems, cordless telephones and portable communications equipment, and low noise instrumentation applications.

### Specification (V<sub>CC</sub> = 3V)

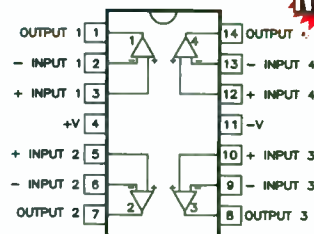
Supply voltage: 2.7V to 12V, 14V max  
 Supply current: 5mA typ, no load  
 I/P offset voltage: 3mV  
 I/P offset voltage drift: 2µV/°C  
 Large signal; voltage swing: 200V/mV  
 GBP: 4MHz  
 CMRR: 80dB typ  
 PSRR: 85dB typ  
 Slew rate: 1.3V/µs  
 Noise: 9nV/√Hz  
 THD: 0.01%  
 Channel separation: 120dB

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP86T	TS925IN	£1.360 100+ £1.130 500+ £1.040	1+ £1.990

## TS514AIN

SGS-Thomson



TS514

The TS514 is a high performance quad op-amp with frequency and phase compensation built-in. This allows for very stable operation as a voltage follower, and still maintain a high gain-bandwidth product (GBP). Combined with low distortion and noise, high channel separation, this IC is particularly suited for professional and telecom applications. Supplied in a 14-pin DIL package.

### Specification

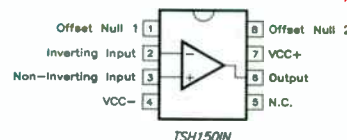
Supply voltage: ±15V  
 Supply current: 1.4mA typ  
 I/P offset voltage: 1.5mV  
 I/P offset voltage drift: 5µV/°C  
 Large signal voltage gain: 100dB typ  
 GBP: 3MHz  
 Noise: 18nV/√Hz R<sub>S</sub> = 10kΩ  
 THD: 0.03% typ  
 Slew rate: 1.5V/µs  
 CMRR: 90dB min  
 PSRR: 90dB min  
 Channel separation: 120dB typ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP88V	TS514AIN	£1.100 100+ £0.917 500+ £0.846	1+ £1.610

## TSH150IN

SGS-Thomson



TSH150IN

The TSH150 is a wideband monolithic op-amp with internal compensation for unity-gain stability, and short circuit protection. The low noise and distortion, plus excellent linearity and slew rate, make this op-amp particularly suited for RF and video applications. Supplied in an 8-pin DIL package.

### Specification

Supply voltage: ±5V - 30mA max no load  
 I/P offset voltage: 0.3mV typ  
 I/P offset voltage drift: 10µV/°C  
 Large signal voltage gain: 650V/V 50Ω load  
 CMRR: 100dB  
 PSRR: 70dB  
 GBP: 150MHz  
 Full power bandwidth: 30MHz 100Ω load  
 Slew rate: 190V/µs  
 Noise: 6.2nV/√Hz at 100kHz  
 THD: 0.02%

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP99H	TSH150IN	£3.420 100+ £2.850 500+ £2.630	1+ £5.020

## POWER AND BUFFER OP AMPS

### LM12CLK

National Semiconductor

A 150W power op-amp capable of driving ±25V at ±10A while operating from ±30V supplies. The monolithic IC can deliver 150W of sine wave power

into a 4Ω load with 0.01% distortion. The IC features input protection, controlled turn on, thermal limiting, overvoltage shutdown, output current limiting and dynamic safe area protection.

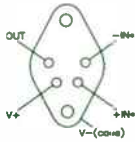
**Absolute max ratings**

Voltage supply range: ±8V to ±40V  
Power dissipation: 150W with 400in<sup>2</sup> heatsink

Differential input voltage: 60V  
Output current: 10A

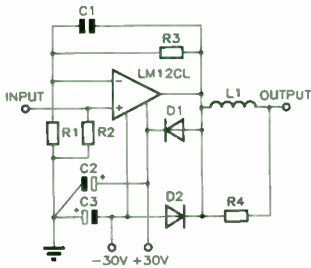
**Typical ratings at 25°C with V<sub>S</sub> = ±30V**

Input offset voltage: 2mV  
Input offset current: 0.03μA  
Input bias current: 0.15μA  
Common mode rejection ratio: 86dB  
Supply voltage rejection ratio: 90dB  
Large signal voltage gain: 94dB  
Slew rate: 9V/μs  
Full power bandwidth: 60kHz  
Supply current (no load): 60mA



**Audio Amplifier Parts List**

- R1 Min Res 1k1 (M1K1)
- R2 Min Res 1k (M1K)
- R3 Min Res 3k3 (M3K3)
- R4 7W W/W 2-2Ω (L2R2)
- C1 Polystyrene 1500pF (BX58N)
- C2,3 Snap-in 4700μF 50V (CW74R)
- D1,2 MR751 (YH96E)
- L1 25 turns of 18swg enamelled copper wire wound side-by-side approx. 8mm diameter.



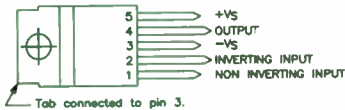
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
UL32K	LM12CLK	£24.990	£19.200	£14.770	£39.990

**L165V**

SGS Thomson

A power op-amp for use in servo amplifiers and power supplies. The high gain and high output power capability provide superior performance wherever an op-amp and power booster combination is required.



**Absolute max ratings L165V**

Voltage supply range: ±6V to ±18V  
Power dissipation: 20W  
Differential input voltage: ±15V  
Output current: 4A

**Typical ratings at 25°C with V<sub>S</sub> = ±15V**

Input offset voltage: ±2mV  
Input offset current: ±20nA  
Input bias current: 0.2μA  
Input resistance: 500kΩ  
Common mode rejection ratio: 70dB  
Supply voltage rejection ratio: 60dB  
Large signal voltage gain: 80dB  
Output voltage swing: 24V p-p  
Slew rate: 8V/μs  
Full power bandwidth: 50kHz  
Supply current (no load): 40mA

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
UK66W	L165V	£2.000	£1.800	£1.690	£3.104

**L272M**

SGS Thomson

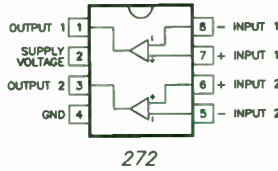
A dual power op-amp for use in a wide range of applications including servo amplifiers and power supplies, compact disc, VCR etc. Channel separation 60dB.

**Absolute max ratings 272**

Voltage supply range: 4V to 28V  
Power dissipation: 1W  
Differential input voltage: ±V<sub>S</sub>  
Output current: 1A

**Typical ratings at 25°C with V<sub>S</sub> = 24V**

Input offset voltage: 15mV  
Input offset current: 50mA  
Input bias current: 0.3μA  
Input resistance: >500kΩ  
Common mode rejection ratio: 75dB  
Supply voltage rejection ratio: 70dB  
Large signal voltage gain: 50dB  
Output voltage swing: 23V  
Slew rate: 1V/μs  
Unity gain bandwidth: 350kHz  
Supply current (no load): 8mA



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
UJ36P	L272M	£1.180	£0.787	£0.738	£2.290

**BUF634 250mA High-Speed Buffer**

Burr-Brown®

The BUF634 is a high-speed, unity gain, open-loop buffer recommended for a wide range of applications, which can include valve, solenoid and motor drivers, add-on output current booster stages for op-amps, audio line and headphone drivers, and video and test equipment applications. It can be used inside the feedback loops of op-amps to increase output current, eliminate thermal feedback and improve capacitive load drive.

For low-power applications, the BUF634 can operate at a quiescent current of 1.5mA with a 250mA output capability and a slew rate of 2,000V/μs. Bandwidth can be increased from 30MHz to 180MHz by connecting pin 1 (BW or bandwidth control) to pin 4 (-V) with a corresponding increase in quiescent current; extra care is also required in layout to prevent an increased tendency to RF instability.

The output circuitry is fully protected by internal current limiters and thermal shutdown, making the device rugged and easy to use. This device is supplied in an 8-pin DIL package, and should preferably be soldered directly into a PCB to allow heatsinking via the pins, instead of using a DIL socket.

**Specification**

	Narrow Band Mode	Wide Band Mode
Supply voltage range (V <sub>S</sub> ):	±2.25 to ±18V	±2.25 to ±18V
Quiescent current:	1.5mA	15mA
Bandwidth, -3dB, R <sub>L</sub> = 1kΩ:	30MHz	180MHz
R <sub>L</sub> = 100Ω:	20MHz	160MHz
Slew rate:	2,000V/μs into 100Ω	
Input voltage range:	±V <sub>S</sub>	
Input impedance, R <sub>L</sub> = 100Ω:	80MΩ    8pF	8MΩ    8pF
I <sub>O</sub> = 10mA:	+V <sub>S</sub> -1.7	-V <sub>S</sub> +1.8
I <sub>O</sub> = 10mA:	+V <sub>S</sub> -2.4	-V <sub>S</sub> +3.5
I <sub>O</sub> = 100mA:	+V <sub>S</sub> -3.5	-V <sub>S</sub> -2.8
I <sub>O</sub> = 150mA:	+V <sub>S</sub> -2.8	-V <sub>S</sub> +4

Continuous output current: ±250mA  
Short-circuit output current: ±350mA ±400mA

**Retail Unit Price each (inc. VAT)**

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
AD65V	BUF634P	£4.500	£3.500	£3.100	£5.290

Device Part	Manufacturer	Supply Voltage (Vcc)	Output Voltage (V)	Power Dissipation (W)	Differential Input Voltage (V)	Power Dissipation (W)	Supply Voltage (V)	Manufacturer
BUFR34P	BB	±2.25V to ±18V	-	-	-	-	-	BB
LM12CLK	NSC	±8V to ±40V	-	150	60	20W	±8V to ±40V	NSC
L165	ST	±6V to ±18V	24V p-p	20W	±15	1W	±6V to ±18V	ST
L272M	ST	4V to 28V	23	1	±V	±400mA	4V to 28V	ST

Power Op Amps

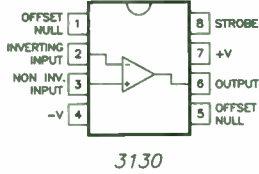
FET INPUT OP AMPS

Device Part Number	Manufacturer	Voltage Supply (Vcc)	Power Dissipation (W)	Differential i/p Volts (max)	Maximum Input Voltage - one ip earthed (V)	Input Offset Voltage (mV)	Input Offset Current (nA)	Input Bias Current (nA)	Input Resistance (MΩ)	Common Mode Rejection Ratio (dB)	Supply Voltage Rejection Ratio (dB)	Large Signal Voltage Gain (dB)	Output Voltage Swing (V)	Slew Rate (V/μs)	Unity Gain Bandwidth (MHz)	Full Power Bandwidth (kHz)	Supply Current (mA)	Order Code	Type	Price each exc. VAT				inc.VAT
																				25+	100+	300+	1+	
CA3130E	HA	±2.5V to ±8V or 5V to 16V	630	±8	±VCC	8	0.5pA	5pA	1.5T	90	90	110	13V (VCC)=15	10	15	100	2	QH28F	CA3130E	£0.636	£0.551	£0.517	£1.39	
CA3140E	HA	±2V to ±18V or 4V to 36V	630	±8	±VCC	5	0.5pA	10pA	1.5T	90	80	100	13V (VCC)=15	9	4.5	100	4	QH29V	CA3140E	£0.422	£0.315	£0.264	£1.00	
CA3240E	HA	±2V to ±18V or 4V to 36V	630	±8	±VCC	5	0.5pA	10pA	1.5T	90	80	100	13V (VCC)=15	9	4.5	100	8.4	WQ21X	CA3240E	£0.957	£0.798	£0.714	£1.87	
ICL7611DCPA	HA	±1V to ±8V	0.25	±9	18	15	0.5pA	1pA	>1T	87	83	83	±4.9	1.6	1.4	-	15	AV65V	Op-Amp ICL7611DCPA	£0.664	£0.562	£0.487	£0.93	
ICL7621DCPA	HA	±1V to ±8V	0.25	±9	18	15	0.5pA	1pA	>1T	91	77	102	±4.9	1.6	1.4	-	15	AV66W	Op-Amp ICL7621DCPA	£0.882	£0.746	£0.647	£1.30	
LF347N	NSC	±5V to ±18V	500	±30	±15	5	25pA	50pA	1T	100	100	100	±13.5	13	4	100	7.2	WQ29G	LF347N	£1.070	£0.897	£0.903	£1.49	
LF351N	HA	±5V to ±18V	500	±30	±15	5	25pA	50pA	1T	100	100	100	±13.5	13	4	100	1.8	WQ30H	LF351N	£0.391	£0.358	£0.307	£0.53	
LF351N	NSC	±5V to ±18V	670	±30	±VCC	5	25	50	10T	100	100	100	±13.5	13	4	-	1.8	AV46A	FET-Amp LF351N NSC	£0.391	£0.358	£0.307	£0.53	
LF353N	HA	±5V to ±18V	500	±30	±15	5	25pA	50pA	1T	100	100	100	±13.5	13	4	100	3.6	WQ31J	LF353N	£0.460	£0.329	£0.288	£0.91	
LF353N	NSC	±2V to ±18V	-	±30	±15	5	25	50	10T	100	100	100	±13.5	13	-	-	-	AV47B	FET-Amp LF353N NSC	£0.573	£0.525	£0.450	£0.70	
LF355N	NSC	±5V to ±20V	-	±40	-	3	3pA	20pA	1T	100	100	200V/mV	±13	5	2.5	-	2	AV48C	FET-Amp LF355N NSC	£0.646	£0.580	£0.550	£0.76	
LF355N	ST	±5V to ±20V	-	±40	-	3	3pA	20pA	1T	100	100	200V/mV	±13	5	2.5	-	2	AV49D	FET-Amp LF355N SGS	£0.612	£0.561	£0.481	£1.16	
LF356N	ST	±5V to ±20V	-	±40	-	3	3pA	20pA	1T	100	100	200V/mV	±13	12	5	-	5	AV50E	FET-Amp LF356N NSC	£0.545	£0.500	£0.429	£0.89	
LF356N	ST	±5V to ±20V	-	±40	-	3	3pA	20pA	1T	100	100	200V/mV	±13	12	5	-	5	AV51F	FET-Amp LF356N SGS	£0.773	£0.708	£0.607	£1.07	
LF357N	NSC	±5V to ±20V	-	±40	-	3	3pA	20pA	1T	100	100	200V/mV	±13	50	20	-	10	AV52G	FET-Amp LF357N NSC	£0.648	£0.595	£0.510	£0.89	
LF357N	ST	±5V to ±20V	-	±40	-	3	3pA	20pA	1T	100	100	200V/mV	±13	50	20	-	10	AV53H	FET-Amp LF357N SGS	£0.818	£0.750	£0.643	£1.07	
LF411CN	NSC	±5V to ±18V	500	±30	±15	0.8	25pA	50pA	1T	100	100	106	±13.5	15	4	100	1.8	QY27E	LF411CN	£0.621	£0.586	£0.513	£0.96	
LF412CN	NSC	±5V to ±18V	500	±30	±15	1	25pA	50pA	1T	100	100	106	±13.5	15	4	100	3.6	QY28F	LF412CN	£1.340	£1.260	£1.110	£2.08	
LF414CN	NSC	±5V to ±18V	500	±30	±15	1	5pA	10pA	1T	95	90	100	±13	1	1	15	400μA	QY30H	LF414CN	£0.530	£0.500	£0.438	£0.89	
LF442CN	NSC	±5V to ±18V	500	±30	±15	1	5pA	10pA	1T	95	90	100	±13	1	1	15	400μA	QY30H	LF442CN	£0.768	£0.725	£0.634	£1.29	
LF444CN	NSC	±5V to ±18V	500	±30	±15	3	5pA	10pA	1T	95	90	100	±13	1	1	15	800μA	QY31J	LF444CN	£1.500	£1.480	£1.400	£1.91	
LMC660AIN	NSC	±5V to ±15V	-	VS	VS	3	20	20	>1TΩ	70	70	400V/mV	-	0.11	350kHz	-	35	AX66W	LMC660AIN	£1.600	£1.480	£1.300	£2.28	
LMC662CN	NSC	±5V to ±15V	-	±VS	±VS	1	0.001pA	0.002pA	>1TΩ	83	83	120	-	0.11	350kHz	-	35	AX65V	Op-Amp LMC662CN NSC	£1.520	£1.290	£1.120	£1.87	
LPC660IN	NSC	±5V to ±15V	-	VS	VS	3	20	20	>1TΩ	70	70	400V/mV	-	0.11	350kHz	-	35	AX64U	Op-Amp LPC660IN NSC	£1.760	£1.490	£1.290	£2.15	
LPC661IN	NSC	±5V to ±15V	-	±VS	±VS	1	0.001pA	0.002pA	>1TΩ	83	83	120	-	0.11	350kHz	-	55μA	AX62S	Op-Amp LPC661IN NSC	£0.740	£0.720	£0.710	£0.94	
LPC662IN	NSC	±5V to ±15V	-	±VS	±VS	1	0.001pA	0.002pA	>1TΩ	83	83	120	-	0.11	350kHz	-	35	AX63T	Op-Amp LPC662IN NSC	£1.300	£1.000	£0.880	£1.64	
MC33171	MOT	±1.5V to ±22V	-	±VCC	VEE to (VCC 1.8V)	2.5	5	20	300	90	100	1.114	±14.2	2.1	1.8	35	180μA	AD99H	MC33171P	£0.567	£0.520	£0.446	£1.20	
MC33172	MOT	±1.5V to ±22V	-	±VCC	VEE to (VCC 1.8V)	2.5	5	20	300	90	100	1.114	±14.2	2.1	1.8	35	380μA	AE00A	MC33172P	£0.553	£0.507	£0.434	£1.44	
MC33174	MOT	±1.5V to ±22V	-	±VCC	VEE to (VCC 1.8V)	2.5	5	20	300	90	100	1.114	±14.2	2.1	1.8	35	720μA	AE01B	MC33174P	£0.818	£0.750	£0.643	£2.00	
OPA124P	BB	±5V to ±18V	-	-	-	±11	±750V	±5pA	±5pA	10T	92	86	106 min	±12	2	1.5	32	2.5	AD59P	OPA124P	£4.440	£4.070	£3.490	£5.84
OPA129P	BB	±5V to ±18V	-	±15	15	±2	30pA	-	-	118	100	-	±13	2.5	1MHz	47	1.8	LE64U	Very Lo-Bias Op Amp	£3.550	£3.080	£2.880	£5.69	
OPA445AP	BB	±10V to ±45V	680	±80	-	5	40pA	50pA	-	-	-	-	-	-	-	-	-	LE69A	Hi V Op-Amp	£5.010	£4.340	£4.070	£7.30	
OPA604AP	BB	±4.5V to ±25V	-	-	±13	±1	±3pA	50pA	1T	100	100	100	±12	25	20	-	5.25	AD57M	OPA604AP	£1.100	£0.789	£0.691	£1.98	
OPA606KP	BB	±5V to ±18V	-	±11	-	±300μV	±1pA	±8pA	-	90	90	-	±11.8	35	12MHz	-	±10	LE70M	Wide Band Di-FET	£3.500	£3.040	£2.850	£5.40	
OPA623AP	BB	±4.5V to ±5.5V	-	±3.2	-	±30	±20μA	-	50	50	50	-	±3.1	2100	350MHz	-	±4	AR57M	TLC27L4CN	£1.520	£1.390	£1.190	£1.93	
OPA627AP	BB	±4.5V to ±18V	-	±11.5	-	130μV	2pA	2pA	-	110	116	116	±12.3	55	16MHz	-	±45	LE71N	OPA627AP	£9.530	£8.260	£7.750	£14.62	
OPA2604AP	BB	±5V to ±25V	-	-	±13	±1	±4pA	100pA	1T	100	100	100	±12	25	20	-	10.5	AD58N	OPA2604AP	£1.810	£1.660	£1.420	£3.89	
TL061CN	ST	±2V to ±15V	680	±30	15	3	5pA	30pA	1T	86	95	6V/mV	±13.5	3.5	1	-	200μA	AV54J	FET-Amp TL061CN SGS	£0.382	£0.350	£0.300	£0.71	
TL061CP	TI	±2V to ±15V	680	±30	15	3	5pA	30pA	1T	86	95	6V/mV	±13.5	3.5	1	-	200μA	AV55K	FET-Amp TL061CP TI	£0.494	£0.453	£0.388	£0.71	
TL062CN	ST	±2V to ±15V	680	±30	15	3	5pA	30pA	1T	86	95	6V/mV	±13.5	3.5	1	-	400μA	AV56L	FET-Amp TL062CN SGS	£0.436	£0.400	£0.343	£0.89	
TL062CP	TI	±2V to ±15V	680	±30	15	3	5pA	30pA	1T	86	95	6V/mV	±13.5	3.5	1	-	400μA	AV57M	FET-Amp TL062CP TI	£0.530	£0.486	£0.416	£0.80	
TL064CN	ST	±2V to ±18V	680	±30	±15	3	5pA	30pA	1T	76	95	75	±13.5	3.5	1	30	800μA	RA66W	TL064CN	£0.500	£0.471	£0.413	£1.20	
TL064CN	TI	±2V to ±15V	680	±30	±15	3	5pA	30pA	1T	76	95	75	±13.5	3.5	1	-	800μA	AV58N	FET-Amp TL064CN TI	£0.691	£0.633	£0.543	£1.03	
TL071CN	ST	±2V to ±18V	680	±30	±15	3	5pA	30pA	1T	76	76	106	±13.5	13	3	100	1.4	RA67X	TL071CN	£0.242	£0.239	£0.200	£0.95	
TL071CP	TI	±5V to ±15V	680	±30	±15	3	5pA	30pA	1T	76	76	106	±13.5	13	3	100	1.4	RA68Y	FET-Amp TL071CP TI	£0.506	£0.428	£0.371	£0.83	
TL072CN	ST	±2V to ±18V	680	±30	±15	3	5pA	30pA	1T	76	76	106	±13.5	13	3	100	2.8	RA68Y	TL072CN	£0.490	£0.283	£0.237	£1.01	
TL072CP	TI	±5V to ±15V	680	±30	±15	3	5pA	30pA	1T	76	76	106	±13.5	13	3	100	2.8	AV60Q	FET-Amp TL072CP TI	£0.545	£0.462	£0.400	£0.83	
TL074CN	ST	±2V to ±18V	680	±30	±15	3	5pA	30pA	1T	76	76	106	±13.5	13	3	100	5.6	RA69A	TL074CN	£0.790	£0.540	£0.490	£1.58	
TL074CN	TI	±5V to ±15V	680	±30	±15	3	-	-	-	-	-	-	±13.5	13	3	-	-	AV61R	FET-Amp TL074CN TI	£0.691	£0.585	£0.507	£1.11	
TL081CN	ST	±2V to ±8V	680	±30	±15	5	5	30	1T	76	76	106	13.5	13	3	100	1.4	RA70M	TL081CN	£0.440	£0.380	£0.320	£0.83	
TL081CP	TI	±5V to ±15V	-	±30	-	3	-	-	-	-	-	-	±13.5	13	3	-	-	AV62S	FET-Amp TL081CP TI	£0.495	£0.418	£0.363	£0.79	
TL082CN	ST	±2V to ±8V	680	±30	±15	5	5	30	1T	76	76	106	13.5	13	3	100	2.8	RA71N	TL082CN	£0.354	£0.295	£0.264	£0.85	
TL082CP	TI	±5V to ±15V	-	±30	-	3	-	-	-	-	-	-	±13.5	13	3	-	-	AV63T	FET-Amp TL082CP TI	£0.531	£0.449	£0.389	£0.86	
TL084CN	TI	±5V to ±15V	-	±30	-	3	-	-	-	-	-	-	±13.5	13	3	-	-	AV64U	FET-Amp TL084CN TI	£0.680	£0.575	£0.498	£1.11	
TL084CN	ST	±2V to ±8V	680	±30	±15	5	5	30	1T	76	76	106	13.5	13	3	100	5.6	RA72P	TL084CN	£0.720	£0.390	£0.273	£1.34	
TS27L2CN	ST	+18V	-	±18	18	1.1	1pA	1pA	-	80	80	100V/mV	-	0.04	0.1	-	20	AX54J	Op-Amp TLC27L2CN SGS	£0.800	£			

## CA3130E

**Harris**

A MOS-FET input, CMOS output op-amp that will operate from a single or dual power supply, and input terminals can be swung up to 0.5V below negative rail. An external compensation capacitor between pins 1 and 8 permits adjustment of frequency/gain characteristic (typically 47pF).



3130

Offset null is achieved with 100kΩ pot between pins 1 and 5 with slider to pin 4. Max input-terminal current is 1mA. The output can be strobed.

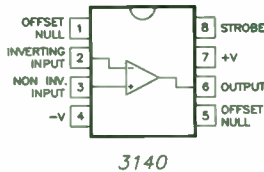
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2318	Price each exc. VAT	25+	100+	300+	1+	inc. VAT each
QH28F	CA3130E	£0.636	£0.551	£0.517	£1.390		

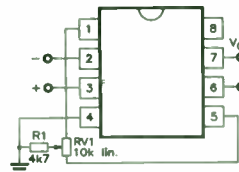
## CA3140E & CA3240E

**Harris**

A MOSFET input, bipolar output op-amp that will directly replace the 741 in most applications. It will operate from single or dual supply rails and input terminals can be swung up to 0.5V below negative rail. Internally compensated. Max input terminal current is 1mA. The output can be strobed. 3240 is a dual version of 3140. Both are in an 8-pin DIL package.



3140



3140 & 3240  
Offset Null



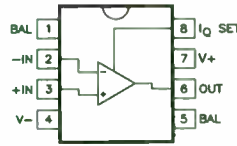
3240

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

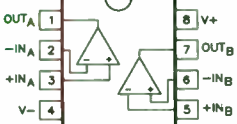
Order Code	Type 2020	Price each exc. VAT	25+	100+	300+	1+	inc. VAT each
QH29G	CA3140E	£0.422	£0.315	£0.264	£1.000		
WQ21X	CA3240E	£0.957	£0.798	£0.714	£1.870		

## ICL7611, 7621

**Harris**



7611



7621

Monolithic CMOS op amps providing the designer with high performance operation at low supply voltages and selectable quiescent currents, and having ultra-low input and low power dissipation where required.

The basic amplifier will operate at supply voltages ranging from ±1V to ±8V, and may be operated from a single lithium cell. ICL7611 has a programming pin which can be used to set the quiescent current to 1mA, 100µA or 10µA, while ICL7621 is factory set to 100µA.

Both devices feature extremely low input current (1pA), input noise current and impedance of 1012Ω. All inputs are internally protected, and outputs are short-circuit protected. Both types are encapsulated in 8-pin plastic DIL packages.

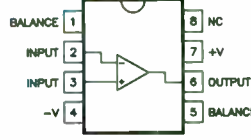
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 8073	Price each exc. VAT	25+	100+	300+	1+	inc. VAT each
AV65V	Op-Amp ICL7611DCPA	£0.664	£0.562	£0.487	£0.930		
AV66V	Op-Amp ICL7621DCPA	£0.882	£0.746	£0.647	£1.300		

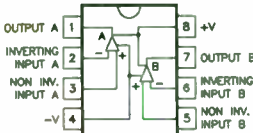
## LF351N, LF353N & LF347N

**SGS-Thomson**

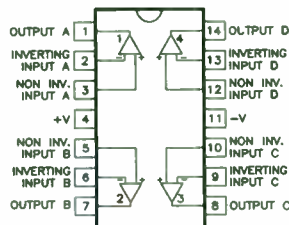
**National Semiconductor**



351



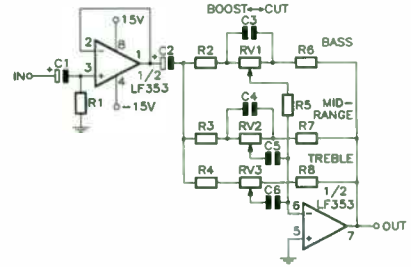
353



347

Low-cost high performance J-FET input op-amps that will directly replace, and out perform, the 741 in most applications. The devices are low noise, have distortion figures of less than 0.02% over the audio band, high slew rate (13V/µs), high input impedance (10<sup>12</sup>Ω) and wide bandwidth. For the 353 and 347, internal amplifier isolation is 120dB. Additionally, the accurately matched JFET inputs provide very low input bias and offset currents. It is most important that input voltages never go more negative than the negative supply voltage or the device will be

destroyed. The ICs are ideal for audio circuits, as well as fast D/A converters, high speed integrators and sample-and-hold circuits. The 351 is supplied in an 8-pin DIL package as is the 353 which is a dual version and the 347 is supplied in a 14-pin DIL package and is a quad version. Note that since the inputs are J-FETs not MOS-FETs no special handling is required.



Cut & Boost: Bass 20Hz ±20dB  
Mid 1kHz ±20dB  
Treble 20kHz ±20dB

**Suggested Parts List (Mono)**

R1	Min Res 10k	(M10K)
R2,5,6	Min Res 11k	(M11K)
R3,7	Min Res 3.6k	(M3K6)
R4,8	Min Res 1.8k	(M1K8)
VR1,2	Pot Lin 100k	(FW05F)
	Dual for stereo	(FW88V)
VR3	Pot Lin 47k	(FW07H)
	Dual for stereo	(FW90X)
C1	GenElect 4.7µF 50V	(AU05F)
C2	GenElect 1µF 63V	(AU09K)
C3	Monores 0.047µF	(RA47B)
C4,6	Monores 4700pF	(RA42V)
C5	Monores 0.022µF	(RA45V)

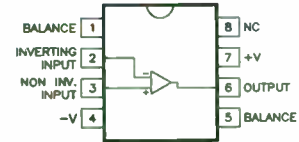
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2024	Price each exc. VAT	25+	100+	300+	1+	inc. VAT each
WQ30H	LF351N	£0.391	£0.326	£0.292	£0.820		
AV46A	LF351N NSC	£0.391	£0.358	£0.307	£0.530		
WQ31J	LF353N	£0.460	£0.329	£0.288	£0.910		
AV47B	LF353N NSC	£0.573	£0.525	£0.450	£0.700		
WQ29G	LF347N	£1.070	£0.897	£0.803	£1.490		

## LF355N, LF356N & LF357N

**SGS-Thomson**

**National Semiconductor**



LF355/356/357

These JFET input op-amps feature low input bias current (30pA), low input offset current (3pA), very high input impedance and a large DC voltage gain (106dB). The 355 has a very low supply current typically 2mA, compared to the 356/357 of 5mA. The 356/357 have wide gain bandwidths of typically 4.5MHz for the 356 and 20MHz for the 357, and low input noise voltage of 12nV/√Hz. With extremely fast settling times the ICs are suitable for precision high speed integrators, and fast D/A and A/D converters. Additionally, they can be used as high impedance buffers, and in wideband, low noise, low drift amplifiers. Note that the 357 is not internally compensated. Supplied in an 8-pin DIL package.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 1255	Price each exc. VAT	25+	100+	300+	1+	inc. VAT each
AV48C	FET-Amp LF355N NSC	£0.580	£0.550	£0.590	£0.760		
AV49D	FET-Amp LF355N SGS	£0.612	£0.561	£0.481	£1.160		
AV50E	FET-Amp LF356N NSC	£0.545	£0.500	£0.429	£0.890		
AV51F	FET-Amp LF356N SGS	£0.773	£0.708	£0.607	£1.070		
AV52G	FET-Amp LF357N NSC	£0.649	£0.595	£0.510	£0.890		
AV53H	FET-Amp LF357N SGS	£0.818	£0.750	£0.643	£1.070		

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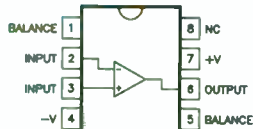
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Export carriage charges (1,2 etc.) and price information see back of catalogue. † symbol in price block indicates While Stocks Last.

## LF411CN and LF412CN

National Semiconductor



LF411



LF412

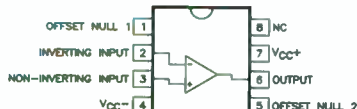
High performance J-FET input op-amps similar to 351 and 353 respectively, offering high speed, very low input offset and guaranteed input offset voltage drift of less than  $10\mu\text{V}/^\circ\text{C}$ . The ICs require low supply current yet maintain a large gain bandwidth product (4MHz), fast slew rate ( $>10\text{V}/\mu\text{s}$ ) and low distortion ( $\leq 0.02\%$ ). LF411CN is a single op-amp in an 8-pin DIL package, LF412CN is the dual version in 14-pin DIL package.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

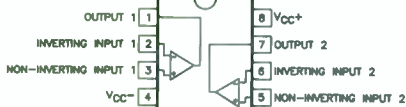
Order Code	Type 2306	Price each exc. VAT	25+	100+	300+	inc. VAT each 1+
OY27E	LF411CN	£0.621	£0.586	£0.513	£0.960	
OY28F	LF412CN	£1.340	£1.260	£1.110	£2.080	

## LF441CN, LF442CN & LF444CN

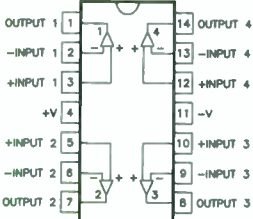
National Semiconductor



LF441



LF442



LF444

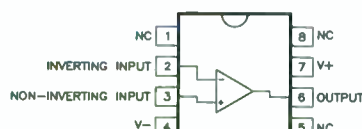
Low power J-FET input op-amps may be used as direct replacements for the  $\mu\text{A}741\text{C}$ , 1458C and 3403 respectively. They offer improved DC characteristics, the same bandwidth, slew rate and gain yet only draw one tenth of the supply current (one fifth for LF444). In addition they offer extremely low input offset voltages and currents and very low bias currents.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2306	Price each exc. VAT	25+	100+	300+	inc. VAT each 1+
OY29G	LF441CN	£0.530	£0.500	£0.438	£0.890	
OY30H	LF442CN	£0.768	£0.725	£0.634	£1.290	
OY31J	LF444CN	£1.500	£1.480	£1.400	£1.910	

## LPC661, LMC/LPC662, 660

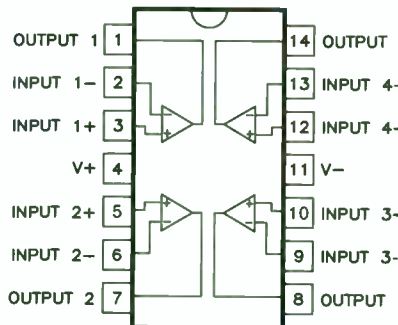
National Semiconductor



661



662



660

Low power, single (661), dual (662) and quad (660) CMOS operational amplifiers, each encapsulated in an 8-pin DIL package. The devices are ideal for single supply rail operation, which can range from +5V to +15V. Output has a full rail-to-rail voltage swing, and input common mode range includes ground. Input drift and broadband noise performance is equal to or better than widely accepted bipolar equivalents, while quiescent supply current is in the range of 55 to 200 $\mu\text{A}$  per amplifier (depending on type). LMC662 and 660 have an operating temperature range of  $0^\circ\text{C}$  to  $+70^\circ\text{C}$ , while LPC661, 662 and 660 have a range of  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$ .

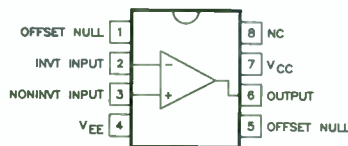
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 0076	Price each exc. VAT	25+	100+	300+	inc. VAT each 1+
AX62S	Op-Amp LPC661IN NSC	£0.740	£0.720	£0.710	£0.940	
AX63T	Op-Amp LPC662IN NSC	£1.300	£1.000	£0.880	£1.640	
AX64U	Op-Amp LPC660IN NSC	£1.760	£1.490	£1.290	£2.150	
AX65V †	Op-Amp LMC662CN NSC	£1.520	£1.290	£1.120	£1.870	
AX66W	LMC660AIN	£1.600	£1.380	£1.300	£2.280	

## MC33171, MC33172 & MC33174

Motorola

A range of low-power, single supply op amps. Features include wide operating voltage range, wide bandwidth, high slew rate, large capacitance drive capability, low total harmonic distortion and output short circuit protection. The MC33171 device has a single amplifier, while the MC33172 is a dual equivalent and the MC33174 a quad equivalent.



Specification

Supply voltage,  $V_{CC}$ : 3-0V to 44V, or  $\pm 1.5\text{V}$  to  $\pm 22\text{V}$   
 Bandwidth: 1-8MHz  
 Slew rate: 2-1V/ $\mu\text{s}$   
 Input offset voltage: 2-0mV

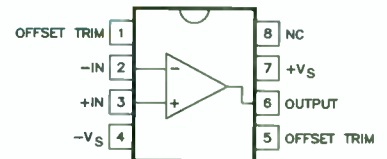
Capacitance drive capability: 0 to 500pF  
 Total harmonic distortion, THD: 0-03%  
 Phase margin: 60%  
 Gain margin: 15dB

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5506	Price each exc. VAT	25+	100+	300+	inc. VAT each 1+
AD99H	MC33171P	£0.567	£0.520	£0.446	£1.200	
AE00A	MC33172P	£0.553	£0.507	£0.434	£1.440	
AE01B	MC33174P	£0.818	£0.750	£0.643	£2.000	

## OPA124P

Burr-Brown



OPA124P

The OPA124P is a precision monolithic dielectrically isolated FET (DIFET®) operational amplifier. Outstanding performance characteristics allow its use in the most critical instrumentation applications. Low noise  $6\text{nV}/\sqrt{\text{Hz}}$  (10kHz), low bias current, 1pA (maximum), high open-loop gain of 106dB (minimum), and high common-mode rejection, 100dB (minimum) make it superior to BIFET® and CMOS amplifiers. Extremely low noise is achieved with patented circuit design techniques. A cascode design allows high precision input specifications.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5532	Price each exc. VAT	25+	100+	300+	inc. VAT each 1+
AD59P	OPA124P	£4.440	£4.070	£3.490	£5.840	

## OPA129P

Burr-Brown

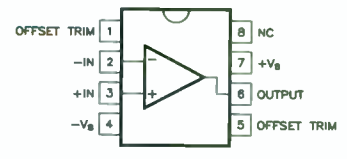
The OPA129 is an ultra low bias current op-amp with Burr-Brown's Difet input fabrication, which reduces input bias current by a factor of 10 to 100 over conventional FET input op-amps, to a typical figure of just 30fA (0-00003pA). It may be used to amplify small signals from very high impedance transducers such as pH probes (typically 500M impedance), or other applications where the device offers excellent sensitivity such as spectrometry or other photodetection circuits. The device is internally laser trimmed to balance offset voltage and requires no external trimming in use.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11847	Price each exc. VAT	25+	100+	300+	inc. VAT each 1+
LE64U	OPA129P	£3.550	£3.080	£2.880	£5.690	

## OPA445P

Burr-Brown



445

This FET input op-amp features a wide supply voltage range from  $\pm 10\text{V}$  to  $\pm 40\text{V}$ , making it suitable for use in a wide variety of applications requiring high output voltage or large common-mode voltage

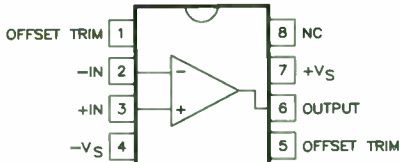
swings. Cost savings may be made by using this where output current required is no more than 15mA, as previously a high power op-amp would have been used to achieve the high voltage requirement. The OPA445 has a high slew rate of 10V/ $\mu$ s and in input bias current of 50pA max.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE69A	OPA445AP	£5.010 100+ £4.340 300+ £4.070	1+ £7.300

## OPA604AP

Burr-Brown®



OPA604AP

The OPA604AP is a FET-input operational amplifier designed for enhanced AC performance. Very low distortion 0.0003% at 1kHz, low noise 10nV/ $\sqrt$ Hz, and wide gain-bandwidth of 20MHz. It provides superior performance in high-quality audio and other applications requiring excellent dynamic performance. The OPA604AP has a wide supply range of  $\pm$ 4.5 to  $\pm$ 24V.

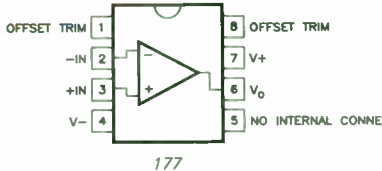
The low-noise FET input of the OPA604AP provides wide dynamic range, even with a high source impedance, and drives a 600 $\Omega$  load.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AD57M	OPA604AP	£1.100 100+ £0.789 300+ £0.691	1+ £1.980

## OPA606

Burr-Brown



177

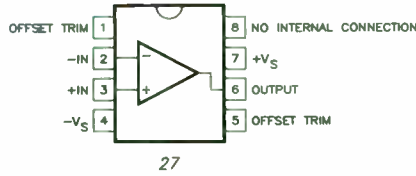
The OPA606 is a wideband dielectrically isolated Difet op-amp featuring a 12MHz small signal bandwidth (470kHz full power bandwidth) as well as laser trimmed thin film resistors for improved offset voltage and noise performance. This amplifier is ideally suited to high quality audio amplification tasks. THD is typically 0.0035% @ 10kHz, bias current is 10pA max @ 25°C, offset voltage is 0.5mV max.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE70M	OPA606KP	£3.500 100+ £3.040 300+ £2.850	1+ £5.400

## OPA627AP

Burr-Brown



27

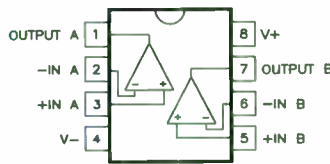
This FET input op-amp combines the very best of AC and DC characteristics for top end audio and instrumentation applications. High frequency complementary transistors allow increased circuit bandwidth, attaining dynamic performance not possible with previous precision FET op-amps. Burr-Brown's Difet fabrication achieves extremely low input bias current without compromising input voltage noise performance. THD+noise is typically 0.00003% and slew rate is typically 55V/ $\mu$ s. The input bias current is 5pA max, drift 0.8 $\mu$ V/ $^{\circ}$ C max and offset voltage (laser trimmed) 0.1mV max.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE71N	OPA627AP	£9.530 100+ £8.260 300+ £7.750	1+ £14.620

## OPA2604AP

Burr-Brown®



OPA2604AP

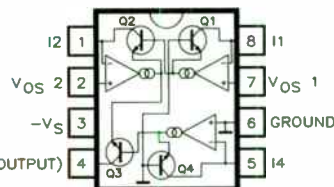
The OPA2604AP is a dual FET-input operational amplifier designed for enhanced AC performance. Very low distortion 0.0003% at 1kHz, low noise 10nV/ $\sqrt$ Hz, and wide gain-bandwidth of 20MHz. It provides superior performance in high-quality audio and other applications requiring excellent dynamic performance. The OPA2604AP has a wide supply range of  $\pm$ 4.5 to  $\pm$ 24V. The low-noise FET input of the OPA2604AP provides wide dynamic range, even with a high source impedance, and drives a 600 $\Omega$  load.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AD58N	OPA2604AP	£1.810 100+ £1.660 300+ £1.420	1+ £3.890

## RC4200N Analogue Multiplier

Raytheon



4200

An analogue multiplier combining three op-amps specially designed for multiplier logging circuits and offering complete compensation for non-linearity. As a result, four quadrant multiplication, two quadrant division, square rooting, squaring and rms conversion can all be implemented with predictable accuracy. The nominal relationship between the three inputs and the output is  $I3 = I1 \times I2 \div I4$ .

The circuit is ideal for use in low distortion audio modulation circuits, voltage controlled active filters, and precision oscillators.

### Specification (typical at $V_S = -15V$ )

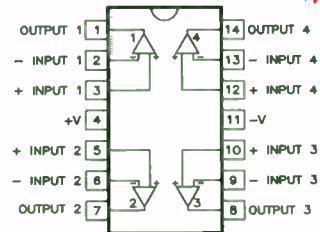
Supply voltage: -9V to -18V  
Supply current: <4mA  
Input current range: 1 $\mu$ A to 1mA  
Input offset voltage: < $\pm$ 10mV  
Input bias current: <500nA  
Output current range: 1 $\mu$ A to 1mA  
Frequency response: 4MHz  
Total error as multiplier: < $\pm$ 3% untrimmed  
with external trim:  $\pm$ 0.2%  
Non-linearity: < $\pm$ 0.3%

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UR16S	RC4200N	£4.100 100+ £2.920 300+ £2.560	1+ £6.580

## TSM221N

SGS-Thomson



TSM221

The TSM221 contains two differential input CMOS rail-to-rail op-amps (amps 1,4), and two push-pull CMOS comparators (amps 2,3). This mixed circuit is a general purpose analogue block for auto-motive, telecom and consumer applications. The device will operate from a single supply rail of 2.7V to 16V, and at 5V requires just 500 $\mu$ A of current. Supplied in a 14-pin DIL package.

### Specification ( $V_{SS} = 5V$ )

Supply voltage: 18V max  
Supply current: 500 $\mu$ A total  
I/P offset voltage op-amp: 10mV max  
comparator: 5mV  
I/P offset voltage drift: 5 $\mu$ V/ $^{\circ}$ C (op-amp)  
I/P offset current op-amp: 1pA typ  
comparator: 1pA  
I/P bias current op-amp: 1pA  
comparator: 1pA  
Large signal voltage gain: 40V/mV (op-amp)  
GBP: 1MHz typ  
CMRR op-amp: 85dB typ  
comparator: 82dB typ  
PSRR op-amp: 80dB typ  
comparator: 90dB typ  
Slew rate: 0.7V/ $\mu$ s  
Noise: 30nV/ $\sqrt$ Hz  
Channel separation: 120dB typ  
Response time overdrive = 5mV  
low to high: 1.5 $\mu$ s  
high to low: 2.2 $\mu$ s  
Fall time: 30ns

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP89W	TSM221N	£1.210 100+ £1.010 500+ £0.932	1+ £1.780

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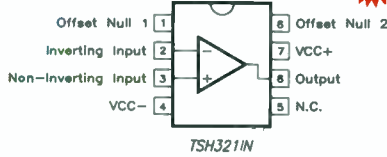
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## TSH321IN

SGS-Thomson



The TSH321 is a wideband monolithic op-amp with extremely high input impedance, typically  $>10^{12}\Omega$ , that can be directly interfaced with high impedance sources. Low distortion, wide bandwidth and high linearity make this device suitable for RF and video applications. Short circuit protection is provided by an internal current-limiting circuit. Note that to maintain stability, the device requires a minimum closed loop gain of 2. Supplied in an 8-pin DIL package.

### Specification

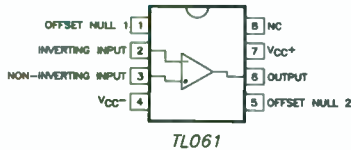
Supply voltage:  $\pm 3V$  to  $\pm 6V$ , typ  $\pm 5V$   
 Supply current: 40mA max ( $\pm 6V$ )  
 I/P offset voltage: 0.5mV typ  
 I/P offset voltage drift:  $10\mu V/^\circ C$  typ  
 Voltage gain: 850V/V typ Load = 100 $\Omega$   
 CMRR: 100dB  
 PSRR: 70dB  
 GBP: 300MHz  
 Slow rate: 400V/ $\mu s$   
 Noise: 18.2nV/ $\sqrt{Hz}$  at 1MHz  
 THD: 0.02%  
 Full power bandwidth: 64MHz ( $V_O = 2V$  pk-pk) load = 100 $\Omega$

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

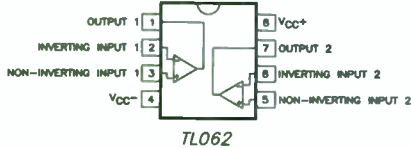
Order Code	Type	Price each exc. VAT	inc. VAT each
NC51F	TSH321IN	£3.920 25+ £3.260 100+ £3.010 500+ £5.750 1+	

## TL061CN/CP, TL062CN/CP & TL064CN

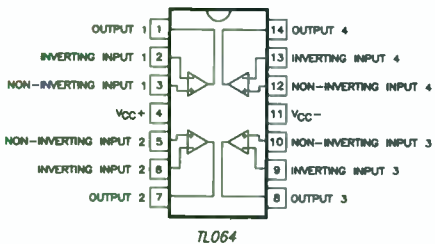
SGS Thomson  
Texas Instruments



TL061



TL062



TL064

The TL06x series of J-FET-input operational amplifiers are designed as low-power versions of the TL08x series, and feature high input impedance, wide bandwidth, high slew rate (3.5V/ $\mu s$ ), output short-circuit protection and low input offset (100pA) and bias (200pA) currents. They are pin compatible with the TL07x and TL08x series and contain well-matched, high-voltage J-FET and bi-polar transistors in a monolithic IC package. All the devices have internal frequency

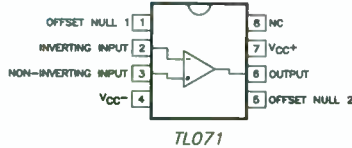
compensation. TL061 is an 8-pin DIL package containing one amplifier, TL062 is an 8-pin DIL package containing two individual amplifiers and TL064 is a 14-pin DIL package with four individual amplifiers

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

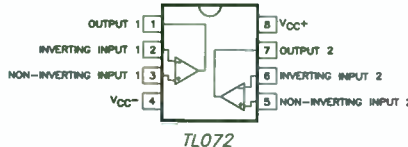
Order Code	Type	Price each exc. VAT	inc. VAT each
AV54J	FET-Amp TL061CN SGS	£0.382 25+ £0.350 100+ £0.300 300+	£0.710 1+
AV55K	FET-Amp TL061CP TI	£0.494 £0.453 £0.388	£0.710
AV56L	FET-Amp TL062CN SGS	£0.436 £0.400 £0.343	£0.890
AV57M	FET-Amp TL062CP TI	£0.530 £0.486 £0.416	£0.800
RA66W	TL064CN	£0.500 £0.471 £0.413	£1.200
AV58N	FET-Amp TL064CN TI	£0.691 £0.633 £0.543	£1.030

## TL071CN/CP, TL072CN/CP & TL074CN

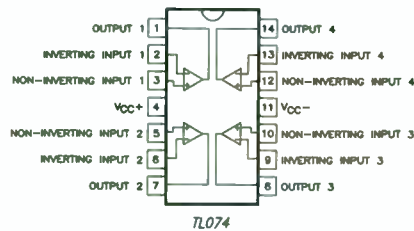
SGS Thomson  
Texas Instruments



TL071



TL072



TL074

The J-FET input operational amplifiers in the TL07x series are designed as low-noise versions of the TL08x series with low input bias and offset currents and fast slew rates (typically 13V/ $\mu s$ ). The low harmonic distortion (0.003%) and low noise (18nV/ $\sqrt{Hz}$ ) make the TL07x series ideal for amplifiers in high quality audio applications. Each amplifier features J-FET inputs coupled with bi-polar output stages integrated on a single monolithic chip. All the devices have internal frequency compensation. TL071 is an 8-pin DIL package containing one amplifier, TL072 is an 8-pin DIL package containing two individual amplifiers and TL074 is a 14-pin DIL package with four individual amplifiers.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

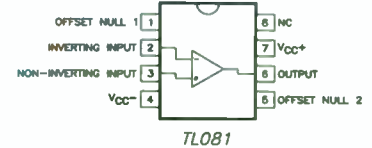
Order Code	Type	Price each exc. VAT	inc. VAT each
RA67X	TL071CN	£0.242 £0.239 £0.200	£0.950
RA68Y	TL072CN	£0.490 £0.283 £0.237	£1.010
RA69A	TL074CN	£0.780 £0.540 £0.490	£1.580
AV59P	FET-Amp TL071CP TI	£0.506 £0.428 £0.371	£0.830
AV60Q	FET-Amp TL072CP TI	£0.545 £0.462 £0.400	£0.830
AV61R	FET-Amp TL074CN TI	£0.691 £0.585 £0.507	£1.110

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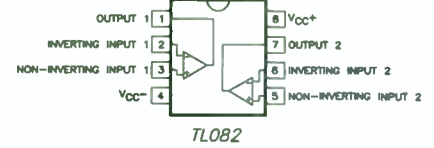
Just complete form at back of catalogue

## TL081CN, TL082CN & TL084CN

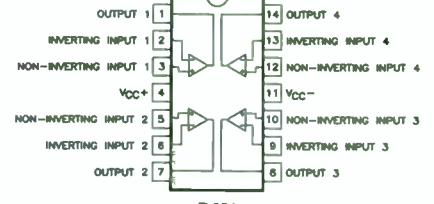
SGS-Thomson  
Texas Instruments



TL081



TL082



TL084

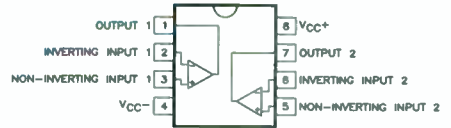
A low-cost general purpose range of J-FET op-amps featuring high slew rates (13V/ $\mu s$ ), low distortion (0.003%), low input bias and offset currents, and low offset voltage temperature coefficient. Each device features well-matched, high voltage J-FET and bi-polar transistors in a monolithic IC package. TL081CN is supplied in an 8-pin DIL package, as is the dual version TL082CN. TL084CN is a quad version in a 14-pin DIL package

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

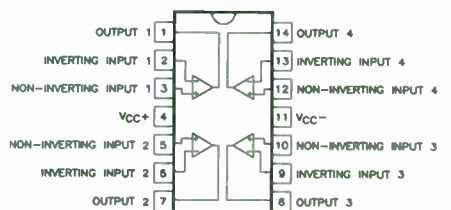
Order Code	Type	Price each exc. VAT	inc. VAT each
RA70W	TL081CN	£0.440 £0.380 £0.320	£0.830
AV62S	FET-Amp TL081CP TI	£0.495 £0.418 £0.363	£0.790
RA71N	TL082CN	£0.354 £0.295 £0.264	£0.850
AV63T	FET-Amp TL082CP TI	£0.531 £0.449 £0.389	£0.860
RA72P	TL084CN	£0.720 £0.390 £0.273	£1.340
AV64U	FET-Amp TL084CN TI	£0.680 £0.575 £0.498	£1.110

## TLC27L2CN, 27L4CN, 27M2CN, 27M4CN

SGS Thomson  
Texas Instruments



27L2, 27M2



27L4, 27M4

Dual and quad operational amplifiers that are low power (M) and very low power (L) versions of TS272 and TS274. Types 27M2CN and 27M4CN each have a quiescent current consumption of 150 $\mu A$  per amplifier, for 27L2CN and 27L4CN, 10 $\mu A$  per amplifier. All other characteristics are as TS272 and TS274. Encapsulated in 8-pin plastic DIL packages. Silicon gate technology provides offset voltage stability far exceeding that of conventional



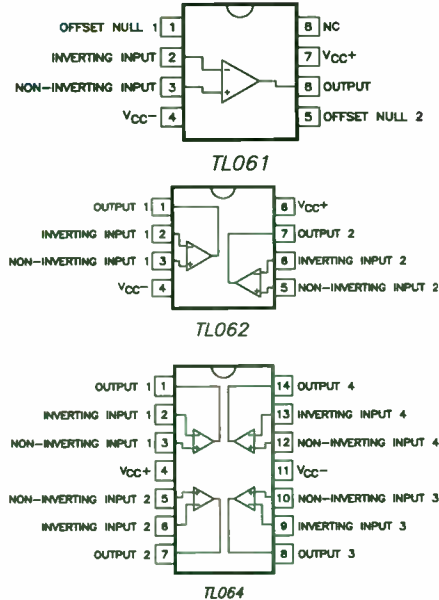
metal gate processes. This and other features make this series an excellent cost-effective choice for new state-of-the-art designs as well as excellent upgrade for existing designs.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AX55K†	Op-Amp TLC27M2CN SGS	£0.800	£1.110
AX57M†	Op-Amp TLC27M4CN SGS	£1.120	£1.680
AX54J	Op-Amp TLC27L2CN SGS	£0.800	£1.110
AX56L	Op-Amp TLC27L4CN SGS	£1.120	£1.680
AR57M	TLC27L4CN	£1.520	£1.930

## TS271, 272, 274

SGS Thomson



Low cost, low power op amps designed to operate with single or dual rail supplies. All types use a silicon gate LIN-MOS process giving them an excellent current consumption to speed ratio. Single (271), dual (272) and quad (274) versions are available, each encapsulated in an 8-pin plastic DIL package. Type 271 includes offset null connections. The devices offer very high input impedances and extremely low input currents, with very low input current drift versus temperature compared with JFET devices.

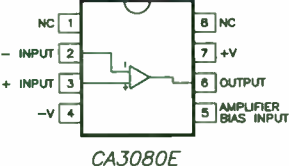
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AV67X	Op-Amp TS271N SGS	£0.473	£0.680
AV68Y	Op-Amp TS272N SGS	£0.733	£1.090
AV69A	Op-Amp TS274N SGS	£1.120	£1.680

## TRANSCONDUCTIVE OP-AMPS

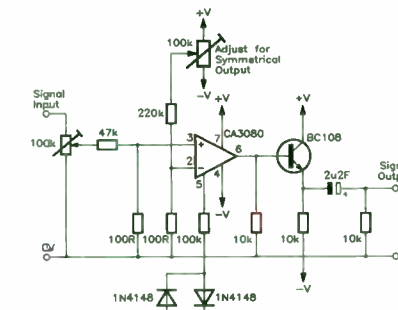
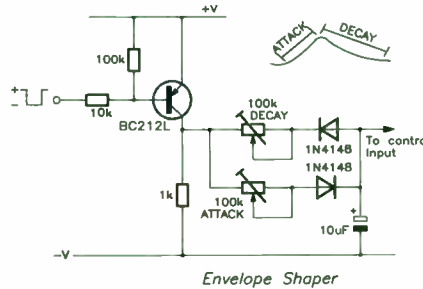
### CA3080E

Harris



This 8-pin DIL IC is an op-amp whose output current is proportional to the voltage difference between its input pins. In addition the IC has a bias input which may be used either for gating or for linear gain control. The amplifier has an excellent slew rate and in addition when gated off the amp uses only a minute 10µW making it ideal in

multiplex applications. For technical specification see LM13700N below.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

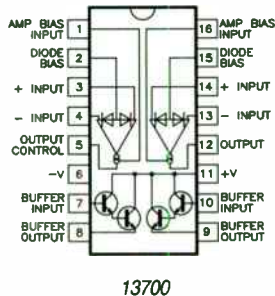
Order Code	Type	Price each exc. VAT	inc. VAT each
YH58N	CA3080E	£0.560	£0.960

## LM13700N

National Semiconductor

The 13700 is a dual operational transconductance amplifier with linearising diodes and buffers. It consists of two current controlled transconductance amplifiers each with different inputs and a push pull output. The two amplifiers share common supplies but otherwise operate independently. Linearising diodes are provided at the inputs to reduce distortion and allow higher input levels. The result is a 10dB signal-to-noise improvement referenced to 0.5% THD. High impedance buffers are provided which are specially designed to complement the dynamic range of the amplifiers.

The IC has many useful applications such as voltage controlled amplifiers, voltage controlled resistors, voltage controlled filters, voltage controlled oscillators, phase locked loop, Schmitt trigger tachometer (f to v), peak detector and hold, sample and hold, ramp and hold, true RMS converter, variable temperature coefficient voltage reference, pulse width modulator, log current source, multiplexer, zero standby power timer, four quadrant multiplier, amplitude monitor and stereo volume control. A data sheet is available which shows circuit details of all the above applications.



Absolute max ratings	CA3080E	LM13700N
Voltage supply range	±2V to ±15V	±2V to ±18V
Power dissipation	125mW	570mW
Differential input voltage	±5V	±5V
Diode bias current	—	2mA
Amplifier bias current	2mA	2mA

Typical ratings at 25°C with V<sub>S</sub> = ±15V

Input offset voltage:	0-4mA	0-4mA
Input offset current:	120nA	100nA
Input bias current:	400nA	400nA
Input resistance:	20kΩ	26kΩ
Forward transconductance (gm)	9600µS	9600µS
Tracking of gm:	—	0-3dB
Peak output current:	500µA	500µA
Peak output voltage:	±14V	±14V
Supply current (per amp):	1-1mA	1-3mA
Common mode rejection ratio	110dB	110dB
Unity gain bandwidth:	2MHz	2MHz
Full power bandwidth:	200kHz	200kHz
Slew rate:	50V/µs	50V/µs

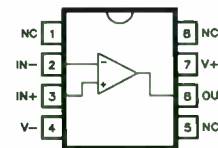
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YH64U	LM13700N	£1.270	£1.840

## INSTRUMENTATION ISOLATION

### MAX430CPA ±15V Chopper Stabilised Op-Amp

Maxim



MAX430

The MAX430 is a ±15V chopper stabilised op-amp designed for high accuracy signal conditioning, amplification and instrumentation applications. The IC offers an input offset and drift specification superior to previous precision bipolar op-amps and monolithic chopper amplifiers.

The device requires no external chopper capacitors, and with its standard op-amp pin configuration allows for direct replacement in to almost any OP07/OP77/LM106/741 socket. This is regardless of any offset balancing or frequency compensation circuitry that might be present. In addition, the MAX430 features a maximum supply current of just 2mA and a unity gain bandwidth of 500kHz. Supplied in an 8-pin DIL package.

#### Specification

Power supply:	±2.5V to ±16.5V
Supply current:	1.3mA typ
I/P offset voltage:	1µV typ
I/P offset voltage drift:	0.02µV/°C
Large signal voltage gain:	150dB
CMRR:	140dB
PSRR:	140dB
I/P noise current:	0.01pA/√Hz
GPB:	500kHz
Slew rate:	0.5V/µs
Rise time:	0.7µs
Internal chopper frequency:	400kHz

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NR42V	MAX430CPA	£1.960	£2.450

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## INA114 Precision Instrumentation Amplifier

**Burr-Brown**

A low cost, general purpose instrumentation amplifier offering excellent accuracy in a versatile 3-opamp design ideal for a wide range of applications. A single external resistor sets any gain between 1 and 10,000. Internal input protection can withstand up to  $\pm 40V$  without damage, even without a supply voltage present.

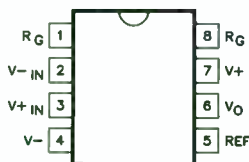
The INA114 is laser trimmed for very low offset voltage ( $50\mu V$ ), drift ( $0.25\mu V/^\circ C$ ) and high common-mode rejection ( $115dB$  at  $G = 1000$ ). It operates with power supplies as low as  $\pm 2.5V$ , allowing its use in battery powered and single 5V supply systems. Quiescent current is 3mA maximum. Using the device with noisy or high impedance power supplies may require decoupling capacitors close to the device pins. In use, the output is referred to the output reference terminal (Ref, pin 5) which is normally grounded. This must be a low impedance connection to 0V to assure good common-mode rejection. The gain of the INA114 is set by connecting a single external resistor,  $R_G$ , between pins 1 and 8 where:

$$\text{gain } (G) = 1 + 50k \Omega / R_G$$

The  $50k\Omega$  term in the equation comes from the sum of the two internal feedback resistors, and values for  $R_G$  can range from none, giving a gain of 1,  $50k\Omega$  giving x2 down to  $5\Omega$  giving 10,000. Applications include bridge amplifiers, thermocouple amplifiers, RTD sensors, medical instrumentation and data acquisition.

### Specification

Input offset voltage:	$\pm 25+30/G \mu V$
Input impedance, differential common mode:	$10^{10} \Omega \parallel 6pF$
Input common mode range:	$\pm 13.5V$
Common mode rejection, $G = 1$ :	90dB
$G = 1000$ :	110dB
Bias current:	$\pm 5nA$ max. $\pm 8pA/^\circ C$
Offset current:	$\pm 5nA$ max. $\pm 8pA/^\circ C$
Noise voltage, $G = 1000$ :	$15nV/\sqrt{Hz}$ @ 10Hz $11nV/\sqrt{Hz}$ @ 100Hz and 1kHz
Gain range:	1 to 10,000
Gain error:	$\pm 2\%$ max.
Output voltage:	$\pm 13.7V$ ( $V_S = \pm 15V$ )
Frequency response, $G = 1$ :	1MHz
$G = 10$ :	100kHz
$G = 100$ :	10kHz
$G = 1000$ :	1kHz
Slew rate:	$0.6V/\mu s$ ( $V_S = \pm 10V$ , $G = 10$ )
Overload recovery:	20 $\mu s$
Power supply voltage:	$\pm 2\mu 25V$ to $\pm 15V$
Quiescent current:	3mA



114

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5541	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AD73Q	INA114AP	£3.980	£3.560	£3.110	£5.400

## INA117KP High Common-Mode Difference Amplifier

**Burr-Brown**

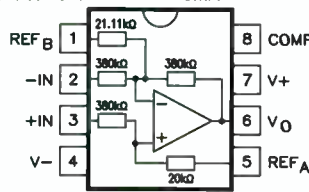
The INA117KP is a precision unity-gain difference amplifier with a very high common-mode input voltage range. It is a single monolithic IC consisting of a precision op amp and integrated thin-film resistor network. It can accurately measure small differential voltages in the presence of common-mode signals up to  $\pm 200V$ . The INA117 inputs are protected from momentary common-mode or differential overloads up to  $\pm 500V$ .

In many applications where galvanic isolation is not essential, the device can replace isolation amplifiers, eliminating costly isolated input side

power supplies and their associated ripple, noise and quiescent current. The IC's 0.001% non-linearity and 200kHz bandwidth are superior to those of conventional isolation amplifiers. Applications include current monitors, battery cell voltage monitors, ground breakers, input protection, signal acquisition in noisy environments and factory automation.

### Specification

Initial gain:	1V/V
Gain error:	0.01%
Rated output voltage:	12V, $I_O = +20mA$ , -5mA
Input impedance, differential:	10k $\Omega$
common-mode:	110k $\Omega$
Common-mode rejection:	100dB
Initial offset voltage:	120 $\mu V$
Noise voltage:	25 $\mu V$ pk-pk, 0.01Hz to 10Hz 550nV/Hz @ 10kHz -3dB @ 200kHz 30kHz @ 20V pk-pk
Gain bandwidth:	2V/ $\mu s$
Full power bandwidth:	30kHz @ 20V pk-pk
Slew rate:	2V/ $\mu s$
Supply voltage:	$\pm 15V$
Quiescent current:	1.5mA



117

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5546	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AD76H	INA117KP	£7.720	£5.510	£4.820	£9.330

## INA118P Precision Low Power Instrumentation Amplifier

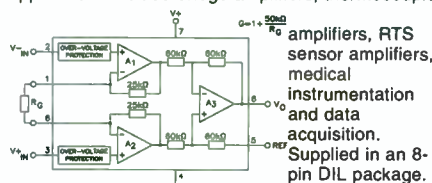
**Burr-Brown**

The INA118P is a low power, general purpose instrumentation amplifier offering excellent accuracy. Its versatile 3 op-amp design and small size make it ideal for a wide range of applications. Current-feedback input circuitry provides wide bandwidth even at high gain (100kHz at  $G = 100$ ). A single external resistor sets any gain from 1 to 10,000. Internal input protection can withstand up to  $\pm 40V$  without damage. The device operates with power supplies as low as  $\pm 1.35V$ , and quiescent current is only 280 $\mu A$ , ideal for battery powered systems.

In use, the output is referred to the output reference terminal (Ref, pin 5) which is normally grounded. This must be a low impedance connection to 0V to assure good common-mode rejection. The gain of the INA118 is set by connecting a single external resistor,  $R_G$ , between pins 1 and 8 where:

$$\text{gain } (G) = 1 + 50k \Omega / R_G$$

Applications include bridge amplifiers, thermocouple



### Specification

Input offset voltage:	$\pm 25+100/G \mu V$
Input impedance, differential common mode:	$10^{10} \Omega \parallel 5pF$
Input common-mode range:	$\pm V_S \pm 0.9V$
Common-mode rejection,	

$G = 1$ :	90dB
$G = 1000$ :	110dB
Bias current:	$\pm 5nA$ max. $\pm 20pA/^\circ C$
Offset current:	$\pm 5nA$ max. $\pm 20pA/^\circ C$
Noise voltage, $G = 1000$ :	$12nV/\sqrt{Hz}$ @ 10Hz $10nV/\sqrt{Hz}$ @ 100Hz
and 1kHz	
Gain range:	1 to 10,000
Gain error:	$\pm 0.5\%$ max.
Output voltage:	+14.2V, -14.6V ( $V_S = \pm 15V$ )
Frequency response,	
$G = 1$ :	500MHz
$G = 10$ :	400kHz
$G = 100$ :	100kHz
$G = 1000$ :	10kHz
Slew rate:	$1V/\mu s$ ( $V_S = \pm 10V$ , $G = 10$ )
Overload recovery:	20 $\mu s$
Power supply voltage:	$\pm 1.35V$ to $\pm 15V$
Quiescent current:	280mA

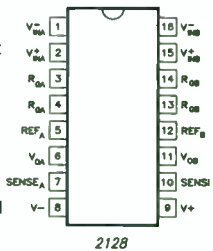
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5543	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AD74R	INA118P	£3.770	£3.690		£4.910

## INA2128PA

**Burr-Brown**

The INA2128 instrumentation amplifier offers an accurate low power design with an input bias current of 2nA max. This makes it ideal for micropower sensor amplification in environmental or medical monitoring systems. A quiescent current of around 1mA and wide supply range of  $\pm 2.25V$  to  $\pm 18V$  means that the device is well suited to battery powered applications. A single external resistor sets any gain from 1 to 10,000 and current feedback circuitry provides wide bandwidth even at high gain settings (200kHz at  $G=100$ ). Inputs are protected to  $\pm 40V$  and drift/offset voltage are both low.



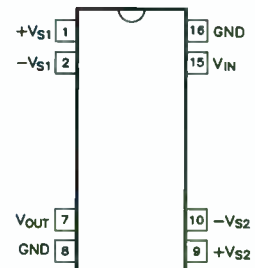
2128

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11849	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
LE61R	INA2128PA	£7.470	£6.940	£6.070	£11.390

## ISO122 Precision Isolation Amplifier

**Burr-Brown**



A precision isolation amplifier incorporating a novel duty cycle modulation-demodulation technique to transmit the signal digitally across a 2pF isolation barrier. With digital modulation the barrier characteristics do not affect signal integrity, resulting in excellent reliability and good high-frequency transient immunity across the barrier. Both barrier capacitors (1pF each) are embedded in the plastic body of the package. The device is very easy to use, no additional external components are needed for operation. All

that is required is to provide separate  $\pm$  supply rails and a ground reference for both the input and output sides of the device, as the internal input and output circuits are completely isolated. The isolation barrier can handle 1,500V AC rms continuously and is 100% tested. The configuration has a gain of unity and for all intents and purposes a ground referenced, DC or AC signal is passed through to the output unchanged. However, small signal bandwidth should be limited to 50kHz or less, due to the internal modulation frequency being 500kHz.

A power supply range of  $\pm 4.5V$  to  $\pm 18V$  at each end, with quiescent currents of  $\pm 5mA$  and  $\pm 5.5mA$  respectively make the device ideal for a wide range of applications, including industrial process control, ground loop elimination, motor and SCR control, PC based data acquisition, etc.

**Specification**

Isolation rating: 1,500V AC @ 60Hz  
2,400V AC max. for 1s  
Isolation mode rejection: 140dB @ 60Hz  
Leakage current: 0-18 $\mu$ A rms @ 60Hz  
Nominal gain: 1V/V  
Gain error:  $\pm 0.05\%$  FSR  
Gain drift:  $\pm 10$ ppm/ $^{\circ}C$   
Non-linearity: 0-0.16% FSR  
( $\pm 0.025\%$  FSR ISO122J)  
Input offset voltage:  $\pm 20mV$   
Input offset drift:  $\pm 200\mu V/^{\circ}C$   
Noise: 4 $\mu V/\sqrt{Hz}$   
Input voltage range:  $\pm 12.5V$  ( $V_S = \pm 15V$ )  
Input resistance: 200k $\Omega$   
Output voltage range:  $\pm 12.5V$  ( $V_S = \pm 15V$ )  
Output current drive:  $\pm 15mA$   
Capacitive load drive: 100nF  
Ripple voltage: 20mV pk-pk  
Small signal bandwidth: 50kHz  
Slew rate: 2V/ $\mu s$   
Overload recovery time: 150 $\mu s$   
Supply voltage range:  $\pm 4.5$  to  $\pm 18V$  each section  
Quiescent current:  $\pm 5mA$  input side,  $\pm 5.5mA$  output side

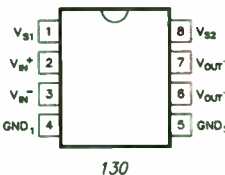
Note that version ISO122J has a non-linearity figure of  $\pm 0.025\%$  FSR.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AD80B	ISO122JP	£11.990	£9.380	£8.990	£18.990
AD81C	ISO122P	£13.160	£12.220	£10.700	£20.410

## ISO130P

The ISO130 is a high isolation-mode rejection amplifier suited for precise and stable monitoring of motor currents in high noise motor control environments or any other signal isolation application requiring a high degree of linearity under severe noise conditions. The input signal is transmitted digitally across the isolation barrier which provides 10kV/ $\mu s$  isolation-mode rejection using a high speed AlGaAs LED and Sigma-Delta A/D converter. The output section converts this digital signal back into an analogue voltage and filters it to produce the final output. The device conforms with UL1577 and VDE0884 barrier voltage and discharge test requirements. No external components are required for operation, provided that power supplies of +5V are available on each side of the isolation barrier. The large signal bandwidth of the ISO130 is typically 85kHz.

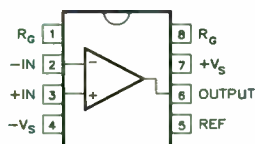


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
LE62S	ISO130P	£6.500	£6.040	£5.280	£8.060

## AD622AN Instrumentation Amplifier

Analog Devices



AD622

A low-cost, quality instrumentation amplifier that requires no external resistor for a gain of one, and only one external resistor to set any gain from 2 to 1000. The device is a complete difference or subtracter amplifier 'system', providing superior linearity and common-mode rejection by using precision laser trimmed resistors. The IC will operate from a wide supply voltage ( $\pm 2.6V$  to  $\pm 15V$ ) and has a maximum supply current requirement of just 1.5mA.

Supplied in an 8-pin DIL package.

**Specification**

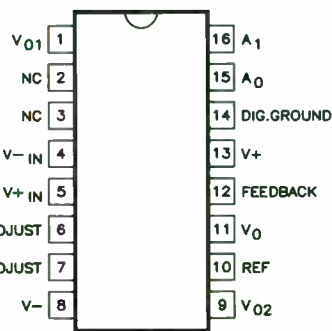
Supply voltage:  $\pm 2V$  to  $\pm 18V$  max  
Supply current: 1.5mA max  
Gain range: 1 to 1000  
Gain error  
G = 1: 0.05% typ  
G = 1000: 0.2% typ  
Nonlinearity: 10 ppm for G = 1 to 1000  
Input offset: 60 $\mu V$  typ  
Input offset drift: 250 $\mu V/^{\circ}C$  max  
CCMR  
G = 1: 78 typ  
G = 1000: 118dB  
Dynamic response -3dB bandwidth  
G = 1: 1MHz  
G = 1000: 12kHz  
Slew rate: 1.2 $\mu s$   
Settling time: 10 $\mu s$  (to 0.1%)  
Noise: 12nV/ $\sqrt{Hz}$

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT		inc. VAT each
		25+	100+	1+
NP37S	AD622AN	£3.210	£2.360	£5.170

## PGA204/5 Programmable-Gain Instrumentation Amplifiers

Burr-Brown



204/205

The PGA204 and PGA205 are low cost, general purpose programmable-gain instrumentation amplifiers offering excellent accuracy. Gains are digitally selected: PGA204 has options for gains of 1, 10, 100 and 1000, while PGA205 has 1, 2, 4 and 8V/V. The precision, versatility and low cost of the PGA204 and 205 make them ideal for a wide range of applications.

The gain is selected by two TTL or CMOS compatible address lines,  $A_0$  and  $A_1$ . Internal input protection can withstand up to  $\pm 40V$  on the analogue inputs without damage. Both devices are laser trimmed for very low offset voltages (50 $\mu V$ ), drift (0.25 $\mu V/^{\circ}C$ ) and high common-mode rejection ratio (115dB at G = 1000). They can operate from supply voltages as low as  $\pm 4.5V$ , allowing them to be used in battery powered systems. Quiescent current is 5mA.

In use the output is referred to the output reference (Ref, pin 10) which is normally grounded. This must be a low impedance connection to assure good common-mode rejection. The output feedback connection, pin 12, must be connected to the output, pin 11, for proper operation, but can be used to sense the output voltage directly at the load for best accuracy.

The digital inputs  $A_0$  and  $A_1$  are not latched; a change in the logic immediately selects a new gain. Logic switching time is approximately 1 $\mu s$ . Typical applications for these devices include data acquisition, general purpose analogue boards and medical instrumentation.

**Specification**

Input offset voltage:  $\pm 25+30/G$   
Input impedance, differential:  $10^{10}\Omega$  || 6pF  
common-mode:  $10^{10}\Omega$  || 6pF  
Common-mode rejection: 75dB min., 123dB max.  
Input offset current:  $\pm 2nA$   
Noise voltage: 16nV/ $\sqrt{Hz}$  max.  
Gain error:  $\pm 0.05\%$  to  $\pm 0.1\%$   
Output voltage:  $\pm V_S - 1.3V$  pk-pk  
Supply voltage range:  $\pm 4.5V$  to  $\pm 18V$

Retail Unit Price Each (inc. VAT).

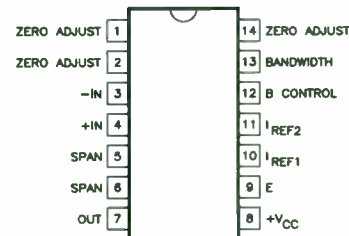
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	+	+	1+
AD77J	PGA204AP	£5.090			£5.990
AD78K	PGA205AP	£8.500			£9.990

## XTR101AP

The XTR101 is a microcircuit, 4-20mA, two wire transmitter containing a high accuracy instrumentation amplifier, a voltage controlled output current source and dual matched precision current reference. This combination is ideally suited for remote signal monitoring of a wide variety of transducers such as thermocouples, RTDs, thermistors and strain gauge bridges.

The two wire transmitter allows signal and power to share the same single wire pair by modulating the power supply current with the input signal source. The transmitter is immune to voltage drops caused by long cable runs and noise from motors, relays, actuators, switches, transformers and industrial equipment.

The XTR101 requires a single rail supply from 11-6V to 40V, and features low offset voltage (30 $\mu V$  max), low drift (0.75 $\mu V/^{\circ}C$  max) and low non-linearity (0.01% max).



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
LE76H	Lo-Drift 4-20mA Tx	£8.180	£7.600	£6.650	£12.340

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## VOLTAGE COMPARATORS

Device Part Number	Manufacturer	Voltage Supply (Vcc)	Power Dissipation (W)	Differential Input Voltage - one ip earthed (max)	Maximum Input Voltage - one ip earthed	Input Offset Voltage (mV)	Input Offset Current (nA)	Input Bias Current (nA)	Input Resistance (MΩ)	Common Mode Rejection Ratio (dB)	Supply Voltage Rejection Ratio (dB)	Large Signal Voltage Gain (dB)	Output Voltage Swing (V)	Slew Rate (V/μs)	Unity Gain Bandwidth (MHz)	Full Power Bandwidth (kHz)	Supply Current (mA)	Order Code
LM311N	ST	+4V to 36V or ±2V to ±18V	500	±30V	-	2	6	100	-	-	-	106	-	-	-	-	+5.7/-4.1	QY09K
LM319N	ST	4V to 36V or ±2V to ±18V	500	±5	-	0.7	30	150	-	-	-	92	-	-	-	-	+8/-3	UH33L
LM339N	ST	2V to 36V or ±1V to ±18V	570	±VCC	-	-	-	-	-	-	-	-	-	-	-	-	+0.8	UH31J
LM392	NSC	3V to 32V or ±1.5V to ±16	570	32	-	-2	±5	50	-	-	-	106	-	-	-	-	+1	UH32K
LM393N	ST	2V to 36V or ±1V to ±18V	570	36	-	±1	±5	25	-	-	-	106	-	-	-	-	+0.4	UH30H
LM2901N	NSC	±1V to ±14V or 2V to 28V	-	-	±V	-2	±5	25	-	70	100	100	24	-	-	-	1	AX73O
LM2902N	NSC	±1.5V to ±16V or 3V to 32V	-	-	±V	-2	±5	45	-	70	100	100	24	-	-	-	1.5	AX74R
LM2903N	NSC	+2V to ±18V or 4V to 36V	-	-	±V	-2	±5	25	-	70	100	100	24	-	-	-	1	AX75S
LM2904N	NSC	±1.5V to ±16V or 3V to 32V	-	-	±V	-2	±5	45	-	70	100	100	24	-	-	-	1.5	AX76H
MAX931CPA	ST	±1.5V to ±5.5V or 2.5V to 11V	0.7	-	-	±10	-	-	-	-	-	-	11	-	-	-	4μA	NP60Q
MC3302P	MOT	2V to 28V or ±1V to ±14V	570	±VCC	-	±3	±3	25	-	85	80	90	15	-	-	-	+0.8	CH48C
TSM221N	ST	2.7V to 16V	-	±18	-	-	-	1pA	-	-	-	40V/mV	-	0.7	1	1	500μA	NP89W

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP60Q	MAX931CPA	10+ £1.380 50+ £1.150 200+ £0.986	1+ £1.720

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AX73Q	ComparatrLM2901N NSC	£0.269 25+ £0.250 100+ £0.219 300+ £0.650 1+	
AX74R	ComparatrLM2902N NSC	£0.195 25+ £0.181 100+ £0.159 300+ £0.460 1+	
AX75S	ComparatrLM2903N NSC	£0.269 25+ £0.250 100+ £0.219 300+ £0.650 1+	
QH48C	MC3302P	£0.385 25+ £0.368 100+ £0.313 300+ £0.940 1+	
QY09K	LM311N	£0.215 25+ £0.200 100+ £0.175 300+ £0.620 1+	
UH30H	LM393N	£0.240 25+ £0.147 100+ £0.129 300+ £0.620 1+	
UH31J	LM339N	£0.190 25+ £0.129 100+ £0.113 300+ £0.610 1+	
UH32K	LM392N	£0.801 25+ £0.743 100+ £0.651 300+ £1.060 1+	
UH33L	LM319N	£0.646 25+ £0.600 100+ £0.525 300+ £2.100 1+	

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP89W	TSM221N	£1.210 25+ £1.010 100+ £0.932 300+ £1.780 1+	

## SGS Op-Amps and Comparators



**LM308N (NP82D)** - A single precision op-amp featuring extremely low input currents, and very low power requirements, ideal for battery operation.

**LM741CN (NP83E)** - Industry standard general purpose op-amp with internal frequency compensation.

**LF347N (NP84F)** - Quad J-FET op-amps with low distortion, high slew rate and wide bandwidth.

**LF353N (NP85G)** - Dual J-FET op-amps with low distortion, high slew rate and wide bandwidth.

**MC33171N (NR62S)** - A single bipolar op-amp featuring low-power, single supply operation with wide bandwidth and high slew rate.

**MC33172N (NR63T)** - A dual bipolar op-amp featuring low-power, single supply operation with wide bandwidth and high slew rate.

**MC33174N (NR64U)** - A quad bipolar op-amp featuring low-power, single supply operation with wide bandwidth and high slew rate.

**LM2901N (NR65V)** - A quad low offset voltage comparator featuring low-power and single supply rail operation.

**LM2902N (NR66W)** - A quad low-power op-amp with internal frequency compensation, wide bandwidth, large voltage gain and designed to operate from a single supply rail.

**LM2903N (NR67X)** - A dual low offset voltage comparator featuring low-power and single supply rail operation.

**LM2904N (NR68Y)** - A dual low-power op-amp with internal frequency compensation, wide bandwidth, large voltage gain and designed to operate from a single supply rail.

**LM239N (NR69A)** - Four independent precision low power voltage comparators designed to operate from a single supply rail, and will directly interface with TTL and CMOS.

**MC33078N (NR70M)** - A dual low noise bipolar op-amp designed for high quality audio and data signal processing. Features include low input voltage noise, high gain bandwidth products and high slew rate.

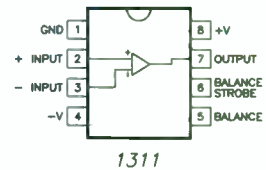
**MC33079N (NR71N)** - A quad low noise bipolar op-amp designed for high quality audio and data signal processing. Features include low input voltage noise, high gain bandwidth products and high slew rate.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP82D	LM308N	£0.720 25+ £0.600 100+ £0.554 300+ £1.050 1+	
NP83E	LM741CN	£0.192 25+ £0.160 100+ £0.148 300+ £0.280 1+	
NP84F	LF347N	£0.460 25+ £0.383 100+ £0.354 300+ £0.670 1+	
NP85G	LF353N	£0.460 25+ £0.383 100+ £0.354 300+ £0.670 1+	
NR62S	MC33171N	£0.500 25+ £0.417 100+ £0.385 300+ £0.730 1+	
NR63T	MC33172N	£0.700 25+ £0.583 100+ £0.538 300+ £1.020 1+	
NR64U	MC33174N	£0.840 25+ £0.700 100+ £0.646 300+ £1.230 1+	
NR65V	LM2901N	£0.260 25+ £0.217 100+ £0.200 300+ £0.380 1+	
NR66W	LM2902N	£0.260 25+ £0.217 100+ £0.200 300+ £0.380 1+	
NR67X	LM2903N	£0.260 25+ £0.217 100+ £0.200 300+ £0.380 1+	
NR68Y	LM2904N	£0.260 25+ £0.217 100+ £0.200 300+ £0.380 1+	
NR69A	LM239N	£0.280 25+ £0.233 100+ £0.215 300+ £0.410 1+	
NR70M	MC33078N	£0.440 25+ £0.367 100+ £0.338 300+ £0.640 1+	
NR71N	MC33079N	£0.660 25+ £0.550 100+ £0.508 300+ £0.960 1+	

## LM311N

SGS Thomson



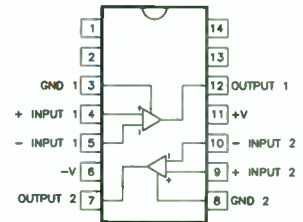
A voltage comparator that has input currents more than a hundred times lower than the 710. It will operate on ±14V or +5V supplies and will drive RTL, DTL, TTL, MOS and switch voltages up to 40V at currents as high as 50mA. Both input and output can be isolated from system ground and the output can drive loads referred to ground, positive or negative. Offset balancing and strobe capability are provided and outputs can be wire-OR'ed.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QY09K	LM311N	£0.215 25+ £0.200 100+ £0.175 300+ £0.620 1+	

## LM319N

SGS Thomson



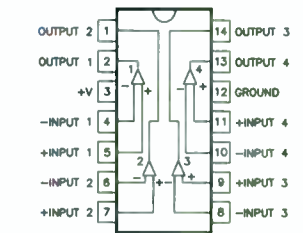
A precision, high speed dual comparator designed to operate over a wide voltage range including +5V and ground. It has a faster response, though higher power dissipation than the 311. It is capable of driving outputs up to 25mA.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UH33L	LM319N	£0.646 25+ £0.600 100+ £0.525 300+ £2.100 1+	

## LM339N

SGS Thomson



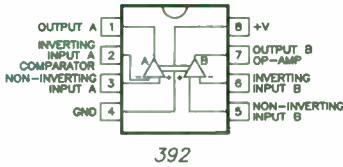
Four independent precision voltage comparators with a typical input offset voltage of 2mV, and designed to operate from a single power supply. The input common-mode voltage range includes ground, even though operated from a single power supply voltage. Identical to the 3302, but offering improved supply voltage range and voltage gain (typically 200). Designed to directly interface with TTL and CMOS, and when used with a +/- supply will directly interface with MOS logic, where the low power drain of the LM339 is a distinct advantage over standard comparators.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UH31J	LM339N	£0.190 25+ £0.129 100+ £0.113 300+ £0.610 1+	

**LM392N**

National Semiconductor



392

This device contains a precision voltage comparator and an op-amp in one 8-pin DIL package. They operate from the same supply and will work with a +5V supply and the output of the comparator will interface directly with TTL or CMOS. The very low supply current makes the device ideal for use in battery powered equipment. The following data applies to the op-amp stage only (see main table for rest of data).

**Specification**

- Common mode rejection ratio: 70dB
- Supply voltage rejection ratio: 100dB
- Large signal voltage gain: 100dB
- Output voltage swing:  $V+ - 1.5V$
- Output current source: 40mA
- Output current sink: 20mA

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UH32K	LM392N	25+ £0.801 100+ £0.743 300+ £0.651	1+ £1.060

**LM393N**

SGS Thomson



LM393

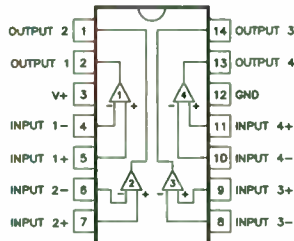
Two independent precision voltage comparators designed specifically to operate from a single power supply over a wide range of voltages operation from split rails is possible and the low power supply current drain is independent of the magnitude of the power supply voltage. Unique to the LM393 is that the input common-mode voltage range includes ground, even though operated from a single power supply voltage. Designed to directly interface with TTL and CMOS, and when operated from a +/- supply will directly interface with MOS logic. The device is similar to the 392, but offers much lower input offset voltage and draws only half the supply current.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

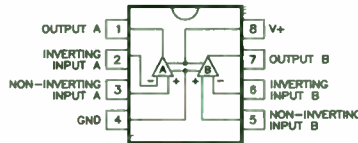
Order Code	Type	Price each exc. VAT	inc. VAT each
UH30H	LM393N	25+ £0.240 100+ £0.147 300+ £0.129	1+ £0.620

**LM2901N and LM2903N**  
Voltage Comparators

NSC



LM2901N



LM2903N

**Features**

- ★ Wide supply voltage range, 2V to 28V or  $\pm 1V$  to  $\pm 14V$  (2V to 36V or  $\pm 2V$  to  $\pm 18V$  for dual version)
- ★ Very low power consumption (0-8mA)
- ★ Low input biasing current, 25nA
- ★ Low input offset current,  $\pm 5nA$
- ★ Input common-mode range includes ground
- ★ Differential input voltage range equal to the power supply voltage
- ★ Low output saturation voltage
- ★ Output voltage compatible with TTL, DTL, ECL, MOS and CMOS logic systems

**Applications**

- ★ High precision comparators
  - ★ Reduced VOS drift over temperature
  - ★ Eliminates need for dual supplies
  - ★ Allows sensing near GND
  - ★ Compatible with all forms of logic
  - ★ Power drain suitable for battery operation
- A low power, low offset voltage comparator consisting of two or four independent precision voltage comparators with an offset voltage specification as low as 2mV maximum for all comparators. Designed specifically for operation from a single power supply with low power consumption. Features include operation down to ground, even from a single power supply. Available in a dual (AX75S) or quad (AX73Q) configuration.

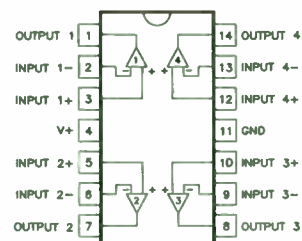
**Specification**

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

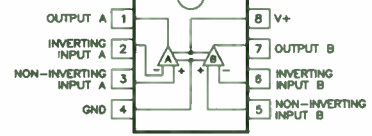
Order Code	Type	Price each exc. VAT	inc. VAT each
AX75S	Comparator LM2903N NSC	£0.269 £0.250 £0.219	£0.650
AX73Q	Comparator LM2901N NSC	£0.269 £0.250 £0.219	£0.650

**LM2902N and LM2904N**  
Operational Amplifiers

NSC



LM2902N



LM2904N

A low-power operational amplifier consisting of either two or four independent, high-gain, internally frequency compensated operational amplifiers which were designed specifically to operate from a single power supply. Available in dual (AX76H) and quad (AX74R) configurations.

**Unique Characteristics**

- ★ In the linear mode the input common-mode voltage range includes ground and the output voltage can also swing to ground, even though operated from only a single power supply voltage
- ★ The unity gain cross frequency is temperature compensated
- ★ The input bias current is also temperature compensated

**Features**

- ★ Large DC voltage gain of 100dB
- ★ Wide unity gain bandwidth (1MHz)
- ★ Wide power supply range, 3V to 32V or  $\pm 1.5V$  to  $\pm 16V$
- ★ Very low supply current drain 700µA
- ★ Low input biasing current
- ★ Low input offset voltage
- ★ Input common-mode voltage range includes ground
- ★ Differential input voltage range equal to the power supply voltage
- ★ Large output voltage swing

**Specification**

- Supply voltage: 3V to 32V or  $\pm 1.5V$  to  $\pm 16V$
- Supply current: 1-5mA typ
- Input offset voltage:  $\pm 2mV$
- Input bias current: 45nA
- Input offset current:  $\pm 5nA$
- Input common-mode voltage range:  $V+$
- Large signal voltage range: 100V/mV
- Common-mode rejection ratio: 70dB
- Power supply rejection ratio: 100dB
- Output current, sourcing: 40mA
- Output current, sinking: 20µA
- Short circuit to ground: 40mA
- Output voltage swing: 24V typ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AX76H	Comparator LM2904N NSC	£0.269 £0.250 £0.219	£0.560
AX74R	Comparator LM2902N NSC	£0.195 £0.181 £0.159	£0.460



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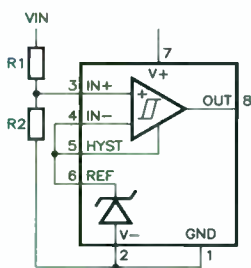
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## MAX 931CPA Low-Power Comparator with Reference

Maxim



The MAX931 is a low voltage comparator with an on-board 2% accurate reference, and one of the lowest power consumption available - less than 4µA. The voltage reference is set at 1.182V, and the IC also has a programmable hysteresis, and TTL/CMOS outputs will sink and source current. The device is ideal for 3V or 5V single supply applications, but will operate from a single +2.5V to +11V rail (or a ±1.25V to ±5V dual supply). The comparators input voltage range extends from the negative supply rail to within 1.3V of the positive supply.

The unique output stage will continuously source as much as 40mA. By eliminating power supply glitches that commonly occur when comparators change logic states, the device minimises parasitic feedback which makes it easier to use. Hysteresis can be very easily added by using the HYST pin and two resistors. Supplied in an 8-pin DIL package.

### Specification (V<sub>SS</sub> = 5V)

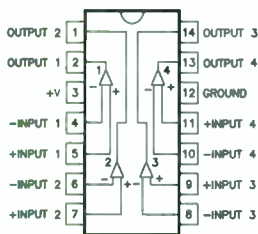
Power supply: 2V to 11V, 5V at 2.5µA typ  
 Input offset voltage: ±10mV  
 CMRR: 0.1mV/V typ  
 PSRR: 0.1mV/V typ  
 Voltage noise: 20µV rms  
 Response time: 12µs  
 Reference voltage: 1.182V 2% tolerance

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NR60Q	MAX931CPA	10+ £1.380 50+ £1.150 200+ £0.986	1+ £1.720

## MC3302P

Texas Instruments



339MC3302

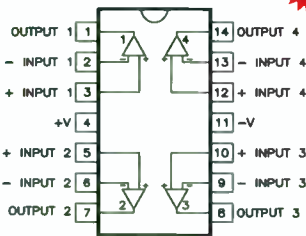
Four independent precision voltage comparators designed specifically to operate from a single power supply. These comparators have a unique characteristic in that the input common-mode voltage range includes ground even though operated from a single power supply. Typical applications include limit comparators; simple A/D converters; pulse, square wave, and time delay generators; wide range VCO; MOS clock timers; multivibrators and high voltage digital logic gates. Will directly interface with TTL and CMOS, and MOS logic when used with +/- supply rails.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QH48C	MC3302P	25+ £0.385 100+ £0.358 300+ £0.313	1+ £0.940

## TSM221N

SGS-Thomson



TSM221

The TSM221 contains two differential input CMOS rail-to-rail op-amps (amps 1,4), and two push-pull CMOS comparators (amps 2,3). This mixed circuit is a general purpose analogue block for auto-motive, telecom and consumer applications. The device will operate from a single supply rail of 2.7V to 16V, and at 5V requires just 500µA of current. Supplied in a 14-pin DIL package.

### Specification (V<sub>SS</sub> = 5V)

Supply voltage: 18V max  
 Supply current: 500µA total  
 I/P offset voltage  
 op-amp: 10mV max  
 comparator: 5mV  
 I/P offset voltage drift: 5µV/°C (op-amp)  
 I/P offset current  
 op-amp: 1pA typ  
 comparator: 1pA  
 I/P bias current  
 op-amp: 1pA  
 comparator: 1pA  
 Large signal voltage gain: 40V/mV (op-amp)  
 GBP: 1MHz typ  
 CMRR  
 op-amp: 85dB typ  
 comparator: 82dB typ  
 PSRR  
 op-amp: 80dB typ  
 comparator: 90dB typ  
 Slew rate: 0.7V/µs  
 Noise: 30nV/√Hz  
 Channel separation: 120dB typ  
 Response time overdrive = 5mV  
 low to high: 1.5µs  
 high to low: 2.2µs  
 Fall time: 30ns

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP89V	TSM221N	25+ £1.210 100+ £1.010 500+ £0.932	1+ £1.780

### The Abbreviations

- AD - Analog Devices
- ATM - Atmel
- BB - Burr-Brown
- DAL - Dallas
- EL - Elantec
- FA - Fagor
- HA - Harris
- HIT - Hitachi
- LT - Linear Technology
- MAX - Maxim
- ME - Micro Electronics
- MOT - Motorola
- NEC - NEC
- NSC - National Semiconductor
- PC - Philips Components
- RAY - Raytheon
- SAM - Samsung
- SEM - Semelab
- SIE - Siemens
- SIG - Signetics
- SLX - Siliconix
- ST - SGS-Thomson
- TFK - Teric
- TI - Texas Instruments
- TOSH - Toshiba
- ZET - Zetex

### POWER AMP IC'S

Type No	Order Code	Gain Closed Loop typical	Input impedance	Output into 4Ω	Output into 8Ω	Quiescent supply current	Supply voltage min to max	Recommended supply voltage	Short circuit current	Short circuit protection	Thermal protection	Power supply rejection	Bandwidth	Distortion into 8Ω	Sensitivity	Power dissipation
LM12CLK	UL32K	-	-	150W	70W	60mA	-8V to +40V	±30V	10A	Yes	Yes	90dB	60kHz	0.01% V <sub>r</sub> =±30V P <sub>r</sub> =150W (4Ω)	-	150W
LM380N	OH40T	34dB	150kΩ	3W	5W	7mA	6V to 22V	8V to 22V	1.3A	Yes	Yes	38dB	100kHz	0.2% V <sub>r</sub> =18V P <sub>r</sub> =2W	100mV	10W with 12°C/W heatsink
LM383T	WQ33L	40dB	150kΩ	7W	-	45mA	5V to 25V	5V to 20V	3.5A	Yes	Yes	40dB	300kHz	0.2% V <sub>r</sub> =14.4V P <sub>r</sub> =4W	55mV	15W with 4°C/W heatsink
LM386N-1	ULJ7S	26dB	50kΩ	25W (1% d)	325mW	4mA	4V to 15V	4V to 12V	-	No	No	50dB	300kHz	0.2% V <sub>r</sub> =6V P <sub>r</sub> =0.5W	-	660mW
LM1875N	LH78K	26dB	1MΩ	25W (1% d)	25W (1% d)	70mA	20V to 60V	50V	4A	Yes	Yes	83dB	20Hz to 70kHz	0.015% V <sub>r</sub> =50V P <sub>r</sub> =20W	630mV	30W with 1.2°C/W heatsink
LM1877N-9	QH38R	34dB	4MΩ	-	2W/channel	25mA	6V to 28V	6V to 24V	1A	Yes	Yes	85dB	65kHz	0.04% V <sub>r</sub> =±20V P <sub>r</sub> =2W/channel	-	4W with 30°C/W heatsink
TA820M	GX49D	-	-	-	40W	-	-	±30V	-	-	-	-	-	0.01% V <sub>r</sub> =±30V P <sub>r</sub> =40W	-	40W
TDA1020	WQ63T	34dB	5MΩ	16W	2W	4mA	3V to 16V	3V to 16V	-	No	No	42dB	25Hz to 20kHz	0.4% V <sub>r</sub> =9V P <sub>r</sub> =500mW	30mV	1W
TA1514A-N7	AW88Y	29.5dB	40kΩ	7W	3.5W	30mA	6V to 18V	±14V	4A	Yes	Yes	72dB	20Hz to 25kHz	0.0033% V <sub>r</sub> =±27.5V P <sub>r</sub> =32W	570mV	40W with 4.3°C/W heatsink
TDA2003	UK75S	40dB	>1MΩ	40W	40W	60mA	±7.5V to ±30V	±17.5	-	Yes	Yes	36dB	40Hz to 15kHz	0.15% V <sub>r</sub> =14.4V P <sub>r</sub> =1W (4Ω)	-	20W
TDA2005	AH53H	40dB	150kΩ	6W	3W	-	8V to 18V	14.4V	4A	Yes	Yes	55dB	10Hz to 150kHz	0.25% V <sub>r</sub> =14.4V P <sub>r</sub> =16W	200mV	15W with 4°C/W heatsink
TDA2006V	Y770M	50dB	100kΩ	20W	-	75mA	6V to 18V	12V to 14.4V	3.5A	Yes	Yes	50dB	10Hz to 140kHz	0.1% V <sub>r</sub> =±18V	30mV	30W with 1.2°C/W heatsink
TDA2030AV	WQ96W	30dB	5MΩ	12W	8W	40mA	±6V to ±15V	±12V	3A	Yes	Yes	50dB	10Hz to 20kHz	0.1% V <sub>r</sub> =±14.4V P <sub>r</sub> =4W	215mV	18W with 4°C/W heatsink
TDA2040V	WQ67X	30dB	5MΩ	18W	11W	40mA	±6V to ±18V	±14V	3.5A	Yes	Yes	50dB	10Hz to 140kHz	0.08% V <sub>r</sub> =±16V P <sub>r</sub> =10W (4Ω)	25mV	25W with 1.8°C/W heatsink
TDA2050V	AH54J	30dB	5MΩ	22W	12W	30mA	±2.5V to ±20	±16V	4A	Yes	Yes	45dB	20Hz to 20kHz	0.05% V <sub>r</sub> =±19V P <sub>r</sub> =15W	400mV	20W with 4°C/W heatsink
TDA2822M	CP88V	40dB	>500kΩ	32W	24W	55mA	1.8V to 15V	38V to 45V	5A	Yes	Yes	30dB	120kHz	0.3% V <sub>r</sub> =9V P <sub>r</sub> =0.5W	60mV	1W
TDA7052	ULJ88R	40dB	100kΩ	0.65W/channel	1W/channel	6mA	1.8V to 15V	1.8V to 15V	-	No	No	30dB	20Hz to 20kHz	0.2% V <sub>r</sub> =6V P <sub>r</sub> =100mW	70mV	1.14W
TDA7052	UK79L	40dB	100kΩ	-	1.2W	4mA	3V to 15V	6V	-	Yes	No	50dB	20Hz to 20kHz	-	-	1.14W

## LM12CLK

National Semiconductor

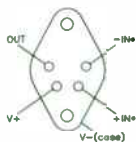
A 150W power op-amp capable of driving  $\pm 25V$  at  $\pm 10A$  while operating from  $\pm 30V$  supplies. The monolithic IC can deliver 150W of sine wave power into a  $4\Omega$  load with 0.01% distortion. The IC features input protection, controlled turn on, thermal limiting, overvoltage shutdown, output current limiting and dynamic safe area protection.

### Absolute max ratings

Voltage supply range:  $\pm 8V$  to  $\pm 40V$   
 Power dissipation: 150W with 400in<sup>2</sup> heatsink  
 Differential input voltage: 60V  
 Output current: 10A

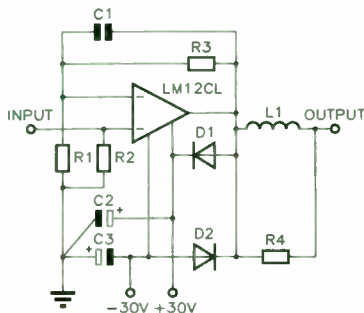
### Typical ratings at 25°C with $V_s = \pm 30V$

Input offset voltage: 2mV  
 Input offset current: 0-03 $\mu A$   
 Input bias current: 0-15 $\mu A$   
 Common mode rejection ratio: 86dB  
 Supply voltage rejection ratio: 90dB  
 Large signal voltage gain: 94dB  
 Slew rate: 9V/ $\mu s$   
 Full power bandwidth: 60kHz  
 Supply current (no load): 60mA



### Audio Amplifier Parts List

- R1 Min Res 1k1 (M1K1)
- R2 Min Res 1k (M1K)
- R3 Min Res 3k3 (M3K3)
- R4 7W W/W 2-2 $\Omega$  (L2R2)
- C1 Polystyrene 1500pF (BX58N)
- C2,3 Snap-in 4700 $\mu F$  50V (CW74R)
- D1,2 MR751 (YH96E)
- L1 25 turns of 18swg enamelled copper wire wound side-by-side approx. 8mm diameter.

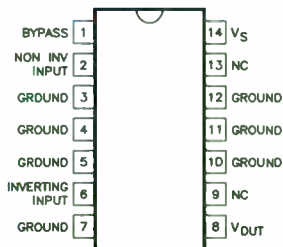


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Order Code	Type 2216	Price each exc. VAT	inc. VAT each
UL32K	LM12CLK	£24.990 £19.200 £14.770	£39.990

## LM380N

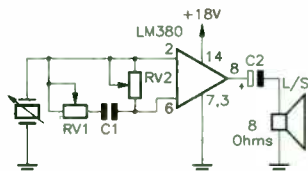
National Semiconductor



380

An audio amp in a 14-pin DIL package that requires very few external components to make a complete 2-5W power amplifier. In most cases, however, it is advisable to add a Min Res 2-7 $\Omega$  and Polyester 0-1 $\mu F$  in series from pin 8 to ground and an Axial 4-7 $\mu F$  from pin 1 to ground.

### High-Output-Crystal-Cartridge Power Amp



A 2-5W rms power amp the 380 is shown in the circuit driven by a high output crystal pickup. The IC requires only 4 other components (without tone control only two other components! — simply omit C1 and RV1).

### Component list

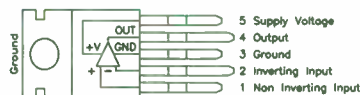
- RV1: Pot Lin 2M2 (FW09K)
- RV2: Pot Log 2M2 (FW29G)
- C1: Polystyrene 3300pF (BX38R)
- C2: Axial 470 $\mu F$  35V (FF16S)
- IC: LM380 (QH40T)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2232	Price each exc. VAT	inc. VAT each
QH40T	LM380N	£0.855 £0.684 £0.641	£2.110

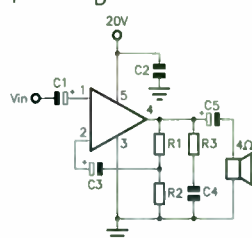
## LM383T

National Semiconductor



A high quality, cost effective audio op amp that is suited to automotive applications. A high current capability (3.5A) enables the device to drive low impedance loads with low distortion, the amp is supplied in a 5-pin TO220A package and is pin for pin compatible with the TDA2002A, but offering lower noise and improved frequency response. The device will work with a supply voltage of 5V to 20V DC (transient peak 25V) and is current limited, thermally protected and requires no insulating washer between the metal tab in single rail operation.

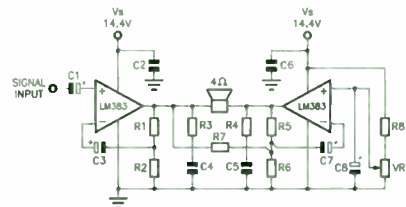
11W output with  $V_D = 20V$  DC  
 7W output with  $V_D = 16V$  DC  
 5W output with  $V_D = 14.4V$  DC



Note R3 & C4 should be mounted as near as possible to pins 3 & 4.

### Suggested Parts List

- R1 Min Res 220 $\Omega$  (M220R)
- R2 Min Res 2.2 $\Omega$  (M2R2)
- R3 Min Res 1 $\Omega$  (M1R)
- C1 GenElect 10 $\mu F$  50V (AU08G)
- C2,4 Monores 0.22 $\mu F$  (RA50E)
- C3 GenElect 470 $\mu F$  35V (AT62S)
- C5 PC Elect 2200 $\mu F$  35V (JL28F)



### 16W Bridge Amplifier

#### Suggested Parts List

- R1,5 Min Res 220 $\Omega$  (M220R)
- R2,6 Min Res 2.2 $\Omega$  (M2R2)
- R3,4 Min Res 1 $\Omega$  (M1R)
- R7 Min Res 1M (M1M)
- VR1 Log Pot 100k (FW25C)
- C1,8 GenElect 10 $\mu F$  50V (AU08G)
- C2,4,5,6 Monores 0.22 $\mu F$  (RA50E)
- C3,7 GenElect 470 $\mu F$  35V (AT62S)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2238	Price each exc. VAT	inc. VAT each
WQ33L	LM383T	£2.100 £1.800 £1.570	£5.860

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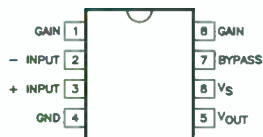
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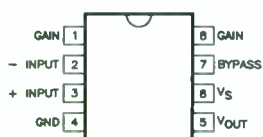
## LM386N-1

National Semiconductor



386

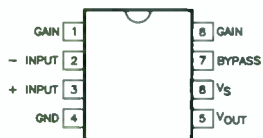
A power amp designed for use in low voltage, especially battery-operated, applications, such as AM-FM radios, portable tape cassettes, intercoms, power inverters etc. For minimum parts count, C1 and C2 can be omitted. With pins 1 and 8 open circuit the gain is internally set to 20dB. With a 10µF capacitor between pins 1 and 8 the gain is increased to 200dB and the gain can be set to anything between these limits by placing a resistor in series with this capacitor. For example a 1k2 resistor here, sets the gain to 50dB. The capacitor on pin 7 sets the power supply rejection ratio from 6dB with no connection to 50dB at 1kHz with 10µF. The inputs are referenced to ground, while the output is automatically biased to half the supply voltage.



386

### Specification

Maximum supply voltage: 15V DC  
 Quiescent current: 4mA  
 Output power with 8Ω load: 325mW (6V supply)  
 THD at 125mW with 8Ω load: 0.2% (6V supply)  
 Bandwidth: 300kHz  
 Input resistance: 50kΩ



386

### Parts List

R1 Min Res 10kΩ (M10R)  
 RV1 Pot Log 10kΩ (FW22Y)  
 C1,2 Axial or PC Elect 10µF 50V (FF04E)  
 C3 Polyester 0.047µF (BX74R)  
 C4 Axial or PC Elect 220µF 16V (FF13P)

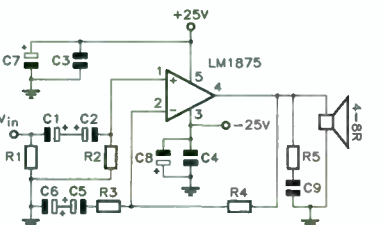
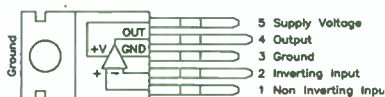
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UJ37S	LM386N-1	£0.740	£1.690

## LM1875N

National Semiconductor

A very high quality audio amp in a 5-pin TO-220 package that does not require insulating washers between the tab and the heatsink in single rail supply applications. The amp will deliver 20W into 4Ω or 8Ω loads with a 50V supply. The device uses advance circuit techniques to achieve extremely low distortion levels even at high output levels (only 0.015% at 1kHz and 0.05% at 20kHz into 8Ω and 0.07% at 20kHz into 4Ω all with 20W output). Care must be taken with the pcb layout and the data sheet shows suitable layouts for the circuits shown. Note that if using a dual supply the IC's tab must be insulated from the heatsink and since this increases the thermal resistance a larger heatsink will be required.

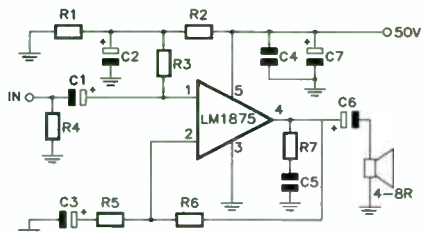


20W Amplifier Dual Supply

### Parts List Dual Supply Amp

R1 Min Res 1M (M1M)  
 R2 Min Res 22k (M22K)  
 R3 Min Res 1k (M1K)  
 R4 Min Res 20k (M20K)  
 R5 Min Res 1Ω (M1R)  
 C1,2 Minelect 4.7µF 35V (YY33L)  
 C3,4 Disc 0.1µF (BX03D)  
 C5,6 PC Elect 47µF 63V (FF09K)  
 C7,8 PC Elect 1000µF 35V (FF18U)  
 C9 Monores Cap 0.22µF (RA50E)

20W Amplifier Single Supply



### Parts List for Single Supply Amp

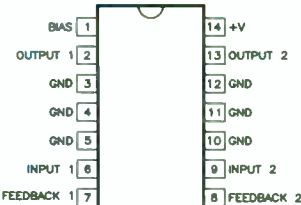
R1,2,3 Min Res 22k (M22K)  
 R4 Min Res 1M (M1M)  
 R5 Min Res 1k (M1K)  
 R6 Min Res 20k (M20K)  
 R7 Min Res 1Ω (M1R)  
 C1 Minelect 1µF 63V (YY31J)  
 C2,3 PC Elect 47µF 63V (FF09K)  
 C4 Monores Cap 0.1µF (RA49D)  
 C5 Monores Cap 0.22µF (RA50E)  
 C6 Can 2200µF 63V (FF22Y)  
 C7 Axial 1000µF 63V (FB84F)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UH78K	LM1875N	£3.610	£6.990

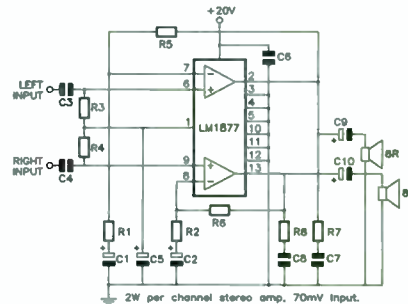
## LM1877N-9

National Semiconductor



1877

A stereo amplifier in a 14-pin DIL package that requires very few external components to make a complete 2W per channel power amplifier. The IC is suitable for use with 8Ω or 16Ω speakers.



### Parts List

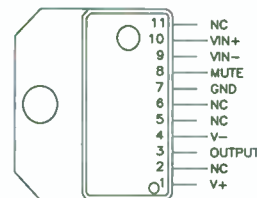
R1,2 Min Res 510Ω (M510R)  
 R3,4 Min Res 1M (M1M)  
 R5,6 Min Res 100k (M100K)  
 R7,8 Min Res 2.7Ω (M2R7)  
 C1,2 PC Elect 10µF 50V (FF04E)  
 C3,4 Poly Layer 0.1µF (WW41U)  
 C5 PC Elect 47µF 25V (FF08J)  
 C6,7,8 Mylar 0.1µF (WW21X)  
 C9,10 PC Elect 470µF 35V (FF16S)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QH38R	LM1877N-9	£2.910	£5.730

## LM3876 50W Audio Power Amplifier

National Semiconductor



A high performance audio power amplifier capable of delivering up to 56W of continuous average power in to an 8Ω load with only 0.1% distortion, over 20Hz to 20kHz. The amplifier is fully protected against overloads, shorts, thermal runaway etc., and includes an input mute function. Under voltage protection ensures that no 'transients' are heard at switch-on/off. The amplifier will work from either split or single power supplies, and the circuits are capable of producing 40W with less than 0.06% distortion over the audio spectrum, and a S/N ratio exceeding 95dB. Single point earthing should be used to avoid earth loop problems - input, output and supply earth returns should be separate and connected to the power supply earth using heavy-duty cable. The device is ideal for self-powered speakers, active loudspeakers, surround-sound amplifiers and compact stereo systems. Contained in an 11-pin plastic package with the tab connected to the -V rail. An insulation washer must be used in split-rail applications.

### Specification

Max. supply voltage: ±42V DC

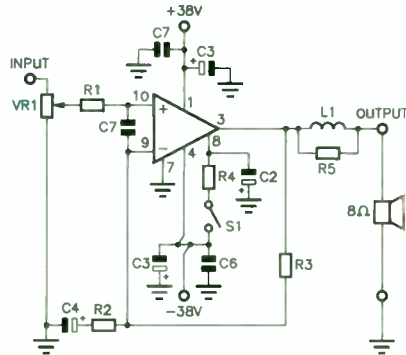
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Quiescent current: +84V DC  
30mA typical  
Output power: 56W continuous  
Instantaneous output power: 100W  
S/N ratio @ 1W: 98dB  
THD plus noise @ 40W: 0.06%  
Slew rate ( $V_{IN}=1.2V$  rms): 11V/ $\mu$ S  
PSRR: 120dB  
CMRR: 120dB



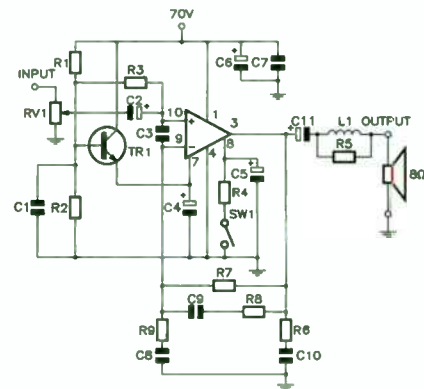
**Suggested Parts List for Split Rail**

- R1,2 Min Res 1k (M1K)
- R3 Min Res 20k (M20K)
- R4 Min Res 33k (M33K)
- R5 1W Res 10 $\Omega$  (C10R)
- VR1 Pot Log 10k (FW22Y)
- C1,3,4 Minelect 10 $\mu$ F 50V (YY35Q)
- C2 Minelect 100 $\mu$ F 16V (RA55K)
- C5,6 Monores 0.1 $\mu$ F (RA49D)
- C7 Polystyrene 220pF (BX32K)
- L1 20 turns of close wound 18swg enamelled copper wire, 8mm dia. approx.

**Suggested Parts List for Single Rail**

- R1 Min Res 91k (M91K)
- R2 Min Res 100k (M100K)
- R3 Min Res 75k (M75K)
- R4 Min Res 33k (M33K)
- R5 Min Res 10 $\Omega$  (M10R)
- R6 Min Res 2.7 $\Omega$  (M2R7)
- R7,8 Min Res 20k (M20K)
- R9 Min Res 1k (M1K)
- VR1 Pot Log 10k (FW22Y)
- C1,4,7,10 Monores 0.1 $\mu$ F (RA49D)
- C2,8 Minelect 10 $\mu$ F 50V (YY35Q)
- C3 Polystyrene 220pF (BX32K)
- C5 Minelect 100 $\mu$ F 16V (RA55K)
- C6 GenElect 4700 $\mu$ F 50V (AU26D)
- TR1 2N3904 (QR40T)
- L1 20 turns of close wound 18swg enamelled copper wire, 8mm dia. approx.

Note: In both circuits R5 and L1 are only needed if used with highly capacitive loads such as long speaker leads.

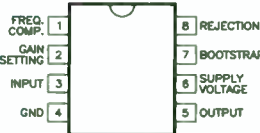


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

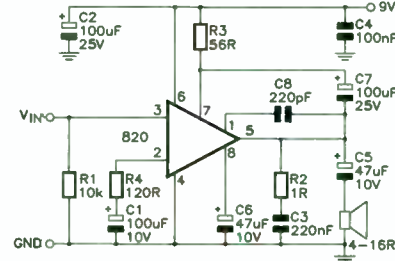
Order Code	Type	Price each exc. VAT	inc. VAT each
GX49D	LM3876	£7.500	£8.000
		£6.000	£6.620
		£5.620	£6.010

## TBA820M

SGS Thomson



A very useful audio amp in an 8-pin DIP package. The IC features a very low minimum working supply voltage of 3V, low quiescent current, good ripple rejection, no crossover distortion and low power dissipation. Maximum supply voltage is 16V into 16 $\Omega$  speaker, 12V into 8 $\Omega$  and 9V into 4 $\Omega$ .



**Suggested Parts List**

- R1 Min Res 10k (M10K)
- R2 Min Res 1 $\Omega$  (M1R)
- R3 Min Res 56 $\Omega$  (M56R)
- R4 Min Res 120 $\Omega$  (M120R)
- C1 PC Elect 100 $\mu$ F 10V (FF10L)
- C2,7 PC Elect 100 $\mu$ F 25V (FF11M)
- C3 0.22 $\mu$ F Polyester (BX78K)
- C4 0.1 $\mu$ F Polyester (BX76H)
- C5 PC Elect 220 $\mu$ F 16V (FF13P)
- C6 PC Elect 47 $\mu$ F 25V (FF08J)
- C8 Polystyrene 220pF (BX30H)

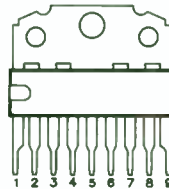
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WQ3T	TBA820M	£0.380	£0.400
		£0.290	£0.310
		£0.231	£0.240

## TDA1020

Philips

A monolithic integrated 12W audio amplifier in a 9-pin SIL plastic package primarily intended for car radio amplifiers although the maximum supply voltage of 18V makes the IC suitable for mains-fed radio receivers, tape recorders and record players. At a supply voltage of 14.4V, and 1% distortion, the IC can deliver 6W into a 4 $\Omega$  load and 9.5W into a 2 $\Omega$  load. The device has separate pre and power amplifiers that can be easily accessed and an overall voltage gain of 47dB. To avoid interference and car ignition signals coming from the supply lines, frequency limiting is used beyond the audio spectrum in both the preamplifier and power amplifier. The device will work down to 6V and incorporates a 'load dump' which protects the device if the voltage increases above 18V (<45V). Also short-circuit and thermal protection are built-in. At 14V the device has a quiescent current drain of 30mA.

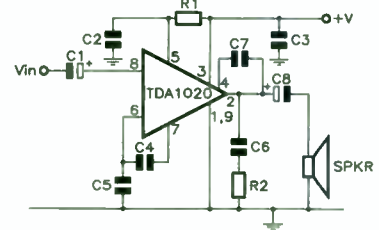


1. Negative supply (substrate)
2. Output power stage
3. Positive supply
4. Bootstrap
5. Ripple rejection filter
6. Input power stage
7. Output preamplifier
8. Input preamplifier
9. Negative supply

**Specification**

Supply voltage range: 6V to 18V DC  
Repetitive peak output current: 4A  
Output at 14.4V, 1% distortion  
2 $\Omega$  load: 9.5W (10% dist. @ 12W)  
4 $\Omega$  load: 6W (10% dist. @ 7W)  
8 $\Omega$  load: 3W (10% dist. @ 3.5W)

Frequency response: 50Hz to 25kHz  
Typical voltage gain  
pre-amp: 17.7dB  
power amp: 29.5dB  
total: 47dB  
Input impedance: 40k $\Omega$  (pre and power)  
Ripple rejection: 44dB



**Suggested Parts List**

- R1 Min Res 330k (M330K)
- R2 Min Res 4.7 $\Omega$  (M4R7)
- C1 GenElect 1 $\mu$ F 63V (AT74R)
- C2,3,6 Monores 0.1 $\mu$ F (RA49D)
- C4 Polyester 0.15 $\mu$ F (BX77J)
- C5 Monores 3300pF (RA41U)
- C7 GenElect 100 $\mu$ F 25V (AT48C)
- C8 GenElect 1000 $\mu$ F 25V (AT52G)
- 2200 $\mu$ F 25V for 2 $\Omega$  load (AT53H)

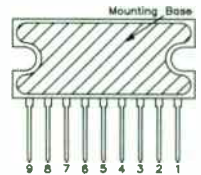
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AW68Y1	12 Watt Car Amp IC	£3.040	£3.200
		£2.620	£2.780
		£2.200	£2.360

## TDA1514A-N-7

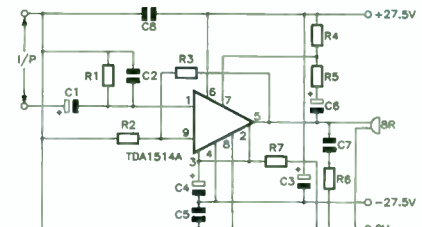
Philips

A very high quality audio amp in a 9-pin flat package. The heatsink must be insulated from ground. The amp will deliver 40W into an 8 $\Omega$  load with a  $\pm$ 27.5V power rail or 40W into a 4 $\Omega$  load with a  $\pm$ 21V power rail. The device is designed to meet the requirements of digital sound sources such as Compact Disc. The total harmonic distortion at 32W is less than 0.0032%. An output mute circuit prevents switch-on and switch-off clicks, and the device is totally protected against short-circuits and thermal runaway. The device will deliver 25W into 8 $\Omega$  with a  $\pm$ 22V supply or 12.5W into 8 $\Omega$  with a  $\pm$ 16V supply. The metal plate on the package is connected to pin 4.



**Parts List**

- R1,3 Min Res 20k $\Omega$  (M20K)
- R2 Min Res 680 $\Omega$  (M680R)
- R4 Min Res 82 $\Omega$  (M82R)
- R5 Min Res 150 $\Omega$  (M150R)
- R6 Min Res 3.3 $\Omega$  (M3R3)
- R7 Min Res 470k (M470K)
- C1 PC Elect 1 $\mu$ F 100V (FF01B)
- C2 Ceramic 220pF (WX60Q)
- C3 PC Elect 47 $\mu$ F 63V (FF09K)
- C4 GenElect 3.3 $\mu$ F 50V (AU04E)
- C5,8 Polyester 0.47 $\mu$ F (BX80B)
- C6 PC Elect 220 $\mu$ F 35V (JL22Y)
- C7 Mylar 0.022 $\mu$ F (WW19V)

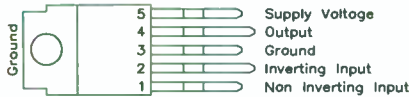


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UK75S	TDA1514A-N-7	£4.990	£5.280
		£4.650	£4.940
		£4.370	£4.660

## TDA2003V/H

SGS Thomson

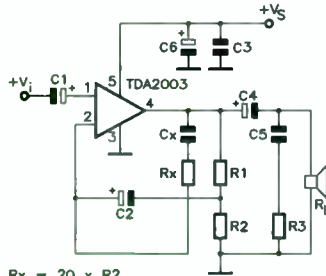


The TDA2003 has improved performance but with the same pin configuration as the TDA2002. The additional features of the TDA2002 - very low number of external components, ease of assembly, space and cost saving - are maintained. The device provides a high output current capability of up to 3.5A, and very low harmonic and crossover distortion. The device is designed for single-ended supply operation in the range 8 to 18V and applications include in-car stereos and radios. It can output 6W into a 4Ω load from a 14.4V supply, and up to 12W into loads down to 1.6Ω. Two can be used to form a bridge delivering 18W into 4Ω from a 14.4V supply.

Completely safe operation is guaranteed due to protection against DC and AC short-circuit between all pins and ground, with thermal overrange, load dump voltage surge up to 40V and fortuitous open ground. No electrical insulation is required between the mounting tab and the heatsink, but lead lengths should be as short as possible. Two variations are available: TDA2003V has pins arranged for vertical PCB mounting, while TDA2003H is arranged for horizontal mounting.

### Specification

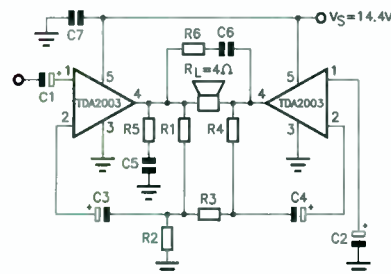
- Operating supply voltage: 8 to 18V DC
- Max. DC supply voltage: 28V
- Peak supply voltage: 40V for 50ms
- Repetitive peak output current: 3.5A
- Non-repetitive peak output current: 4.5A
- Max. power dissipation: 20W (90°C)
- Frequency response: 40Hz to 15kHz -3dB @ 1W into 4Ω
- Distortion: 0.15% @ 4.5W into 4Ω, 1kHz
- Input impedance: 150kΩ
- Open loop gain: 80dB @ 1kHz
- Closed loop gain: 40dB @ 1kHz
- Input noise: 5µV max.
- Supply voltage rejection: 36dB
- Efficiency: 69%



$$R_x = \frac{20 \times R_2}{1 - 2\pi B R_1}$$

### Suggested Parts List

- R1: Min Res 220Ω (M220R)
- R2: Min Res 2.2kΩ (M2R2)
- R3: Min Res 1Ω (M1R)
- Rx: Min Res 39Ω (M39R)
- C1: Minelect 10µF 16V (YY34M)
- C2: PC Elect 470µF 25V (FF16S)
- Cx: Poly Layer 0.039µF (WW36P)
- C3,5: Poly Layer 0.1µF (WW41U)
- C4: PC Elect 1000µF 35V (FF18U)
- C6: PC Elect 100µF 63V (FF12N)



### 20W Bridge Configuration

Suggested Parts List - Bridged Version

- R1: Min Res 22Ω (M200R)
  - R2,3: Min Res 16Ω (M16R)
  - R4: Min Res 430Ω (M430R)
  - R5,6: Min Res 1Ω (M1R)
  - C1,2: Minelect 2.2µF 63V (YY32K)
  - C3: Minelect 10µF 35V (JL05F) plus 4.7µF 63V parallel (RA53H)
  - C4: Minelect 10µF 35V (JL05F)
  - C5,6,7: Monores 0.1µF (RA49D)
- Note that C3 & C4 are optimised for supply voltage rejection (SVR) - typically 40dB

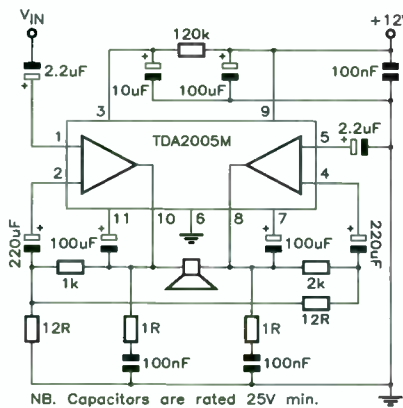
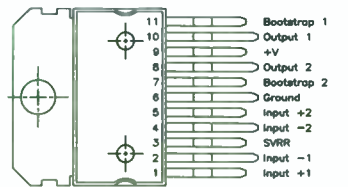
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2570	Price each exc. VAT	inc. VAT each
AH52G	TDA2003V	25+ £0.783 100+ £0.671 300+ £0.587	1+ £1.790
AH53H	TDA2003H	£0.706 £0.655 £0.573	£1.410

## TDA2005M

SGS Thomson

A 20W power booster IC for use in cars. The integrated circuit is fully protected against damage in use. It is protected against output short circuits across the speaker or to ground (AC or DC) and it



### Bridge Amplifier

protects the loudspeaker under this condition as well. It is protected against voltage surges up to 40V and it can withstand polarity reversal for longer than it would take a 2A quick blow fuse to blow. The IC consists of two power amps internally connected in a bridge configuration to achieve the high power, low voltage operation.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2263	Price each exc. VAT	inc. VAT each
YY70M	TDA2005M	25+ £2.060 100+ £1.770 300+ £1.550	1+ £5.880

## TDA2006V

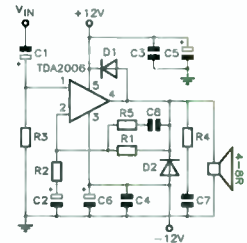
SGS Thomson

A high quality audio amp in a 5-pin TO220 package that does not require insulating washers between the metal tab and the heatsink in single rail applications. The amp will operate with single or split power supplies. The distortion up to 8W with 4Ω load or 4W with 2Ω load is less than 0.1% (typically).

### Parts List

- R1: Min Res 22k (M22K)
- R2: Min Res 680Ω (M680R)
- R3: Min Res 22k (M22K)
- R4: Min Res 1Ω (M1R)
- R5: Min Res 1k8 (M1K8)
- C1: Axial 1µF 100V (FB12N)

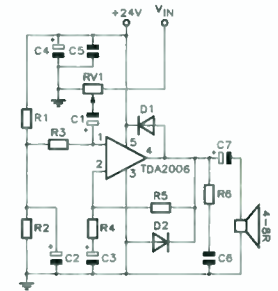
- C2: Axial 22µF 35V (FB30H)
- C3,4: Polyester 0.1µF (BX76H)
- C5,6: Axial 100µF 35V (FB49D)
- C7: Polyester 0.22µF (BX78K)
- C8: Polystyrene 220pF (BX30H)
- D1,2: 1N4001 (QL73Q)



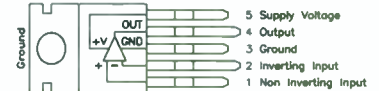
Typical application with split-rail power supply

### Parts List

- R1,2,3: Min Res 100k (M100K)
- R4: Min Res 4k7 (M4K7)
- R5: Min Res 150k (M150K)
- R6: Min Res 1Ω (M1R)
- RV1: Pot Log 22Ω (FW23A)
- C1: Axial 1µF 100V (FB12N)
- C2: Axial 22µF 35V (FB30H)
- C3: Axial 2.2µF 100V (FB15R)
- C4: Axial 100µF 63V (FB51F)
- C5: Polyester 0.1µF (BX76H)
- C6: Polyester 0.22µF (BX78K)
- C7: Axial 2200µF 35V (FB90X)
- D1,2: 1N4001 (QL73Q)



Typical application with single-rail power supply



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2258	Price each exc. VAT	inc. VAT each
WQ66W	TDA2006V	25+ £1.160 100+ £0.996 300+ £0.871	1+ £1.990

## TDA2030AV

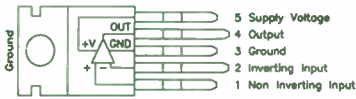
SGS Thomson

A high quality audio amp in a 5-pin TO220 package that does not require insulating washers between the metal tab and heatsink in single rail supply applications. The amp will operate with single or split supplies. The distortion up to 12W into 4Ω is less than 0.2% typically (less than 0.5% up to 14W) and up to 8W into 8Ω is less than 0.1% (less than 0.5% up to 9W). The circuits shown for the 2006 are suitable for use with this IC, but the supply voltage should be increased to +14V and -14V (or 28V for the single supply circuit). In addition the bridge amplifier will deliver 24W into 8Ω (or with 2006 and power supplies of +12V and -12V it will deliver 20W into 8Ω).

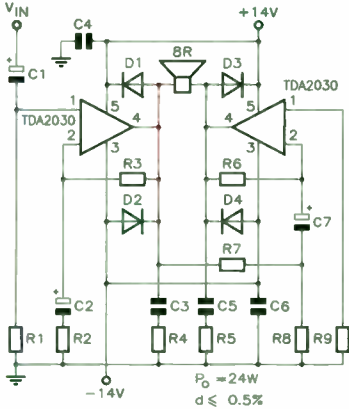
### Parts List

- R1: Min Res 22k (M22K)
- R2: Min Res 680Ω (M680R)
- R3: Min Res 22k (M22K)
- R4,5: Min Res 1Ω (M1R)
- R6,7: Min Res 22k (M22K)
- R8: Min Res 680Ω (M680R)
- R9: Min Res 22k (M22K)
- C1: Axial 1µF 100V (FB12N)
- C2: Axial 22µF 35V (FB30H)
- C3: Polyester 0.22µF (BX78K)
- C4: Polyester 0.1µF (BX76H)

- C5: Polyester 0.22μF (BX78K)  
 C6: Polyester 0.1μF (BX76H)  
 C7: Axial 22μF 35V (FB30H)  
 D1,2,3,4: 1N4001 (QL73Q)



Bridge Amplifier with split-rail power supply.

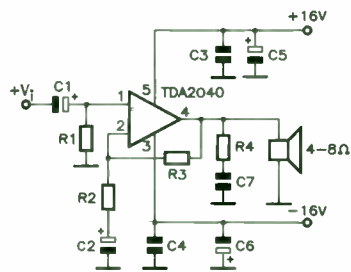
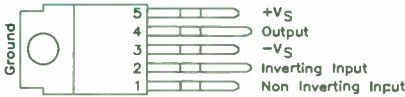


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AH54J	TDA2040V	£2.140	£3.670

## TDA2040V

SGS Thomson



A monolithic power amplifier IC intended for use as a high quality, class AB audio power amplifier. Typically it provides 22W output power into 4Ω with 0.5% distortion, from a 32V supply. The device is designed to operate from a split power supply and no electrical isolation is needed between the mounting tab and its heatsink. It provides a high output current and has very low harmonic and crossover distortion. The device incorporates a patented short circuit protection system comprising an arrangement for automatically limiting the dissipated power so as to keep the working point of the output transistors within their safe operating area. Thus the TDA2040V is protected against temporary overloads or short-circuit. A thermal shutdown system is also included, and should the short-circuit exist for a longer time the thermal shutdown protection keeps the junction temperature within safe limits. The device's pins are arranged for vertical PCB mounting.

**Specification**

Supply voltage range:	±2.5V min. to ±20V DC
Quiescent current drain:	30mA
Max. differential input voltage:	±15V
Input offset voltage:	<±20mV
Peak output current:	4A
Output power:	22W into 4Ω, 12W into 8Ω

Power bandwidth: 8Ω, V<sub>SS</sub> = ±16V  
 100kHz (1W into 4Ω)  
 Open loop gain: 80dB  
 Closed loop gain: 30dB  
 Total harmonic distortion: 0.08% @ 0.1 to 10W into 4Ω, f = 40Hz to 15kHz  
 Input noise: <10μV (3μV typical)  
 Input impedance: 5MΩ (500kΩ min.)  
 Supply voltage rejection: 50dB  
 Efficiency: 66%  
 Thermal shutdown junction temperature: 145°C  
 Max. power dissipation: 25W (75°C)

**Suggested Parts List**

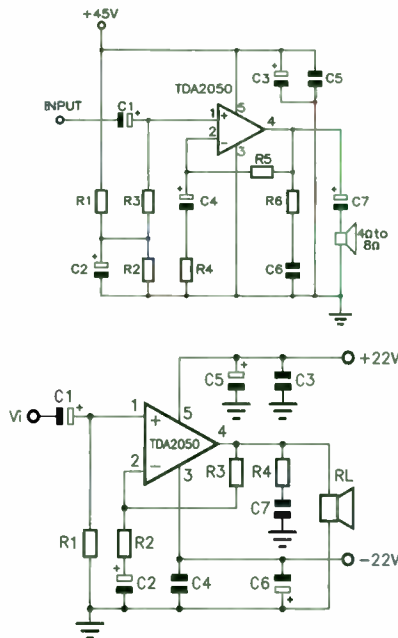
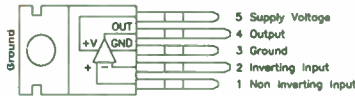
R1,3	Min Res 22k	(M22K)
R2	Min Res 680Ω	(M680R)
R4	Min Res 4.7kΩ	(M4R7)
C1	Tant 1μF 35V	(WW60Q)
C2	Minelect 22μF 35V	(RA54J)
C3,4,7	Polyester 0.1μF	(BX76H)
C5,6	Genelect 220μF 35V	(AT60Q)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AH54J	TDA2040V	£2.140	£3.670

## TDA2050V

SGS Thomson



A high quality audio amp in a 5-pin TO220 package that does not require insulating washers between the metal tab and heatsink in single rail supply applications. The amp will operate with single or split supplies. The amp can provide 32W rms into a 4Ω load and 25W rms into 8Ω. The device features low harmonic and crossover distortion and a low external component count. The device includes short circuit protection and thermal shutdown.

**Specification**

Supply voltage range:	±25V
Output power (0.5% THD)	25W rms
8Ω (±22V):	25W rms
4Ω (±18V):	28W rms
Typical THD	
8Ω (0.1W to 20W):	0.02%
4Ω (0.1W to 24W):	0.03%
Supply voltage rejection:	45dB
Slew rate:	8V/μs
Open loop voltage gain:	80dB
Closed loop gain:	31dB
Power bandwidth:	20Hz to 80kHz

Typical application gives 25W into 8Ω. 32W into 4Ω, with single voltage rail.

**Suggested Parts List**

R1,2,3,5	Min Res 22kΩ	(M22K)
R4	Min Res 680Ω	(M680R)
R6	Min Res 2.2kΩ	(M2R2)
C1	PC Elect 2.2μF 100V	(FF02C)
C2	PC Elect 100μF 35V	(JL19V)
C3,7	PC Elect 1000μF 63V	(JL26D)
C4	PC Elect 22μF 25V	(FF06G)
C5	Disc 0.1μF 50V	(BX03D)
C6	Polyester 0.47μF	(BX80B)

**Suggested Parts List For Split Rail Power Supply**

R1,3	Min Res 22k	(M22K)
R2	Min Res 680Ω	(M680R)
R4	Min Res 2.2kΩ	(M2R2)
C1	PC Elect 1μF 100V	(FF01B)
C2	PC Elect 22μF 25V	(FF06G)
C3,4	Monores 0.1μF	(RA49D)
C5,6	PC Elect 220μF 35V	(JL22Y)
C7	Monores 0.47μF	(RA52G)

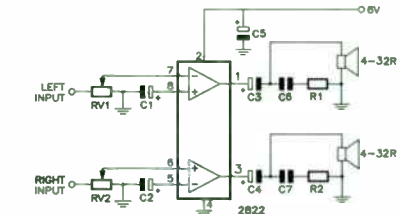
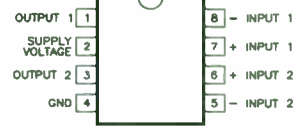
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CP88V	TDA2050V	£2.980	£5.040

## TDA2822M

SGS Thomson

A stereo power amp designed for use in portable cassette players and radios. A 3V supply can be used to drive headphones providing 20mW in 32Ω per channel, and a 9V supply will provide 1W in 8Ω per channel for small loudspeakers.



**Parts List**

R1,2	Min Res 4.7kΩ	(M4R7)
RV1,2	Pot Log 47kΩ	(FW24B)
C1,2	Axial/PC Elect 100μF 35V	(JL19V)
C3,4	Axial/PC Elect 470μF 16V	(FF15R)
C5	Axial/PC Elect 10μF 50V	(FF04E)
C6,7	Polyester 0.1μF	(BX76H)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UJ38R	TDA2822M	£0.790	£1.720

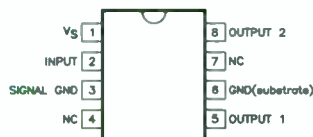
**MPS**  
MAPLIN PROFESSIONAL

Sales: 01702 554000  
 Fax: 01702 554001

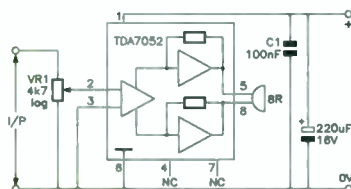
Customer Services : 01702 554002  
 Technical: 01702 556001  
 Account : 01702 554187  
 Enquiries :  
 e-mail: Sales@maplin.co.uk

## TDA7052

Philips



A power amp designed for use in low voltage battery operated equipment, where a high output power is still required. By using the Bridge Tied Load principle in the amp an output power of 1.2W into 8Ω is achieved from a 6V supply. The gain of the amplifier is fixed internally at 40dB and almost no external components are required. The amp is short-circuit proof, requires no external heatsink and there are no switch-on or switch-off clicks.



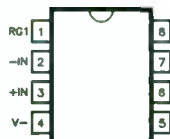
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2228	Price each exc. VAT	inc. VAT each
UK79L	TDA7052	25+ £1.190 100+ £0.990 300+ £0.850	1+ £2.490

### AUDIO PREAMPLIFIERS

## SSM2017P Audio Preamplifier

Analog Devices

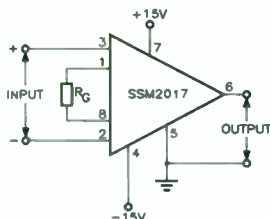


A state-of-the-art audio preamplifier that requires just one external resistor or potentiometer to set the gain between x1 and x3500. The value of the gain setting resistor  $R_G$  can be found from the formula:

$$R_G = \frac{10,000}{G-1}$$

where G is the gain.

For example: for a gain of 100 times (=40dB),  $R_G$  is equal to 100Ω. For x1 gain, pins 1 and 8 should be left open circuit and for maximum gain use Min Res 1.8Ω and Min Res 1.2Ω in series. The very low noise mixer amplifier circuit shows how to connect the amplifier so that pins 1 and 8 are true dc virtual ground allowing almost perfect summing of the circuits connected to the input. With its superb noise performance of just 950pV/√Hz, and its ultra low total harmonic distortion over the full audio bandwidth of <0.01% and 1MHz bandwidth at x100 gain, this low cost device is suitable for the most demanding hi-fi applications.



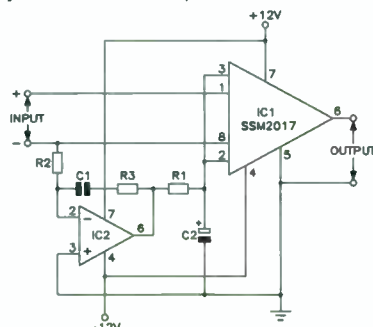
Basic Amplifier

### Specification (typical at $V_S = \pm 15V, 25^\circ C$ )

Supply voltage:	$\pm 15V (\pm 6V \text{ to } \pm 22V)$
Supply current:	$\pm 10.6mA$
Input voltage range:	$\pm 8V$
Input offset voltage:	100μV
Input offset current:	$\pm 2nA$
Input bias current:	6μA
Output voltage swing:	$\pm 12.3V$

Minimum load:	2kΩ
Max capacitive load:	50pF
<b>Gain</b>	<b>1</b> <b>10</b> <b>100</b> <b>1000</b>
Total harmonic distortion + noise:	0.008%    0.004%    0.005%    0.012%
Input voltage noise (nV/√Hz):	107.14    11.83    1.95    0.95
Slew rate:	17V/μs
Bandwidth:	4MHz    2MHz    1MHz    200kHz
Common mode rejection ratio:	54dB    74dB    92dB    112dB
Power supply rejection ratio:	82dB    101dB    118dB    124dB
Gain accuracy:	0.05dB    0.2dB    0.2dB    0.25dB

### Very Low Noise Mixer Amplifier



### Parts List

R1	Min Res 5.1kΩ
R2	Min Res 6.2kΩ
R3	Min Res 33kΩ
C1	Poly Layer 0.33μF
C2	PC Elect 220μF 16V
IC1	SSM2017
IC2	741

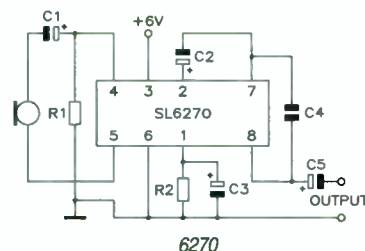
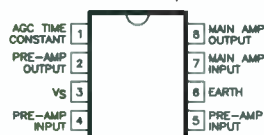
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2389	Price each exc. VAT	inc. VAT each
CP89W	SSM2017P	25+ £2.500 100+ £2.140 300+ £1.870	1+ £4.220

## SL6270CDP Microphone Preamplifier/VOGAD

GEC-Plessey

The IC combines the functions of audio amplifier and voice operated gain adjusting device (VOGAD). It is designed to accept signals from a low sensitivity microphone and provide an essentially constant output signal for a 50dB range of input. The application circuit shows a radio transmitter microphone with constant output.



### Gain controlled microphone preamplifier

### Specification (Typical at $V_S = 6V$ )

Supply voltage:	4.5V to 10V (12V max.)
Supply current:	5mA
Input impedance:	150Ω (pin 4 or 5)
Differential input Impedance:	300Ω
Voltage gain:	52dB (72μV rms at pin 4)
Output level:	90mV rms (4mV rms at pin 4)
Distortion:	2% (90mV rms at pin 4)
Input noise:	1μV (300Ω source)

### Parts List

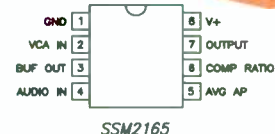
R1, R3	Min Res 27kΩ	(M27K)
R2	Min Res 1MΩ	(M1M)
C1,2	Minelect 2.2μF 63V	(YY32K)
C3,5	Minelect 22μF 16V	(YY36P)
C4	Poly Layer 0.0047μF	(WW26D)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2285	Price each exc. VAT	inc. VAT each
UM73Q S	SL6270CDP	25+ £5.400 100+ £4.080 500+ £3.490	1+ £7.850

## SSM2165 Microphone Pre-amp

Analog Devices



A low-cost microphone pre-amplifier IC with variable compression and noise gating intended for computer audio systems, but ideal for improving vocal clarity in communications and PA systems. A low noise voltage controlled amplifier (VCA) provides a gain that is dynamically adjusted by a control loop to maintain a set compression characteristics. The compression ratio is set by a single resistor and can be varied from 1:1 to 10:1 relative to a 'rotation point' of 300mV rms. The pre-amp has a fixed gain of 10dB for 1:1 compression, and the gain is in addition to the variable gain in other compression settings. A noise gate prevents amplification of noise or hum. Compression ratio and time constants are set externally. Supplied in an 8-pin DIL plastic package.

### Specification

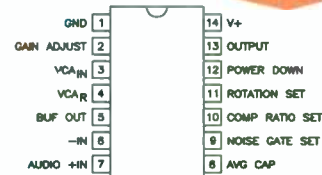
Supply voltage:	5V
Supply current:	6mA
PSRR:	60dB
Equivalent input noise:	2μV rms
Voltage noise density:	14nV/√Hz typical
THD + N (1:1 comp):	0.25% typ
Gain range:	60dB
Compression ratio:	1:1 to 10:1
Input impedance:	100kΩ
Output impedance:	<100Ω
Load drive:	2kΩ/50pF
Output voltage swing high:	4V typical
low:	1V typical
Gain bandwidth:	20MHz

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 13376	Price each exc. VAT	inc. VAT each
VQ88V	SSM2165-1P	25+ £2.660 100+ £2.280 500+ £2.000	1+ £4.000

## SSM2166P Microphone Pre-amp

Analog Devices



SSM2166

A low-cost microphone pre-amplifier IC with variable compression and noise gating intended for computer audio systems, but ideal for improving vocal clarity in communications, PA systems, mixers, musical effect units telephone conferencing etc.

A low noise voltage controlled amplifier (VCA) provides a gain that is dynamically adjusted by a

control loop to maintain a set compression characteristics. The compression ratio is set by a single resistor and can be varied from 1:1 to over 50:1 relative to a user defined 'rotation point'. Signals above the rotation point are limited to prevent overload and eliminate 'popping'. The pre-amp can be programmed with a fixed gain of up to 20dB for 1:1 compression, and the gain is in addition to the variable gain in other compression settings. The input buffer can be configured for front-end gains of 0dB to 20dB. A noise gate prevents amplification of noise or hum. Compression ratio and time constants are set externally, and a high degree of flexibility is provided by the VCA gain, rotation point and noise gate adjustment pins. Supplied in a 14-pin DIL plastic package.

**Specification**

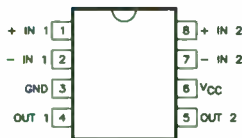
Supply voltage:	5V
Supply current:	7.5mA
Power down:	100µA max.
PSRR:	50dB
Noise:	-109dBu
Voltage noise density:	17nV/√Hz typical
THD + N (1:1 comp):	0.25% typ
VCA - gain range dynamic:	60dB
fixed:	-60dB to +19dB
Compression ratio:	1:1 to 15:1
Input impedance:	180kΩ
Output impedance:	75Ω
Load drive:	5kΩ/2nF
Buffer - voltage range (1% THD) input:	1V rms
output:	1V rms
VCA - voltage range (1% THD) input:	1V rms
output:	1.4V rms
Gain bandwidth product:	30MHz

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
GS38N	LM387N	£3.000	£4.550

**LM387N Low Noise Dual Preamplifier**

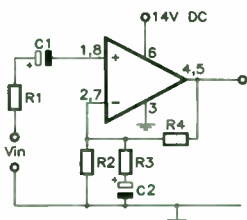
National Semiconductor



A stereo pre-amp designed for the amplification of low level signals and offering excellent noise performance. The two pre-amps are completely independent with an internal power supply decoupler/regulator providing 110dB supply rejection, and 60dB channel separation. The IC has internal compensation, high gain (104dB), large output voltage swing, wide power bandwidth and is designed to operate from a single supply rail. Supplied in an 8-pin DIL package.

**Specification**

Power supply:	9V to 30V DC
Typical supply current:	140mA
Unity gain bandwidth:	15MHz
Supply rejection ratio:	110dB
Channel separation:	60dB
THD (60dB gain):	0.1% typical at 1kHz
Total input equivalent noise:	1.0µV rms



**Suggested Parts List (Av=1000)**

- R1 Min Res 600Ω (M600R)
- R2 Min Res 22k (M22K)
- R3 Min Res 100Ω (M100R)

- R4 Min Res 100k (M100K)
- C1 1µF 35V (WW60Q)
- C2 GenElect 220µF 16V (AT41U)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WQ38Q	LM387N	£1.410	£2.410

**BALANCED LINE DRIVERS & RECEIVERS**

**SSM2142P Balanced Line Driver**

Analog Devices

NEW LOW PRICE

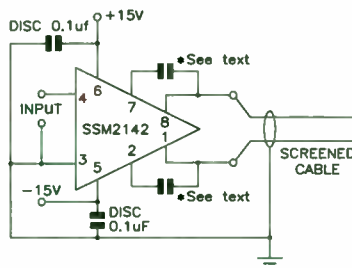


2142

A differential output buffer amplifier that converts a single-ended input signal to a balanced output with high drive capability. The IC helps to maintain audio quality on long cable runs by eliminating mains hum, rf interference, voltage drops and noise. It is capable of driving a 10V rms signal into 600Ω loads, or even extremely long cables, with a very low distortion performance. The 0.1µF capacitors shown in the application circuit must be connected close to the IC. For optimal performance Reversolytic 10µF capacitors can be connected between pins 1 and 2, and between pins 7 and 8, otherwise pin 1 should be connected to pin 2, and pin 7 should be connected to pin 8.

**Specification (typical at V<sub>S</sub> = ±15V)**

Supply voltage:	±4V to ±18V
Supply current:	5.5mA
Input impedance:	10kΩ
Input current:	750µA
Differential gain:	5.98dB
Total harmonic distortion:	0.006%
Signal to noise ratio:	-109dB
Output voltage swing:	±14V
Output impedance:	50Ω



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UM54J	SSM2142P	£3.950	£5.840

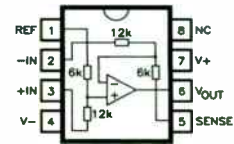
**SSM2143P Balanced Line Receiver**

Analog Devices

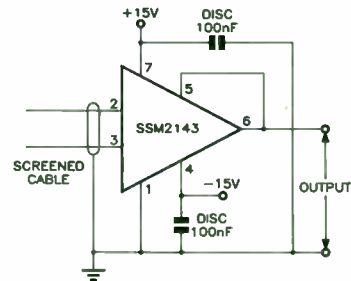
NEW LOW PRICE

A differential amplifier designed to receive balanced line inputs in audio applications requiring a high level of immunity from common-mode noise. Total harmonic distortion is less than 0.004% over the full audio band even while driving low impedance loads. The input stage is designed to handle input signals as large as +28dBu (0dBu = 0.775V) when the gain is x0.5. With gain = 0.5 the SSM2142/SSM2143

combination provides a fully integrated, unity gain solution to driving high quality audio signals over long cable runs.



2143



**Specification (typical at V<sub>S</sub> = ±15V)**

Supply voltage:	±6V to ±18V
Supply current:	±2.7mA
Gain:	0.5 (-6dB)
Total harmonic distortion + noise:	0.0006% (at 1kHz, V <sub>in</sub> =10Vrms)
Signal to noise ratio:	-107.3dB
Headroom:	+28dBu
Bandwidth:	7MHz
Output voltage swing:	±14V
Minimum resistive load drive:	2kΩ
Maximum capacitive load drive:	300pF

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CP90X	SSM2143P	£2.430	£3.450

ORDER BEFORE 5PM FOR SAME DAY DESPATCH

Tel: 01702 554000

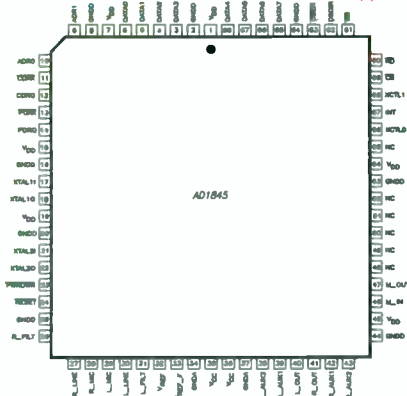
Fax: 01702 554001

e-mail: Sales@maplin.co.uk

## SIGNAL PROCESSING & ROUTING

### AD1845JP Parallel-Port 16-Bit SoundPort Stereo Codec

Analog Devices



- ★ Microsoft and Windows sound system compatible
- ★ MPC Level-2+ compliant mixing
- ★ 16mA bus drive capability
- ★ On-chip capture and playback FIFOs
- ★ Supports two DMA channels for full duplex operation

The AD1845 integrates key audio data conversion and control functions into a single IC, and provides a complete single chip computer audio solution for business audio and multimedia applications. The codec includes stereo audio converters, complete on-chip filtering, MPC Level-2 compliant mixing, programmable gain, attenuation and mute, a variable sample frequency generator, FIFOs and supports power-down modes. The device provides a direct byte-wide interface to both ISA and EISA computer buses for simplified implementation on a computer motherboard or add-in card.

the ISA/EISA bus. Also included are user selectable 8/16mA bus drivers and a stereo pair of sigma-delta ADCs and matching DACs.

The AD1845 mixer surpasses MPC Level-2 recommendations, with inputs to the ADC selectable from four stereo pairs of analog signals: line (LINE), microphone (MIC), auxiliary line #1 (AUX1), and post-mixed DAC output. A software-controlled programmable gain stage allows independent gain for each channel going into the ADC.

External circuit requirements are limited to a minimal number of low-cost support components. Anti-imaging DAC output filters are incorporated on-chip. Dynamic range exceeds 80dB over the 20kHz audio band, and sample rates from 4kHz to 50kHz are supported from a single external crystal or clock source. Supplied in a 68-lead PLCC package.

#### Specification

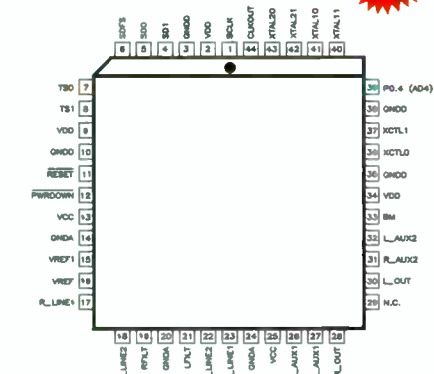
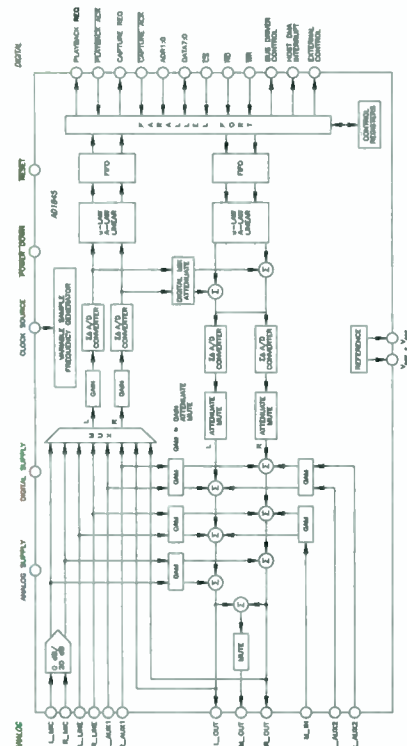
- Supply voltage: 5V for digital and analogue
- Supply current: 120mA
- Power dissipation: 600mW
- Clock frequency: 33MHz
- Resolution: 16-bits
- Dynamic range
- ADC: 81dB
- DAC: 82dB
- THD+noise
- ADC: 0.025%
- DAC: 0.022%
- Signal to intermodulation distortion
- ADC: 85dB
- DAC: 90dB
- Crosstalk
- ADC: -90dB typical
- DAC: -80dB
- Analogue input
- line: 1V rms, 2.83V pk-pk
- MIC: 0.1V rms with 20dB gain
- 1V rms with 0dB gain
- i/p impedance: 17kΩ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP43W	AD1845JP	£8.960	£14.420

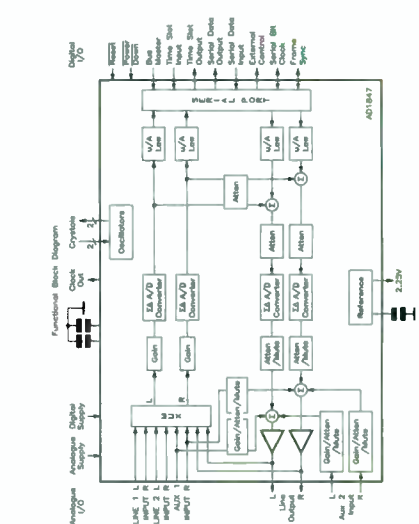
### AD1847JP Serial-Port 16-Bit SoundPort Stereo Codec

Analog Devices



- ★ Supports the Microsoft Windows sound system
- ★ Single chip integrated sigma-delta digital audio stereo codec
- ★ Sample rates from 5.5kHz to 48kHz
- ★ Analogue and digital stereo mixing
- ★ Programmable gain and attenuation
- ★ Multichannel stereo inputs
- ★ Operates from a single 5V supply
- ★ On-chip signal filters

The AD1847 integrates key audio data conversion and control functions into a single IC, and provides a complete single chip computer audio solution for business audio and multimedia applications. It provides a serial interface for implementation on a computer motherboard, add-in or PCMCIA card. The diagram shows an example system.



The device has built-in anti-imaging DAC output filters, and has a dynamic range in excess of 70dB over the 20kHz audio band. Sample rates from 5.5kHz to 48kHz are supported from external crystals.

The Codec includes stereo pairs of sigma-delta ADCs and DACs, with inputs to the ADCs selectable from one of four stereo pairs of analogue signals. These include line 1, line 2, auxiliary ('aux') line #1, and post-mixed DAC output. A software-controlled programmable gain stage allows independent gain for each channel going into the ADC. The ADCs' output can be digitally mixed with the DACs' inputs

The pair of 16-bit outputs from the ADCs is available over a serial interface that also supports 16-bit digital input to the DACs and control/status information. The AD1847 can accept and generate 16-bit 2's complement PCM linear digital data, 8-bit unsigned magnitude PCM linear data, and 8-bit  $\mu$ -law or A-law companded digital data. The sigma-delta DACs are preceded by a digital interpolation filter. An attenuator provides independent user volume control over each DAC channel. Nyquist images are removed from the DACs' analogue stereo output by on-chip switched-capacitor and continuous-time filters. Two stereo pairs of auxiliary line-level inputs can also be mixed in the analogue domain with the DAC output.

The AD1847 serial data interface uses a Time Division Multiplex (TDM) scheme that is compatible with DSP serial ports configured in Multi-Channel Mode with 32 x 16-bit time slots.

#### Specification

- Voltage supply: 5V typ
- Supply current: 140mA max
- I/P clock frequency: 25kHz max
- Analogue inputs
- voltage: 1V rms
- impedance: 10kΩ
- capacitance: 15pF
- Analogue outputs
- voltage: 0.707V rms
- impedance: 600Ω max
- o/p capacitance: 15pF max
- Converters resolution: 16-bit
- Dynamic range
- ADCs: 70dB min
- DACs: 76dB min
- THD+N
- ADCs: 0.040%
- DACs: 0.025%
- Crosstalk
- ADCs: -80dB typ
- DACs: -80dB typ
- Interchannel gain mismatch
- ADCs:  $\pm 0.2$ dB
- DACs:  $\pm 0.2$ dB
- DAC attenuator and digital mix attenuator
- step size: 1.5dB typ
- o/p range span: -93dB to +95.5dB
- Supplied in a 44-lead PLCC package.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP44X	AD1847JP	£10.410	£16.970

The device includes dual DMA count registers for full duplex operation enabling the IC to capture data on one DMA channel and playback data on a separate channel. The on-board FIFOs reduce the risk of losing data when making DMA transfers over

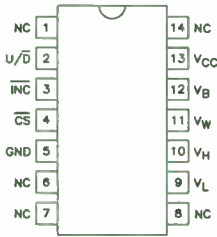
## Dallas Digital Potentiometer IC's

This selection from Dallas Semiconductors new range of Digital Potentiometer IC's brings analogue signal level control into the digital age, with no moving parts to wear and become noisy. The devices simulate the action of both linear or, in the case of DS1666, logarithmic potentiometers for electronic audio level or balance control, analogue voltage control generation or any other application where low power potentiometers would normally be used.

The devices may simply be controlled by means of up and down pulse inputs, either by connecting push buttons directly to the inputs, or by stepping them with a train of pulses generated by an oscillator or other control circuit.

However, those designers who wish to interface audio control with microcontroller circuits for preset position storage and retrieval as used in electronic mixing desks, or any other application where the exact position of the potentiometer needs to be read, or written to, will find these devices ideal. Selected devices are provided with a serial port which may be connected to a host controller to give full remote control and monitor facilities.

a select line. The resistor array (track) inputs are capable of handling input voltages between  $\pm 5V$ . The power supply required is  $+5V$  at 5mA max, and the device defaults to the 10% wiper position at power-up..



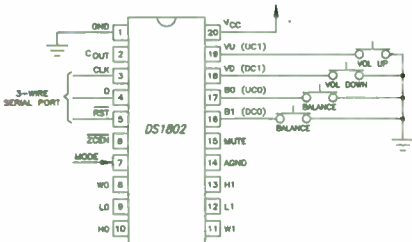
DS1666

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE20W	Dig Log Pot	25+ £2.110 50+ £1.810 100+ £1.580	1+ £3.140

## DS1802 Dual Digital Log Pot

Dallas Semiconductors



This ultra low power consumption device offers two digitally controlled 65 step 10k $\Omega$  potentiometers in a 20 pin DIP package. The unit may be configured to operate in independent mode where each potentiometer may be adjusted separately, or stereo mode where both potentiometers will track together with a single input control pin. Balance inputs are also provided.

Control can be either via the push-button inputs, or via the clocked serial port by a host microcontroller. The device control response is logarithmic (1dB per step) and an internal signal zero crossing circuit may be enabled in audio applications to minimise any noise during control changes. A pulse controlled mute input is also provided, with settings being returned to their previous levels after the mute is switched off by a second pulse. Initial potentiometer settings on power-up are at position 63, which is the low end of each track.

The DS1802 requires a 3V to 5V power supply and typically consumes just 10 $\mu A$ . The circuit above shows a stereo volume and balance control with push-button inputs.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE19V	Dig Dual Log Pot	25+ £3.190 50+ £2.730 100+ £2.390	1+ £5.090

## DS1666 Log Pot

Dallas Semiconductors

The DS1666 is a 128 position 10k $\Omega$  potentiometer with a logarithmic control response. The lower half of the potentiometer advances 1% of the total resistance with each control input step, providing for precise amplification of low level signals.

The upper half of the potentiometer advances 3% for each control step, providing for the lower resolution gain required for high level signals. The control inputs are TTL compatible and are gated by

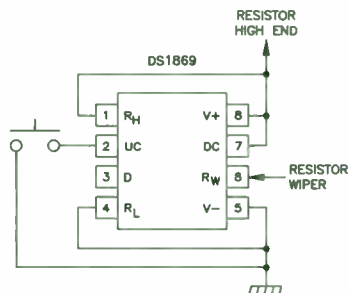
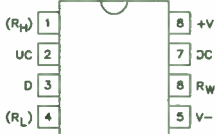
## DS1869 Electronic Potentiometer

Dallas Semiconductors

This push-button controlled linear potentiometer is available in either 10k $\Omega$  or 50k $\Omega$  values. It differs from other members of the range in several aspects. Firstly, the push-button inputs are scanned for a closure greater than one second duration. If this condition is detected, the DS1869 will auto increment (or decrement) on 100ms intervals until the push-button is released or the track limit is reached. Secondly, this device is equipped with an EEPROM memory which will store the current wiper setting, even after power is removed.

The combination of single press button closure control and stored control settings during power off makes this device an ideal choice for up/down front panel controls on any equipment. The DS1869 will operate from 3V or 5V supplies and requires no external debounce components. It may be used in single or dual push button modes, or controlled by remote digital signals.

The diagram below shows the single button control mode where the direction of wiper movement reverses for each successive press of the button after a period of one second or more of inactivity.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE21X	Dig Lin Pot 10k	25+ £2.530 50+ £2.170 100+ £1.900	1+ £3.870
LE22Y	Dig Lin Pot 50k	25+ £2.530 50+ £2.170 100+ £1.900	1+ £3.870

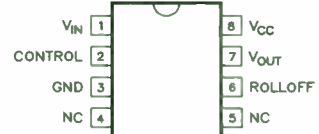
See Stock Code Index For More Price Breaks

## MC3340 Electronic Attenuator



Motorola

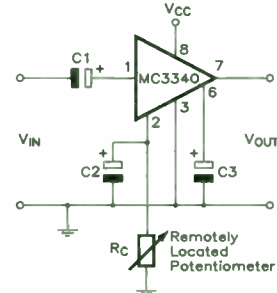
The MC3340 is a simple, but effective electronic attenuator offering up to 80dB of attenuation control for frequencies up to 1MHz. Distortion is below 1% for attenuation up to 15dB, and below 3% for attenuation up to 40dB. The device is controlled from either a DC voltage or an external potentiometer, and works from an 18V DC (max.) power supply. Typical uses include instrumentation control, remote control audio amplifiers, electronic games, and similar applications requiring a DC operated volume control or compression/expansion amplifier circuits. Supplied in 8-pin DIL package.



MC3340

### Specification

Power supply voltage: 18V DC max.  
Input voltage: 0.5V rms  
Voltage gain: 13dB  
Pin 2 sink current: 2mA DC  
Attenuation range: 80dB typical  
Voltage gain: 13dB  
THD (pin 2 gnd): 0.6dB typical  
Typical DC remote volume control



### Parts List

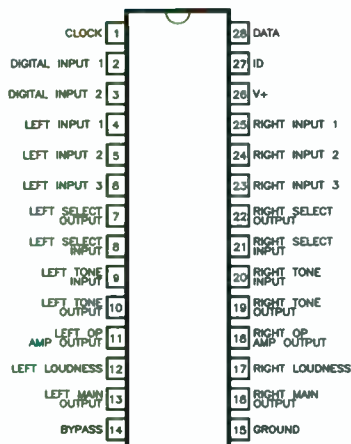
Rc Pot Lin 47k (JM73Q)  
C1 Minelect 1 $\mu F$  63V (YY31J)  
C2 Minelect 47 $\mu F$  16V (YY37S)  
C3 Ceramic 680pF (WX66W)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AY17T	MC3340	25+ £1.250 100+ £1.070 300+ £0.938	1+ £4.590

## LMC1983 Digitally Controlled Stereo Selector, Tone and Volume Block

National Semiconductor



The LMC1983 is a 28-pin DIL, CMOS/bipolar building block IC intended for Hi-Fi audio that provides volume, balance, tone (bass and treble) and loudness controls with a 3-way stereo input selector between three pairs of stereo inputs, and a mute function. These functions are digitally controlled through an INTERMETAL bus 3-wire communication interface from a microprocessor or similar controlling logic. There are in addition two digital inputs for easy interfacing to other audio peripherals such as stereo decoders. The IC is designed for line level input signals (300mV to 2V) and has a maximum gain of -0.5dB. Volume is set at minimum and tone controls are set flat when supply voltage is first applied.

Low noise and distortion performance results from the use of analogue switches and polysilicon resistor networks in the signal path, and, while the chip is basically manufactured in CMOS, NPN transistors are added to build low noise op amps. The combination of CMOS switches, bipolar op amps and polysilicon resistors make it possible for the IC to achieve a quality of reproduction which is substantially superior to other bipolar circuits that use analogue multipliers to accomplish gain adjustment. In fact the noise floor is low enough for DNR and Dolby processed signals to retain maximum effect. The volume controls are adjustable in 40 steps and left and right volume levels can be separately programmed to achieve the balance function.

The device has internal decoding logic that allows a microprocessor or microcontroller to communicate directly with the audio control circuitry via a standard INTERMETAL bus interface. This consists of a bidirectional, serial data line (DATA), a clock input line (CLK) and an identity line (ID). Address and function selection data bytes, each 8 bits long, are serially shifted into the LMC1983. Data present in the internal shift register is latched and the instruction executed.

### Specification

Supply voltage:	15V
Power dissipation:	500mW
Signal input voltage:	2V rms max.
Total harmonic distortion, $V_{IN} = 300mV @ 100Hz,$ 1kHz, 10kHz:	0.008%
$V_{IN} = 2V @ 100Hz, 1kHz:$	<0.5%
Input impedance:	50k $\Omega$
Selector stage output impedance (pins 7, 22):	150 $\Omega$
Main outputs impedance (pins 13, 16):	26 $\Omega$
Volume attenuator range:	-0dB to -80dB
Total volume steps:	40
Volume step size:	2dB
Channel balance, all volume settings:	0.2dB
Mute attenuation:	-105dB
Bass gain range @ 100Hz:	$\pm 12dB$
Total bass steps:	$\pm 6$
Bass step size:	2dB
Treble gain range @ 10kHz:	$\pm 12dB$
Total treble steps:	$\pm 6$
Treble step size:	2dB
Channel-to-channel tracking error, all functions:	$\pm 0.1\%$

Loudness boost:	11-5dB @ 100Hz, 6-5dB @ 10kHz
Frequency response:	$\pm 0.1dB @ 20Hz$ to 20kHz
Signal to noise ratio:	95dB
Channel separation:	80dB
Between inputs isolation:	95dB
Supply rejection ratio:	32dB
Clock frequency:	1MHz

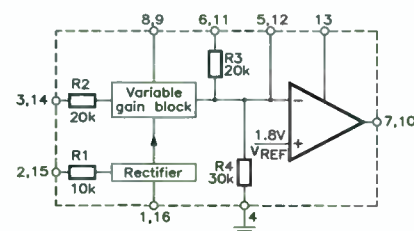
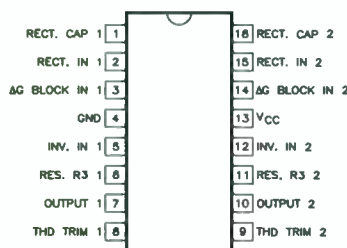
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
GX48C	LMC1983	£13.780	£20.990

## NE571N Compressor

Philips

Versatile, low cost, two channel (stereo) gain control circuits in which either channel may be used as a dynamic range compressor or expander. Each channel has a full wave rectifier to detect the average value of a signal, a linearised temperature compensated variable gain block and an operational amplifier.



### Basic input to output characteristics.

Compressor input level or expander output level (dBm)	Compressor output level or expander input level (dBm)
+20	+10
0	0
-20	-10
-40	-20
-60	-30
-80	-40

### Characteristics

Supply voltage range	6V to 18V
Supply current	3-2mA
Output current capability	$\geq 20mA$
Output slew rate	0.5V/ $\mu s$
Gain block distortion untrimmed	0.5%
Gain block distortion untrimmed	0.1%
Resistor tolerance	$\pm 5\%$
Internal reference voltage	1.8V
Output dc shift	$\pm 30mV$
Expander output noise	20 $\mu V$

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

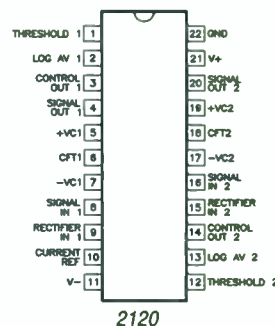
Order Code	Type	Price each exc. VAT	inc. VAT each
YY87U	NE571N	£2.320	£2.970

## SSM2120P Dynamic Range Processor

Analog Devices

The IC consists of two VCAs and two level detectors, a combination that allows construction of compressors, expanders, limiters, AGC circuits, voltage controlled filters, noise reduction systems

and stereo noise gates. Detailed information about how to use this IC can be found in Maplin Magazine Issue 47.



### Specification (typical at $V_s = \pm 15V$ )

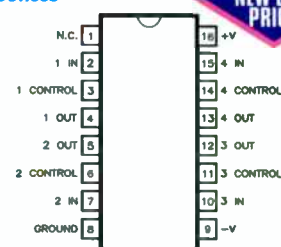
Supply voltage:	$\pm 5V$ to $\pm 15V$ ( $\pm 18V$ max.)
Positive supply current:	8mA
Negative supply current:	6mA
Max. input current (pins 8 and 16):	$\pm 400\mu A$
Gain control range:	-100dB to +40dB
Control sensitivity:	6mV/dB
Frequency response:	250kHz
Off isolation:	100dB
Total harmonic distortion:	0.005%
Noise:	-80dB
Level detector dynamic range:	110dB
Input current (pins 9 and 15):	0.03 $\mu A$ to 3mA pk-pk
Output drive (pins 3 and 14):	7.5mA sink
This device is supplied in a 22-pin 7.62mm (0.3in.) DIL package.	

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL78K	SSM2120P	£8.140	£10.980

## SSM2024P Quad Current Controlled Amplifier

Analog Devices



A quad class A current controlled amplifier with signal to noise better than 82dB at 0.3% distortion. The four VCAs are completely independent and the control lines are ground referenced linear current inputs for easy and direct interfacing. In most applications, few external components are required.

### Specification (typical at 25°C, $V_s = \pm 15V$ )

Supply voltage:	$\pm 9V$ to $\pm 18V$
Positive supply current:	2.5mA
Negative supply current:	1mA
Gain:	4085 $\mu S$
Input offset voltage:	$\pm 0.4mV$
Output leakage:	0.1nA
Control rejection (untrimmed):	41.5dB

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

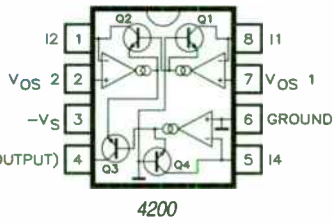
Order Code	Type	Price each exc. VAT	inc. VAT each
UL18U	SSM2024P	£4.580	£7.680

Account Enquiries: 01702 554187



## RC4200N Analogue Multiplier

Raytheon



An analogue multiplier combining three op-amps specially designed for multiplier logging circuits and offering complete compensation for non-linearity. As a result, four quadrant multiplication, two quadrant division, square rooting, squaring and rms conversion can all be implemented with predictable accuracy. The nominal relationship between the three inputs and the output is  $I3 = I1 \times I2 \div I4$ . The circuit is ideal for use in low distortion audio modulation circuits, voltage controlled active filters, and precision oscillators.

### Specification (typical at $V_{S} = -15V$ )

Supply voltage:  $-9V$  to  $-18V$   
 Supply current:  $<4mA$   
 Input current range:  $1\mu A$  to  $1mA$   
 Input offset voltage:  $<\pm 10mV$   
 Input bias current:  $<500nA$   
 Output current range:  $1\mu A$  to  $1mA$   
 Frequency response:  $4MHz$   
 Total error as multiplier:  $<\pm 3\%$  untrimmed  
 with external trim:  $\pm 0.2\%$   
 Non-linearity:  $<\pm 0.3\%$

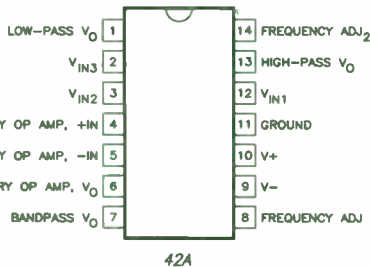
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UR16S	RC4200N	25+ £4.100 100+ £2.920 300+ £2.560	1+ £5.580

## UAF42AP

Burr-Brown

This device is a universal active filter which may be configured for a wide range of low pass, high pass and band pass filters. It uses a classic state variable analogue architecture with an inverting amplifier and two integrators, which include on chip 1000pF capacitors trimmed to 0.5%. This solves one of the most difficult problems of active filter design, that of obtaining tight tolerance, low loss capacitors. The UAF42 is pin compatible with the UAF41, but slew rate has been increased to  $10V/\mu s$  and the useful natural frequency extended by a factor of four to 100kHz.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE75S	UAF42AP	25+ £8.990 50+ £6.990 100+ £6.180	1+ £14.900

## FilterPro™ Filter Design Program

Burr-Brown

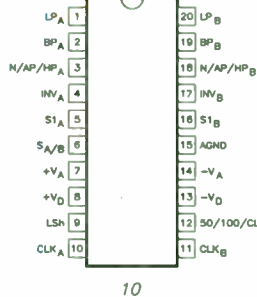
Active filters are an important part of modern electronics but their design and verification can be tedious and time consuming. FilterPro™ is a collection of computer aided design programs intended to make life easier in calculating active filters. Using the 'Filter42' program and the UAF42 it is easy to design and implement all kinds of active filters. Filters that use the UAF42 are time-continuous, free from switching noise and aliasing problems of switched capacitor filters. Simple two-pole filters can be made with a UAF42 and just two external resistors. The DOS compatible program guides you through the design process and automatically calculates component values. Low-pass, high pass, band-pass and notch filters can be designed. 'Filter42' supports the most commonly used all-pole filter types i.e Butterworth, Chebyshev and Bessel, as well as the less familiar inverse Chebyshev. Additionally, the program supports Sallen-Key low-pass filter design if a two-pole band-pass, or notch, filter is selected, the program defaults to a resonant circuit response. Two application booklets are supplied containing detail information and suggested circuits. Supplied on one 89mm (3.5in.) 720k disk. The software will run from a floppy disk drive.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
DT84F	FilterPro Software	1198S £3.390	1+ £3.990

## MF10CCN Universal Monolithic Switched Capacitor Filter

National Semiconductor



Two independent general purpose CMOS active filter building blocks each requiring just the addition of 3 to 4 resistors and an external clock to produce various 2nd order functions. Each block has three output pins. One of the outputs can be configured to perform either an allpass, highpass, or a notch function. The other two pins perform lowpass and bandpass functions. The centre frequency of the lowpass and bandpass 2nd order functions can be either directly dependent on the clock frequency or they can depend on both clock frequency and external resistor ratios. The centre frequency of the notch and allpass functions is directly dependent on the clock frequency while the highpass centre frequency depends on both resistor ratio and clock. Up to 4th order functions can be performed by cascading the two 2nd order building blocks in each MF10C. Higher than 4th order functions can be obtained by cascading MF10C packages. Any of the classic filter configurations (such as Butterworth, Bessel, Causer and Chebyshev) can be formed.

### Characteristics (typical)

Recommended supply voltage:  $+5V$  ( $+4V$  to  $+7V$  max)  
 Frequency range: 30kHz  
 Clock to centre frequency ratio: 49-94 (pin 12 high) 99-35 (pin 12 at mid  $V_S$ )  
 Q accuracy:  $\pm 2\%$

Centre frequency temperature:  $\pm 10pm/^{\circ}C$  (pin 12 high)  
 Coefficient:  $\pm 100ppm/^{\circ}C$  (pin 12 at mid  $V_S$ )  
 Q temperature coefficient:  $\pm 500ppm/^{\circ}C$   
 DC low pass gain accuracy:  $\pm 2\%$  max  
 Crosstalk: 50dB  
 Clock feedthrough: 10mV  
 Maximum clock frequency: 1.5MHz  
 Power supply current: 8mA  
 Voltage swing (pins 1,2,3,9,18,20):  $\pm 3.7V$   
 Output short circuit current: 3mA source, 1.5mA sink  
 Op-amp unity gain bandwidth: 2.5MHz  
 Op-amp slew rate: 7V/ $\mu s$   
 Full data sheet available.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QY35Q	MF10CCN	25+ £2.790 50+ £2.490 100+ £2.320	1+ £4.990

## MAX293/7

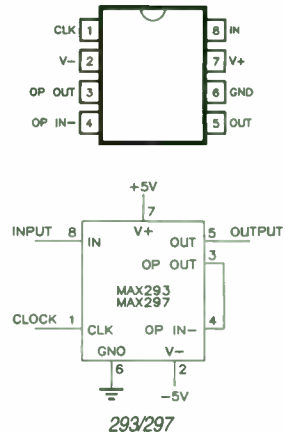
Maxim

The MAX293/297 8th-order, low-pass, elliptic, switched-capacitor filters are easy to use and can be set up with corner frequencies from 0.1Hz to 25kHz in the case of the MAX293, or from 0.1Hz to 50kHz for the MAX297.

The transmission ratio of both is 1.5:1 and provides a sharp roll-off and a -80dB of stopband rejection. These filters have fixed responses, so the design task is limited to selecting the clock frequency that controls the filter's corner frequency.

An external capacitor is used to generate a clock using the internal oscillator, or an external clock signal can be used. An uncommitted op amp, with non-inverting input grounded, is provided for building a continuous time low-pass filter for post-filtering or anti-aliasing. Steep roll-off and high-order make these filters ideal for anti-aliasing applications that require maximum bandwidth, and for communication applications that require filtering signals in close proximity within the frequency domain.

Both devices are packaged in 8-pin DIL with the same pin numbering.



### Specification

Supply voltage: 12V C  
 Corner frequency range  
 MAX293: 0.1Hz to 25kHz  
 MAX297: 0.1Hz to 50kHz  
 Clock to corner frequency ratio  
 MAX293: 100:1  
 MAX297: 50:1  
 Clock to corner frequency temperature coefficient  
 MAX293: 8ppm/ $^{\circ}C$   
 MAX297: 4ppm/ $^{\circ}C$

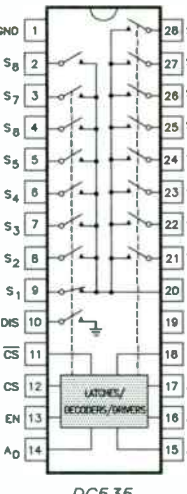
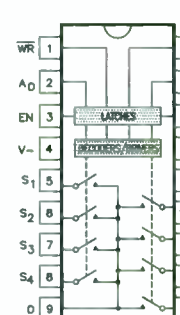
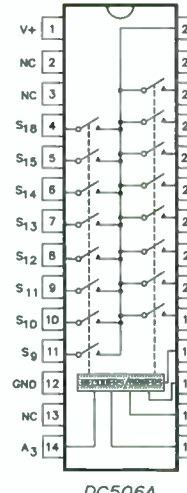
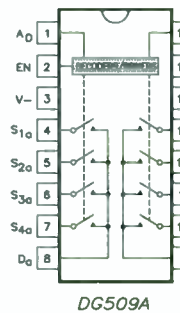
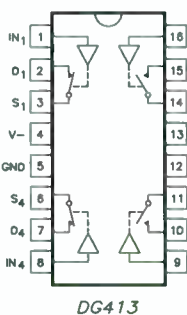
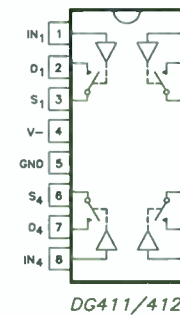
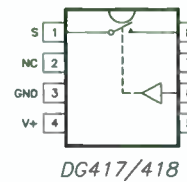
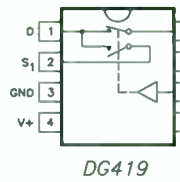
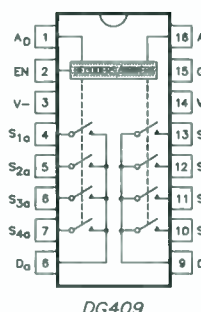
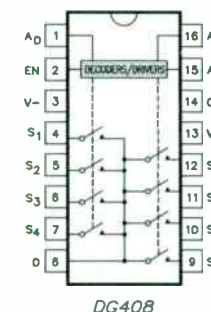
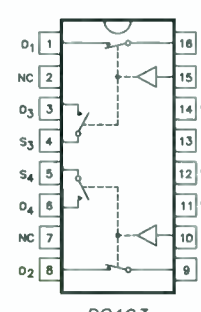
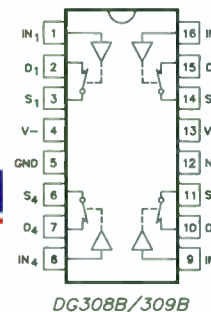
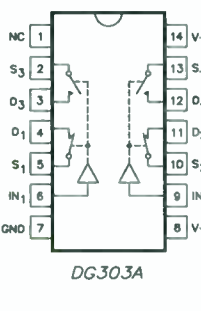
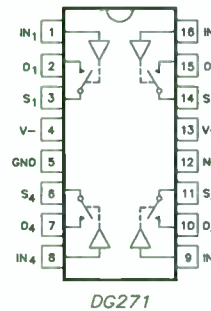
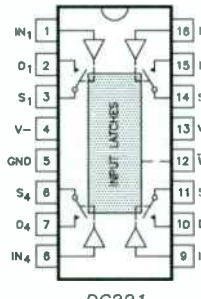
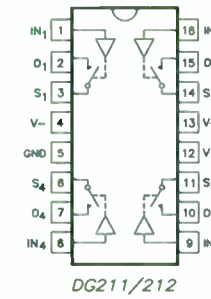
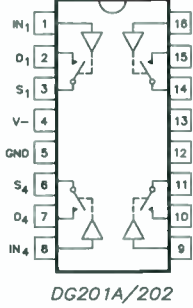
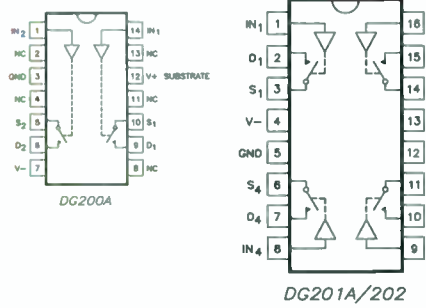
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AY41U	MAX293	10+ £5.320 25+ £4.430 50+ £3.320	1+ £7.590
AY42V	MAX297	10+ £4.820 25+ £4.010 50+ £3.010	1+ £6.400

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## G200, 300, 400 and 500 Series Analogue Switches/Multiplexers

Siliconix



A range of high quality solid state analogue switches and multiplexers designed specifically for switching wide voltage ranges coupled with low through resistances. Typical applications include servo control switching, programmable gain amplifiers, audio switching, programmable filters, video switching, sample/hold, guidance/control systems, aerospace, disk drives, test equipment, etc.

### Features

- ★ Reduced external component count
- ★ Reduced power consumption
- ★ Simple interfacing
- ★ TTL and CMOS compatibility

★ Wide dynamic range

### Analogue Switches

The DG4XX family supports the most popular analogue switching functions including SPST and SPDT etc., in single and dual switch configurations, along with several SPST quad packages available. The DG6XX series of devices takes the same technology a step further with faster switching times and low on-resistance versions available. The DG2XX, DG3XX and DG5XX series provide slightly less specification devices when compared with DG4XX and DG6XX types, but at a reduced cost while being suitable for many general purpose applications.

### Multiplexers

Single ended multiplexers are good for general purpose applications where the input signals are close to full scale range and referencing is close to ground. Differential multiplexers are suited to signals with small signal amplitude. When using differential multiplexers, the input signals can quite often be conditioned with operational amplifiers to provide the maximum resolution in A/D or D/A type circuitry.

The DG4XX series of multiplexers has been designed to reduce switching errors, glitching and high power consumption while providing improved data throughput and increased ruggedness. For data acquisition, high reliability, and battery operated systems, the rugged DG408/9 are the answer for designs requiring low on-resistance, low charge injection, fast transition time, and single-supply capability. DG535 and DG538 are both wideband/video multiplexers featuring high-density, high-speed CMOS logic and latches to hold all the necessary address selection data and control logic to facilitate connection into larger arrays, matrixes and multiplexers.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each 1+
		25+	100+	300+	
AX29G	Anlg Switch DG200ACJ	£1.080	£0.830	£0.789	£1.610
AX30H	Anlg Switch DG201BDU	£1.080	£1.020	£0.969	£1.610
AX31J	Anlg Switch DG202BDU	£1.080	£0.960	£0.903	£1.790
AX32K	Anlg Switch DG21BDU	£1.010	£0.960	£0.912	£1.480
AX33L	Anlg Switch DG212BDU	£1.010	£0.960	£0.912	£1.480
AX34M	Anlg Switch DG221CJ	£1.400	£1.250	£1.180	£2.330
AX35O	Anlg Switch DG271CJ	£2.740	£2.160	£2.050	£4.220
AX36P	Anlg Switch DG303ACJ	£2.540	£2.000	£1.900	£3.590
AX37S	Anlg Switch DG308BDU	£1.080	£1.020	£0.969	£1.610
AX38R	Anlg Switch DG309BDU	£1.080	£0.960	£0.903	£1.790
AX39N	Anlg Switch DG403DU	£3.010	£2.370	£2.250	£4.670
AX40T	Anlg Switch DG408DU	£2.900	£2.290	£2.170	£4.670
AX41U	Anlg Switch DG409DU	£3.200	£2.400	£2.280	£4.760
AX42V	Anlg Switch DG411DU	£2.020	£1.590	£1.510	£2.960
AX43W	Anlg Switch DG412DU	£2.020	£1.590	£1.510	£2.960
AX44X	Anlg Switch DG413DU	£2.020	£1.590	£1.510	£2.960
AX45Y	Anlg Switch DG417DU	£1.220	£0.940	£0.893	£1.700
AX46A	Anlg Switch DG418DU	£1.220	£0.940	£0.893	£1.700
AX47B	Anlg Switch DG419DU	£1.580	£1.230	£1.160	£2.240
AX48C	Anlg Switch DG506ACJ	£4.210	£3.330	£3.160	£6.560
AX49D	Anlg Switch DG509ACJ	£2.250	£1.770	£1.680	£4.940
DB31J	DG508ACJ	£1.880	£1.790	£1.690	£3.790
AX50E	Anlg Switch DG528CJ	£2.610	£2.060	£1.950	£4.760
AX51F	Anlg Switch DG535DU	£6.950	£5.530	£5.250	£9.890
AX52G	Anlg Switch DG538ADU	£5.370	£4.580	£4.350	£7.640

## LM1037N Dual 4-Channel Analogue Switch

**National Semiconductor** Dual electronically controlled, four channel analogue switch with internal muting facility. It is ideal for use as a stereo source selector or in multiplexing or sampling applications. An additional pin is included to allow parallel connection of two or more integrated circuits. Channel selection is achieved by taking one of the four control lines high (>2V and up to 50V). Each signal should be connected to one of the eight inputs via an 0.47µF capacitor. Also a Min Res 100k should be connected to each input with the other end of the resistor connected to a common point. This common point should then be connected to pin 12 and via a 100µF 40V capacitor to earth. Decouple the supply voltage close to the chip with a 10µF 63V capacitor. Each output should be connected via a 1µF 63V capacitor. Two or more devices can be connected together by directly coupling all pin 7s and the output pins 9 and 10. Only one output capacitor is required for each common output.

### Channel Selection

Taking control pin high	Connects this pin to	
pin high	pin 10	pin 9
1	11	13
3	17	15
16	2	4
18	6	8

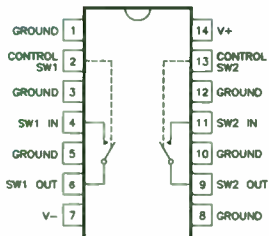
**Characteristics**  
 Supply voltage range: 5V to 28V  
 Supply current:  $V_S = 12V$  6.4mA;  
 $V_S = 30V$  10mA  
 Signal handling:  $V_S = 12V$  2.9V rms  
 Total harmonic distortion: (1V rms) 0-04%  
 Noise voltage at output: 5µV  
 Channel separation: -95dB  
 Relative unselected output: -90dB

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	25+	100+	300+	1+
QY33L	LM1037N	£3.580	£2.980	£2.750	£5.990

## SSM2412P Dual Audio Analogue Switch

Analog Devices



2412

A dual analogue switch designed for high performance audio applications. Distortion and noise are negligible over the full operating range of 20Hz to 20kHz and with signals up to 10Vrms. The IC provides superb fidelity with no clicks during switching. It can be controlled by standard TTL or CMOS logic and pull-up resistors are not required. The switches provide superb off-isolation and true bilateral operation. The analogue inputs and outputs are protected against overload and overvoltage. The switches are guaranteed to break before make even in multiple systems. A logic 0 (less than 0.8V) turns the switch off, whilst a logic 1 (greater than 2V) turns the switch on.

**Specification (typical at  $V_S = \pm 18V$ )**  
 Supply voltage:  $\pm 7.5V$  to  $\pm 18V$  ( $\pm 20V$  max.)

Positive supply current: 6mA  
 Negative supply current: 4-8mA  
 Ground current: 0-6mA  
 Logic input current: 1µA  
 Analogue voltage range:  $\pm 14.2V^*$   
 On resistance: 60Ω  
 On resistance matching: 1%  
 Turn on time: 3.5ms  
 Turn off time: 1.5ms  
 Break before make time delay: 2ms  
 On-state input capacitance: 12pF  
 Off-state input capacitance: 4pF  
 Off isolation: 120dB  
 Crosstalk: 96dB

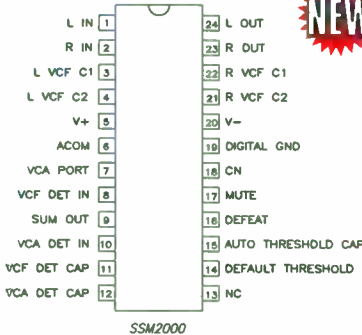
\*With  $V_S$  lower than  $\pm 18V$ , the analogue voltage ( $V_A$ ) must not exceed 3.5V less than the rail voltage. E.g. with  $V_S = \pm 7.5V$ ,  $V_A$  must be  $< \pm 4V$ , with  $V_S = \pm 12V$ ,  $V_A$  must be  $< \pm 8.5V$ .

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL81C	SSM2412P	£4.600	£5.490

## SSM200 HUSH® Stereo Noise Reduction System

Analog Devices



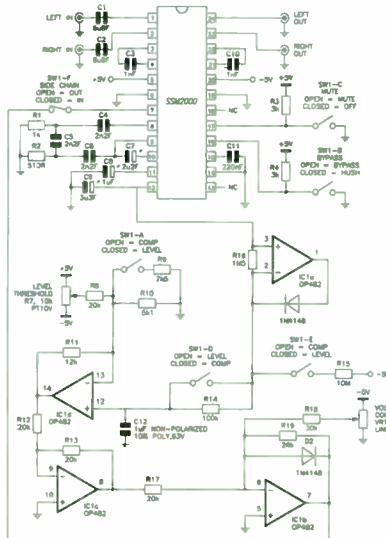
### Features

- ★ Up to 25dB of noise reduction
- ★ Effectively decodes Dolby B® encoded sources
- ★ 'Single-ended' operation eliminates need for encode-decode process
- ★ Logic controllable bypass and muting
- ★ 100dB dynamic range (noise reduction off)

### Applications

- ★ Professional audio
- ★ Multimedia PC sound cards
- ★ Television sound processing
- ★ Cassette tape players
- ★ AM/FM receivers
- ★ Telephone and wireless links

The SSM2000 is an advanced audio noise reduction system based on proprietary HUSH® circuitry. HUSH® combines a dynamic filter and downward expander to provide a high level of effectiveness without the sonic problems associated with normal noise reduction systems. Additionally, an adaptive threshold circuit detects nominal signal levels and dynamically adjusts both thresholds, thereby providing optimal results regardless of program source. Since it is a single-ended system, HUSH® can be used on virtually any audio source, including audio and video tapes, radio and television broadcasts, or any source with objectionable noise. The IC can be used with Dolby B encoded sources with excellent results. Since the VCA port can be directly accessed, then additional functions such as DC volume control, automatic levelling, compression etc., can be implemented with minimal external circuitry.



### Suggested Parts List

R1	Min Res 1k	(M1K)
R2	Min Res 510Ω	(M510R)
R3,4	Min Res 3k	(M3K)
R5	Min Res 1.5M	(M1M5)
R6	Min Res 30k	(M30K)
R7,8,12,13,17	Min Res 20k	(M20K)
R9	Min Res 7.5k	(M7K5)
R10	Min Res 5.1k	(M5K1)
R11	Min Res 12k	(M12K)
R14	Min Res 100k	(M100K)
R15	Min Res 10M	(M10M)

VR1,2	Eco Lin 10k	(VQ13P)
C1,2	Tant 10µF 35V	(WW70M)
C3,10	Polystrene 1000pF	(JA86T)
C4,5	Polystrene 2200pF	(JA88V)
C6	Minester 0.022µF	(CX19V)
C7	Tant 2.2µF 35V	(WW62S)
C8	Tant 1µF 35V	(WW60Q)
C9	Tant 3.3µF 35V	(WW63T)
C11	MinEster 0.22µF	(CX22Y)
C12	Polyester 1µF	(BX82D)
IC1	TL074CN	(AV61R)
D1,2	1N4148	(QL80B)
SW1,2,3	PCB Sw 2-pole	(CL78K)
SW4	Ill Sw 4-pole	(KE60Q)

### Specification

Supply voltage: +7V to +18V max  
 Supply current: 7.5mA typ  
 PSRR: 70dB  
 SNR: 86dB typ  
 Dynamic range: 91dB  
 Effective noise reduction 20kHz bandwidth (flat) downward expander: 15dB  
 dynamic filter section: 10dB  
 THD+N: 0.02%  
 Channel separation: 60dB  
 Mute output: -85dB  
 Channel gain matching:  $\pm 1dB$   
 Gain bandwidth: 37kHz NR disabled  
 Dynamic filter bandwidth min: 3kHz  
 max: 37kHz  
 VCA control port i/p impedance: 3.8kΩ  
 voltage gain range: -70dB to +1dB  
 gain constant: 22mV/dB typ  
 control feedthrough: 1mV typ

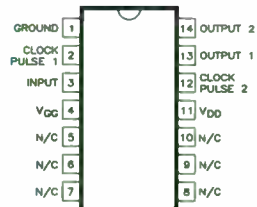
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP55K	SSM2000P	£6.560	£7.800

## AUDIO & MUSICAL EFFECTS

### MN3004 512-Stage BBD

Panasonic



A 512-stage bucket-brigade delay line (BBD) that can delay audio signals by up to 25.6ms. Applications include reverberation and echo effects, tremolo, vibrato and chorus effects.

### Specification (typical)

Drain supply voltage ( $V_{DD}$ ): -15V (-14V to -16V)  
 Gate supply voltage ( $V_{GG}$ ): -14V ( $V_{DD} + 1V$ )  
 Clock high voltage: 0V (max -1V)  
 Clock low voltage:  $V_{DD}$   
 Clock input capacitance:  $< 350pF$   
 Clock frequency: 10kHz to 100kHz  
 Signal delay time: 2.56 to 25.6ms  
 Input signal frequency:  $0.3 \times f_c$  (e.g. 12kHz at  $f_c = 40kHz$ )  
 Input voltage swing:  $> 1.8V$  rms  
 Insertion loss: 1.5dB  
 Input DC bias: -5 to -10V  
 Total harmonic distortion: 0.4%  
 Noise voltage: 0.21mV rms  
 Signal to noise ratio: 85dB

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

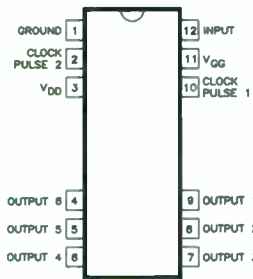
Order Code	Type	Price each exc. VAT	inc. VAT each
UM64U	MN3004	£5.800	£6.990

## Urgent Requirement?

Call and collect from your local Maplin store.

## MN3011 3328-Stage BBD with 6 Taps

Panasonic



3011

A 3328-stage bucket-brigade delay line (BBD) that can delay audio signals by up to 166.4ms. Six outputs are available with different non-related delay times so that a natural reverberation effect can be achieved by mixing these signals. Can be used to create a chorus effect in electronic musical instruments.

### Specification (typical)

Drain supply voltage ( $V_{DD}$ ): -15V  
 Gate supply voltage ( $V_{GG}$ ): -14V ( $V_{DD} + 1V$ )  
 Clock high voltage: 0V (max -1.3V)  
 Clock low voltage:  $V_{DD}$   
 Clock input capacitance: <math><2300\text{pF}</math>  
 Clock frequency: 10kHz to 100kHz  
 Input DC bias: -5V to -10V  
 Signal delay time (pin 9): 1.98 to 19.8ms

(pin 8): 3.31 to 33.1ms  
 (pin 7): 5.97 to 59.7ms  
 (pin 6): 8.63 to 86.3ms  
 (pin 5): 13.95 to 139.5ms  
 (pin 4): 16.64 to 166.4ms

Input signal frequency:  $0.25 \times f_c$  (e.g. 10kHz at  $f_c = 40\text{kHz}$ )  
 Input voltage swing: >1V rms  
 Insertion loss: 0dB  
 Total harmonic distortion: 0.4%  
 Noise voltage: <math><0.4\text{mV rms}</math>  
 Signal to noise ratio: 76dB

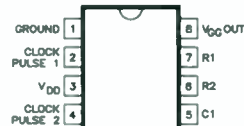
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UM65V	MN3011	£30.500 25+ £29.000 100+ £27.600 1+	£38.990

## MN3101 Clock Generator/Driver for BBDs

Panasonic

Suitable for driving the 3004 and 3011 BBDs, this IC generates a two phase low impedance clock and the most suitable VGG when driven from the same VDD as the BBD. The chip can drive up to 8192 stages and operates from a single power supply.



3101

### Specification (typical at $V_{DD} = -15V$ )

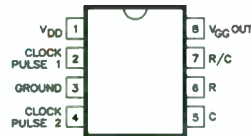
Drain supply voltage ( $V_{DD}$ ): -8V to -16V  
 Drain current: 3mA  
 Power dissipation: 45mW  
 Voltage at  $V_{GG}$  out: -14V ( $V_{DD} \times 14/15$ )

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UM66W	MN3101	£1.350 10+ £1.210 25+ £1.090 100+ £1.960 1+	

## MN3102 Clock Generator/Driver for Low Voltage BBDs

Panasonic



3102

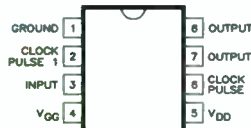
Specification (typical at  $V_{DD} = +5V$ )  
 Drain supply voltage: +4V to +10V  
 Drain current: 0.5mA  
 Power dissipation: 2.5mW  
 Voltage at  $V_{GG}$  out: +4.67( $V_{DD} \times 14/15$ )

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UR68Y	MN3102	£1.540 10+ £1.370 25+ £1.290 100+ £2.490 1+	

## MN3207 1024-Stage Low Voltage BBD

Panasonic



3207

A 1024-stage bucket-brigade delay line that can provide an audio delay of up to 51.2ms. Applications include reverberation and echo effects in portable radios etc. and for echo microphones and karaoke units.

### Specification (typical)

Drain supply voltage ( $V_{DD}$ ): +5V (+4 to +10V)  
 Gate supply voltage ( $V_{GG}$ ):  $V_{DD} \times 14/15$   
 Clock high voltage:  $V_{DD}$   
 Clock low voltage: 0V (max +1V)  
 Clock input capacitance: <math><700\text{pF}</math>  
 Clock frequency: 10kHz to 200kHz  
 Signal delay time: 2.56 to 51.2ms  
 Input signal frequency:  $0.25 \times f_c$  (e.g. 10kHz at  $f_c = 40\text{kHz}$ )

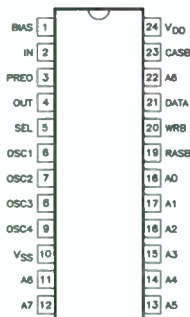
Input voltage swing: >0.36V rms  
 Insertion loss: 0dB  
 Total harmonic distortion: 0.4%  
 Noise voltage: <math><0.25\text{mV rms}</math>  
 Signal to noise ratio: 73dB

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UR67X	MN3207	£5.700 10+ £5.100 25+ £4.990 100+ £8.990 1+	

## HT8955A Voice Echo

Holtek



8955

The HT8955A is a CMOS digital audio signal delay processor designed for applications such as voice echo generators, Karaoke systems and sound effect

generators. This device contains a built-in preamplifier, an on-chip oscillator, a DRAM interface, a 10-bit A/D converter, a 10-bit D/A converter and all the necessary control logic. Designed for use with 41256 and 4164 DRAMs, a delay time of up to 0.8s and 0.2s, respectively, is possible. When comparing the HT8955 with conventional BBD units, the HT8955 exhibits low distortion, high S/N ratio and long delay times. Due to the high sampling rate (25kHz or 50kHz, depending on the DRAM used), sophisticated low-pass filtering is not required. Other features of the device are 5V working voltage, a wide frequency response and continuously variable delay time.

### Specification

Operating voltage,  $V_{CC}$ : 4.5V to 5.5V, 5V typ (6V abs max)  
 Operating current,  $I_{op}$ : 2.5mA typ at  $V_{CC}=5V$  (max)

8mA)

Preamplifier voltage gain,  $A_V$ : 2000 typ at  $V_{CC}=5V$

High-input voltage,  $V_{IH}$ : 0.3V

Low-input voltage,  $V_{IL}$ : 0.7V

Maximum output voltage,  $V_{omax}$ : 1.5V typ (min 1V)

Signal to noise ratio, S/N: 55dB

Total harmonic distortion, THD: 0.5%

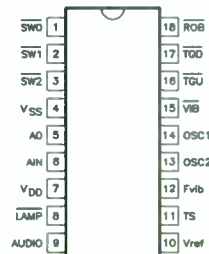
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ17T	HT8955A	£2.510 10+ £2.140 25+ £1.560 100+ £3.980 1+	

## HT8950 Voice Modulator

Holtek

A single chip voice modulator used for pitch shifting. This chip integrates a built-in microphone preamplifier with internal biasing, an 8-bit A/D converter, internal SRAM, an 8-bit D/A converter, and all operating from a single rail power supply. Pitch shifting is selected by either momentarily connecting one of four pins (with a push-button, etc.), signifying Pitch UP, Pitch DN, Robot or Vibrator, or according to the state of three pins on the device specifically designed for interfacing to electronic equipment. Altering the inputs selects between normal and either higher or lower pitches. In addition the 'Robot' and 'Vibrato' functions can be used to dramatically alter the nature of the output. Due to the high level of integration, very few external components are necessary to produce a working design. Applications include toys, mixers, voice recorders, audio systems and other forms of speech systems.



8950

### Specification

Operating voltage,  $V_{CC}$ : 2.4V to 4V, 3V typ (5.5V abs max)

Operating current (No load),  $I_{op}$ : 2mA typ (10mA)

Input signal level,  $V_{in}$ : max), at 3V

Lamp sink current,  $I_{lamp}$ : 5mA min, 9.5mA typ

OPA gain value,  $A_V$ : 2000 typ

High-input voltage,  $V_{IH}$ : 0.7V

Low-input voltage,  $V_{IL}$ : 0.3V

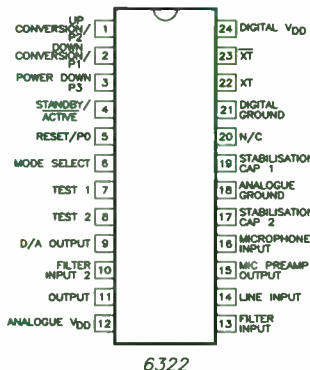
System operation frequency: 512kHz typ

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ16S	HT8950	£2.510 10+ £2.140 25+ £1.560 100+ £3.980 1+	

## MSM6322GSK Speech Pitch Controller

OKI

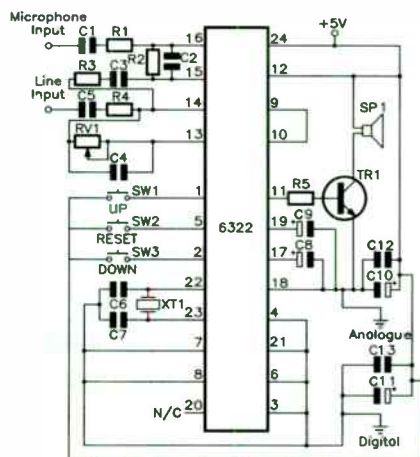
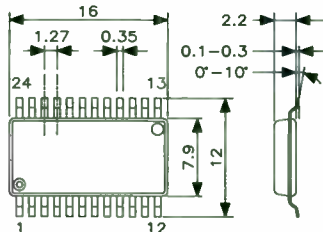


Note: This device is only available in small outline 24-pin plastic SOP style package. A speech pitch converter IC that operates in real time and requires very few external components. It has a microphone preamplifier and line level input and the output requires only a single transistor to directly drive a loudspeaker. As well as the microphone preamplifier, the IC contains a 4th order low pass filter on input and a 3rd order low-pass filter on output. In addition there is a built-in 8-bit A/D converter and 9-bit D/A converter. The pitch of the speech is alterable in 17 steps over a range of one octave up and one octave down, and there are two modes of operation. In the 'up/down' mode two inputs are provided which when pulsed, move the pitch up or down sequentially through the pitches available. In the 'binary' mode four inputs are provided from which 16 of the available pitches can be directly selected. In the example circuit, an application using the 'up/down' mode is shown. Note that pins 1 and/or 2 could be continuously cycled using an electronic counter to produce an interesting effect. The following table shows the pitches available.

### Pin functions (high = +5V, low = 0V digital)

- Pin 1. In 'up/down' mode, pulse high to move the pitch up one step. In 'binary' mode, taking this pin high sets bit 3.
- Pin 2. In 'up/down' mode, pulse high to move the pitch down one step. In 'binary' mode, taking this pin high sets bit 2.
- Pin 3. In 'up/down' mode, setting this pin high initiates power down, where all internal clocks are stopped and pin 9 goes low. On reverting to low on pin 3, the clocks take 10ms to restabilise. In 'binary' mode, taking this pin high sets bit 4, the most significant bit.
- Pin 4. When taken high, all internal clocks are stopped except the main 4MHz oscillator. On reverting to low, pin 9 outputs a 2.5V ( $1/2$  of  $V_{DD}$ ) level for about 15ms.
- Pin 5. In 'up/down' mode, pulse high to set the pitch to stage 8, no pitch change. In 'binary' mode, taking this pin high sets bit 1, the least significant bit.
- Pin 6. Set high to select 'binary' mode; set low to select 'up/down' mode.
- Pin 7. Manufacturers test pin. Must be fixed low.
- Pin 8. Manufacturers test pin. Must be fixed low.
- Pin 9. Output of the digital to analogue converter.
- Pin 10. Input to the output stage's low-pass filter.
- Pin 11. Final output.
- Pin 12. Analogue supply +5V.
- Pin 13. Output of the line amplifier and input to the input stage's low-pass filter. The gain of this amplifier is set by the value of resistance between here and pin 14.
- Pin 14. Input to the line amplifier. Must be capacitively coupled to input signals.
- Pin 15. Output of the microphone preamplifier.
- Pin 16. Input to the microphone preamplifier. Must be capacitively coupled to the microphone.
- Pin 17. Stabilisation capacitor for the internal analogue reference voltage +2.5V ( $1/2$  of  $V_{DD}$ ).

- Pin 18. Analogue ground. Microphone and line inputs and the output must be referenced to this ground.
- Pin 19. Stabilisation capacitor for the internal analogue reference voltage +2.5V ( $1/2$  of  $V_{DD}$ ).
- Pin 20. No connection.
- Pin 21. Digital ground. Logic low.
- Pin 22. Crystal oscillator. If using an external clock, it should be connected here.
- Pin 23. Crystal oscillator. If using an external clock, leave this pin open.
- Pin 24. Digital supply +5V. Logic high.



Supply voltages: 4V to 6V (7V max.)

'Binary' mode settings				Scale stage	D/A sampling cycle/frequency	Low-pass filter cut-off	Pitch change
Pin 3	Pin 1	Pin 2	Pin 5				
Not obtainable				16	60µs/16.6kHz	7.6kHz	One octave up
1	1	1	1	15	71µs/14kHz	7.6kHz	Major 6th up
1	1	1	0	14	77µs/13.1kHz	5.7kHz	Minor 6th up
1	1	0	1	13	80µs/12.5kHz	5.7kHz	Fifth up
1	1	0	0	12	90µs/11.1kHz	5.7kHz	Fourth up
1	0	1	1	11	95µs/10.5kHz	5.7kHz	Major 3rd up
1	0	1	0	10	101µs/9.9kHz	4.56kHz	Minor 2nd up
1	0	0	1	9	113µs/8.84kHz	4.56kHz	First up
1	0	0	0	8	120µs/8.33kHz	3.8kHz	No change
0	1	1	1	7	127µs/7.87kHz	3.8kHz	First down
0	1	1	0	6	143µs/6.99kHz	3.26kHz	Minor 2nd down
0	1	0	1	5	151µs/6.62kHz	3.26kHz	Major 3rd down
0	1	0	0	4	160µs/6.25kHz	3.25kHz	Fourth down
0	0	1	1	3	180µs/5.55kHz	2.85kHz	Fifth down
0	0	1	0	2	190µs/5.26kHz	2.53kHz	Minor 6th down
0	0	0	1	1	202µs/4.95kHz	2.53kHz	Major 6th down
0	0	0	0	0	227µs/4.4kHz	2.07kHz	Above one octave down

- Supply current: <10mA
- Standby current: <7mA
- Power down current: <1mA
- Logic high: >3.6V
- Logic low: <0.8V
- Logic input current: ±10µA max.
- Output impedance: pin 15: 5kΩ
- pin 9: 10kΩ
- pin 11: 15kΩ
- pin 13: 15kΩ
- pin 16: 100MΩ
- pin 14: 100MΩ
- pin 10: 30MΩ

- Max. frequency pins 1,2,5 in 'up/down' mode: 16Hz
- Max. operating frequency pin 22: 4.5MHz
- Low-pass filters characteristics:
- Gain 300Hz to  $f_c$ : ±3dB at worst
- Gain at  $f_c$ : -3dB
- Gain at  $2 \times f_c$ : -20dB

$f_c$  is the cut-off frequency as shown in the table above.

### Parts List:

R1,3,4,5	Min Res 10k	(M10K)
R2	Min Res 100k	(M100K)
RV1	Pot Log 100k	(FW25C)
C1,3,5	Mylar 0.22µF	(WW83E)
C2,4,5,7	Ceramic 33pF	(WX50E)
C8,9	PC Elect 47µF 25V	(FF08J)
C10,11	PC Elect 10µF 50V	(FF04E)
C12,13	Minidisc 0.1µF 16V	(YR75S)
TR1	BC338	(QB69A)
XT1	Crystal 4MHz	(FY82D)
SW1,2,3	Tact Switch	(JR89W)
SP1	64Ω Loudspeaker	(YT29G)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2510	Price each exc. VAT	inc. VAT each
UL76H	MSM6322GSK	10+ £7.500 25+ £6.350 100+ £6.290	1+ £11.990

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## HT8656 Voice Repeat Recorder

Holtek

A 16 second voice repeat IC primarily intended for toys, amusements, disco sound effects etc. with a motor drive output to operate mechanical devices i.e. animal mouth etc. The device supports either a 64k or 256k bit DRAM with sampling rates of either 16k or 32k bits. The maximum record time of 16 seconds is obtained with a 256k DRAM and a 16k bit sampling rate. With built-in sound triggered record/play, the IC will start recording when sound is detected and stops to play back when there is 0.5 seconds of silence. Other features include auto power-off either after 2 minutes of silence or after 64 repeat cycles and a built-in two-stage microphone amplifier. Designed to operate from a 5V DC supply rail with a typical operating current of 1.5mA. Supplied in a 28-pin DIL package.

### Suggested Parts List

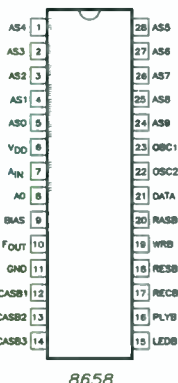
R1,7	Min Res 100Ω	(M100R)
R2,	Min Res 4.7k	(M4K7)
R3	Min Res 30k	(M30K)
R4	Min Res 75k	(M75K)
R5	Min Res 43k	(M43K)
R6,8,11	Min Res 1k	(M1K)
R9	Min Res 470Ω	(M470R)
R10	Min Res 12k	(M12K)
R15,16	Min Res 1k	(M1K)
R12	Min Res 10Ω	(M10R)
R13	Min Res 1.5k	(M1K5)
C1,8	Minelect 22µF 16V	(YY36P)
C2,4,6,11	Monores 0.1µF	(RA49D)
C3	Monores 470pF	(RA38R)
C5,	Minelect 10µF 16V	(YY34M)
C9	Monores 0.047µF	(RA47B)
C7,8,10,12	Minelect 100µF 10V	(RK50E)
D1	Zener 500mW 5.6V	(QH08J)
D2	Zener 500mW 3.6V	(QH03D)
D3	1N4001	(QL73Q)
LED1	3mm Red LED	(CJ58N)
TR1,3,4	BC140	(QB37S)
TR2	BC160	(QB48C)
IC1	DRAM 41256	(QY74R)
IC2	HT8656A	(AZ13P)
IC3	LM386N	(UJ37S)
Mic	Mic Insert DU3	(FK43W)
SW1,2,	Slide Switch	(FF77J)
SW3	Push Switch	(FH59P)
SPK	L/S 50mm 8Ω	(WB08J)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 12054	Price each exc. VAT	inc. VAT each
AZ13P	HT8656	£2.850	£3.990

## HT8658 Voice Recorder

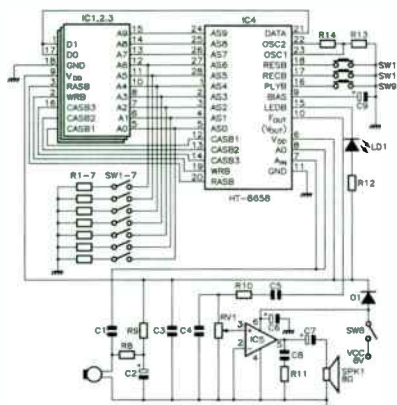
Holtek



A comprehensive voice recorder chip that has a recording time up to a maximum of 4.5 minutes, using three 1Mbit DRAMs and a 11kbit sampling rate. To improve sound quality, 16k, 22k or 32kbit sampling rates can be selected, but with a reduced recording time. The chip has an on-board two stage microphone amplifier, built-in low pass filter and status indicator. In addition, an auto play back function is included. The device is designed to operate from a 5V DC supply rail and with no load has a typical operating current of 0.8mA (40µA, standby). Supplied in a 28-pin DIL package.

### Suggested Parts List

R1-7	Min Res 100k	(M100K)
R8	Min Res 4k7	(M4KR)
R9	Min Res 100Ω	(M100R)
R10	Min Res 20k	(M20K)
R11	Min Res 10Ω	(M10R)
R12	Min Res 300Ω	(M300R)
R13	Min Res 270k	(M270K)
R14	Min Res 120k	(M120K)
VR1	Pot Log 22k	(FW23A)
C1,5,8	Monores 0.1µF	(RA49D)
C2	22µF 16V	(AT37S)
C3,6	100µF 10V	(AT30H)
C4	Monores 0.01µF	(RA44X)
C7	220µF 10V	(AT31J)
C9	10µF 63V	(AT77J)
IC1,2,3	1M DRAM	(AD05F)
IC4	HT8658	(AZ14Q)
IC5	LM386	(UJ37S)
D1	1N4001	(QL73Q)
LED1	5mm Red LED	(WL27E)
SW1-8	Slide Switch	(FFD77J)
SW9,10,11	Push Switch	(FH59P)
SPK	Min Speaker	(YW53H)
MIC	Microphone	(ZA31J)

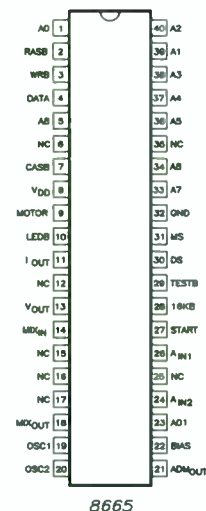


Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 12051	Price each exc. VAT	inc. VAT each
AZ14Q	HT8658	£3.280	£3.990

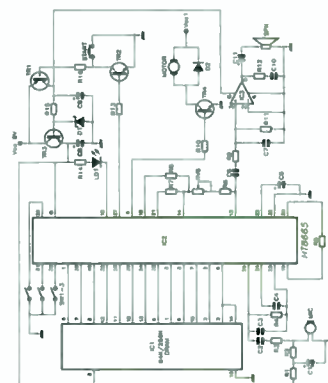
## HT8665 Voice Repeat with Echo

Holtek



A 16 second voice repeat with echo effect IC primarily intended for toys, amusements, disco sound effects etc. with a motor drive output to operate mechanical devices i.e. animal mouth etc. The device supports either a 64k or 256k bit DRAM with sampling rates of either 16k or 32k bits. Other features include auto sound and silence detect, auto power-off either after 2 minutes of silence or after 64 repeats, and built-in two-stage microphone

amplifier. Designed to operate from a 5V DC supply rail with a typical operating current of 3mA Supplied in a 40-pin DIL package.



### Suggested Parts List

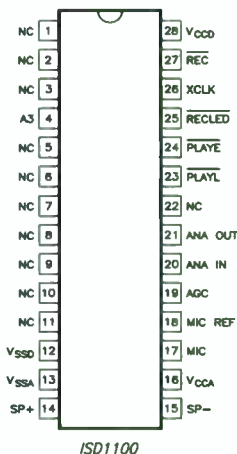
R1,14	Min Res 100Ω	(M100R)
R2,11	Min Res 4.7k	(M4K7)
R3	Min Res 30k	(M30K)
R4	Min Res 100k	(M100K)
R5	Min Res 27k	(M27K)
R6,8	Min Res 20k	(M20K)
R7,13	Min Res 10k	(M10K)
R9	Min Res 12k	(M12K)
R10,15,16	Min Res 1k	(M1K)
R12	Min Res 10Ω	(M10R)
RV6	Horz Preset 22k	(UH04E)
C1,8	Minelect 22µF 16V	(YY36P)
C2,4,6,10	Monores 0.1µF	(RA49D)
C3	Monores 470pF	(RA38R)
C5,9	Minelect 10µF 16V	(YY34M)
C7	Monores 0.047µF	(RA47B)
C11	Minelect 100µF 10V	(RK50E)
D1	Zener 500mW 5.6V	(QH08J)
D2	1N4001	(QL73Q)
LD1	3mm Red LED	(CJ58N)
TR1	BC160	(QB48C)
TR2,3,4	BC140	(QB37S)
IC1	DRAM 41256	(QY74R)
IC2	HT8665	(AZ15R)
IC3	LM386N	(UJ37S)
Mic	Mic Insert DU3	(FK43W)
SW1,2,3	Slide Switch	(FF77J)
START	Push Switch	(FH59P)
SPK	L/S 50mm 8Ω	(WB08J)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 12057	Price each exc. VAT	inc. VAT each
AZ15R	HT8665	£2.970	£3.990

## ISD1110P 10-Second Voice Record/Playback

ISD



A high quality, single-chip record/playback device for short duration messaging applications. The device includes an on-chip oscillator, microphone preamplifier, AGC, anti-aliasing filter, smoothing filter, and speaker amplifier. A minimum system can be configured with a microphone, a speaker, a few

passive components, two push-button switches and a power source.

Recordings are stored in non-volatile memory cells requiring no power. This unique solution is made possible through new technology whereby voice and audio signals are stored directly, in their natural analogue form, into an EEPROM memory. Such direct analogue storage allows natural voice reproduction in a single IC. The device is supplied in a 28-pin DIL package.

**Specification**

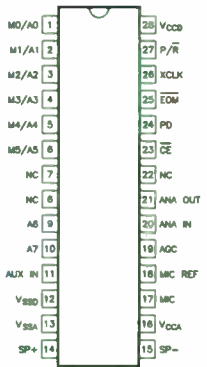
Supply voltage: 7V max.  
Supply current: 30mA max., operating  
2µA max., standby  
Output load impedance: 16Ω min.  
Output power: 12.2mW into 16Ω  
Harmonic distortion: 1%  
Mic. input level: 20mV pk-pk  
Mic. input impedance: 10kΩ  
AGC output impedance: 5kΩ  
Sampling frequency: 6.4kHz max.  
Bandwidth: 2.7kHz max.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
KU92A	ISD1110P	£7.250	£7.190
		£8.670	£12.990

## ISD1016A/20A Single-Chip Voice Record/Playback

ISD



The ISD1016 and ISD1020 devices are designed to record and playback audio and voice information entirely on the one chip, with a minimum of added circuitry. A non-volatile analogue array consists of 128K cells, the equivalent of 1M-bits of storage. The devices eliminate the need for complex digital conversion, compression or voice synthesis techniques, which often compromise voice quality and are more complicated to use. Signal conditioning circuits are included, and control functions which enable a complete, high-quality recording and playback system to be realised in a single device. The two versions offer total recording times of 16 or 20 seconds respectively. A noise cancelling microphone preamplifier with AGC can record both low and high volume sounds. A fifth order anti-aliasing filter in the output path ensures all digital components are removed, and the device is able to drive an 8 or 16Ω speaker directly through differential outputs. This boosts power output by four times compared with single ended operation, and eliminates the need for a series blocking capacitor and an output amplifier. The device will operate from a single 5V supply or from batteries, and includes a power down function for applications where minimum power consumption is critical.

Digital addresses are provided for more sophisticated message addressing and control. The storage arrays are organised into 160 segments, and addresses A0 to A7 provide access to each segment, providing the capability to construct messages by linking stored phrases and sounds.

**Specification**

Supply voltage: 7V max.  
Supply current: 30mA max., operating  
10µA max., standby  
Output load impedance: 8 to 16Ω  
Output power: 50mW into 16Ω  
Harmonic distortion: 1%  
Mic. input level: 20mV pk-pk  
Mic. input impedance: 10kΩ

AGC output impedance: 5kΩ  
Sampling frequency: 8kHz, ISD1016A  
6.4kHz, ISD1020A  
Bandwidth: 3.4kHz, ISD1016A  
2.7kHz, ISD1020A

The devices are available in a 28-pin DIL package (suffix P) or as 28-pin SMD (suffix G).

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
KU63T	ISD1016AP	£8.500	£8.390
KU64U	ISD1016AG	£11.990	£8.990
KU66W	ISD1020AP	£8.500	£8.390
KU68Y	ISD1020AG	£11.990	£8.990

## Voice Record/Playback Evaluation System

ISD



**ISD-ES002**

A hand-held demonstration board with a built-in socket allowing easy and immediate record and playback of ISD devices. Messages can be recorded on the ICs and saved, due to the non-volatile storage of the devices. A library of recordings can be created using either of the ISD devices. Simple operation is assured through just three switches: On/Off, Play/Record and Start/Stop. Push-button play and automatic power down are also supported. The system includes a speaker, a 9V battery with supply regulation and an ISD1016A DIL IC.

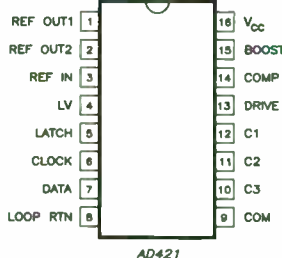
Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
KU70M	ISDES002	£127.650	£149.990

## A/D D/A CONVERTERS

### AD421 Loop-Powered 4-20mA D/A Converter

Analog devices



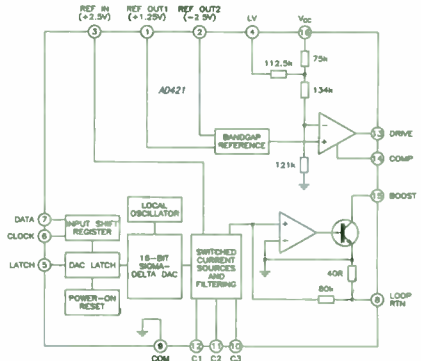
**Features**

- ★ HART Compatible
- ★ 16-bit resolution and monotonicity
- ★ ±0.01% integral non-linearity
- ★ 750µA max quiescent current
- ★ Flexible high speed

The AD421 is a complete, loop-powered, digital to 4-20mA converter, designed to meet the needs of smart transmitter manufacturers in the industrial control industry. It provides a high precision, fully integrated, low cost solution in a compact 16-pin DIL plastic package. The AD421 is ideal for

extending the resolution of smart 4-20mA transmitters at very low cost.

The device includes a selectable regulator that is used to power itself and other devices in the transmitter. This regulator provides either a +5V, 3.3V or 3V regulated output voltage. Additionally, there are 1.25V and 2.5V precision reference voltages, so the device eliminates the need for a discrete regulator and voltage reference. Few external components are required.



The AD421 can be used with standard HART FSK protocol communication circuitry without any degradation in specified performance. The high speed serial interface is capable of operating at 10Mbps and allows for simple connection to commonly used microprocessors and microcontrollers via a standard 3-wire serial interface.

The sigma-delta architecture of the D/A converter guarantees 16-bit monotonicity while the integral non-linearity for the device is ±0.01%. The IC provides a zero scale 4mA output current with ±0.1% offset error and a 20mA full-scale output current with a ±0.2% gain error.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

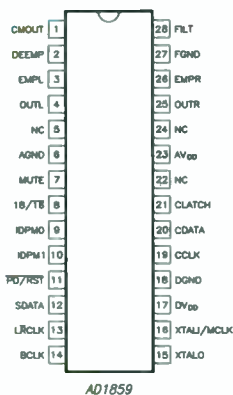
Order Code	Type	Price each exc. VAT	inc. VAT each
NP32K	AD421BN	£8.700	£8.380
			£14.000

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Tel: 01702 554000  
Fax: 01702 554001  
e-mail: Sales@maplin.co.uk

## AD1859 Stereo 18-Bit Integrated DAC

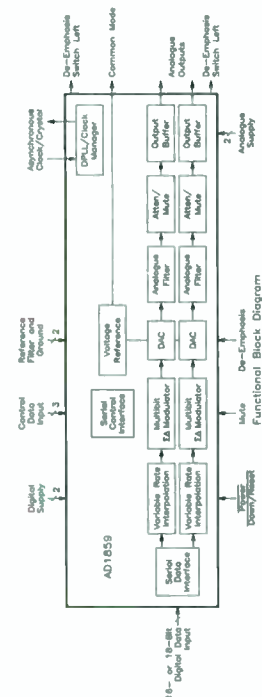
Analog Devices



The AD1859 is a complete 16/18-bit single-chip stereo digital audio playback subsystem, requiring a single 5V supply. The device comprises a variable rate-digital interpolation filter, a revolutionary multibit sigma-delta modulator with dither, a jitter tolerant DAC, switched capacitor and continuous time analogue filters, and analogue drive output circuitry. In addition, there is an on-chip stereo attenuator and mute, that are programmed through an SPI-compatible serial control port.

The digital PLL feature allows the master clock to be asynchronous which gives the device an unprecedented jitter rejection feature. An on-chip oscillator is included, so that only an inexpensive quartz crystal, or ceramic resonator, is required for an external time base. A result of using a multibit sigma-delta modulator is that the AD1859 generates dramatically lower amounts of out-of-band noise energy, which greatly reduces the requirement on post DAC filtering. The required post-filtering is integrated on the device.

The simple, very flexible serial data input port allows for glueless interconnections to a variety of ADCs, DSP chips, AES/EBU receivers and simple rate converters. The serial data input port can be configured in left-justified, I<sup>2</sup>S-justified, right-justified and DSP serial port compatible modes. The AD1859 accepts 16-/18-bit serial audio data in MSB-first, two's complement format. Supplied in a 28-pin SOIC package



**Specification**  
 Supply voltage: 5V analogue & digital  
 Typical supply current analogue: 36mA  
 digital: 30mA  
 Resolution: 18-bits

Dynamic range: 94dB (A-weighted)  
 THD + noise: -88dB (0.004%)  
 Gain error: ±1%  
 Crosstalk: 101dB  
 Attenuator step size: 1dB  
 Attenuator range span: -62.5dB  
 Mute attenuation: -74.2dB

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP30H	AD1859JR	25+ £7.870 100+ £5.770	1+ £12.660

## AD7391AN 10-Bit Micro-Power DAC

Analog Devices



The AD7391AN is a 10-bit DAC that works from a single supply voltage in the range +2.7V to +5.5V, and consumes less than 100µA, making it ideal for battery operated applications. In addition to a DAC, the device features rail-to-rail output op-amps, serial-input register and a DAC register. The external reference input has constant input resistance independent of the digital code setting of the DAC. Also, the reference input can be tied to the same voltage supply as V<sub>DD</sub> resulting in a maximum output voltage span of 0 to V<sub>DD</sub>. The PSI compatible, serial-data interface consists of a serial data input (SDI), clock (CLK), and load (LD) pins. A CLR is available to reset the DAC register to zero-scale, and is a useful function for power-on reset or system failure recovery to a known state. Supplied in a 8-pin DIL package.

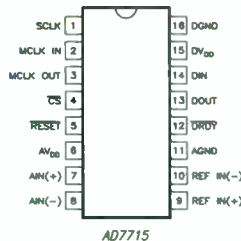
**Specification**  
 Power supply: +2.7V to +5.5V  
 Supply current: 55µA typ, 100µA max  
 Resolution: 10-Bits  
 relative accuracy: ±1.75 LSB max  
 Diff nonlinearity: ±0.9 LSB max  
 O/P slew rate: 0.05V/µs  
 Settling time: 60µs typ  
 DAC glitch: 65nVs typ  
 Digital feedthrough: 15nVs typ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP28F	AD7391AN	25+ £3.590 100+ £2.630	1+ £5.780

## AD7715 16-Bit Sigma Delta A/D Converter

Analog Devices



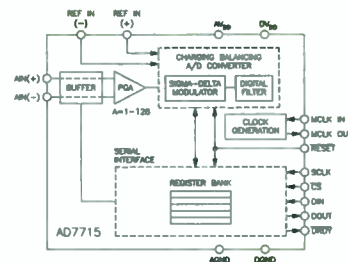
**Features**  
 ★ Charge balancing ADC  
 ★ Programmable gain front end  
 ★ 3-wire serial interface  
 ★ Low-pass filter with programmable o/p update  
 ★ Very low power dissipation 5.3mW  
 The AD7715 is a complete analog front end for low frequency measurement applications. The device can accept low-level input signals from a transducer and outputs a serial digital word. It employs a sigma-delta conversion technique to realise up to 16 bits of no missing codes performance. The input

signal is applied to a programmable gain front end based around an analogue modulator, whose output is processed by an on-chip digital filter. The first notch of this digital filter can be programmed via the on-chip control register allowing adjustment of the filter cut-off and output update rate.

The device features a differential analogue input as well as a differential reference input, and performs all signal conditioning and conversion for a single-channel system.

The AD7715 is ideal for use in smart, micro-controller or DSP based systems, and features a serial interface that can be configured for three-wire operation. Gain settings, signal polarity and update rate selection can be configured in software using the input serial port.

CMOS construction ensures very low power dissipation, and the power-mode reduces the standby power consumption to typically 50µW. Available in 16-pin plastic DIL package.



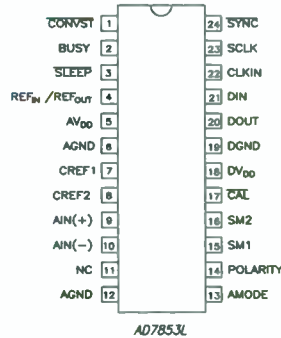
**Specification**  
 Voltage supply: 5V (digital and analogue)  
 Current supply: 1.9mA max.  
 PSR: 95dB typical - depends on gain  
 Integral nonlinearity: ±0.0015% of FSR max.  
 CMR analogue i/p: 95dB min  
 Logic input current: ±10µA max.  
 Voltage i/p except MCLK IN i/p low voltage: 0.8V max.  
 i/p high voltage: 2.0V  
 MCLK IN only i/p low voltage: 0.8V max.  
 i/p high voltage: 3.5V max.  
 Logic o/p o/p low voltage: 0.4V max.  
 o/p high voltage: V<sub>DD</sub> - 0.6V min.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP33L	AD7715AN-5	25+ £7.210 100+ £5.290	1+ £11.610

## AD7853L High Speed 12-Bit Sampling ADC

Analog Devices

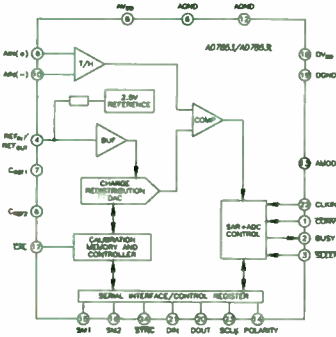


**Features**  
 ★ 100k samples/sec  
 ★ Automatic calibration on power-up  
 ★ Self and system calibration  
 ★ Versatile serial I/O port (SPI/QSPI/8051/µP)  
 ★ Flexible power management options include automatic power-down after conversion  
 ★ 3V supply voltage  
**Applications**  
 ★ Battery powered systems e.g. personal digital assistants, medical instruments, mobile communications



- ★ Pen computers
- ★ Instrumentation and control systems
- ★ High speed modems

The AD7853L is a high speed, low power, 12-bit ADC that operates from a single 3V power supply. The ADC powers up with a set of default conditions at which time it can be operated as a read-only ADC. The ADC contains self-calibration and system calibration options to ensure accurate operation over time and temperature, and a number of power-down options for low power applications.



The device is capable of a 100kHz throughput rate. The input track-and-hold acquires a signal in 500ns and features a pseudo-differential sampling system. The device voltage range is 0 to  $V_{REF}$  with both straight binary and 2's complement output coding. Input signal range is up to the supply voltage and is capable of converting full power signals to 100kHz. Supplied in a 24-pin DIL package.

**Specification**

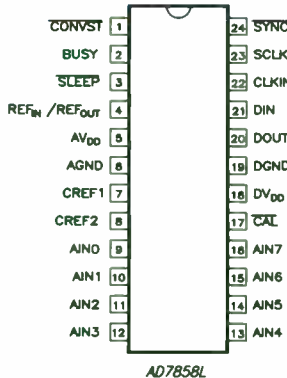
Supply voltage:	3V digital and analogue
Current:	1.9mA
Power dissipation:	6.85mW
SNR:	70dB
THD:	-78dB
Resolution:	12-bits
Integral nonlinearity:	±1 LSB
Differential nonlinearity:	±1 LSB
Conversion time:	18µs
Track/hold acquisition time:	1µs
Master clock frequency:	500kHz min, 1MHz max

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP34M	AD7853LAN	£7.720	£12.430

## AD7858LAN High Speed 8-Channel 12-Bit Sampling ADC

Analog Devices



- Features**
- ★ 100k samples/sec
  - ★ 8 single-ended or 4 pseudo-differential input channels
  - ★ Automatic calibration on power-up
  - ★ Self and system calibration
  - ★ Versatile serial I/O port (SPI/QSPI/8051/µP)
  - ★ Flexible power management options include automatic power-down after conversion
  - ★ 3V supply voltage

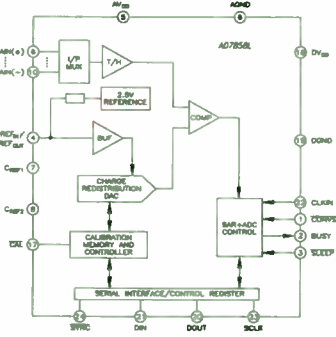
### Applications

- ★ Batter powered systems e.g. personal digital assistants, medical instruments, mobile communications
- ★ Pen computers
- ★ Instrumentation and control systems
- ★ High speed modems

The AD7858L is a high speed, low power, 12-bit ADC that operates from a single 3V power supply, and features eight single-ended or four pseudo differential inputs.

The ADC powers up with a set of default conditions at which time it can be operated as a read-only ADC. The ADC contains self-calibration and system calibration options to ensure accurate operation over time and temperature, and a number of power-down options for low power applications. The IC powers up with a set of default conditions and can operate as a read only ADC.

The device is capable of a 100kHz throughput rate. The input track-and-hold acquires a signal in 500ns and features a pseudo-differential sampling system. The device voltage range is 0 to  $V_{REF}$  with both straight binary and 2's complement output coding. Input signal range is up to the supply voltage and is capable of converting full power signals to 100kHz. Supplied in a 24-pin DIL package.



**Specification**

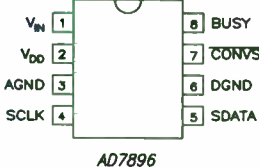
Supply voltage:	3V digital and analogue
Current:	1.9mA
Power dissipation:	5.5mW
SNR:	70dB
THD:	-78dB
Resolution:	12-bits
Integral nonlinearity:	±1 LSB
Differential nonlinearity:	±1 LSB
Conversion time:	18µs
Track/hold acquisition time:	1µs
Master clock frequency:	500kHz min, 1MHz max

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP35Q	AD7858LAN	£8.340	£13.420

## AD7896AN 12-Bit 8µs ADC

Analog Devices



- ★ Complete 12-bit ADC in 8-pin mini-DIP package
- ★ Low power, single supply operation - ideal for battery powered/portable applications
- ★ High speed, easy-to-use serial interface
- ★ 100kHz throughput

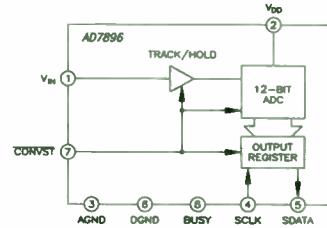
The AD7896 is a fast 12-bit ADC which operates from a single +2.7V to 5.5V supply and is housed in a small 8-pin mini-DIP package. The IC contains an 8µs successive approximation A/D converter, an on-chip track/hold amplifier, an on-chip clock and a high speed serial interface.

Output data from the device is provided via a high speed, serial interface port. This two-wire serial interface has a serial clock input and a serial data output with the external serial clock accessing the

serial data from the IC.

The device has excellent linearity and S/N ratio as well as very low harmonic distortion, and accepts an analogue input range of 0V to  $V_{DD}$ . The  $V_{DD}$  input is also used as the reference for the IC so that no external reference is required.

The AD7896 features a high sampling rate mode and, for low power applications, a proprietary automatic power down mode. The IC will automatically go into power down once conversion is complete and 'wakes up' before the next conversion cycle.



**Specification**

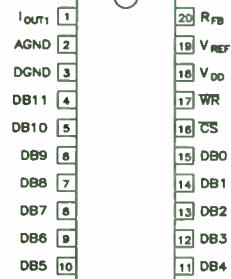
Voltage supply:	+2.7 to +5.5V
Power dissipation:	10.8mW max, typically 9mW with 2.7V supply
S/N+D ratio:	70dB min
THD:	-80dB max
Resolution:	12-bits
Relative accuracy:	±1LSB
Differential non-linearity:	±1LSB
Conversion time	
Mode 1 operation:	8µs max
Mode 2 operation:	14µs max
Track/hold acquisition time:	1.5µs max

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP36P	AD7896AN	£8.130	£13.090

## AD7945BN Multiplying 12-Bit DACs

Analog Devices



The AD7945 is a fast 12-bit multiplying DAC that operates from a single +5V supply, and has a fast 12-bit parallel interface (write pulse width of 40ns). It will replace the industry standard AD7545 in many applications, and offer superior speed and power consumption performance. The low power requirements make this device suitable for battery-powered instrumentation and laptop computers etc.

**Specification**

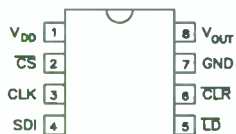
Power supply:	4.5V to 5.5V
Current:	5µA max
Resolution:	12-bits
Relative accuracy:	±0.5 LSB max
Differential nonlinearity:	±0.5 LSB max
THD:	-83dB
O/P noise:	35nV/√Hz typ
Settling time:	600ns typ to 0.01%
D-to-A glitch impulse:	60nV-s typ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP31J	AD7945BN	£4.760	£7.660

## AD8300AN 12-Bit, 3V Serial Input DAC

Analog Devices



AD8300

The AD8300 is a complete 12-bit, voltage output DAC designed to operate from a single +3V supply - ideal for battery operated applications. The 2.0475V full-scale voltage output is laser trimmed to maintain accuracy over the operating temperature of the device. The binary input data format of 0.5mV/bit can be programmed using software, and the voltage outputs are capable of sourcing 5mA. The double buffered serial data interface offers high speed, three-wire, DSP and microcontroller compatible inputs using data in (SDI), clock (CLK), and load strobe (LD) pins. A chip select (CS) pin simplifies connection of multiple DAC packages by enabling the clock input when active low. In addition, an asynchronous CLR pin will set all DAC registers bits to zero causing the  $V_{OUT}$  to become 0V - useful for power on reset, or system failure recovery to a known state. Supplied in an 8-pin DIL package.

### Specification (+3V operation)

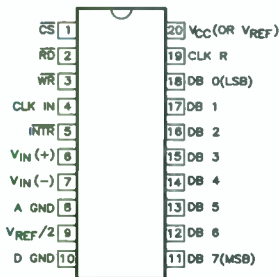
Supply voltage: +2.7V to +5.5V  
 Supply current: 1.7mA max  
 Resolution: 12-Bits  
 Relative accuracy:  $\pm 0.5$  LSB typ  
 Zero scale error: +0.5mV typ  
 Full scale voltage: 2.0475V typ  
 Settling time: 7 $\mu$ s  
 Slew rate: 2V/ $\mu$ s  
 DAC glitch: 15nV/s  
 O/P current: source: 5mA max, sink: 2mA max

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP29G	AD8300AN	£5.750 100+ £4.220	£9.250 1+

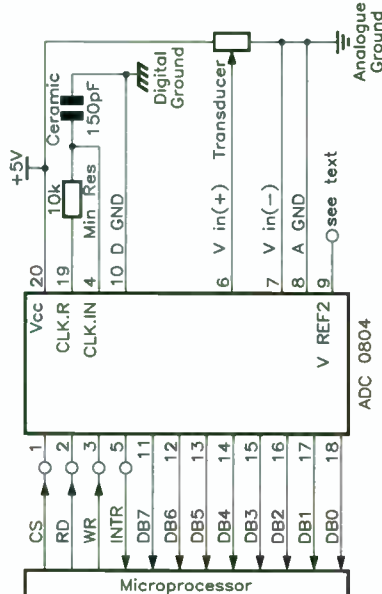
## ADC0804LCN 8-Bit A/D Converter

National Semiconductor



0804

A CMOS 8-bit analogue to digital converter with output latches that can directly drive a microprocessor data bus. The IC looks like a memory location or I/O port to the microprocessor so no interfacing logic is required. The analogue input voltage range is 0V to 5V with a single 5V supply, and 2.5V applied to pin 9. However, the voltage reference on 9 can be any voltage under 2.5V so that any voltage span can be converted with a full 8 bits of resolution. In addition, by connecting pin 7 to a voltage other than ground the span need not start at 0V. For example if the span was 0.5V to 3.5V (a span of 3V) 0.5V would be applied to pin 7 and 1.5V to pin 9 (i.e. 1/2 of 3V). No zero adjustment is needed with this IC.



### Specification

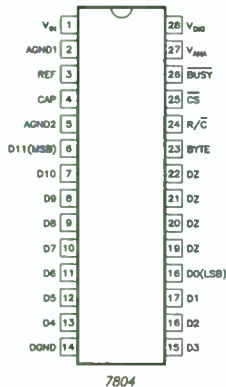
Supply voltage: +5V ( $V_{CC}$ )  
 Max error:  $\pm 1$  bit  
 Input resistance at pin 9: 1.3k $\Omega$   
 Analogue input voltage range: Ground to  $V_{CC}$   
 Conversion rate: 8770/second max  
 Supply current: 1.3mA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QD00A	ADC0804LCN	£2.860 10+ £2.650 25+ £2.320 100+	£4.560 1+

## ADS7804P

Burr-Brown



7804

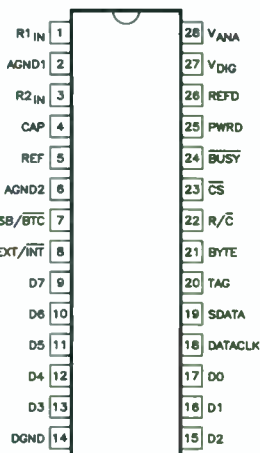
The ADS7804 is a 12-bit sampling CMOS A/D converter circuit with built-in sample and hold, clock oscillator, voltage reference and tristate CPU bus output port. It requires just six external passive components to operate, including supply decoupling, and will sample at 100kHz. With a single 5V power supply requirement @ <100mW dissipation, the device allows a  $\pm 10$ V signal input range and provides a signed 12-bit parallel output, or two 8 bit result bytes for 8-bit bus based systems. The input is protected to  $\pm 25$  V, eliminating the need for external protection circuitry in most instances.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE5AJ	12 Bit 100kHz A/D	£11.310 10+ £10.510 25+ £9.190 100+	£14.290 1+

## ADS7806 Low-Power 12-Bit Sampling CMOS ADC

Burr-Brown



A low-power, 12-bit sampling A to D converter using state-of-the-art CMOS structures and powered from a single 5V supply. It contains a complete 12-bit capacitor-based successive approximation register with sample and hold, internal clock, reference, microprocessor interface and parallel and serial output drivers. It can acquire and convert to full 12-bit accuracy in 25 $\mu$ s maximum while consuming only 35mW. Laser trimmed scaling resistors provide industry standard input ranges of  $\pm 10$ V and 0V to 5V. In addition a 0V to 4V range allows development of complete single rail supply systems. It also has a 50 $\mu$ W power down mode,  $\pm 1/2$  LSB resolution and 72dB minimum dynamic range.

### Specification

Resolution: 12 bits  
 Input voltage ranges:  $\pm 10$ , 0 to 5, 0 to 4  
 Input impedances: 45-7k $\Omega$  ( $\pm 10$ V), 20k $\Omega$  (0 to 5V), 21.4k $\Omega$  (0 to 4V)  
 Input capacitance: 35pF  
 Conversion time: 20 $\mu$ s  
 Complete cycle time (acquire and convert): 25 $\mu$ s  
 Throughput rate: 40kHz  
 Transition noise: 0.1 LSB  
 Spurious free dynamic range: 90dB ( $\pm 10$ V input)  
 Total harmonic distortion: -90dB  
 Signal to noise ratio: 73dB  
 Full power bandwidth: 50kHz  
 Aperture delay: 40ns  
 Transient response: 5 $\mu$ s  
 Overvoltage recovery: 750ns  
 Internal reference: 2.5V  
 Parallel data format: 12 bits in two bytes  
 Serial data format: two's complement or straight binary

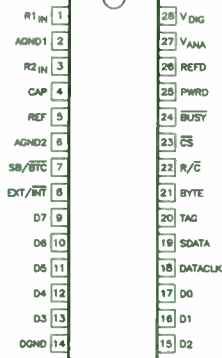
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AD67X	ADS7806P	£9.450 10+ £9.390 25+ £9.110 100+	£17.000 1+

## ADS7807 Low-Power 16-Bit Sampling CMOS ADC

Burr-Brown

A low-power, 16-bit sampling A to D converter using state-of-the-art CMOS structures and powered from a single 5V supply. It contains a complete 16-bit capacitor-based successive approximation register with sample and hold, internal clock and reference, microprocessor interface and parallel and serial output drivers. It can acquire and convert a full 16 bits to within  $\pm 1.5$  LSB in 25 $\mu$ s maximum while consuming only 35mW. Laser trimmed scaling resistors provide industry standard input ranges of  $\pm 10$ V and 0V to 5V. In addition a 0V to 4V range allows development of complete single rail supply systems. It also has a 50 $\mu$ W power down mode,  $\pm 1.5$  LSB resolution and 86dB minimum dynamic range, and is pin-for-pin compatible with the ADS7806.



**Specification**

Resolution: 16 bits  
 Input voltage ranges:  $\pm 10, 0$  to  $5, 0$  to  $4$   
 Input impedances:  $45\text{-}7\text{k}\Omega$  ( $\pm 10\text{V}$ ),  $20\text{k}\Omega$  ( $0$  to  $5\text{V}$ ),  $21\text{-}4\text{k}\Omega$  ( $0$  to  $2$

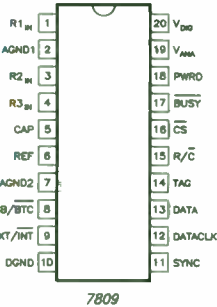
$4\text{V}$ )  
 Input capacitance:  $35\text{pF}$   
 Conversion time:  $20\mu\text{s}$   
 Complete cycle time (acquire and convert):  $25\mu\text{s}$   
 Throughput rate:  $40\text{kHz}$   
 Transition noise:  $0\text{-}8$  LSB  
 Spurious free dynamic range:  $100\text{dB}$  ( $\pm 10\text{V}$  input)  
 Total harmonic distortion:  $-100\text{dB}$   
 Signal to noise ratio:  $88\text{dB}$   
 Full power bandwidth:  $50\text{kHz}$   
 Aperture delay:  $40\text{ns}$   
 Transient response:  $5\mu\text{s}$   
 Overvoltage recovery:  $750\text{ns}$   
 Internal reference:  $2\text{-}5\text{V}$   
 Parallel data format: 16 bits in two bytes  
 Serial data format: two's complement or straight binary

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AD68Y	ADS7807P	£34.400	£46.880

**ADS7809P**

Burr-Brown



The ADS7809 is a complete 16-bit sampling CMOS A/D converter circuit with built in sample and hold circuit, clock oscillator, voltage reference and serial data interface. Data can be output using the internal clock or synchronised to an external data clock. The ADS7809 also provides an output synchronisation pulse for use with standard digital signal processors.

The device requires a single 5V supply and will dissipate less than  $100\text{mW}$  and is capable of a  $100\text{kHz}$  sampling rate suitable for the most demanding digital audio applications. Six different input voltage configurations are possible, ranging from ( $0\text{V}$  to  $4\text{V}$ ) to  $\pm 10$  Volt span, with  $\pm 25\text{V}$  protection on all inputs.

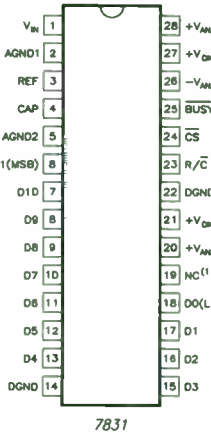
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE55K 1	16 Bit 100kHz A/D	£31.900	£46.990

**ZADS7831P**

Burr-Brown

The ADS7831 is a very fast 12-bit sampling CMOS A/D converter with full parallel tri-state outputs for connection to a CPU bus. It requires only a few resistors and capacitors for operation as it incorporates all necessary sample and hold, oscillator and reference circuitry. This device can operate at an impressive  $600\text{kHz}$  sample rate, allowing input signals of up to  $250\text{kHz}$  to be accurately converted. The input signal may be  $\pm 2\text{-}5\text{V}$  and the output data will be in signed (two's complement) binary. A  $\pm 5\text{V}$  supply is required and the device will dissipate a maximum of  $250\text{mW}$ .

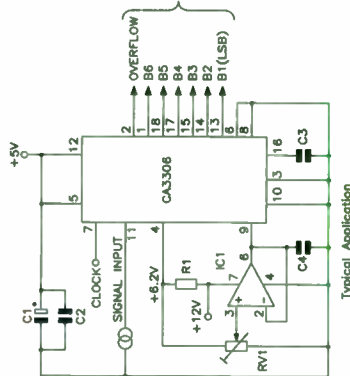
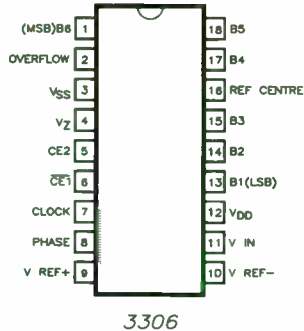


Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE57M	12 Bit 600kHz A/D	£15.520	£23.490

**CA3306 Video Speed 6-Bit Flash A/D**

Harris



A family of CMOS parallel (flash) analogue to digital converters designed for low power, high speed applications. The CA3306CE operates at sampling rates up to 10 million samples per second and the CA3306E up to 15 million samples per second permitting analogue signals with bandwidths up to  $5\text{MHz}$  or  $7\text{-}5\text{MHz}$  to be fully digitised to 6-bit accuracy. An overflow output allows two devices to be connected in series to produce a 7-bit converter. Alternatively, two devices connected in parallel will permit conversion speed to be doubled.

**Specification**  
 (typical  $V_{DD} = 5\text{V}$ ,  $V_{REF} = +4\text{-}8\text{V}$ ,  $25^\circ\text{C}$ )  
 Supply voltage:  $3\text{V}$  to  $7\text{-}5\text{V}$

Linearity error:  $\pm 0\text{-}5\text{LSB}$   
 Full scale input range:  $0\text{V}$  to  $+4\text{-}8\text{V}$   
 Input capacitance:  $15\text{pF}$   
 Input current:  $< \pm 500\mu\text{A}$   
 Resistor ladder impedance:  $1100\Omega$   
 Maximum conversion speed:  $13\text{MS/s}$  (CA3306CE),  $20\text{MS/s}$  (CA3306E)  
 Supply current:  $11\text{mA}$  (CA3306CE),  $14\text{mA}$  (CA3306E)  
 Digital output current:  $> -1\text{-}6\text{mA}$  source,  $> 3\text{-}2\text{mA}$  sink  
 Zener voltage:  $6\text{-}2\text{V}$  at  $10\text{mA}$

**Parts List**

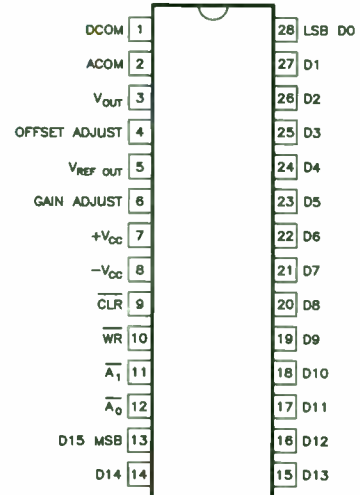
R1	Min Res $560\Omega$	(M560R)
C1	PC Elect $10\mu\text{F}$ $50\text{V}$	(FF04E)
C2	Disc $0\text{-}22\mu\text{F}$ $25\text{V}$	(JL01B)
C3,4	Minidisc $0\text{-}1\mu\text{F}$ $16\text{V}$	(YR75S)
RV1	Cermet $5\text{k}$	(WR41U)
IC1	741	(QL22Y)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CR23A	CA3306CE	£4.520	£9.560
CR24B	CA3306E	£5.520	£9.990

**DAC712P**

Burr-Brown



The DAC712 is a digital audio compatible 16-bit resolution D/A converter. It has a built in temperature compensated voltage reference, output amplifier and 16-bit port bus interface. The data inputs to this device consist of a TTL compatible 16-bit, double buffered parallel data latch which will accept positive true two's complement binary codes for a bipolar output producing a  $\pm 10\text{V}$  span. THD at the output is typically  $0\text{-}005\%$  for an  $0\text{dB}$  output signal @  $1\text{kHz}$ , with a conversion frequency of  $100\text{kHz}$ . The device requires a dual rail power supply of either  $\pm 12\text{V}$  or  $\pm 15\text{V}$  at a maximum dissipation of  $600\text{mW}$ .

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE58N	16 Bit Parallel D/A	£14.670	£22.490

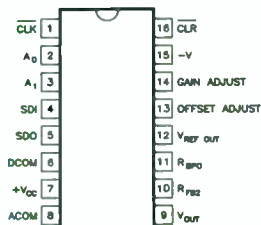
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## DAC714P

Burr-Brown



714

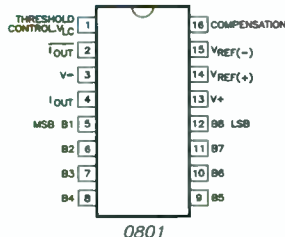
The DAC714 is a digital audio compatible 16-bit resolution D/A converter. It has a built-in temperature compensated voltage reference, output amplifier and serial interface, all in a compact 16-pin package. The data inputs to this device consist of a fast 60ns write pulse width serial digital interface, which will accept positive true two's complement binary codes for a bipolar output producing a  $\pm 10V$  span, a  $\pm 5V$  span or a unipolar 0 to 10V span. THD at the output is typically 0.005% for an 0dB output signal @ 1kHz, with a conversion frequency of 100kHz. The device requires a dual rail power supply of either  $\pm 12V$  or  $\pm 15V$  at a maximum dissipation of 600mW.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

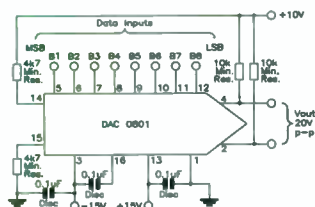
Order Code	Type	Price each exc. VAT	inc. VAT each
LE59P	16 Bit Serial D/A	10+ £14.630 25+ £13.580 100+ £11.880 1+ £23.990	

## DAC0801LCN 8-Bit D/A Converter

National Semiconductor



0801



An 8-bit digital to analogue converter with a full scale error of less than  $\pm 0.39\%$ . The DAC has high compliance complementary current outputs to allow differential output voltages of 20V peak-to-peak with simple resistor loads.

### Specification

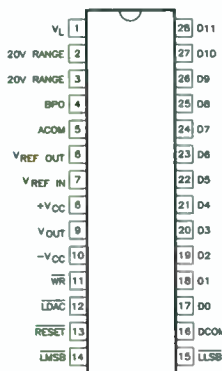
Supply voltage:	$\pm 4.5V$ to $\pm 18V$
Settling time:	100ns (typical)
Output voltage compliance:	-10V to +18V
Full scale current ( $V_{ref} = 10V, R_{14,15} = 5k\Omega$ ):	1.99mA
Output current range ( $V^- = -5V$ ):	0 to 2.1mA
( $V^- = -8V$ to $-18V$ ):	0 to 4.2mA
Reference bias current (Pin15):	-1 $\mu A$
Reference input slew rate:	8mA/ $\mu sec$
Power supply current ( $V_S = \pm 5V, I_{ref} = 1mA$ ):	I <sup>+</sup> : 2.3mA I <sup>-</sup> : 4.3mA
Power supply current ( $V_S = \pm 15V, I_{ref} = 2mA$ ):	I <sup>+</sup> : 2.5mA I <sup>-</sup> : -6.5mA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
Q001B	DAC0801LCN	10+ £2.530 25+ £2.350 100+ £2.060 1+ £3.990	

## DAC813 Microprocessor Compatible 12-Bit DAC

Burr-Brown



813

The DAC813 is a complete 12-bit digital-to-analogue converter with a flexible digital interface. It includes a precision +10V reference, interface control logic, double-buffered latch and a 12-bit D/A converter with voltage output op amp. Fast current switches and laser-trimmed thin-film resistors provide a highly accurate, fast D/A converter. Digital interfacing is facilitated by a double buffered latch. The input latch consists of one 8-bit byte and one 4-bit nibble to allow interfacing to 8-bit (right justified) or 16-bit data buses. Input gating logic is designed so that the last nibble or byte to be loaded can be got simultaneously with the transfer of data to the D/A latch, saving computer instructions. A reset control allows the DAC813 D/A latch to asynchronously reset the D/A output to zero, a feature useful for power-up reset, recalibration or for system re-initialisation upon system failure. The device is specified to  $\pm 1/4$  LSB maximum linearity error.

### Specification

Digital input resolution:	12 bits
Linearity error:	$\pm 1/4$ LSB
Differential linearity error:	$\pm 1/4$ LSB
Gain error:	$\pm 0.05\%$
Settling time:	3.3 $\mu s$ 10V range, 4.5 $\mu s$ 20V range
Output voltage range:	0 to 10V unipolar mode $\pm 5V, \pm 10V$ bipolar mode
Output current:	$\pm 5mA$
Output impedance:	0-2 $\Omega$ @ DC
Short circuit duration:	indefinite
Reference voltage:	+10V
Power supply:	$\pm 15V$

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AD72P	DAC813KP	10+ £13.730 25+ £12.750 100+ £11.160 1+ £23.990	

## DAC7800/1/2 Dual CMOS 12-Bit Multiplying DACs

Burr-Brown

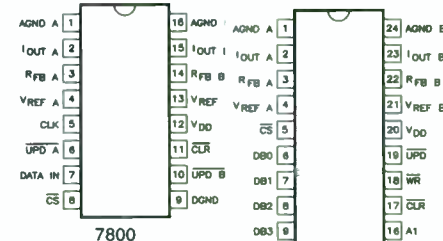
The DAC 7800, 7801 and 7802 are members of a new family of monolithic dual 12-bit CMOS multiplying digital-to-analogue converters. The digital interface speed and the AC multiplying performance are achieved by using an advanced CMOS process optimised for data conversion circuits. High stability on-chip resistors provide true 12-bit integral and differential linearity over the wide industrial temperature range of 240°C to 185°C. The DAC7800 features a serial interface capable of clocking in data at a rate of at least 10MHz. Serial data is clocked (edge triggered) MSB first into a 24-bit shift register and then latched into each D/A separately or simultaneously as required by the application. An asynchronous CLEAR control is provided for power-on reset or system calibration functions.

The DAC7801 has a 2-byte (8 1/4) double-buffered interface. Data is first loaded (level transferred) into the input registers in two steps for each D/A, then both D/As are updated simultaneously. DAC 7801 features an asynchronous CLEAR control. The DAC7802 has a single-buffered 12-bit data word interface. Parallel data is loaded (edge

triggered) into the single D/A register for each D/A. All versions operate from a single 5V supply.

### Specification

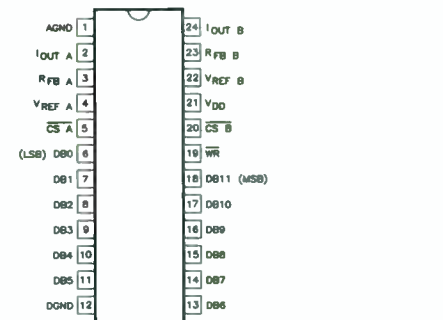
Resolution:	12 bits minimum
Relative accuracy:	$\pm 1$ LSB
Differential non-linearity:	$\pm 1$ LSB
Gain error:	$\pm 3$ LSB
Digital input impedance:	10k $\Omega$
Digital input capacitance:	10pF
Digital input levels:	2V min. 0-8V max. TTL compatible
Output current settling time:	0.4 $\mu s$
D-to-A glitch impulse:	0.9nV/s
AC feedthrough:	-75dB @ 10kHz
Output capacitance:	30 to 70pF
Channel to channel isolation:	-95dB
Digital crosstalk:	0.9nV



7800



7801



7802

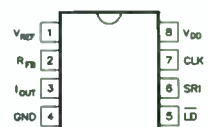
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AD69A	DAC7800KP	10+ £9.900 25+ £9.200 100+ £8.050 1+ £14.490	
AD70M	DAC7801KP	10+ £10.030 25+ £9.310 100+ £8.150 1+ £26.350	
AD71N	DAC7802KP	10+ £10.780 25+ £10.010 100+ £8.760 1+ £15.490	

## DAC8043P

Burr-Brown

This device offers 12-bit D/A accuracy in a compact 8-pin DIP package, with a serial three wire interface to a host microprocessor. It incorporates 2500V electrostatic discharge protection on digital inputs and 1000V protection on analogue pins along with a low 5ppm/ $^{\circ}C$  gain temperature coefficient, making it ideal for use in processor control systems or motion control applications in industrial environments. Inputs are TTL/CMOS compatible, and the device requires a single +5V supply.



8043

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE60Q	DAC8043P	10+ £7.520 25+ £6.980 100+ £6.110 1+ £12.990	

See Stock Code Index For More Price Breaks

## DF1700 Dual Channel 8 x Oversampling Digital Filter

Burr-Brown

The DF1700 is a high-performance, 8 times oversampling CMOS digital filter which accepts 16-bit input data and is user selectable to output 16, 18 or 20-bit data, according to a 2-bit binary code applied to pins 16 and 17. The 8 x oversampling feature converts the input data frequency (fs) to an output data frequency of 8 x fs by digital interpolation. By providing 8 x oversampled data to an audio DAC, lower order analogue filters can be used at the DAC's output, thus reducing filter phase non-linearities. Oversampling with the DF1700 simultaneously improves the fidelity of the analogue reconstruction and reduces analogue filter complexity at the output of the DAC.

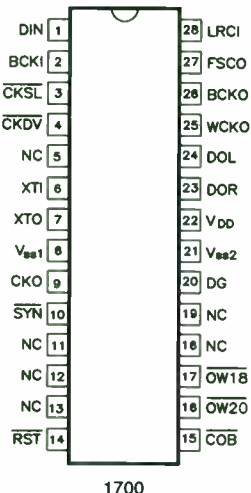
The most common application for this IC is in high-performance digital audio playback, such as compact disc players. Digital information from a compact disc is often formatted using a Digital Interface Format Receiver Chip (DIFRC). The DF1700 can be interfaced directly to the output of many popular DIFRCs able to provide the Left/Right Channel Input multiplex clock (LRCI), the serial Data INput stream (DIN), and the timing clock for serial input data (BCKI).

The fs data stream, which has been formatted by the DIFRC, is 8 times oversampled by the DF1700 and separated into left and right channel data for input to the PCM1700 DAC (AD64U). The analogue stereo outputs from the PCM1700 should then each pass through a three-pole Generalised Intermittence Converter (GIC) low-pass filter, which has extremely low distortion and negligible phase shift.

The frequency of the DF1700's master clock oscillator can be selected as 192, 384, 256 or 512 times fs according to a 2-bit binary code applied to CKSL and CKDV (pins 3 and 4). The IC also needs a crystal, or an external clock signal, to operate at 16.9344MHz (e.g. crystal UL00A).

Specification	CKSL	CKDV	x	fs
Oscillator frequency range:	H	H	192	1 to 13MHz
	H	L	384	2 to 26MHz
	L	H	256	1 to 13MHz
	L	L	512	2 to 26MHz

BCKI pulse width:	100ns min.
BCKI cycle time:	200ns min.
DIN setup time:	75ns min.
DIN hold time:	75ns min.
BCKO delay time:	120ns max.
Supply voltage:	+5V single-ended
Power dissipation:	250mW



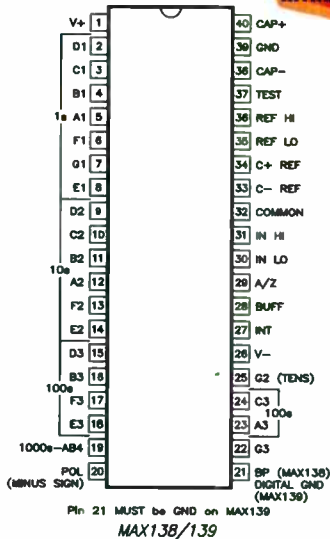
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AD63T S	DF1700P	£12.050	£10.320
		£9.030	£18.490

## MAX138/139 3<sup>1</sup>/<sub>2</sub>-Digit A/D With Display Driver

Maxim

RECENTLY INTRODUCED



The MAX138/MAX139 ICs are 3<sup>1</sup>/<sub>2</sub>-digit A/D converters with on-board LCD (MAX138) and LED (MAX139) display drivers. The devices contain a charge pump voltage inverter that allows the ICs to measure both positive and negative input voltages while operating from a single power supply. The operating circuits for the devices are similar to those of the ICL7136 and ICL7137, but the MAX devices have an internal oscillator and require an external charge-pump capacitor connected to pins 38 and 40.

Supplied in a 40-pin DIP package.

Specification	MAX138	MAX139
Supply voltage:	+7.5V	+6V
Supply current:	500µA max	500µA max
Power dissipation:	1.33W	1.33W
CMRR:	50µV/V	50µV/V
Linearity:	±0.2 counts	±0.2 counts
Scale factor		
temp coefficient:	1ppm/°C	1ppm/°C

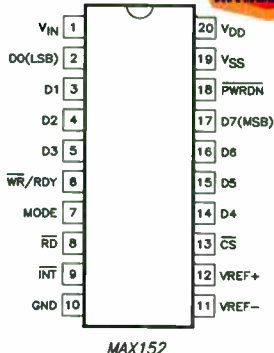
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VQ48C	MAX138CPL	£9.360	£8.020
VQ49D	MAX139CPL	£8.280	£7.100
		£5.210	£12.910

## MAX152CPP 3V 8-Bit A/D Converter

Maxim

RECENTLY INTRODUCED



A high-speed, microprocessor (µP) compatible 8-bit A/D converter that uses a 'half-flash' technique to achieve a 1.8µs conversion time. The device digitises at a rate of 400k samples per second, will accept either unipolar or bipolar inputs, and will operate from either a single +3V or dual ±3V supplies. A POWERDOWN pin reduces current consumption to a typical low value of 1µA. The IC will power up and acquire an input signal in less

than 900ns, providing large reductions in supply current in applications with burst-mode signals. The µP interface appears as a memory location or input/output port that requires no external logic interface. The data outputs use latched, three-state buffered circuitry for direct connection to a µP data bus or system input port. The A/D's input/reference arrangement enables ratiometric operation. The device is suitable for cellular phones, portable radios, battery-powered systems, burst-mode data acquisition, digital signal processing, telecommunications and high speed servo loops. Supplied in a 20-pin DIP package.

### Specification

Power requirements:	3.0V to 3.6V
Negative supply voltage	
unipolar operation:	ground
bipolar operation:	-3.6V to -3.0V
Typical positive supply current	
3.6V supply:	2.5mA
3V supply:	1.5mA
Resolution:	8 bits
S/N + D ratio:	45dB
THD:	-50dB
Full power bandwidth:	300kHz
Power up time:	0.9µs
Conversion time:	1.8µs
Data access time:	400ns

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VQ51F	MAX152CPP	£5.250	£4.500
		£3.930	£8.570

## MAX153CPP 8-Bit A/D

Maxim

RECENTLY INTRODUCED



The MAX153 is a high-speed microprocessor compatible 8-bit A/D converter using a half-flash technique to achieve a 660ns conversion time, and digitise at a rate of 1Mps. The POWERDOWN pin reduces current consumption to a typical value of 1µA with a 5V supply. The device will power-up in less than 200ns.

Its microprocessor interface appears as a memory location, or input/output port, that requires no external interface logic. The data outputs use latched, three-state buffered circuitry for direct connection to a microprocessor data bus or system input port. The A/D's input/reference arrangement enables ratiometric operation. The device requires no external clock, will work from a single +5V rail or ±5V rails and is supplied in 20-pin DIP package.

### Specification

Power requirements:	+5V or ±5V DC (VSS=-5V)
Supply current:	8mA typical
Resolution:	8 bits
Differential non-linearity:	±1LSB
S/N +DR:	45dB
THD:	-50dB
Full power bandwidth:	1MHz
Input slew rate:	15V/µs

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VQ50E	MAX153CPP	£8.010	£6.870
		£6.010	£11.690

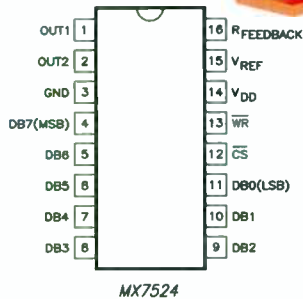
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## MAX7524JN 8-Bit Multiplying D/A

Maxim

RECENTLY INTRODUCED



MAX7524 is a CMOS 8-bit D/A converter that will interface directly with most microprocessors. On-chip input latches make the D/A interface similar to a RAM write cycle where **CS** and **WR** are the only control inputs required. Linearity up to  $\pm 1/8$  LSB is available, and power consumption is less than 10mW. TTL +5V and CMOS logic compatibility is guaranteed when using a +5V power rail. Over the supply range +5V to +15V all logic inputs are high voltage CMOS compatible. The device is suitable for function generators, bus structure instruments, automatic test equipment, digital control systems etc. Supplied in a 16-pin DIL package.

### Specification

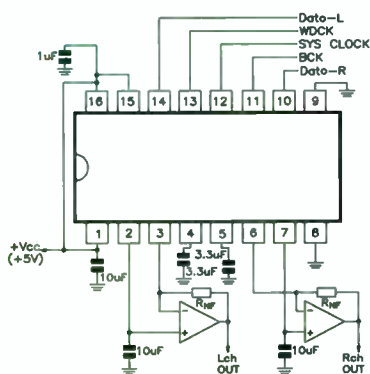
Power requirements: 5V/15V at 2mA max  
 Resolution: 8-bits min  
 Non-linearity:  $\pm 1$ LSB  
 Gain error  
 at 5V:  $\pm 2.25$  LSB  
 at 15V:  $\pm 1.25$  LSB  
 Maximum output current settling time to 0.5 LSB  
 at 5V: 500ns  
 at 15V: 350ns  
 Output capacitance: 120pF max  
 Input high voltage  
 at 5V: 2.4V min  
 at 15V: 13.5V min  
 Input low voltage  
 at 5V: 0.8V max  
 at 15V: 1.5V max  
 Input current: 10 $\mu$ A max.  
 Input capacitance: 20pF max

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AD62G	MAX7524JN	£3.870	£5.710

## PCM69A Advanced 1-Bit BiCMOS Dual 18-Bit DAC

Burr-Brown



PCM69C

The PCM69A dual 18-bit DAC is a low cost, dual output 18-bit BiCMOS digital-to-analogue converter utilising a novel architecture to achieve excellent low level performance. By combining a conventional thin-film R-2R ladder DAC, a digital offset technique with analogue correction and an advanced 1-bit DAC using a first order noise shaping technique, the device achieves high resolution, minimal glitch and low zero-crossing distortion.

The PCM69A digital offset occurs at bit 4, making it an excellent choice for digital musical instruments and audio DSP. Capable of 16 times oversampling, it has excellent THD performance and very high signal to noise ratio. Left and right channel analogue outputs are current drives for direct connection to the inverting inputs of operational amplifiers with single gain setting feedback resistors. Logical inputs are TTL and CMOS compatible, and the device requires only a single 5V supply and consumes 75mW typically.

### Specification

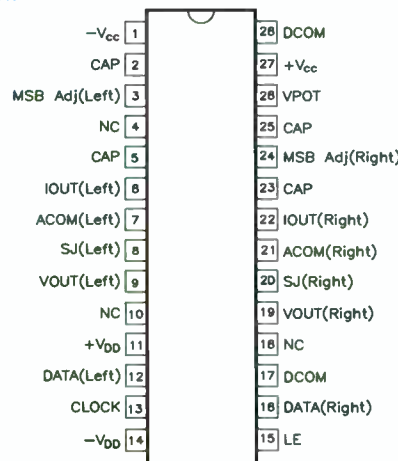
Resolution: 18 bits  
 Dynamic range: 106dB  
 Logic input data format: serial MSB first  
 Input system clock frequency: 16.9344 MHz  
 Total harmonic distortion: -86dB @ 0dB output  
 Channel separation: 106dB @ 1kHz  
 Level linearity:  $\pm 1$ dB @ -90dB signal level  
 Gain error:  $\pm 3\%$   
 Gain mismatch, channel-to-channel: P1%  
 Gain drift: 95ppm/ $^{\circ}$ C  
 Warm-up time: 1 minute  
 Idle channel signal to noise ratio: 110dB, 20Hz to 40kHz  
 Analogue output range:  $\pm 1.2$ mA  $\pm 3\%$   
 Output impedance: 1.8k $\Omega$   $\pm 30\%$   
 Supply voltage range: +4.75 to +5.25V (5V nominal)  
 Combined supply current: 15mA  
 Power dissipation: 75mW

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AD62S	PCM69AP	£15.710	£19.990

## PCM1700 Dual 18-Bit Audio DAC

Burr-Brown



A low cost, high-performance, dual (stereo) 18-bit digital-to-analogue converter specifically for recovering high-fidelity music from a digital storage medium, primarily compact disc. The PCM1700 features true glitch-free, 'co-phase' current and voltage outputs and only requires  $\pm 5$ V supply rails to operate. It comes complete with an internal reference and optional MSB adjustability for even greater THD performance, over and above the -92dB achievable without the external adjustment. This low maximum harmonic distortion figure, plus noise, is 100% tested. The IC is also very fast, capable of 16 times oversampling rates on both channels simultaneously, allowing very simple output filters to be used which will introduce the minimum additional distortion and phase shift. For compact disc reproduction, this IC is intended to be driven by the DF1700, which will expand the 16-bit CD data stream to 18 bits with 8 times oversampling added. The PCM1700 includes on-chip op-amps to convert the left and right channel current outputs to signal voltages. Alternatively the current outputs can be accessed directly for externally added op-amp ICs of the designer's choice. Total power dissipation is less than 400mW

maximum and the IC runs from  $\pm 5$ V supply rails. (See also DF1700.)

### Specification

Resolution: 18 bits  
 Dynamic range: 108dB  
 Input data format: serial BTC  
 Input clock frequency: 16.9MHz  
 Total Harmonic Distortion, + noise: -88dB @ 0dB output  
 Channel separation: 108dB  
 Signal to noise ratio: 108dB  
 Gain error:  $\pm 1\%$   
 Gain mismatch:  $\pm 1\%$   
 Bipolar zero error: 10mV  
 BPZ error mismatch: 5mV  
 Gain drift: 100ppm/ $^{\circ}$ C  
 Bipolar zero drift: 20ppm of FSR/ $^{\circ}$ C  
 Warm-up time: 1 minute  
 Voltage output range:  $\pm 3$ V (using internal op-amps)  
 Voltage output impedance: 0.1 $\Omega$   
 Voltage output current:  $\pm 8$ mA max.  
 Current output range:  $\pm 670\mu$ A  $\pm 2\%$   
 Current output impedance: 1.67k $\Omega$   $\pm 2\%$   
 Supply voltage:  $\pm 4.75$  to 5.25V (plus  $\pm 15$ V for external op-amp filters)  
 Supply current: +40mA and -16mA

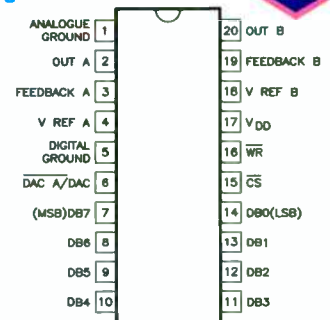
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AD64U	PCM1700P	£14.060	£19.990

## PM7528HP Dual 8-Bit D/A Converter

Analog Devices

NEW LOW PRICE



Two 8-bit multiplying digital to analogue converters in one package. Excellent DAC to DAC matching and tracking is achieved. Digital input data is directed into the latches of one of the DACs according to the condition on pin 6. The chip is TTL and CMOS compatible and the data load cycle is similar to the write cycle of a RAM.

### Specification (typical at 25 $^{\circ}$ C)

Supply voltage: +5V to +15V  
 Non-linearity:  $\pm 1$  LSB max  
 Settling time: 350ns at 5V, 180ns at 15V  
 Supply current: 1mA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL11M	PM7528HP	£5.250	£7.260

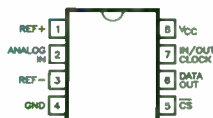
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## TLC548IP A to D Peripheral With Serial Control

Texas Instruments



TLC548

The TLC548 is an A/D peripheral IC built around an 8-bit, switched-capacitor, successive-approximation ADC. It is designed for serial interface with a microprocessor or peripheral through a 3-state data output and an analogue input. The device uses only the I/O clock input, along with the Chip Select (CS) input for data control. The maximum clock I/O frequency is guaranteed to be up to 2.048MHz. Operation is very similar to that of more complex ADCs, however, the TLC548 provides an on-chip system clock allowing internal device operation to proceed independently of serial input/output data timing, and permits manipulation of the device as desired for a wide range of software and hardware requirements. The I/O clock, together with the internal system clock, allows high-speed data transfer and conversion rates of 45,500 conversions per second.

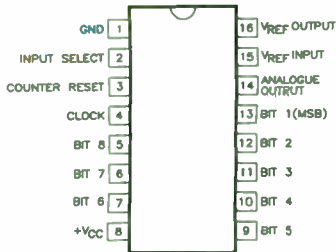
Additional features include versatile control logic, an on-chip sample-and-hold circuit that can operate automatically or under microprocessor control, and a high-speed converter with differential high-impedance reference voltage inputs that ease ratiometric conversion, scaling and circuit isolation from logic and supply noise. The design of the totally switched-capacitor successive-approximation converter circuit allows conversion with a maximum total error of  $\pm 0.5$  least significant bits (LSB) in less than 17 $\mu$ s. Operating temperature range is  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ . The device is encapsulated in an 8-pin DIL package.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
GX06G	TLC548IP	£1.940 10+ £1.610 25+ £1.500 100+	£3.870 1+

## ZN425E8 8-Bit D/A and A/D Converter

GEC-Plessey



425

An 8-bit D/A converter also containing a counter and a 2.5V precision voltage reference. By including an 8-bit counter, analogue to digital conversion can be obtained simply by adding an external comparator and clock inhibit gating (7400). By simply clocking the counter, the IC can be used as a self-contained precision ramp generator.

### Characteristics (typical)

Supply voltage	4.5 to 5.5V
Settling time	1 $\mu$ s
Voltage reference	2.55V
Non-linearity	$\pm 0.5$ LSB
Analogue output resistance	10k $\Omega$
Counter clock frequency	5MHz max
Supply current	25mA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UF38R	ZN425E-8	£5.050 10+ £4.620 25+ £4.310 100+	£7.790 1+

## A/D CONVERTER DISPLAY DRIVERS

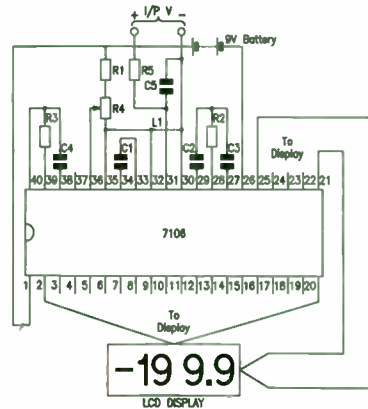
### ICL7106CPL, ICL7107CPL Analogue to Digital Converter/Display Drivers

Harris

These two ICs are high performance, low power  $3\frac{1}{2}$  digit A/D converters. The input requires about 1pA typically. Other features are guaranteed zero reading for 0 volts input on all scales; true polarity at zero for precise null detection; true differential input and reference; low-noise; on chip clock and reference; low supply current 0.8mA typical. The output of the 7106 will drive LCD displays directly and a +9V supply is required at pin 1 and ground at pin 26. This IC is ideally suited for battery operation since it requires only 0.8mA supply current. The output of the 7107 will drive LED displays directly and a +5V supply is required at pin 1, -5V at pin 26 and ground at pin 21. Accuracy  $\pm 1$  count in  $\pm 2000$  counts guaranteed.

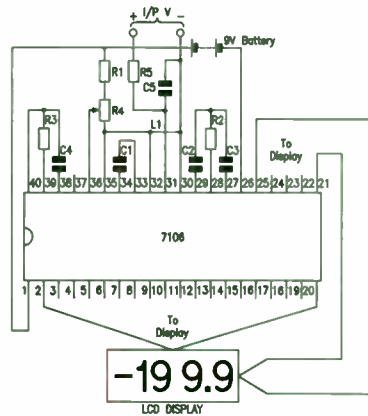
### Display Driver and Thermometer PCB

A printed circuit board is available for use with the 7106 or 7107. The same printed circuit may be used to produce a  $\pm 1.999\text{V}$  (2V) voltmeter, a  $\pm 0.1999$



LCD Digital Panel Meter  
200mV/2V Full Scale Deflection

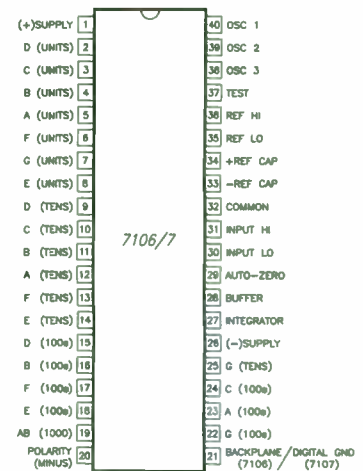
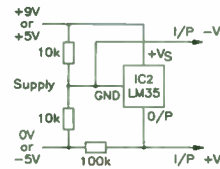
(200mV) voltmeter or a thermometer using the LM35CZ or LM35DZ ICs shown on page XXX, with either an LED or LCD. A leaflet is supplied with every PCB, which shows how to build and calibrate all four projects.



LED Digital Panel Meter  
200mV/2V Full Scale Deflection

	7106	7106	7107	7107
	2V LCD	200mV LCD	2V LED	200mV LED
R1 Min Res	15k	22k	15k	22k
R2 Min Res	470k	47k	470k	47k
R3 Min Res	100k	100k	100k	100k
R4 18-turn Cermet	10k	1k	10k	1k
R5 Min Res	1M	1M	1M	1M
R6 Min Res	-	-	150 $\Omega$	150 $\Omega$
C1 Poly Layer	0.1 $\mu$ F	0.1 $\mu$ F	0.1 $\mu$ F	0.1 $\mu$ F
C2 Poly Layer	0.047 $\mu$ F	0.47 $\mu$ F	0.047 $\mu$ F	0.47 $\mu$ F
C3 Poly Layer	0.22 $\mu$ F	0.22 $\mu$ F	0.22 $\mu$ F	0.22 $\mu$ F
C4 Ceramic	100pF	100pF	100pF	100pF
C5 Poly Layer	0.01 $\mu$ F	0.01 $\mu$ F	0.01 $\mu$ F	0.01 $\mu$ F

IC1	7106	7106	7107	7107
Link L1	Yes	Yes	Yes	Yes
DIL Socket 40-pin	1	1	1	1
PCB (BY76H)	1	1	1	1
Display - 1 needed	FY89W	FY89W	BY66W	BY66W
Display - 1 needed	-	-	BY67X	BY67X



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BY76H	7106/7 PCB	£2.110 1+	£2.490 1+

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QW94CICL7106CPL	25+	£2.890	£5.990 1+
QW95CICL7107CPL	100+	£2.390	£5.990 1+

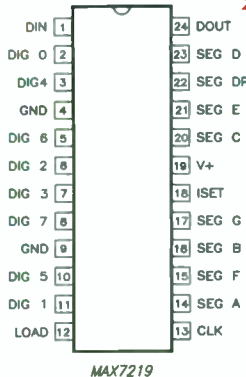
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## MAX7219CNG Serial 8-Digit LED Display Driver

MAXim



MAX7219

The MAX7219 is a compact, serial input/output common-cathode driver that will interface microprocessors ( $\mu$ Ps) to 7-segment numeric LED displays of upto 8-digits, bargraph displays or 64 individual LEDs. The device has a BCD code-B decoder, multiplex scan circuitry, segment and digit drivers, and an 8 x 8 static RAM that stores each digit. The segment current for all LEDs is set by just one external resistor.

A 10MHz 3-wire serial interface connects to all common  $\mu$ Ps, and allows individual digits to be updated without rewriting the entire display. Code-B decoding or no-decode can be selected for each digit.

A 150 $\mu$ A low-power shutdown mode is included that will retain data, as well as analog and digital brightness control, a scan-limit register which allows from 1 to 8 digits to be displayed, and a test mode which forces all LEDs on. Supplied in a 24-pin narrow plastic DIP package.

### Specification

Power supply: 5V/300mA all segments and decimal point on  
Shutdown supply current: 150 $\mu$ A max  
Display scan rate: 2kHz max  
Digit drive sink current: 320mA min  
Clock/serial output propagation delay: 2.25ms

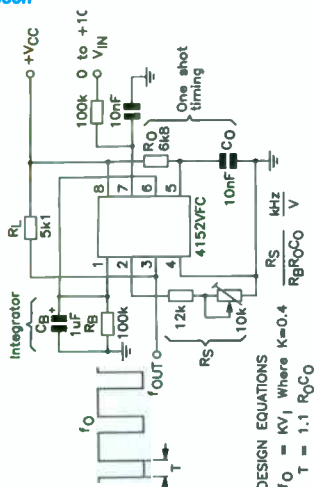
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2444	Price each exc. VAT	inc. VAT each
NF49D	MAX7219CNG	£5.960 10+ £4.960 50+ £4.250 200+	£7.450 1+

## F/V & V/F CONVERTERS

### RC4152N Voltage to Frequency Converter

Raytheon



A simple analogue to digital (A/D) converter which is very low cost yet has precision linearity typically  $\pm 0.05\%$  with e.g. LF351 used as an integrator, or a linearity or typically 1% on its own. The output of

the 4152 is a series of pulses of constant duration whose frequency is proportional to the applied input voltage. Supply voltage range is +7V to +18V, temperature stability is  $\pm 75$ ppm/ $^{\circ}$ C and the device has a high noise rejection ratio. Max output sink current: 20mA, open collector output. Supply current 2.5mA.

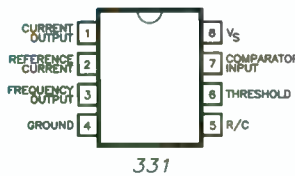


Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2404	Price each exc. VAT	inc. VAT each
UR17T	RC4152N	£3.650 10+ £3.510 25+ £3.410 100+	£5.780 1+

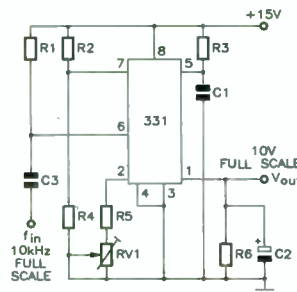
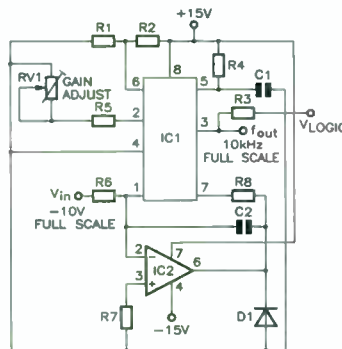
### LM331N Voltage to Frequency Converter

National Semiconductor



A voltage to frequency converter IC which is ideally suited for use in simple low-cost circuits for A/D conversion, F/V conversion, linear frequency modulation or demodulation and many other functions.

The output when used as a V/F converter is a pulse train at a frequency precisely proportional to the applied input voltage. Features include: full scale frequencies from 1Hz to 100kHz attainable; dynamic range of 100dB at 10kHz full scale; non-linearity typically  $\pm 0.003\%$  full scale; and excellent temperature stability typically  $\pm 30$ ppm/ $^{\circ}$ C.

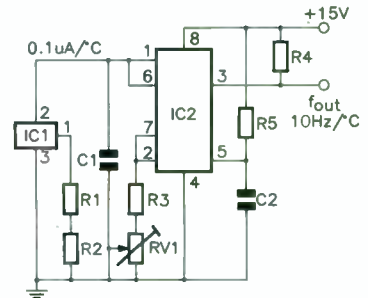


### Specification (typical at 25 $^{\circ}$ C)

Supply voltage: 4.5V to 40V  
Scale factor: 1kHz/V  
Output current: 136 $\mu$ A  
Operating range of current: 10 to 500 $\mu$ A  
Reference voltage (pin 2): 1.89V  
Supply current: 3mA at  $V_S = 5$ V  
4mA at  $V_S = 40$ V

### Parts List for Precision Voltage-to-Frequency Converter

R1,2,3	Min Res 10k	(M10K)
R4	Min Res 6k8	(M6K8)
R5	Min Res 12k	(M12K)
R6,7	Min Res 100k	(M100K)
R8	Min Res 2k2	(M2K2)
RV1	22-Turn Cermet 5k	(UH24B)
C1	Poly Layer 0.01 $\mu$ F	(WW29G)
C2	Mylar 0.0047 $\mu$ F	(WW17T)
D1	1N4002	(QL74R)
IC1	LM331	(UL47B)
IC2	OP-77	(UL05F)



### Parts List for Frequency-to-Voltage Converter

R1,2	Min Res 10k	(M10K)
R3	Min Res 6k8	(M6K8)
R4	Min Res 68k	(M68K)
R5	Min Res 12k	(M12K)
R6	Min Res 100k	(M100K)
RV1	22-Turn Cermet 5k	(UH24B)
C1	Poly Layer 0.01 $\mu$ F	(WW29G)
C2	PC Elect 1 $\mu$ F 100V	(FF01B)
C3	Polystyrene 470pF	(BX32K)

### Parts List for Temperature to Frequency Converter

R1	Min Res 2k2	(M2K2)
R2	Min Res 120 $\Omega$	(M120R)
R3	Min Res 12k	(M12K)
R4	Min Res 22k	(M22K)
R5	Min Res 6k8	(M6K8)
RV1	22-Turn Cermet 5k	(UH24B)
C1	Poly Layer 0.1 $\mu$ F	(WW41U)
C2	Poly Layer 0.01 $\mu$ F	(WW29G)
IC1	LM334Z	(WQ32K)
IC2	LM331	(UL47B)

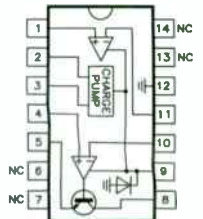
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2403	Price each exc. VAT	inc. VAT each
UL47B	LM331N	£3.470 10+ £3.230 25+ £3.070 100+	£5.000 1+

### LM2917N Frequency to Voltage Converter

National Semiconductor

This 14-pin DIL IC is extremely easy to use since  $V_{OUT} = F_{IN} \times V_{CC} \times VR1 \times C2$  where VR1 is the resistance between pin 3 and ground and C2 is the capacitor (in Farads) between pin 2 and ground. Features include ground referenced tachometer whose input interfaces directly with magnetic variable reluctance pick-ups; 2917 op-amp comparator with floating relays, solenoids, meters or LEDs etc; frequency doubling with low ripple; tachometer with built-in hysteresis for either differential or ground referenced input; built-in zener for accurate and stable frequency to current conversion and linearity typically  $\pm 0.3\%$ . Applications include over/under speed sensing, tachometers, speedometers, breaker point dwell meters, hand-held tachometers, speed governors, cruise control, touch or sound switches etc.



### Parts List

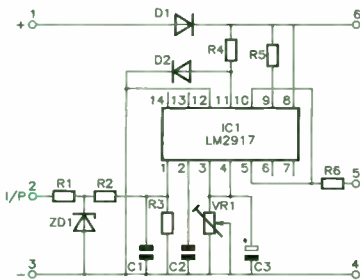
R1,2	Min Res 4k7	(M4K7)
R3	Min Res 22k	(M22K)
R4	Min Res 10k	(M10K)
R5	Min Res 470 $\Omega$	(M470R)
R6	Min Res 1k	(M1K)
C1	Poly Layer 0.022 $\mu$ F	(WW33L)
C2	Poly Layer 0.01 $\mu$ F	(WW29G)
C3	PC Elect 2.2 $\mu$ F 100V	(FF02C)



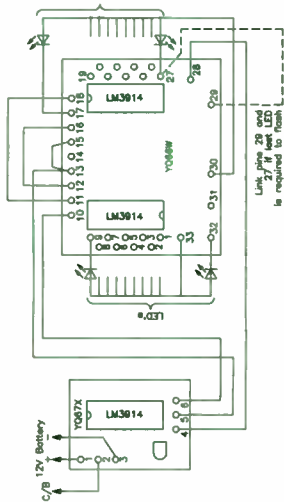
VR1	Hor S-Min Preset 100k	(UH06G)
D1	1N4001	(QL73Q)
D2	1N4148	(QL80B)
ZD1	BZY88C12	(QH16S)
IC1	LM2917	(WQ38R)
1	LM2917 PCB	(YQ67X)
6	Pins 2145	(FL24B)

**Application Circuits**

Frequency to Voltage Converter  
20-LED Display Rev Counter



A printed circuit board is available to make a frequency to voltage converter building block using the LM2917. A particular application is shown for a 20 LED display rev counter where this pcb is connected to the LM3914 pcb.



**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
	2470	1+	1+
YQ67X	LM2917 PCB	£1.260	£1.490

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
	2470	25+	100+
WQ38RLM2917N		£1.990	£1.580
			1+
			£4.770

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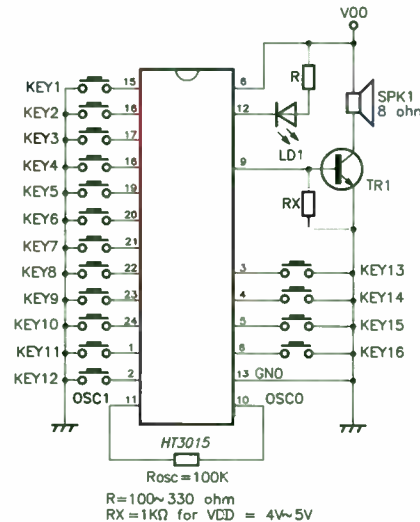
**AUDIO & MUSICAL GENERATORS & SUB SYSTEMS**

## HT3015 Latin Rhythm Generator

**Hoitek**

A low-cost 15-latin rhythm generator IC that is based on eight percussion instruments, and is triggered by 16-keys - KEY1 being a sequential select key. The device is ideal for toys and sound effects generators as it requires very few external components and includes a 3Hz flash rate LED driver output. The audio output will directly drive a single transistor amplifier for driving a small 8Ω loudspeaker. The IC features an in-built oscillator, that is set by one external resistor, and a typical standby current of 1µA. Requires a 2.4V to 5V DC supply rail. Supplied in 24-pin DIL package.

- KEY No. Rhythm**
- KEY2 Latin Fusion 1
  - KEY3 Latin Fusion 2
  - KEY4 Latin Ballad 1
  - KEY5 Latin Ballad 2
  - KEY6 Latin Rock 1
  - KEY7 Latin Rock 2
  - KEY8 Latin Fusion 3
  - KEY9 Samba 1
  - KEY10 Samba 2
  - KEY11 Son Afro
  - KEY12 Mambo
  - KEY13 Latin Rock 3
  - KEY14 Rumba
  - KEY15 Cha Cha
  - KEY16 Samba 3



**Suggested Parts List**

- R Min Res 100Ω to 300Ω depending on V<sub>DD</sub>
- Rx Min Res 1k (M1K) for V<sub>DD</sub>=4V to 5V
- Rosc Min Res 100k (M100K)
- LED1 3mm Red (CJ55K)
- TR1 ZTX302 (QL48C)
- KEY1-16 Push Switch (FH59P)
- SPK1 Lo Cost 8Ω Speaker (WB13P)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

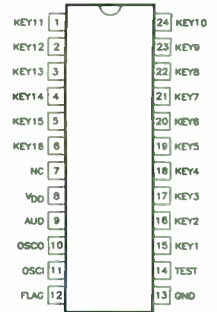
Order Code	Type	Price each exc. VAT	inc. VAT each
	12089	10+	25+
AZ18U	HT3015	£2.140	£1.120
			100+
			£1.040
			1+
			£3.980

† = While Stocks Last

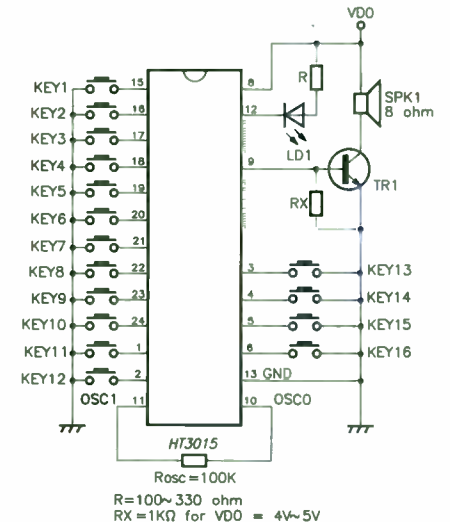
## HT3015 Latin Rhythm Generator

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A low-cost 15-latin rhythm generator IC that is based on eight percussion instruments, and is triggered by 16-keys - KEY1 being a sequential select key. The device is ideal for toys and sound effects generators as it requires very few external components and includes a 3Hz flash rate LED driver output. The audio output will directly drive a single transistor amplifier for driving a small 8Ω loudspeaker. The IC features an in-built oscillator, that is set by one external resistor, and a typical standby current of 1µA. Requires a 2.4V to 5V DC supply rail. Supplied in 24-pin DIL package.



- KEY No. Rhythm**
- KEY2 Latin Fusion 1
  - KEY3 Latin Fusion 2
  - KEY4 Latin Ballad 1
  - KEY5 Latin Ballad 2
  - KEY6 Latin Rock 1
  - KEY7 Latin Rock 2
  - KEY8 Latin Fusion 3
  - KEY9 Samba 1
  - KEY10 Samba 2
  - KEY11 Son Afro
  - KEY12 Mambo
  - KEY13 Latin Rock 3
  - KEY14 Rumba
  - KEY15 Cha Cha
  - KEY16 Samba 3



**Suggested Parts List**

- R Min Res 100Ω to 300Ω depending on V<sub>DD</sub>
- Rx Min Res 1k (M1K) for V<sub>DD</sub>=4V to 5V
- Rosc Min Res 100k (M100K)
- LED1 3mm Red (CJ55K)
- TR1 ZTX302 (QL48C)
- KEY1-16 Push Switch (FH59P)
- SPK1 Lo Cost 8Ω Speaker (WB13P)

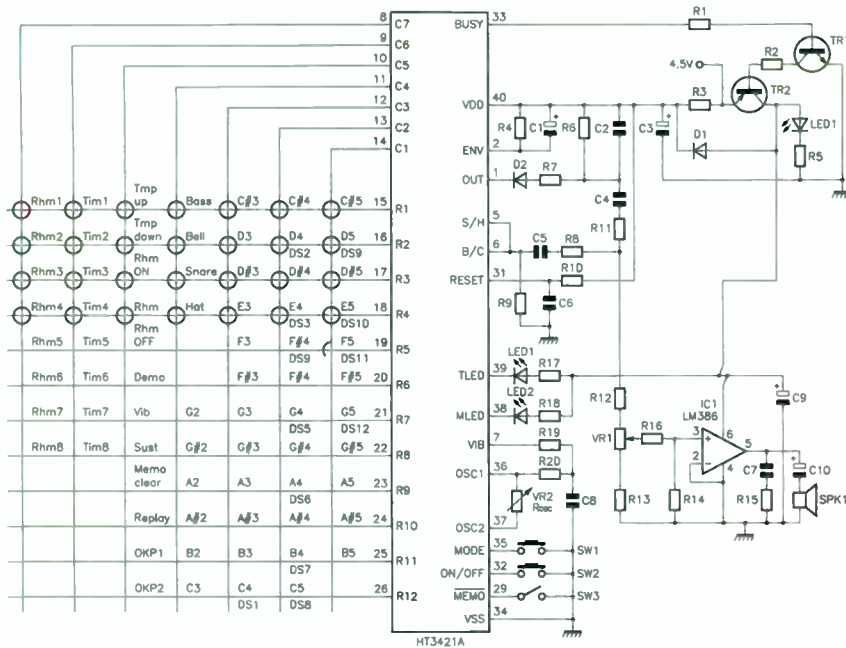
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
	11969	10+	25+
AZ19V	HT3088A	£2.140	£0.915
			£0.854
			1+
			£3.980

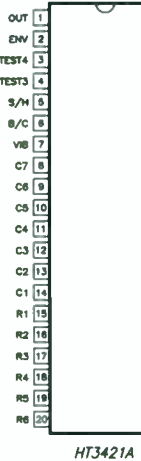
We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

## HT3421A 41-Key Multi Function Piano with Memory

Holtek



A 41-key (G2 to B5) musical instrument CMOS IC that provides eight rhythms, eight instruments, four drum, 12-demo songs and a 62-note memory function. The 'input' is via a 12 x 7 matrix keypad/keyboard that will control basic keys and functions. Vibrato and sustain effects can also be selected. A 16-level tempo is included which is controlled by the 'Tmp up/down' keys, and at power-on, the tempo is set to level 8. An output is provided to flash an LED in time with the selected tempo. In memory mode (indicated by an LED) the device can replay a stored 62-note song by pressing the 'replay key' or by pressing OKP1 (or OKP2) to replay the song note by note. In 'Demo' mode, one of 12 demonstration songs can be played using any of the eight instruments. The IC will operate from a 2.4V to 5V DC supply, and other features include a 512kHz system frequency, a power ON/OFF toggle input and power-down if there is no key input after 5 minutes. Supplied in a 40-pin DIL package



Instrument Key	Instrument	Rhythm Key	Rhythm
Tim1	Piano	Rhm 1	Cha Cha
Tim 2	Oboe	Rhm 2	March
Tim 3	Ukulele	Rhm 3	Rock
Tim 4	Flute	Rhm 4	Swing
Tim 5	Trumpet	Rhm 5	8 Beat
Tim 6	Saxophone	Rhm 6	Beguine
Tim 7	Music Box	Rhm 7	Ballad
Tim 8	Church Bell	Rhm 8	Waltz

### Suggested Parts List

R1,8,9,10,11,14,16	Min Res 10k	(M10K)
R2,13	Min Res 1k	(M1K)
R3	Min Res 430Ω	(M430R)
R4	Min Res 100k	(M100K)
R5	Min Res 220Ω	(M220R)
R6	Min Res 15k	(M15K)
R7	Min Res 39k	(M39K)
R12	Min Res 2k7	(M2K7)
R15	Min Res 10Ω	(M10R)
R17,18	Min Res 220Ω	(M220R)
R19	Min Res 360k	(M360K)
R20	Min Res 1M	(M1M)
VR1	Min Pot Log 47k	(JM78K)
VR2	Cermet Preset 100k	(WR44X)
C1	Min Elect 4.7μF 63V	(RA53H)
C2	Mylar 0.022μF	(WW19V)
C3	Min Elect 220μF 63V	(JL06G)
C4,5,6,7,8	Mylar 0.1μF	(WW21X)
C9	PC Elect 470μF 16V	(FF15R)
C10	PC Elect 100μF 10V	(FF10L)
TR1	ZTX302	(QL48C)
TR2	ZTX502	(QL62S)
IC1	LM386N	(UJ37S)
D1,2	1N4148	(QL80B)
LED1	3mm Low Current	(CJ55K)
LED2	3mm Low Current	(CJ56L)
LED3	3mm Low Current	(CJ57M)
SPK1	100mm 8Ω1.5W	(YT25C)
SW1,2	Push Button Switches	(FF96E)
SW3	Square Locking	(YW41U)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

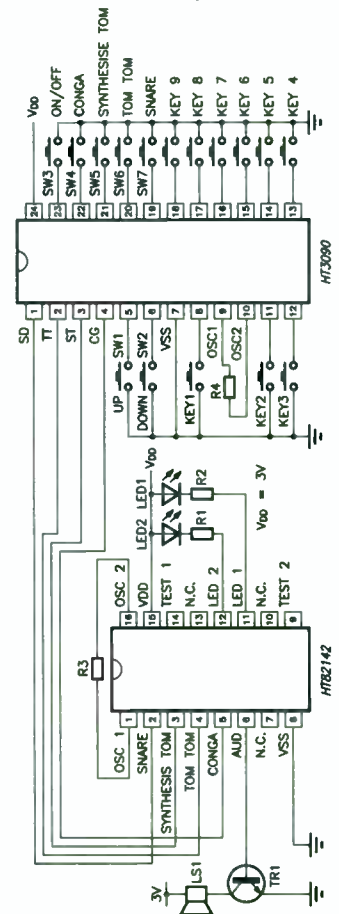
Order Code	Type 11995	Price each exc. VAT	inc. VAT each
AZZ2Y	HT3421A	£2.640 10+ £1.510 25+ £1.410 100+	£3.228 1+

## OHT82142/HT3090 Drum/Rhythm Generators

Holtek

A pair of CMOS LSI devices especially designed for drum/rhythm generator applications. HT82142 generates the drum sounds and provides the audio output while HT3090 creates various timing signals and demonstration rhythms. When used together, the combination will produce four drum sounds, nine demonstration rhythms, with seven levels of tempo speed, and an audio output that will drive a single transistor amplifier. The ICs will operate from a 2.4V to 4.5V DC supply and have a very low stand-by current, typically 1μA with a 3V DC supply. Two LED outputs are provided - LED1 will flash at the tempo rate and LED2 will flash at a constant 4Hz. HT8142 is supplied in a 16-pin DIL package, and HT3090 is supplied in a 24-pin DIL package.

HT82142	Drum Sound	HT3090	Demo Rhythms
Pin1	Conga	Key1	Rock
Pin2	Tom Tom	Key2	Disco
Pin3	Syntesise	Key3	Swing
Pin4	Tom Tom	Key4	Tango
	Snare	Key5	Rumba
		Key6	Merengue
		Key8	Country
		Key9	Waltz



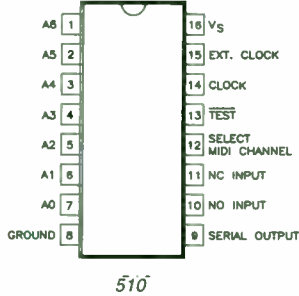
### Suggested Parts List

R1,2	Min Res 270S	(M270R)
R3	Min Res 120k	(M120K)
R4	Min Res 91k	(M91K)
TR1	ZTX302	(QL48C)
LED1	5mm LED Red	(WL27E)
LED2	5mm LED Green	(WL28F)
SW1-7	Push Button Switches	(FH59P)
KEY1-9	Push Button Switches	(FH59P)
LS1	66mm L/S Hi-Z	(WF57M)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 11995	Price each exc. VAT	inc. VAT each
AZ20W	HT3090	£3.400 1+ £2.190 10+ £0.810 250+	£4.000 1+
AZ21X	HT82142	£1.890 1+ £1.370 10+ £0.600 250+	£2.230 1+

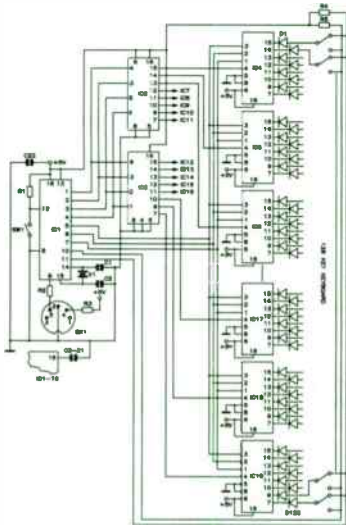
## E510 Keyboard Scanner for Touch Sensitive Keyboards



A fully polyphonic, fast keyboard scanner with serial data output to MIDI specifications. Up to 128 keys (>10 octaves) can be scanned, each touch sensitive with a resolution of 128µs (256µs with a 4MHz clock). The speed is measured on pressing or releasing each key and the chip incorporates debounce circuitry. The IC is HCMOS compatible, has integrated oscillator, FIFO, and can select MIDI channel number, and only a few external components are required. With a clock rate of 4MHz, the output baud rate is 31250 baud. Every time a key is pressed or released, the velocity is calculated by measuring the time with a 7-bit reverse-counting counter. At the same time every press and release is tested for validity. The key is only recognised if it goes from pin 10 to pin 11 or vice versa and thus key bounce is eliminated. An internal FIFO register allows fully polyphonic playing and thus several keys can be pressed simultaneously. The output transmits according to the MIDI specification, the key number, the key velocity, whether the key is on or off and which MIDI channel it is to go to. Close SW1 to transmit to channel 1.

An external clock between 4MHz and 8MHz can be connected to pin 15, in which case pin 14 is left open circuit. If an 8MHz crystal is used, the output rate will be 62500 baud.

**Specification**  
Supply voltage: 5V ±5%  
Supply current: 5mA  
Max clock rate: 8MHz



### Parts List

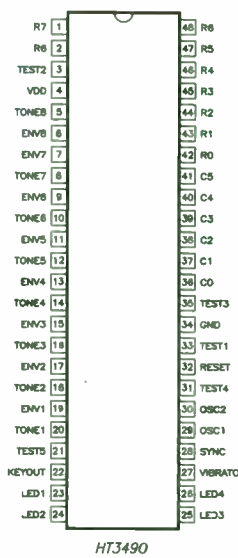
R1	Min Res 1kΩ	(M1K)
R2,3	Min Res 200Ω	(M200R)
R4,5	Min Res 470Ω	(M470R)
C1,2	Ceramic 22pF	(WX48C)
C3-22	Minidisc 0.1µF 16V	(YR75S)
X1	Crystal 4MHz	(FY82D)
D1-128	1N4148	(QL80B)
IC1	E510	(KU41U)
IC2-19	74HC138	(UB33L)
SK1	DIN Socket 5-pin A	(HH34M)
SW1	As required	

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
KU41U	E510	£24.000	£22.000
		£19.000	£23.980

## HT3490 49-Key, 8-Channel Tone Generators

Holtek



A 49-key CMOS keyboard IC covering octaves C3 to C7 with the addition of eight independent tone generators, four instruments and vibrato function. The IC can easily be interfaced with other circuits to include rhythm and chord functions. The device uses an external 3.575945MHz resonator which gives very accurate and stable tone generator outputs and will operate from a 2.4V to 5V DC supply. A warning sound is emitted after 140s if there is no key entry. Supplied in a 48-pin DIL package.

### Key Name Description

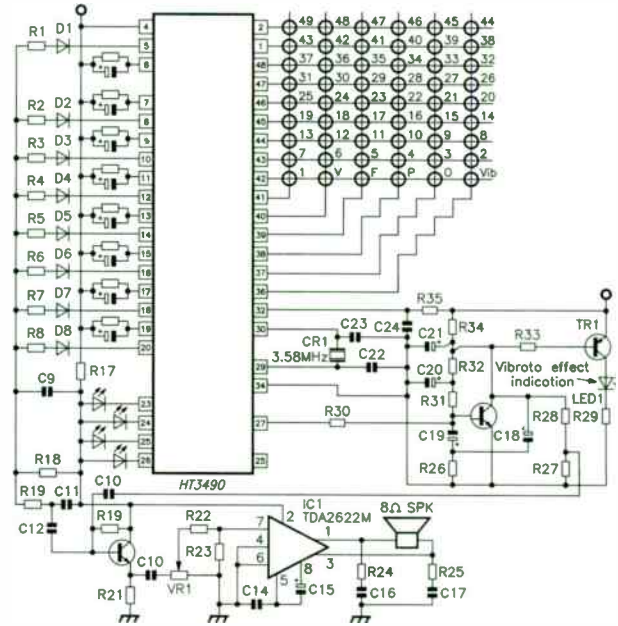
K1 to K49	Scale from C3 to C7 for flute. There are 29 full-scale and 20 chromatic scale keys
V	Violin instrument
F	Flute instrument
P	Piano instrument
O	Organ instrument
Vib	Vibrato effect ON/OFF toggle select. Set OFF at power-on

### Suggested Parts List

R1-8	Min Res 43k	(M43K)
R9-16,35	Min Res 100k	(M100K)
R17,21	Min Res 1k	(M1K)
R18,27	Min Res 22k	(M22K)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZZ3A	HT3490	£2.520	£1.680
		£1.490	£7.250



Note: The Piano, Organ, Flute & Violin timbre are indicated by LED1-LED4. On the key matrix, the 1-49 are denoted K1-K49 (C3-C7). V: Violin, F: Flute, P: Piano, O: Organ, Vib: Vibrato effect (on/off)

The key switch Rn is equal to  $\begin{matrix} \text{---} & \text{---} \\ | & | \\ \text{---} & \text{---} \\ \text{Cn} & \text{Cn} \end{matrix}$

R19,23,30,33	Min Res 10k	(M10K)
R20	Min Res 1M	(M1M)
R22	Min Res 27k	(M22K)
R24,25	Min Res 10Ω	(M10R)
R26	Min Res 3.9k	(M3K9)
R28	Min Res 120k	(M120K)
R29	Min Res 100Ω	(M100R)
R31,32	Min Res 47k	(M47K)
R34	Min Res 4k7	(M4K7)
C1-8	Tant 4.7µF	(WW64U)
C9,11	Monores 0.022µF	(RA45Y)
C10,12,13,14,16,17,24	Monores Cap 0.1µF	(RA49D)
C15,21	Tant 22µF 16V	(YY36P)
C18,19,20	Tant 1µF 35V	(WW60Q)
C22	Ceramic 12pF	(WX45Y)
C23	Ceramic 18pF	(WX47B)
IC1	TDA2822M	(UJ38R)
D1-8	1N4148	(QL80B)
TR1	ZTX502	(QL62S)
TR2	ZTX302	(QL48C)
CR1	Ceramic Res 3.58MHz	(DJ31J)
LED1	3mm Green	(CJ56L)
LED2,3,4,5	3mm Yellow	(CJ57M)
SPK1	100mm Low Cost	(YT25C)

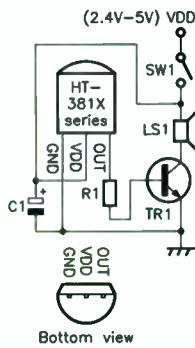
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## HT381xx Series Melody Generators

Holtek



Bottom view

A range of melody generator ICs in a standard 3-pin TO-92 plastic package - ideal for greetings cards, toys and other novelty devices. The ICs can directly drive a small piezo electric sounder, although higher quality sound can be obtained by using a small 8Ω speaker driven by a NPN transistor. Designed to operate from a 2.4V to 5V DC power supply.

Order Code	Device	Melody
AZ57M	HT3810B	Happy Birthday To You
AZ60Q	HT3810N	London Bridge Is Falling Down + The Train Is Running Fast
AZ61R	HT3810W	Old MacDonald Had A Farm
AZ59P	HT3812A	Greensleeves
AZ63T	HT3812G	Love Me Tender
AZ53H	HT3813A	Jingle Bells
AZ54J	HT3813E	We Wish You a Merry Christmas
AZ56L	HT3813M	Hark, The Herald Angel Sings + The 12 Days of Christmas
AZ62S	HT3814A	You Are My Sunshine
AZ64U	HT3814K	I Just Called To Say I Love You

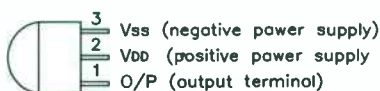
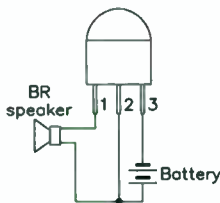
### Suggested Parts List

R1	Min Res 1k (5V supply)	(M1K)
C1	Tant 10µF 16V	(WW68Y)
TR1	ZTX302	(QL48C)
SW1	Push Button Switch	(FH59P)
LS1	L/S 50mm 8Ω	(WB08J)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
AZ57M	HT3810B	£0.400	£0.267	£0.229	£0.750
AZ60Q	HT3810N	£0.398	£0.265	£0.227	£0.750
AZ61R	HT3810W	£0.400	£0.267	£0.229	£0.750
AZ59P	HT3812A	£0.400	£0.267	£0.229	£0.750
AZ63T	HT3812G	£0.400	£0.267	£0.229	£0.750
AZ53H	HT3813A	£0.400	£0.267	£0.229	£0.750
AZ54J	HT3813E	£0.400	£0.267	£0.229	£0.750
AZ56L	HT3813M	£0.400	£0.267	£0.229	£0.750
AZ62S	HT3814A	£0.400	£0.267	£0.229	£0.750
AZ64U	HT3814K	£0.400	£0.267	£0.229	£0.750

## M66T Simple Melody Generator



A low power CMOS LSI device for generating tunes for melody cards, toys and other novelty devices. The built-in oscillator and powerful driving capability

minimises the number of external components required, in fact, all that is additionally needed is a 1.5V battery, a switch and an 8Ω speaker. The device can be powered from a wide range of supply voltages from 1.2V to 3.6V with low power consumption (note that the internal oscillator needs 1.3V to start).

One of five different tunes or tune combinations are available in a single device, as follows:

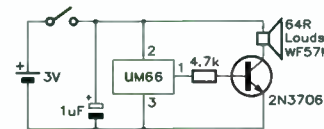
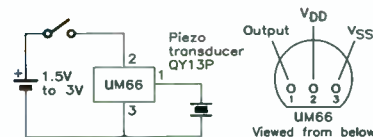
Type	Tune	Duration,
M66T-02B	Twinkle Twinkle Little Star	16.4sec
M66T-36	Old McDonald Had a Farm	24.8sec
M66T-205	I'd Like To Teach The World To Sing	20.4sec
M66T-214	White Christmas	49.5sec
M66T-215	Warning Tone	10.8sec

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	
GX55K	M66T-02B	£0.407	£0.271	£0.233	£0.560
GX56L	M66T-11	£0.350	£0.290		£0.590
GX57M	M66T-36	£0.408	£0.272	£0.233	£0.560
GX58N	M66T-205	£0.406	£0.271	£0.232	£0.560
GX59P	M66T-214	£0.407	£0.271	£0.233	£0.560
GX60Q	M66T-215	£0.290	£0.216	£0.207	£0.730

## UM66 Melody Generator

UMC



A simple melody generator IC as used in musical greetings cards. A complete melody generator can be made by adding just a piezo transducer and a 1.5V battery. After connecting the battery, the tune will play once and stop. The voltage must be disconnected then reconnected to retrigger the IC.

### Specification (V<sub>SS</sub> = 0V)

Operating voltage (V <sub>DD</sub> )	1.3V to 3.3V
Standby current	<1µA
Operating current	<60µA (no load)
Output current	±1.5mA
Type	UM66T09
Tune	Wedding March

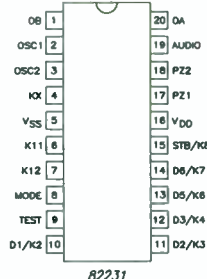
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	
UJ42V	UM66T09	£0.475	£0.380	£0.292	£0.790

## HT82231 Sound Effects Generator

Holtek

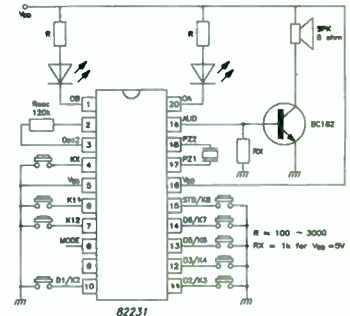
A PCM speech synthesis chip with a variety of programmed sound effects including various animal and farmyard sounds - elephant, cock, hen, frog, dog, sheep, cat, horse, duck, bird, pig and cow. Outputs are also provided for two LEDs for indicating audio output level and a 2Hz flash signal while in the busy state. Many applications in novelty and children's toys, etc. Other features include low stand-by current of 1µA, minimum of external components and simple



operation.

### Specification

Operating voltage, V <sub>CC</sub> :	2.4V to 5V, 3V typ
Operating current (No load), I <sub>op</sub> :	100µA to 300µA
(at V <sub>CC</sub> =3V)	
Audio output, I <sub>o</sub> :	2mA typ
High-input voltage, V <sub>IH</sub> :	0.7V
Low-input voltage, V <sub>IL</sub> :	0.3V
Active-low input pulse width:	200µs min
Operating temperature, T <sub>A</sub> :	0°C to 70°C



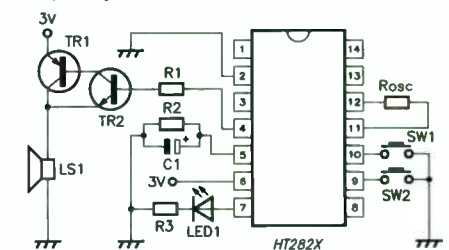
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	1+	
AE12N	HT82231	£2.700	£2.380		£4.490

## HT282xx Series 2-Sound Generators

Holtek

A range of simple two-sound generator ICs offering low-cost sound effects for toys, novelties etc. The sounds are selected via a simple two transistor amplifier driving a small 8Ω loudspeaker. Additionally, the HT2821E can drive a small piezo electric sounder, if preferred, and has an LED driver output. Operating from a 2.4V to 4.5V (3.3V for HT2821E) DC power supply, these devices have a typical stand-by current of just 1µA at 3V, auto power-off and built-in envelope circuit. Supplied in a 14-pin DIL package.



Order Code	Device	Sound Effect
AZ44X	HT28201	2 x Motor Cycle
AZ45Y	HT2821E	1 x Brake, 1 x Explosion

Note that LED1 and R3 are only required for the HT2821E.

### Suggested Parts List

R1	Min Res 1k	(M1K)
R2	Min Res 100k	(M100K)
R3	Min Res 100Ω	(M100R)
Rosc	Min Res 330k	(M330K)
C1	Tant 10µF 16V	(WW68Y)
TR1	ZTX502	(QL62S)
TR2	ZTX302	(QL48C)
LED1	3mm Red Lo Current	(CJ58N)
SW1,2	Push Button Sw	(FH59P)
LS1	66mm L/S 8Ω	(WB13P)

R2, C1 and Rosc can be adjusted to suit requirements.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

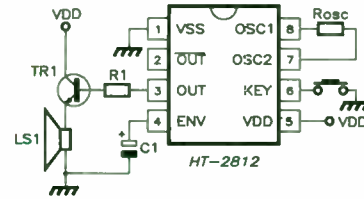
Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
AZ44X	HT28201	£0.523	£0.349	£0.299	£0.990
AZ45Y	HT2821E	£0.523	£0.349	£0.299	£0.990

## HT281x Series Sound Generators

**Holtek**

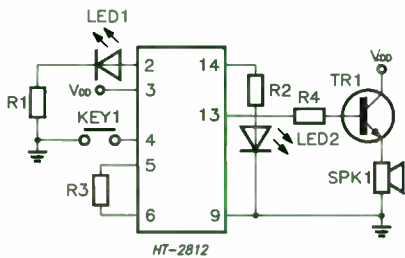
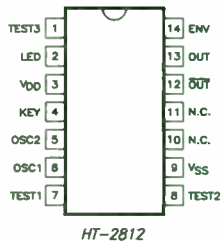
A range of low cost single sound ICs providing a selection of typical sounds. Easy to use, these ICs require a minimum of external components to make a compact system including a small loudspeaker. The devices will operate from a 2.4V to 3.3V DC supply and have a typical stand-by current of 1µA at 3V. If required, the ICs can drive a small piezo electric sounder direct. Featuring a built-in envelope control and auto power-off, these devices are ideal for toys and novelties. Supplied in a 8-pin (HT2810) or 14-pin (HT2812) DIL package.

Order Code	Device	Generated Sound
AZ32K	HT2810B	Car Siren Version 1
AZ33L	HT2810C	Car Siren Version 2
AZ34M	HT2810H	Police Car
AZ37S	HT2812A	Aeroplane
AZ38R	HT2812B	Rocket



### Suggested Parts List for HT2810 Series

R1	Min Res 1k	(M1K)
Rosc	Min Res 330k	(M330K)
C1	Tant 33µF 10V	(WW74R)
TR1	ZTX302	(QL48C)
KEY	Push Button Switch	(FH59P)
LS1	L/S 50mm 8Ω	(WB08J)



### Suggested Parts List for HT2812 Series

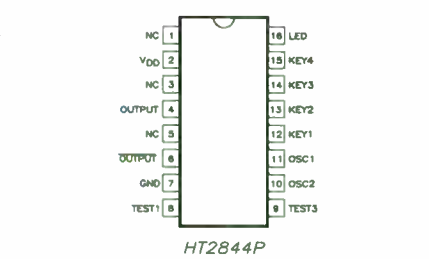
R1,2,4	Min Res 100Ω	(M100R)
R3	Min Res 390k	(M390K)
LED1,2	3mm Red	(WL32K)
TR1	ZTX302	(QL48C)
KEY1	Push Button Switch	(FH59P)
SPK1	L/S 50mm 8Ω	(WB08J)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

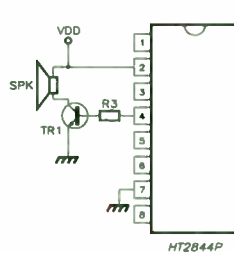
Order Code	Type	Price each exc. VAT	inc. VAT each
AZ32K	HT2810B	£0.492	£0.394
AZ33L	HT2810C	£0.492	£0.394
AZ34M	HT2810H	£0.492	£0.394
AZ37S	HT2812A	£0.492	£0.394
AZ38R	HT2812B	£0.492	£0.394

## HT2844P 4-Jet Sounds Generator

**Holtek**



This simple, fun 4-jet sounds generator IC has a output that will directly drive a small piezo sounder or a small loudspeaker via a single transistor amplifier. The different sounds are selected by four push switches, and an LED can be made to flash when the device is generating a sound. The IC is designed to operate from a 3V DC supply with a typical standby current of only 1µA, and features auto power-off. Supplied in a 16-pin DIL package.



### Suggested Parts List

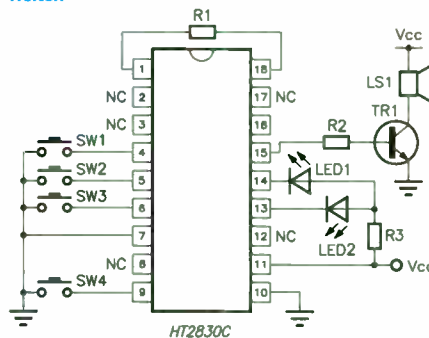
R1	Min Res 50Ω	(M50R)
R2	Min Res 220k	(M220K)
R3	Min Res 470Ω	(M470R)
LED1	3mm Red LED	(CJ55K)
TR1	ZTX302	(QL48C)
KEY1-4	Push Switch	(FH59P)
SPK	50mm L/S 8Ω	(WB08J)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ47B	HT2844P	£0.492	£0.394

## HT2830C Train Sound Generator

**Holtek**



A CMOS LSI train sound generator chip with variable speed and the added advantage of either a bell or horn sound effect that can directly drive a piezo sounder (FM59P). The device will work from a 3V supply and has a typical standby current of 1µA. Two LEDs can be driven by a suitable series resistor, with a flash rate dependent on the speed selected. An audio output is provided to drive a small loudspeaker via a simple, single transistor amplifier. If an amplified output is not required, then a piezo sounder can be connected across pins 15 and 16. SW2 and 3 are used to increase or decrease the train sound speed. The device has a very low external component count, making it ideal for model railways and sound effects generators. Supplied in an 18-pin DIL package.

### Suggested Parts List

R1	Min Res 82k	(M82K)
R2	Min Res 1k	(M1K)
R3	Min Res 470S	(M470R)
TR1	ZTX302	(QL48C)
LED1	5mm LED Red	(WL27E)
LED2	5mm LED Green	(WL28F)
SW1,2,3,4	Push Button Switches	(FH59P)
LS1	L/S 50mm 8S	(WB08J)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ46A	HT2830C	£0.850	£0.680

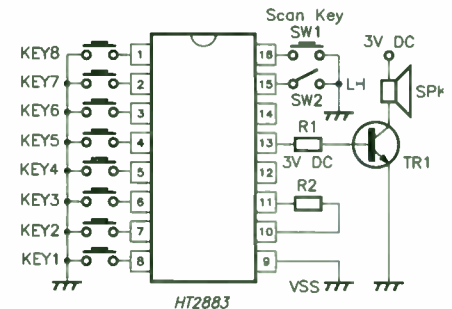
## HT2883 Series Sound Generators

**Holtek**

Each device in this range of low cost sound generator ICs produce eight different sounds, such as tunes, explosions etc., based on a specific theme. Working from a typical DC supply of 3V, each device has a very low stand-by current of 1µA, and features auto power-off. The eight sounds can be keyed independently with the option of either a 'one-shot' or continuous for each key press. Alternatively, the sounds can be scanned sequentially. The output can directly drive a small piezo electric sounder, or with just one transistor and one resistor, can drive a small loudspeaker. Supplied in a 16-pin DIL package.

### Order Device Sounds

AZ49D	HT2883E	8 Types of Submarine War Sounds
AZ50E	HT2883F	8 Types of Helicopter War Sounds
AZ51F	HT2883I	8 Types of Racing Car Sounds



### Suggested Parts List

R1	Min Res 100Ω	(M100R)
R2	Min Res 150k	(M150K)
TR1	ZTX302	(QL48C)
LS1	L/S 50mm 8Ω	(WB08J)
SW1, KEY 1-8	Min Push Sw	(FH59P)
SW2	SP Sub-Min Slide Sw	(FF77J)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ49D	HT2883	£0.616	£0.493
AZ50E	HT2883F	£0.616	£0.493
AZ51F	HT2883I	£0.619	£0.495

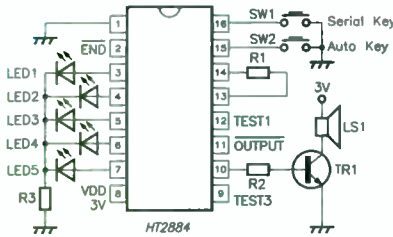
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## HT2884 8-Sounds Generator with 5-LED Outputs

Holtek



A low-cost eight sound (five different sounds plus variations) generator IC with five LED indicators in a 16-pin DIL package. The sounds are selected by two push button switches either 'serially' or 'automatically'. The five LEDs will flash sequentially in synchronism with the five different sounds. The device can directly drive a small piezo sounder if required. Operating from a 2.2V to 5V DC power supply, the device has a typical stand-by current of just 1µA at 3V, auto power-off and built-in oscillator.

### Types of Sounds

- 2 x Laser Gun
- 1 x Dual Tone
- 2 x Bombs
- 2 x Machine Guns
- 1 x Rifle

### Suggested Parts List

R1	Min Res 180k	(M180K)
R2	Min Res 150Ω	(M150R)
R3	Min Res 82Ω	(M82R)
TR1	ZTX302	(QL48C)
LED1-5	3mm Low Current Yellow	(CJ57M)
SW1,2	Push Button Switch	(FH59P)
LS1	66mm L/S 8Ω	(WB13P)

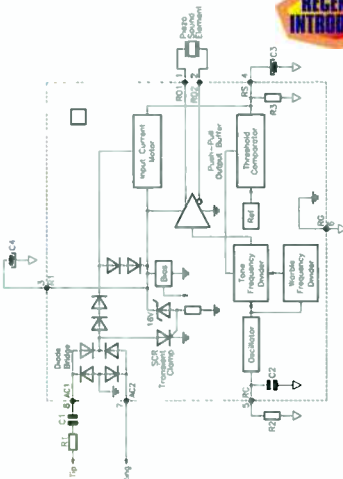
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ52G	HT2884	£0.616	£0.493

## MC34217P Tone Ringer

Motorola

RECENTLY INTRODUCED



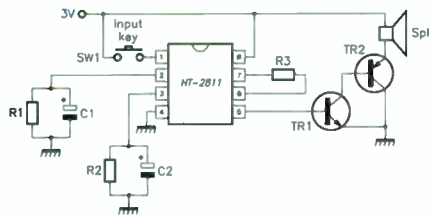
The MC34217P provides a simple and effective alternative to a telephone bell, requiring few external components. The IC features on-chip diode bridge, internal transient protection and a differential output feed for a piezo sounder. The Base and warble frequencies can be independently adjusted. Power is derived from the line and any 'hook switch' or 'rotary dial' transients are automatically rejected. Supplied in an 8-pin DIL package.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
GS12N	MC34217P	£0.750	£0.600

## HT-2811

Holtek



The HT-2811 is a CMOS LSI chip specifically designed to provide the 'ding dong' chime of a doorbell. It produces a high quality dual tone sound and requires little in the way of external components to produce a compact, low cost door bell. Features include CMOS metal-gate process, operating voltage in the range of 2.4 to 3.3V with low stand-by current and excellent sound quality with an envelope adjustable by external RC.

### Suggested Parts List

R1	Min Res 220k	(M220K)
R2	Min Res 330k	(M330K)
R3	Min Res 620k	(M620K)
C1	Tant 3.3µF 35V	(WW63T)
C2	Tant 4.7µF 16V	(WW64U)
TR1	ZTX302	(QL48C)
TR2	ZTX502	(QL62S)
SW1	Bell Push	(FS17T)
SPK	L/S 66mm 8Ω	(WP13P)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

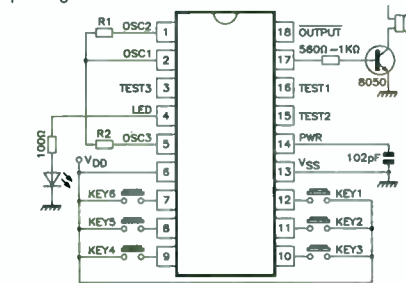
Order Code	Type	Price each exc. VAT	inc. VAT each
BH69A	Bel Sound Gen HT2811	£0.490	£0.392

## HT-2860 Alarm Sounds Generator

A versatile sound chip capable of six different alarm sounds, including 4 various alarm sounds, a horn and an ambulance sound. Each of the six sounds can either be played independently by triggering one of the keys (K1 to K6), or can be cascaded, according to the key priorities (K1 to K6 from high to low), by triggering more than one key simultaneously. The device can directly drive a piezo transducer connected to pins 17 and 18, or can be modified for loudspeaker output on pin 17 (see diagram). Only a few components are needed to produce a working design. Simply connect a 120kΩ resistor between pins 1 and 2, and a 560kΩ resistor between pins 2 and 5. Similarly, connect a 1000pF capacitor between pins 13 and 14. Pins 7 to 12 trigger the different alarm sounds, with power to pin 6 and ground to pin 13.

A suitable piezo sounder can now be connected between pins 17 and 18 for sound output. Additionally, pin 4 can source enough current to drive an LED via a suitable series resistor.

The device requires a 2.4V to 4.5V DC supply and has a typical 1µA standby current with a 3V supply, and features auto power. Supplied in 18-pin DIL package.

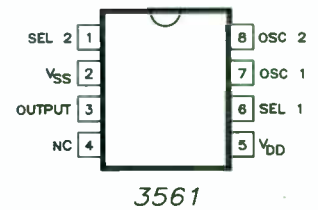


Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AE15R	HT2860B	£0.619	£0.495

## UM3561 Sound Effects Generator

UMC



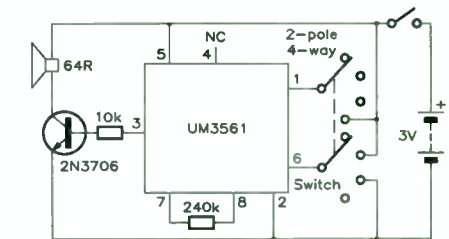
A simple sound generator IC that can produce four sound effects. Designed for use in toys, the effects are selected by varying the connections to pins 1 and 6 as follows:

3561

Pin 1	Pin 6	Sound effect
No connection	No connection	Police siren
No connection	VDD	Fire engine siren
No connection	VSS	Ambulance siren
VDD	Anything	Machine gun

### Specification

Supply voltage	3V (2.4V to 3.6V)
Operating current	150µA
Output current	>3mA



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

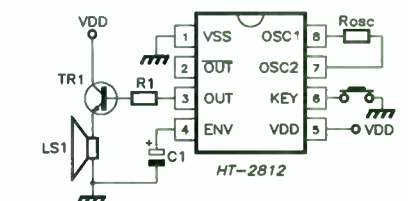
Order Code	Type	Price each exc. VAT	inc. VAT each
UJ45Y	UM3561	£0.590	£0.420

## HT281x Series Sound Generators

Holtek

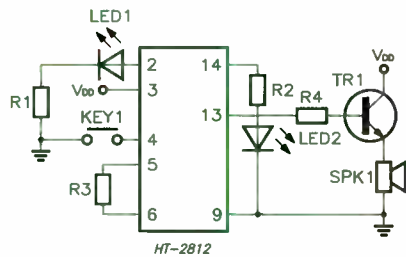
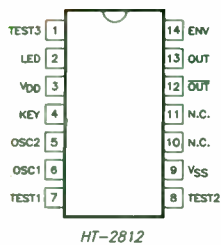
A range of low cost single sound ICs providing a selection of typical sounds. Easy to use, these ICs require a minimum of external components to make a compact system including a small loudspeaker. The devices will operate from a 2.4V to 3.3V DC supply and have a typical stand-by current of 1µA at 3V. If required, the ICs can drive a small piezo electric sounder direct. Featuring a built-in envelope control and auto power-off, these devices are ideal for toys and novelties. Supplied in a 8-pin (HT2810) or 14-pin (HT2812) DIL package.

Order Code	Device	Generated Sound
AZ32K	HT2810B	Car Siren Version 1
AZ33L	HT2810C	Car Siren Version 2
AZ34M	HT2810H	Police Car
AZ37S	HT2812A	Aeroplane
AZ38R	HT2812B	Rocket



### Suggested Parts List for HT2810 Series

R1	Min Res 1k	(M1K)
Rosc	Min Res 330k	(M330K)
C1	Tant 33µF 10V	(WW74R)
TR1	ZTX302	(QL48C)
KEY	Push Button Switch	(FH59P)
LS1	L/S 50mm 8Ω	(WB08J)



**Suggested Parts List for HT2812 Series**

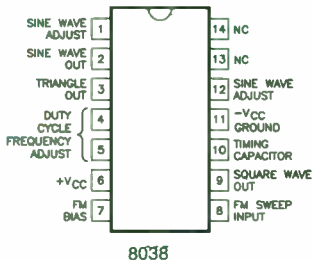
R1,2,4	Min Res 100Ω	(M100R)
R3	Min Res 390k	(M390K)
LED1,2	3mm Red	(WL32K)
TR1	ZTX302	(QL48C)
KEY1	Push Button Switch	(FH59P)
SPK1	L/S 50mm 8Ω	(WB08J)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ32K	HT2810B	£0.492	£0.303
AZ33L	HT2810C	£0.492	£0.303
AZ34M	HT2810H	£0.492	£0.303
AZ37S	HT2812A	£0.492	£0.303
AZ38R	HT2812B	£0.492	£0.303

## ICL8038CCPD Waveform Generator

Harris



A 14-pin DIL IC capable of producing sine, square, triangular, sawtooth and pulse waveforms of high accuracy and stability. The frequency may be selected to be from 0.001Hz to 1MHz, Frequency modulation and sweeping can be accomplished with an external voltage and the frequency can be programmed digitally by resistors or capacitors. Sweep range can be up to 40:1 or 1000:1 with a little less quality.

The circuit shows a sine, triangle and square wave generator. SW1 is the range switch, SW2 sets the waveshape, VR4 sets the output level and VR3 is the frequency control. VR1 and VR2 should be adjusted to give minimum distortion of sine wave.

**Specification**

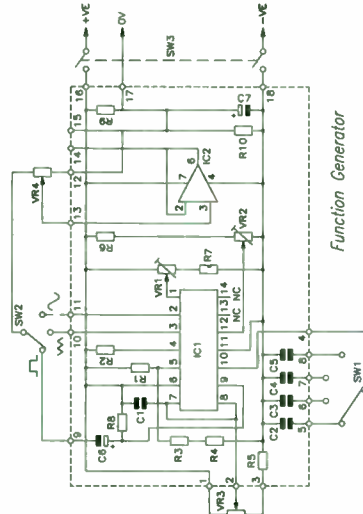
Supply voltage: 5-0.5V to 10-0.10V (e.g. 2 x PP3 batteries)

Output impedance: 600Ω  
Output levels max peak-to-peak:  
sinewave: (V<sub>S</sub> = 7.5-0.7-5V)  
triangle: 3V  
square: 5V  
12V

Distortion sinewave  
<10kHz: <1%  
10kHz to 100kHz: <4%  
100kHz to 200kHz: <7%

Linearity triangle  
<40kHz: <0.1%

40kHz to 100kHz: <1%  
100kHz to 200kHz: <8%  
Square Wave  
<100kHz: Rise time 2μs  
100kHz to 200kHz: 1μs  
Fall time 2μs  
1μs  
Frequency range  
Range 1: 10Hz to 400Hz  
Range 2: 100Hz to 4kHz  
Range 3: 1kHz to 40kHz  
Range 4: 6.25kHz to 200kHz



**Parts List**

R1,2,9,10	Min Res 2k2	(M2K2)
R3	Min Res 10M	(M10M)
R4	Min Res 4M7	(M4M7)
R5	Min Res 22k	(M22K)
R6,7	Min Res 10k	(M10K)
R8	Min Res 2k7	(M2K7)
C1	Poly Layer 1μF	(WW53H)
C2	Polyester 0.22μF	(BX78K)
C3	Polyester 0.022μF	(BX72P)
C4	Polystyrene 2200pF	(BX37S)
C5	Polystyrene 220pF	(BX30H)
C6	PC Elect 47μF 25V	(FF08J)
C7	PC Elect 100μF 25V	(FF11M)
VR1,2	Hor Sub-Min Preset 100k	(UH06G)
VR3,4	Pot Lin 10k	(FW02C)
IC1	8038CCPD	(YH38R)
IC2	LF351	(WQ30H)
SW1	Rotary SW4B	(FF75S)
SW2	Rotary SW3B	(FF76H)
SW3	Sub-Min Toggle E	(FH04E)
1	8038 PCB	(YQ65V)
1	DIL Socket 8-pin	(BL17T)
1	DIL Socket 14-pin	(BL18U)
18	Pins 2141	(FL21X)

A pcb is available for the circuit shown.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YQ65V	8038 PCB	£1.260	£1.490

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

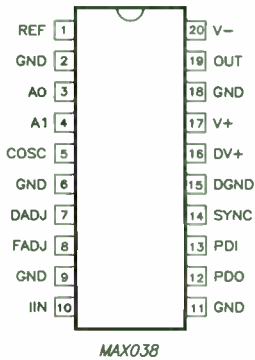
Order Code	Type	Price each exc. VAT	inc. VAT each
YH08R	ICL8038CCPD	£3.140	£1.890

## MAX038CPP

Maxim

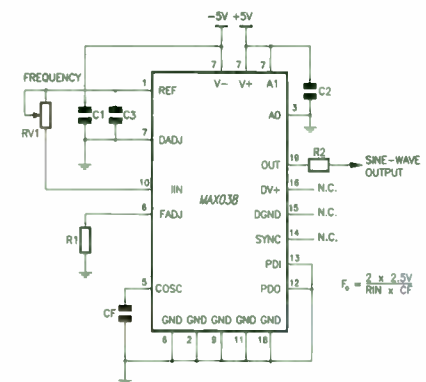
The MAX038CPP is a high frequency, precision function generator producing accurate, high frequency triangle, sawtooth, sine, square and pulse waveforms with the minimum of external components. The output frequency can be controlled over a frequency range of 0.1Hz to 20MHz by an internal 2.5V bandgap voltage reference and an external resistor and capacitor. The duty cycle can be varied over a wide range by applying a ±2.3V control signal, facilitating pulse width modulation and frequency sweeping are

achieved in the same way. The duty cycle and frequency controls are independent. Sine, square and triangle waveforms are selected by setting the appropriate code at two TTL-compatible select pins. The output signal for all waveforms is a 2V pk-pk signal that is symmetrical about ground. The low impedance output can drive up to ±20mA. The TTL compatible 'SYNC' output from the internal oscillator maintains a 50% duty cycle, regardless of the duty cycle of the other waveforms. This allows synchronisation with other devices in the system. The internal oscillator can be synchronised to an external TTL clock connected to pin 13. Supplied in 20-pin DIL plastic package.



**Specification**

Power supply: ±5V DC typical  
Typical supply current: +35mA, -45mA  
Operating frequency: 40MHz max.  
Frequency temperature coefficient (V<sub>FADJ</sub>=-3V): 200ppm/°C  
Output amplifier symmetry: ±4mV  
resistance: 0.1Ω  
short circuit current: 40mA to gnd  
Waveform output: 2V pk-pk  
Square wave rise time 10% - 90%: 12ns  
fall time 90% to 10%: 12ns  
Duty cycle: 50%  
Triangle nonlinearity: 0.5%  
duty cycle: 50%  
Sinewave THD 50% duty cycle: 0.75%  
unadjusted duty cycle: 1.5%  
Simple sinewave generator 50% duty cycle



**Parts List**

Rin	Min Pot 22k	(JM72P)
R1	Min Res12k	(M12K)
R2	Min Res 50Ω	(M50R)
C1,2	Poly Layer 1μF	(WW53H)
C3	Pol Layer 0.001μF	(WW22Y)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
DT25C	20 MHz Fr Gen	£14.560	£12.990

**Business Account Holders**  
No Delivery Charges for any order

## NE566N Function Generator

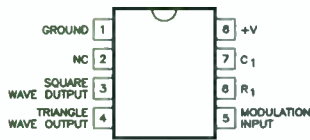
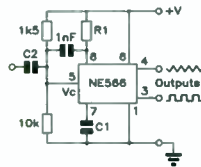
Philips

### Features

- ★ Wide range of operating voltage (10 to 24V or  $\pm 5V$  to  $\pm 12V$ )
- ★ Very high linearity of modulation
- ★ Extremely stable frequency (200ppm/°C typical)
- ★ Highly linear triangle wave output
- ★ High accuracy square wave output
- ★ Frequency determined by resistor, capacitor, voltage or current
- ★ Frequency adjustable over 10 to 1 range with same capacitor

### Applications

- ★ Tone generators
- ★ Frequency shift keying
- ★ FM modulators
- ★ Clock generators
- ★ Signal generators
- ★ Function generators



566

The control voltage  $V_C$  must be between  $3/4V^+$  and  $V^+$ . The modulating signal should be applied to pin 5 via a suitable capacitor C2 or directly if the bias voltage remains within the limits. The frequency is given by:

$$f = \frac{2[(V^+) - (V_C)]}{R1 \cdot C1 \cdot V^+}$$

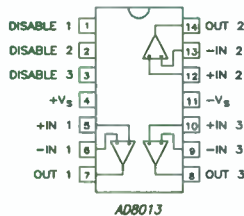
and R1 should be in the range 2k to 20k.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QH65Y	NE566N	£0.877	£1.600

## AD8013AN Low Power Triple Video Amplifier

Analog Devices



AD8013

### Features

- ★ Drives large capacitive loads
- ★ Excellent video specification
- ★ Low power - +5V to +13V supplies, 4mA/amp max
- ★ High speed 140MHz unity gain bandwidth
- ★ Fast settling time

### Applications

- ★ Broadcast and professional video
- ★ RGB amplifier in component systems
- ★ Video line driver
- ★ Computer video plug-in boards
- ★ Consumer video
- ★ LCD displays

The AD8013 is a low power triple video amplifier, with each amplifier capable of delivering 30mA of output current, and optimised for driving one back terminated video load (150Ω). Each amplifier is a current feedback type and offers a gain flatness of 0.1dB to 60MHz, a differential gain of 0.02% and phase error of 0.06%. The device is ideal for broadcast and professional video electronics.

The IC is unique in that it can drive large capacitive loads and still maintain rapid settling times. It can settle in 18ns driving resistive loads, and achieve 40ns (0.1%) settling

while driving 200pF loads.

The outstanding bandwidth of 140MHz, along with 1000V/μs slew rate, make the AD8013 extremely useful in many general purpose high speed applications where a single +5V or dual supplies are required. The high speed disable function can be used to power down the amplifier, or to put the output in to a high impedance state - this can be useful in video multiplexing applications.

### Specification

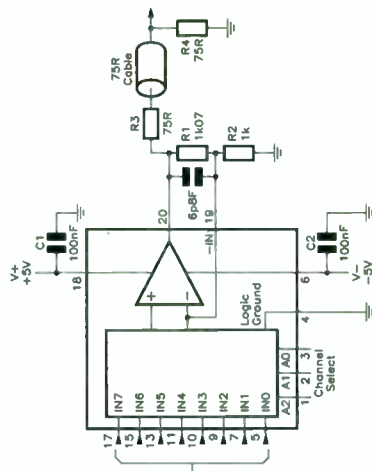
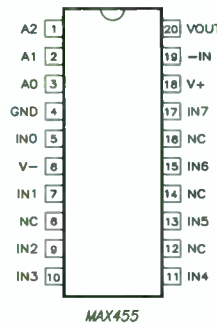
Supply voltage	
single:	+4.2V to +13V
dual:	$\pm 2.1V$ to $\pm 6.5V$
Typical quiescent current per amplifier	
+5V:	3mA
$\pm 5V$ :	3.4mA
PSRR:	76dB typical
Bandwidth	
3dB:	125MHz (+5V), 140MHz ( $\pm 5V$ )
0.1dB:	50MHz (+5V), 60MHz ( $\pm 5V$ )
Slew rate	
2V step (+5V rail):	400V/μs
6V step ( $\pm 5V$ rail):	1000V/μs
Settling time to 0.1%	
resistive:	18ns
200pF load:	40ns
THD:	-76dB
I/P voltage noise:	3.5nV/√Hz
Differential gain:	0.05% (+5V), 0.02% ( $\pm 5V$ )
Differential phase:	0.06°
I/P resistance:	200kΩ
CMRR:	56dB
Crosstalk:	70dB

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP45Y	AD8013AN	£4.830	£7.780

## MAX455CPP CMOS Video Multiplexer/Amplifier

Maxim



The MAX455 is an 8-channel multiplexer with a unity gain stable, 50MHz video amplifier capable of driving a 75Ω load directly. Into a 75Ω load, the amplifier will swing  $\pm 1V$ , and into 150Ω load will

swing  $\pm 2V$ . The amplifier is unity gain stable and does not require any external frequency compensation components. Gain is set by two external resistors. Since the device is connected as a non-inverting amplifier, the minimum closed-loop gain is 0dB, which is the normal mode of operation. With a closed-loop gain of 0dB or +6dB (1V/V or 2V/V) the guaranteed minimum bandwidth is 25MHz. The device operates from a  $\pm 5V$  supply and typically consumes only 250mW.

Supplied in an 20-pin DIL package.

### Specification

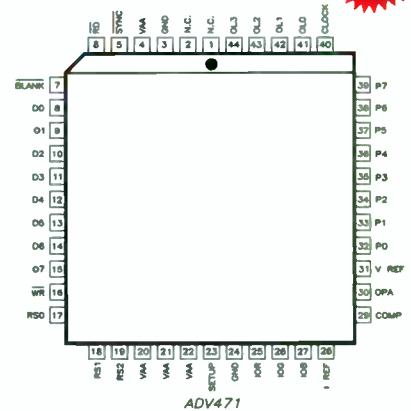
Power supply:	$\pm 5V$ typ
Input voltage range amplifier:	-2V to +2V
Input voltage range multiplexer:	-2V to +2V
Input offset voltage:	2mV typ
Offset voltage drift:	20μV/°C
Open-loop voltage gain 75Ω load:	38V/V
150Ω load:	70V/V
CMRR:	80dB
PSRR:	66dB
Slew rate:	300V/μs
Amplifier bandwidth 0dB, 75Ω:	50MHz
6dB, 150Ω:	40MHz
Diff phase error:	1.2°
Diff gain error:	0.5%
Settling time to 1%:	50ns
O/P impedance:	2Ω
O/P voltage swing:	$\pm 3V$
Multiplexer turn-on time:	75ns
turn-off time:	25ns
Break-before-make delay:	50ns
Channel OFF isolation:	70dB typ

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NR59P	MAX455CPP	£11.840	£14.800

## ADV471KP50 Monolithic 256 x 18 Colour Palette RAM-DAC

Analog Devices



### Features

- ★ Personal System/2 compatible
- ★ 50MHz pipelined operation
- ★ Triple 6-bit DACs
- ★ 15 x 18 overlay registers
- ★ 256 x 18 colour palette RAM
- ★ RS-343A/RS-170 compatible outputs
- ★ Standard MPU interface
- ★ Sync on all three channels

### Applications

- ★ High resolution colour graphics
- ★ CAE/CAD/CAM applications
- ★ Image processing
- ★ Instrumentation
- ★ Desktop publishing

The ADV471 is a pin and software compatible RAM-DAC specifically designed for Personal System/2 compatible colour graphics. The device features a 256 x 18 colour lock-up table with triple 6-bit video



DACs, programmable pedestal (0 or 7.5 IRE) and the ability to use an external voltage or current reference. Voltage reference has the advantage of temperature compensation, simplicity, lower cost, and provides excellent power supply rejection. The 15 overlay registers provide for overlaying cursors, grids, menus, EGA emulation etc., and also supported is a pixel read mask register and sync generation on all three channels.

The ADV471 will generate RS-343A compatible video signals into a doubly terminated 75Ω load, and RS-170 compatible signals into a singly terminated 75Ω load - without the need for external buffering. Supplied in a 44-pin PLCC package.

**Specification**

Power supply: +5V at 180mA typ  
Power dissipation: 900mW typ  
Resolution: 6-bits each DAC  
Accuracy  
integral nonlinearity: ±0.25 LSB max  
diff. nonlinearity: ±0.25 LSB  
grey scale error: ±5%

**Analog o/ps**

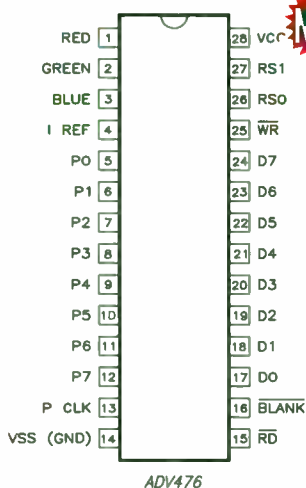
Grey scale current range: 20mA max  
Output current  
white level rel. to blank: 19.05mA typ  
white level rel. to black: 17.62mA typ  
black level rel. to blank: 1.44mA typ, SETUP=V<sub>AA</sub>  
5μA typ, SETUP=GND  
7.62mA typ  
blank level:  
sync level: 5μA typ  
LSB size: 279.68μA typ  
DAC/DAC matching: 5% max  
Voltage ref. range: 1.14V min to 1.26V max  
i/p current I<sub>VREF</sub>: 10μA typ  
Clock/data feedthrough: -30dB typ  
Glitch impulse: 75pV secs typ  
DAC/DAC crosstalk: -23dB typ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP46A	ADV471KP50	£5.640 100+ £4.130	£9.370 1+

## ADV476KN35 256 x 18 Colour Palette RAM-DAC

Analog Devices



**Features**

- ★ Personal System/2 and VGA compatible
- ★ 35MHz pipelined operation
- ★ Three 6-bit DACs
- ★ 256 x 18 colour palette RAM
- ★ RS-343A/RS-170 compatible outputs
- ★ Standard MPU interface.
- ★ Plug-in replacement for INMOS 171/176
- ★ Blanking on all three channels

**Applications**

- ★ High resolution colour graphics
- ★ CAE/CAD/CAM applications
- ★ Image processing
- ★ Instrumentation
- ★ Desktop publishing

The ADV476 is a pin and software compatible,

single monolithic RAM-DAC designed specifically for VGA and Personal System/2 colour graphics.

The device contains a 256 x 18 colour lookup table, a pixel mask register and a triple 6-bit video DAC. It is capable of simultaneously displaying up to 256 colours, from a total colour palette of 262,144 addressable codes. The on-chip asynchronous MPU bus allows access to the colour lookup table without affecting the input video data via the pixel port. The pixel read mask register provides a convenient way of altering the displayed colours without updating the colour lookup table. The device can generate RGB video output signals which are compatible with RS-343A and RS-170 video standards, without the need for external buffering. Supplied in a 28-pin DIL package

**Specification**

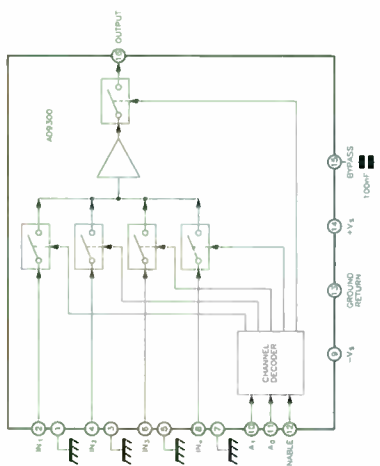
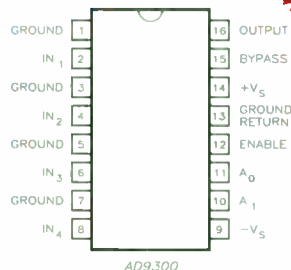
Power supply: 5V typ, 220mA max  
Resolution: 6-bits each DAC  
Accuracy each DAC  
integral nonlinearity: ±0.5 LSB max (monotonic)  
full scale error: ±5% max  
blank level: ±0.5 LSB max  
offset error: ±0.5 LSB max  
Max o/p voltage: 1.5V min  
Max o/p current: 21mA min  
DAC/DAC matching: ±2.5% max  
Clock/data feedthrough: -35dB typ  
Glitch impulse: 75pV sec typ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP47B	ADV476KN35	£4.630 25+ £3.370 100+	£7.400 1+

## AD9300KQ 4 x 1 Wideband Video Multiplexer

Analog Devices



- ★ 34MHz full power bandwidth
- ★ ±0.1dB gain flatness to 8MHz
- ★ 72dB crosstalk rejection at 10MHz
- ★ Excellent differential gain and phase

This monolithic, high-speed video signal multiplexer is suitable for a wide range of applications including video routing, medical imaging, electro-optics, radar systems, data acquisitions etc.

The four video input signal channels can be randomly switched at megahertz rates to the single output. Additionally, multiple devices can be configured in either parallel or cascade arrangements to form switch matrices. The device goes into

a high impedance state when not enabled, and when enabled, the IC acts as a buffer with high input impedance and low output impedance.

An advanced bipolar process provides fast, wideband switching capabilities, while maintaining excellent crosstalk and full power bandwidth figures. The device can operate from ±10V to ±15V supplies and is housed in a 16-pin ceramic DIP (Cerdip) package.

**Specification**

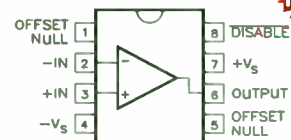
Power supply: ±12V typ, ±16mA max  
I/P offset voltage: 14mV max  
I/P offset voltage drift: 75μV/°C  
DC linearity: 0.01% typ  
Voltage gain: 0.994 typ  
Bandwidth  
small signal: 350MHz  
full power: 34MHz  
Slew rate: 215V/μs typ  
Settling time: 70ns typ  
Differential phase: 0.03°  
Differential gain: 0.01%  
Crosstalk rejection  
three channels: 72dB typ  
one channel: 76dB typ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP48C	AD9300KQ	£10.590 25+ £7.760 100+	£17.040 1+

## AD810AN Low-Power Video Op-Amp

Analog Devices



AD810

The AD810 is a composite and HDTV compatible, current feedback, video op-amp that is ideal for use in multimedia, digital tape recorders, video cameras and broadcast quality video systems.

The device requires only 8mA max, and in the disable mode this drops to 2.1mA, making the IC particularly suited to battery power applications. The IC requires a power supply in the range ±5V to ±15V, and works well as an ADC or DAC buffer in video systems due to its unity gain bandwidth of 80MHz. The AD810 is a transimpedance amplifier. so this bandwidth can be maintained over a wide range of gains, and features a low noise of 2.9nV/√Hz for wide dynamic range applications. Supplied in a 8-pin DIL plastic package.

**Specification (V<sub>S</sub> = ±15V, R<sub>L</sub> = 150Ω)**

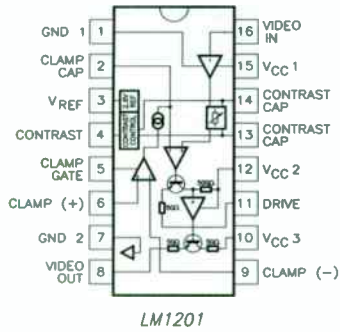
Power supply: ±2.5V to ±18V  
Supply current: 8mA max  
CMRR: 64dB typ  
PSRR: 72dB typ  
I/P offset voltage: 1.5mV typ  
I/P offset voltage drift: 7μV/°C typ  
3dB Bandwidth  
G = 1: 80MHz  
G = 2: 75MHz  
G = 10: 65MHz  
0.1dB bandwidth: 30MHz (G = 2)  
Slew rate: 1000V/μs  
Settling time: 50ns (0.1%)  
Differential gain: 0.02%  
Differential phase: 0.04°

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP50E	AD810AN	£2.670 25+ £1.960 100+	£4.300 1+



## LM1201 Video Amplifier IC



A wideband video amplifier system intended for high resolution monochrome or RGB monitor applications. Features include a gated differential input black level clamp comparator for brightness control and an attenuator circuit for contrast control. The device also contains an internal voltage reference for the video input.

### Features

- ★ Wide video bandwidth 200MHz @ -3dB
  - ★ Attenuator circuit for contrast control (>40dB range)
  - ★ Externally gated comparator for brightness control
  - ★ Provisions for external gain set and peaking of video amplifier
  - ★ Video input voltage reference
  - ★ Low impedance output driver
- Typical Applications**
- ★ CRT video amplifiers
  - ★ Video switches
  - ★ High frequency video preamplifiers
  - ★ Wideband gain controls
  - ★ PC monitors
  - ★ Workstations
  - ★ Facsimile machines
  - ★ Printers

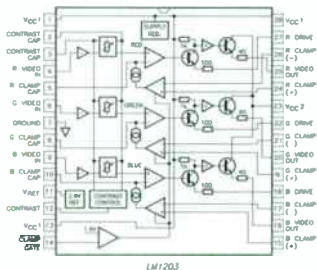
### Specification

Supply voltage:	13.5V DC
Supply current:	45mA typ.
Video input reference voltage:	2.65V typ.
Video input bias current:	5µA
Video amplifier gain:	8V/V
Video amplifier distortion:	0.3%
Video amplifier bandwidth:	200MHz typ.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2041	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AX67X	Vid Mon LM1201N NSC	£3.100	£2.680	£2.690	£4.630

## LM1203 Video Amplifier IC



The LM1203 is a wideband video amplifier system intended for high resolution RGB colour monitor applications. In addition to three matched video amplifiers, the LM1203 contains three gated differential input black level clamp comparators for brightness control and three matched attenuator circuits for contrast control. Each video amplifier contains a gain set or 'Drive' node for setting maximum system gain (between 4 and 10), as well as providing trim capability. The LM1203 also contains a voltage reference for the video inputs.

### Features

- ★ Three wideband video amplifiers (70MHz @ -3dB)
- ★ Inherently matched (0.1dB or 1.2%) attenuators for contrast control

- ★ Three externally gated comparators for brightness control
- ★ Provisions for independent gain control (Drive) of each video amplifier
- ★ Video input voltage reference
- ★ Low impedance output driver

### Typical Applications

- ★ CRT video amplifiers
- ★ Video switches
- ★ High frequency video preamplifiers
- ★ Wideband gain controls
- ★ PC monitors
- ★ Workstations
- ★ Facsimile machines
- ★ Printers

### Specification

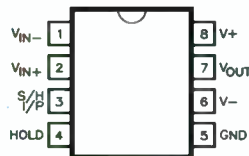
Supply voltage:	13.5V DC
Supply current:	73mA typ.
Video input reference voltage:	2.4V typ.
Video input bias current:	5µA
Video amplifier gain:	6V/V
Video amplifier distortion:	0.5%
Video amplifier bandwidth:	70MHz typ.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2035	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AX68Y	Vid Col LM1203N NSC	£2.430	£2.250	£2.100	£3.550

## EL4089CN Low Power DC Restore Amplifier

Elantec



4089

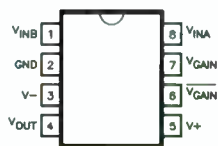
A complete monolithic, DC-restored video amplifier sub-system containing a high quality video amplifier and a nulling, sample-and-hold amplifier specifically designed to stabilise video performance. When the HOLD logic level input is set to a TTL/CMOS logic 0 during a horizontal synchronisation pulse, the sample-and-hold amplifier can be used to null the DC offset of the video amplifier. When the HOLD input goes to a TTL/CMOS logic 1, the correcting voltage is stored on the video amplifier's input coupling capacitor. The correction voltage can be further corrected as need be, at the sync pulse of each line. The device is optimised for video performance and low power consumption and its current feedback design allows essentially the same bandwidth over a gain range of nearly 10:1 to be maintained. It is capable of driving back-terminated 75Ω lines.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2535	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AJ59P	EL4089CN	£6.440	£5.980	£5.580	£7.610

## EL4094CN 8-Pin Video Fader/Gain Control

Elantec



4094

A complete two-input video gain control/fader IC which combines its two inputs according to the equation  $V_{OUT} = V_{INA} (0.5V + V_G) + V_{INB} (0.5V - V_G)$ , and where  $V_G$  is the difference between the non-inverting and inverting  $V_{GAIN}$  pin voltages, which can range from -0.5V to +0.5V. The device has a wide 65MHz bandwidth at -3dB, and is designed for

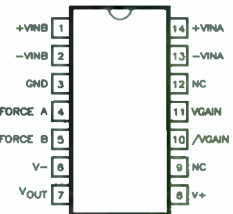
excellent video distortion performance. The EL4094CN is the same circuit as that of the EL4095CN, but with feedback resistors included on-chip to implement unity-gain connection. An output buffer is included and the gain control input is also very fast with a 30MHz small-signal bandwidth and 100ns recovery time. The device is compatible with power supplies from ±5V to ±15V and a supply current of 14mA.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2538	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AJ60Q	EL4094CN	£9.070	£8.420	£7.860	£15.100

## EL4095CN Fader Gain Control with Switches

Elantec



4095

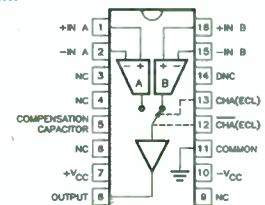
A versatile video gain control/fader/multiplexer block with at its core a fader which can variably blend two inputs together, and an output amplifier that can drive heavy loads. Each input appears as the input of a current-feedback amplifier, and with external resistors, can separately provide any gain required. The output is defined as  $V_{OUT} = A \times V_{INA} (0.5V + V_{GAIN}) + B \times V_{INB} (0.5V - V_{GAIN})$ , where A and B are the feedback gains of each channel. Additionally, two logic inputs are provided each of which overrides the analogue  $V_{GAIN}$  control, and forces 100% gain for one input and 0% for the other. The logic inputs switch in only 20ns and provide high attenuation to the 'off' channel, while generating very small glitches. Signal bandwidth is 65MHz and gain-control bandwidth is 30MHz. The gain control recovers from overdrive in only 100ns. The device can operate from a ±5V to ±15V supply with a current drain of only 16mA typical.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2538	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AJ61R	EL4095CN	£9.070	£8.420	£7.860	£15.100

## OPA678AP

Burr-Brown



OPA678AP

This device is a wideband op-amp with two independent differential inputs. Either input may be selected by means of an external TTL or ECL compatible signal. Fast input switching times (4ns) and low distortion and crosstalk make this amplifier suitable for seamless RF and video switching and multiplexing operations. Unity gain bandwidth is 200MHz (70MHz with G=5). Voltage output into 75Ω is better than 1.7V. Power supply should be ±5V.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 11617	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
LE72P	OPA678AP	£6.360	£5.910	£5.520	£11.860

## EL2099CT Video Distribution Amplifier

Elantec



2099

The EL2099C is a high-speed, monolithic operational amplifier featuring excellent video performance and high output current capability. Built using a dielectric isolation process, it uses current mode feedback to achieve wide bandwidth, and is stable in a unity gain configuration.

The device can deliver  $\pm 12.5V$  into a  $25\Omega$  load at slow rates of  $900V/\mu s$ . Its speed and output current make it ideal for line driver and automatic test applications. Operation from power supplies ranging from  $\pm 5V$  to  $\pm 15V$  makes the EL2099C extremely versatile. Case style is 5-pin TO220.

### Specification

Bandwidth: 20MHz -0.1dB, 70MHz -3dB

Differential gain: 0-0.2%

Differential phase: 0-0.3°

Output short-circuit current: 1A

Fan-out: Up to 6 x 75 $\Omega$  double-terminated cables in parallel @  $\pm 12.5V$

Slew rate: 900V/ $\mu s$

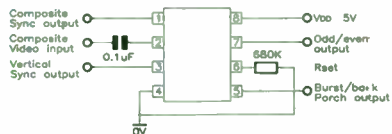
Supply voltage:  $\pm 5V$  to  $\pm 15V$

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2561	Price each exc. VAT	inc. VAT each
AV89W	EL2099CT	£5.290 10+ £4.910 25+ £4.580 100+	£8.290 1+

## EL4581CN Video Sync Separator

Elantec



A video sync separator which extracts timing information, including composite sync, burst/back porch timing and odd/even field information from standard negative going sync NTSC, PAL and SECAM video signals. It will detect video signals from 0.5 to 2V pk-to-pk. The 50% slicing feature provides precise sync edge detection even in the presence of noise and variable signal amplitudes. A built-in linear phase, third order, colour burst filter minimises spurious timing information and reduces external components. The device is also capable of providing sync separation for non-standard, faster horizontal rate video signals by changing an external horizontal scan rate setting resistor. The vertical output is produced on the rising edge of the first serration in the vertical sync period. A default vertical output is produced after an internally generated time delay in the event that serration pulses may be missing, for example, in the case of a non-standard video signal. All outputs are active low.

The device is packaged in 8-pin DIL and is an improved version of the LM1881.

### Specification

Supply voltage: 5V (7V max.) DC

Supply current: 1.5mA

Pin 2 clamp voltage: 1.5V

Pin 2 discharge current: 10 $\mu A$

Pin 2 clamp charge current: 500 $\mu A$

Pin 6 reference voltage: 1.7V

Video output voltage swing: 800mV min., 4V max. dependent on load

Vertical sync width: 230 $\mu s$

Burst gate width: 3-2 $\mu s$

Vertical default time: 60 $\mu s$

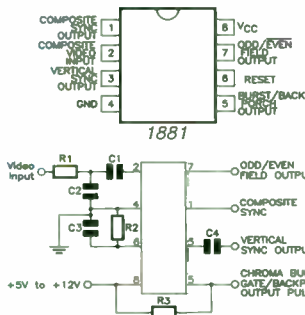
Filter attenuation: 24dB  
Propagation delay: 400ns  
Input signal dynamic range: 2V  
Sync slice level: 60% typical  
Operating temperature range: 0°C to +75°C

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2562	Price each exc. VAT	inc. VAT each
AL62S	EL4581CN	£2.840 10+ £2.640 25+ £2.460 100+	£4.680 1+

## LM1881N Video Sync Separator

National Semiconductor



The IC can extract the timing information from PAL, SECAM or NTSC encoded video signals having standard negative going sync and amplitudes from 0.5V to 2V. The IC outputs the composite sync, vertical sync, burst/back porch timing and an odd/even field identifier. By changing the value of R2, non-standard faster horizontal rate video signals can also be stripped. The vertical sync output is produced on the rising edge of the first serration in the vertical sync period, but if the rising edge does not occur within the internally set period, a default vertical output is produced, permitting use with video games and home computers. The IC can be used as a master gen-lock; to providing timing references for the extraction of data on specific scan lines; to restore the original video waveform for remodulation or retrieve the colour burst and decode into R.G.B. components; or to identify individual scan lines in the video signal.

### Parts List

- R1 Min Res 620 $\Omega$  (M620R)
  - R2 Min Res 680k $\Omega$  (M620K)
  - R3 Min Res 2k7 (M2K7)
  - C1,3 Poly Layer 0.1 $\mu F$  (WW41U)
  - C2 Ceramic 330pF and Ceramic 180pF in parallel (WX59P/WX62S)
  - C4 Mylar 0.001 $\mu F$  (WW15R)
  - C5 Minidisc 0.1 $\mu F$  16V (YR75S)
- C5 is connected between pins 4 and 8.

### Specification (typical)

Supply voltage: 5V to 12V (13.2V max.)  
Supply current: 5.5mA  
DC input voltage: 1.5V  
Input threshold voltage: 70mV  
Sync outputs (pins 1 & 3): Logic 1:4.5V @ 40 $\mu A$  ( $V_{CC} = +5V$ )  
Logic 1:3.6V @ 1.6mA ( $V_{CC} = +5V$ )  
Logic 0:0.2V @ -1.6mA ( $V_{CC} = +5V$ )  
Logic 1:>11V @ 40 $\mu A$  ( $V_{CC} = -12V$ )  
Logic 1:>10V @ 1.6mA ( $V_{CC} = +12V$ )  
Logic 1:4.5V @ 40 $\mu A$  ( $V_{CC} = +5V$ )  
Logic 1:>11V @ 40 $\mu A$  ( $V_{CC} = +12V$ )  
Logic 0:0.2V @ -1.6mA ( $V_{CC} = +12V$ )

### Outputs (pins 5 & 7):

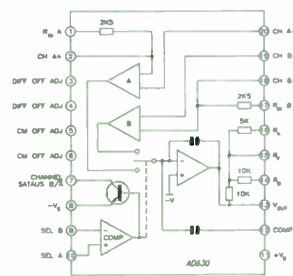
Vertical sync width: 230 $\mu s$   
Burst gate width: 4 $\mu s$  (with R3 = 2k7)  
Vertical default time: 65 $\mu s$

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2565	Price each exc. VAT	inc. VAT each
UL75S	LM1881N	£2.190 10+ £2.030 25+ £1.900 100+	£3.830 1+

## AD630JN Balanced Modulator/Demodulator

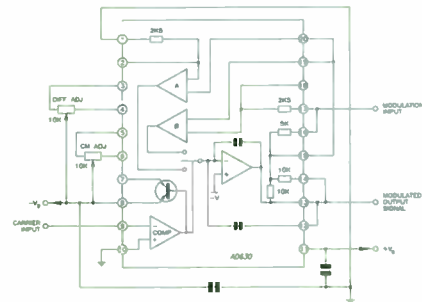
Analog Devices



- Can be configured for balanced modulation and demodulation, synchronous detection, phase detection, quadrature detection, phase sensitive detection, lock-in amplification and square wave multiplication
- 45V/ $\mu s$  slew rate
- 2MHz channel bandwidth
- Pin programmable closed loop gains of  $\pm 1/\pm 2$
- 100dB dynamic range
- 100dB at 10kHz channel separation

The AD630 is a high precision balanced modulator that combines a flexible commutating architecture with the accuracy and temperature stability achieved by using laser wafer thin-film resistors. A network of on-board resistors provides precision closed loop gains of  $\pm 1$  and  $\pm 2$ . These resistors can be configured to accurately configure multi-plexer gains of +1, +2, +3 or +4. Alternatively, external feedback can be employed to produce high gain or complex switched feedback circuits.

The device can be considered as a precision op-amp with two independent differential input stages, and a precision comparator which is used to select the active front end. The rapid response time of this comparator coupled with the high slew rate and fast settling of the linear amplifiers minimise switching distortion. When used as a synchronous demodulator in a lock-in amplifier configuration, it can recover a small signal from 100dB of interfering noise. Although optimised for operation up to 1kHz, the circuit is useful at frequencies up to several hundred kilohertz. Other features include pin programmable frequency compensation, optional input bias current compensation resistors, common-mode and differential offset voltage adjustment, and a channel status output. This will indicate which of the two differential inputs is active.



The circuit shows the AD630 configured as a gain of one balanced modulator. Supplied in a 20-pin DIL package.

### Specification (at 25°C, $\pm 15V$ )

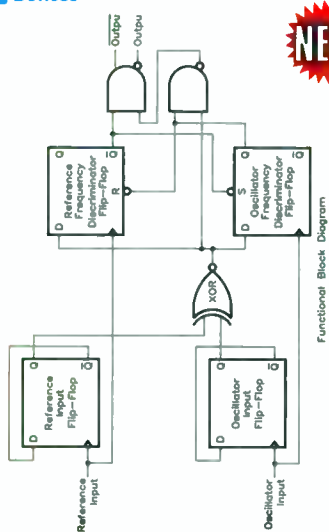
Supply voltage:  $\pm 5V$  to  $\pm 16.5V$   
Supply current: 5mA max  
Open loop gain: 110dB typ  
Closed loop gain error: 0.1% (Gain  $\pm 1, \pm 2$ )  
I/P offset voltage: 500 $\mu V$  max  
Channel separation: 100dB typ at 10kHz  
Unity gain bandwidth: 2MHz  
Slew rate: 45V/ $\mu s$   
Settling time: 3 $\mu s$  (to 0.1%)  
CMRR: 105dB typ  
PSRR: 110dB

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

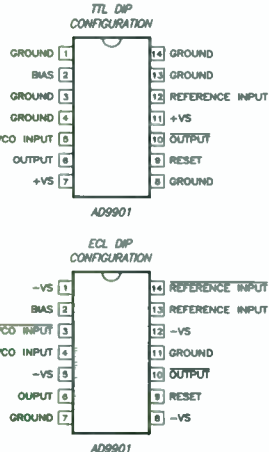
Order Code	Type 1751	Price each exc. VAT	inc. VAT each
NP59P	AD630JN	£11.860 25+ £8.690 100+	£19.080 1+

## AD9901KQ Ultra High Speed Phase/Frequency Discriminator

Analog Devices



The AD9901 is a digital phase/frequency discriminator capable of directly comparing phase - frequency inputs up to 200MHz. The device has the advantage of a linear detection range, which results in no indeterminate phase detection zones often found in similar devices. With a single 5V supply, the device can be configured to operate with TTL or CMOS logic levels, but can operate with ECL inputs when operate with a -5.2V supply. The AD9901 has the ability to compare phase/frequency inputs at standard IF frequencies without prescalers. Excessive 'phase uncertainty' is eliminated with the device - a problem which is common with standard PPL design. Supplied in a 14-pin ceramic DIP package.



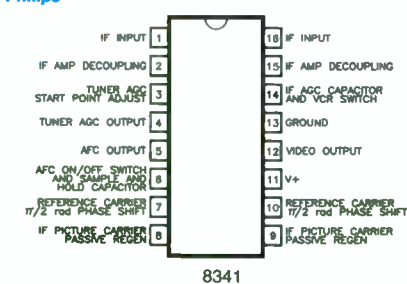
**Specification**  
 Power supply current  
 TTL (+5V): 43.5mA typ  
 ECL (-5.2V): 42.5mA typ  
 Power dissipation: 218mW typ  
 TTL input logic  
 '1' voltage: 2V min  
 '0' voltage: 0.8V max  
 '1' current: 0.6mA max  
 '0' current: 1.6mA max  
 Pk-Pk o/p voltage swing: 1.8V typ  
 Compliance range  
 TTL o/p: 3V to 7V  
 ECL o/p: ±2V  
 Linear phase detection range  
 40kHz: 360°  
 30MHz: 320°  
 70MHz: 270°

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NPS2N	AD9901KQ	£7.610 25+ £5.570 100+	£12.240 1+

## TDA8341-N6 TV IF Amp and Demodulator

Philips



An integrated IF amplifier and demodulator for colour and black and white TV sets, with wide bandwidth and excellent intermodulation performance making it suitable for use in teletext and NICAM applications. The IC is designed for use with tuners requiring a decreasing positive bias (a.g.c.) with increasing signal strength. The IC contains a full range, gain-controlled, wide band IF amp, a linear synchronous demodulator, white spot inverter, wide band video amp with noise protection, AFC with on/off switching and sample and hold function, AGC with noise gating, external video switch for switching off video output, and an integrated filter to limit second harmonic IF signals. A typical circuit is shown in Maplin Magazine issue 36.

**Specification (typical)**  
 Supply voltage: 12V (9.4 to 13.2V)  
 Supply current: 42mA  
 IF input sensitivity: 40µV rms  
 IF gain control range: 67dB  
 Video output voltage: 2-7Vp-p  
 Signal to noise ratio: 58dB  
 AFC output voltage swing: 10Vp-p  
 Bandwidth of output: 7.5MHz  
 Intermodulation: -60dB

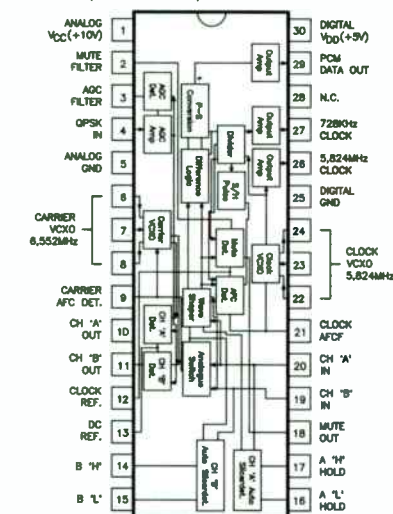
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL27E	TDA8341-N6	£1.790 10+ £1.660 25+	£1.550 100+ £3.550 1+

## TA8662N, TC6011N, TD6710N NICAM Decoder Chip Set

Toshiba

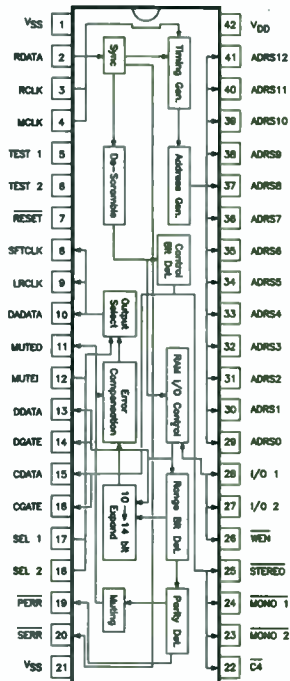
The NICAM decoder chip set used in the NICAM receiver project published in the Maplin Magazine issue 35. The TA8662 is a Quadrant Phase Shift Keying (QPSK) decoder that demodulates the data in the 6.552MHz sub-carrier and provides all the necessary timing information. It is supplied in a 30-pin shrink DIP package with pin spacing 1.778 x 10-16mm (0.07 x 0.4in.).



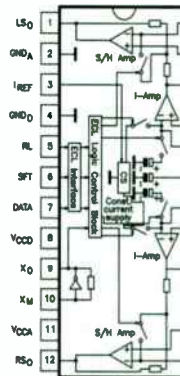
**TA8662N**  
 Analogue supply voltage: 10V (9V to 11V)  
 Analogue supply current: 40mA

Digital supply voltage: 5V (4.5V to 5.5V)  
 Digital supply current: 24mA  
**TC6011N**  
 Supply voltage: 5V (4.75V to 5.25V)  
 Supply current: 35mA

The TC6011N converts the demodulated data into a 14-bit serial data stream for input to the D/A converter. It is supplied in a 42-pin shrink DIP package with pin spacing 1.778 x 15.24mm (0.07 x 0.6in.). The TD6710AN is a 14-bit D/A converter with stereo outputs. It is supplied in a 24-pin non-standard shrink DIP package with pin spacing 1.778 x 7.62mm (0.07 x 0.3in.).



**TD6710AN**  
 Supply voltage: 5V (4.5V to 7V)  
 Analogue supply current: 10mA  
 Digital supply current: 8-5mA  
 Total harmonic distortion: -82dB  
 Signal to noise ratio: 83.5dB  
 Crosstalk: 83dB  
 Operating frequency: 16.9MHz



Please note that these ICs are only available in sets

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UK95D	Nicam Chip Set	£6.800	£7.990 1+



**SAA5246A**

Philips

The SAA5246A is a single chip teletext decoder IC for decoding 625 line base World System Teletext. Features include support for both video and scan related synchronisation modes, RGB interface to standard colour decoder ICs, digital data slicer and display clock phase-locked loop, option for up to seven languages, optional storage of packet 24 in the display memory, separate text and video signal quality detectors and automatic ODD/EVEN output control with override. SOT 240 48-pin DIL. +5V power supply.

**Specification**

Supply voltage: +5V  
Supply current: 64mA typical; 128mA max  
Sync amplitude: 0.3V typical; 0.6V max.  
Video amplitude: 1V typical; 1.4V max.  
Crystal frequency: 27MHz

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BH75S	SAA5246	£14.450	£16.990



encoding matrix, two filters limit the bandwidth of the U and V colour difference signals to 1.2MHz prior to quadrature modulation of the colour subcarrier. A third filter at 3.6MHz (NTSC) or 4.4MHz (PAL) follows the modulators to limit the harmonic content of the output. U and V chroma filter delays are matched by an on-chip sampled data delay line in the Y signal path - overall delay is about 170ns, which precompensates for delays in the filters used to decode the NTSC/PAL signal in a television receiver. The chip requires ±5V supplies. Supplied in a 28-pin PLCC package.

Specification	NTSC	PAL
I/P amplitude	714mV	700mV
Bandwidth:	5MHz	5MHz
Gain error:	±1%	±1%
Linearity:	±0.1%	±0.1%
Video o/p's sync level:	286mV	300mV
Colour burst:	286mV	300mV

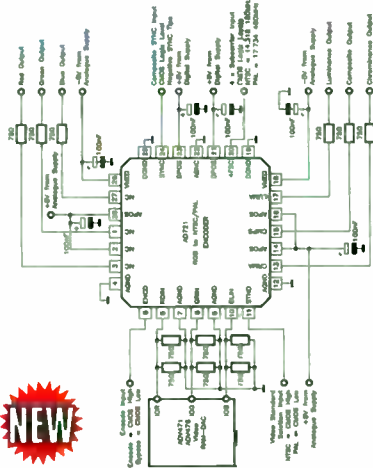
Chroma o/p bandwidth:	3.6MHz	4.4MHz
abs. gain error:	±5%	±5%
abs. phase error:	±3°	±3°
Composite o/p abs. gain error:	±1%	±1%
diff gain:	0.1%	0.1%
diff phase:	0.1°	0.1°
O/P offset voltage:	50mV	50mV
Chroma feedthrough:	20mVpk-pk	20mVpk-pk
Bypass amplifiers gain error:	-5% to +5%	
-3db bandwidth:	100MHz	
o/p offset voltage:	-5mV to +5mV	

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP49D	AD721P	£11.810	£19.010

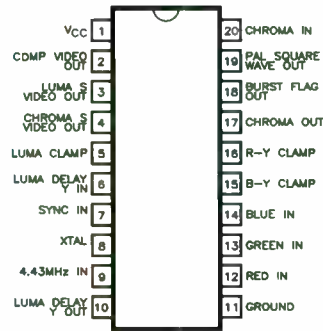
**AD721P RGB to NTSC/PAL Encoder**

Analog Devices



**MC13077P Advanced PAL/NTSC Encoder**

Motorola



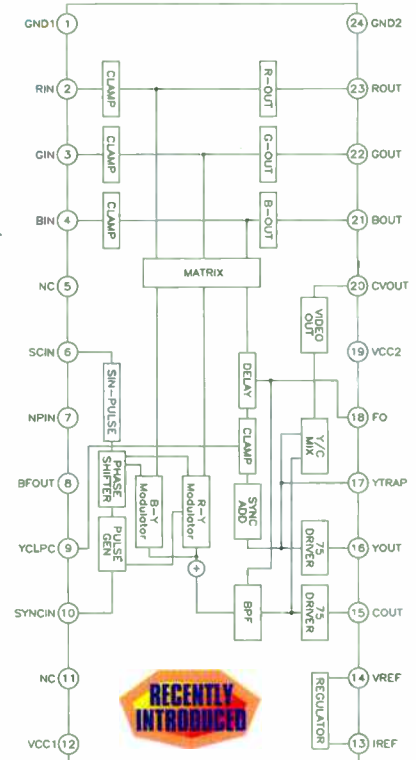
The MC13077P is an economical, high quality, RGB to composite video encoder for PAL or NTSC protocols. Useful where video signal conversion is required, and especially for recombining separate RGB video signals which are best processed individually (by digital means, for example) in a video editing environment or studio. It accepts red, green, blue and composite sync inputs and delivers either composite PAL or NTSC standard video complete with luminance and chrominance components incorporating all the synchronisation and chroma regeneration signals. The device is manufactured using a high density bipolar process and is contained in a single 20-pin DIL package. Features include a single 5V supply, PAL or NTSC switchable composite output, PAL square wave output, PAL sequence resettable, internal or external colour burst flag, digitally determined modular angles, and a selectable subcarrier reference drive.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AY33L	MC13077	£3.520	£6.320

**CXA1645P RGB Encoder**

Sony



An encoder IC that converts analog RGB signals into a composite video signal and is suitable for both PAL and NTSC systems. The device requires composite sync pulses, subcarrier and RGB signals and will produce composite video output, separate luminance and chroma components, and clamped RGB outputs. The IC features 75Ω drivers, a band pass filter, delay line, R-Y and B-Y modulator circuits, PAL alternating line circuit, and burst flag generator circuit. The device is suitable for image processing in video games and personal computers and works from a single 5V rail. Supplied in a 24-pin DIL plastic package.

**Specification (100% Colour Bar Input 1V pk-pk)**

Supply voltage:	5V DC
Operating current:	31mA typical
Power dissipation:	1.25W max.
Operating temperature:	-20°C to +75°C
RGB o/p:	0.71V pk-pk
O/P sync:	0.29V pk-pk
Y and CV output	
R = 100%:	0.21V pk-pk
G = 100%:	0.42V pk-pk
B = 100%:	0.08V pk-pk
Y White (100%):	0.71V pk-pk
C and CV output	
R chroma ratio:	3.16
R phase:	104°
G chroma ratio:	2.95
G phase:	241
B chroma ratio:	2.24
B phase:	347
Burst level:	0.25V pk-pk
Burst width:	2.75µs
Burst position:	0.6µs
Sub carrier input:	0.4V to 5V sine or pulse

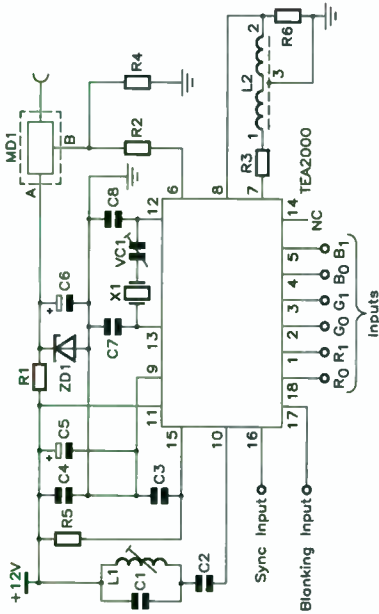
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VO61R	CXA1645P	£3.810	£5.990

**Business Account Holders**  
No Delivery Charges for any order

## TEA2000-V1 PAL Colour Encoder

Philips



A PAL colour encoder and video summer which requires just composite sync and composite blanking inputs, and a 6-bit binary coded input giving the colour information. The inputs are organised as 2 bits per primary colour with gamma correction automatically applied to the resultant luminance and chrominance levels. Each of the equally spaced intensity levels for each primary colour is combined with those of the other primary colours. This produces 64 output colours comprising a wide range of saturated and desaturated colours, black, white and two levels of grey. The output is a composite video signal with PAL standards. The composite sync input, pin 16, requires a negative logic signal (TTL format) and must include field and line sync information. The blanking input (TTL format) must be high during sync and colour burst, unless all colour inputs are low at this time. The colour inputs are also TTL compatible. A +12V supply  $\pm 10\%$  is required on pin 11. If pin 14 is connected to ground an NTSC signal is produced, but different external components would be required. Leave pin 14 open for normal PAL operation.

### Parts List

R1	Min Res 680 $\Omega$	(M680R)
R2	Min Res 510 $\Omega$	(M510R)
R3	Min Res 1k	(M1K)
R4	Min Res 430 $\Omega$	(M430R)
R5	Min Res 36k	(M36K)
R6	Min Res 910 $\Omega$	(M910R)
C1	Ceramic 82pF	(WX55K)
C2	Polyester 0.01 $\mu$ F	(BX70M)
C3	Ceramic 330pF	(WX62S)
C4	Disc 0.1 $\mu$ F	(BX03D)
C5	PC Elect 220 $\mu$ F 16V	(FF13P)
C6	PC Elect 100 $\mu$ F 10V	(FF10L)
C7,8	Ceramic 5-6pF	(WX41U)
VC1	Trimmer 22pF	(WL70M)
X1	Crystal 8-867238MHz	(UH85G)
L1	15 $\mu$ H adjustable coil	(UH86T)
L2	Delay line DL270	(UH84F)
ZD1	BZY88C5V1	(QH07H)
MD1	Modulator UM1233	(FT30H)

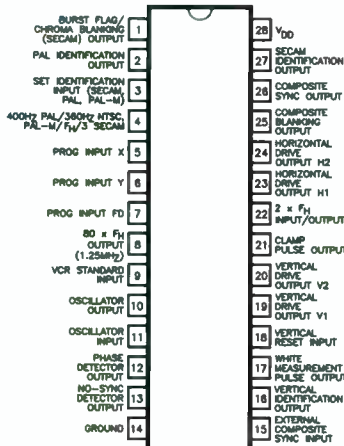
Adjust VC1 and L1 for best picture.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2549	Price each exc. VAT	inc. VAT each
UH66W	TEA2000-V1	£5.360 25+ £5.630 100+ £5.000 1+	£5.880

## SAA1043P Universal Sync Generator

Philips



1043

This IC generates the synchronising waveforms required in all types of video source equipment e.g. video cameras, film scanners, video games, computer displays etc. The device is programmable to suit standards SECAM1, SECAM2, PAL/CCIR, NTSC1, NTSC2 and PAL-M; the video game 624 and 524 line standards; and can be synchronised to an external sync signal.

### Specification

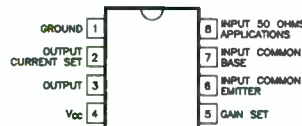
Supply voltage:	5.7 to 7.5V
Supply current:	<10 $\mu$ A
Load resistance at $V_{DD} = 5.7V$ :	1.4k $\Omega$ min
at $V_{DD} = 7.5V$ :	820 $\Omega$ min
Oscillator frequency:	>5.1MHz (5MHz for PAL)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2552	Price each exc. VAT	inc. VAT each
UK85G	SAA1043P	£9.090 1+ £8.330 25+ £7.140 100+ £12.960 1+	

## SL560CDP 300MHz Low Noise Amplifier

GEC-Plessey



8629

A monolithic IC that contains three very high performance transistors, and associated biasing components, to form a 300MHz low noise amplifier. The device is suitable for radar IF preamplifiers, low power wideband amplifiers, 50 $\Omega$  line drivers, aerial preamplifiers for FM radio, instrumentation preamplifiers etc.

### Specification

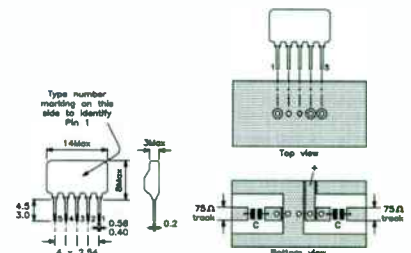
Supply voltage:	+15V maximum
Supply current:	20mA approx. with 6V supply voltage
Small signal voltage gain:	14dB typical
Typical noise figure $R_S=200\Omega$ :	1.8dB
$R_S=50\Omega$ :	3.5dB

Price each shown, but sold only in multiples of 1.

Order Code	Type 2003	Price each exc. VAT	inc. VAT each
DB46A	SL560CDP	£3.500 1+ £2.410 25+ £2.050 100+ £4.120 1+	

## OM2045 Wideband VHF/UHF Amp

Philips



A one-stage hybrid wideband amplifier for aerial amplifiers for FM radios and UHF TVs. It is ideal for overcoming losses when more than one TV is operated from one antenna (MATV).

Supply voltage:	12V $\pm 10\%$ (15V max.)
Frequency range:	40 to 860MHz
Gain:	12dB
Frequency response within band:	$\pm 1$ dB
Source and load impedance:	75 $\Omega$
Input VSWR:	2.0
Output VSWR:	1.4
Back attenuation @ 100MHz:	22dB
@ 860MHz:	19dB
Output voltage:	99dB $\mu$ V
Noise figure:	3.6dB
Supply current:	11.5mA

### Pin Connections

Pin 1:	Input 75 $\Omega$
Pins 2,3:	Common
Pin 4:	+12V supply
Pin 5:	Output 75 $\Omega$

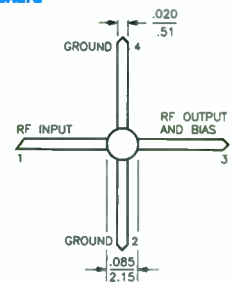
The module should be mounted on double-sided pcb with a ground plane on the top as shown in the diagram. The connections to the common pins must be as close to the 'seating plane' as possible.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2542	Price each exc. VAT	inc. VAT each
LJL77J	DM2045	£4.850 10+ £4.440 25+ £3.810 100+ £7.680 1+	

## MSA-0685

Hewlett Packard



The MSA-0685 is a high performance silicon bipolar monolithic microwave integrated circuit (MMIC) housed in a low cost plastic package. It is designed for use as a general purpose 50 $\Omega$  gain block and typical applications include narrow and broadband IF and RF amplifiers. Features include low operating voltage (3.5V typical), 3dB bandwidth, high gain and a low noise figure (3.0dB typical at 0.5GHz). Excellent uniformity, performance and reliability. Please note that the device should not be stressed or overheated when fitting.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 11883	Price each exc. VAT	inc. VAT each
DK24B	MAR-6	£2.740 10+ £2.510 25+ £2.150 100+ £4.980 1+	

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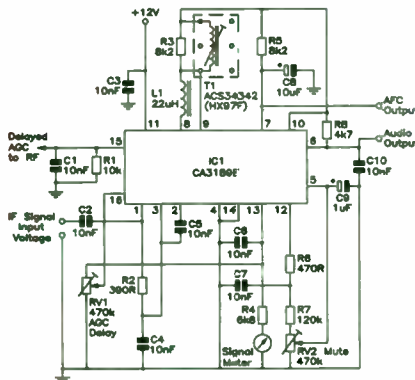
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## CA3189E FM IF Subsystem

Harris

### Features

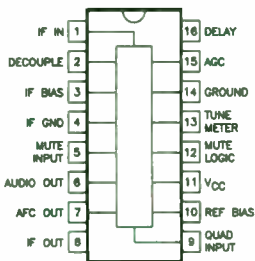
- ★ Exceptional limiting sensitivity: 10µV (typical) at -3dB
- ★ Low distortion: 0.1% (with double-tuned coil) typical
- ★ Single-coil tuning capability
- ★ High recovered audio: 500mV (typical)
- ★ Internal supply-voltage regulators
- ★ AGC threshold controlled externally
- ★ Low signal or frequency changed muting option
- ★ Mute - centre channel detect



The CA3189E is a comprehensive FM-IF system designed for high-fidelity FM tuners. It includes a three stage FM-IF amplifier/limiter configuration with level detectors for each stage, a double-balanced quadrature FM detector and an audio amplifier that features the optional use of a muting circuit. The advanced circuit design includes desirable special features such as delayed AGC for the RF tuner, an AFC drive circuit, and an output signal to drive a tuning meter and/or provide stereo switching logic. In addition, internal power supply regulators maintain a nearly constant current drain over the voltage supply range of +8V to +16V. Distortion is primarily a function of the phase linearity characteristic of the external detector coil.

### Absolute maximum ratings

Supply voltage (Pin 11 to 4/14)	18V
DC current out of pin 15	2mA
Max dissipation	600mW



CA3189E

### Characteristics (typical at V+ = 12V)

Quiescent current drain:	28mA
DC voltage at pin 1 (IF input):	1.9V
at pin 2 (AC return to input):	1.9V
at pin 3 (DC bias to input):	1.9V
at pin 7 (AFC):	5.6V
at pin 10 (DC reference):	5.6V

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2585	Price each exc. VAT	inc. VAT each
WQ20W	CA3189E	£1.010 £0.933 £0.800	1+ £1.700

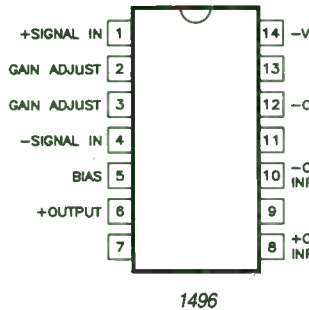
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## MC1496P Double-Balanced Modulator

Motorola

The MC1496P is a double-balanced modulator/demodulator. The circuit produces an output voltage which is the product of an input voltage (signal) and a switching function (carrier). Communications applications include modulation and demodulation of AM, SSB, DSB, FSK, FM and phase encoded signals. Signal conditioning techniques possible include frequency doubling and halving, linear mixing and chopping, with additional uses as phase detectors in phase locked loops and as differentiators in NRZ and phase encoded digital tape and disk memories.



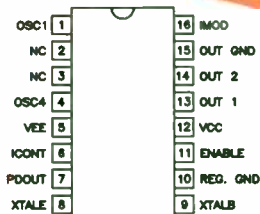
1496

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2585	Price each exc. VAT	inc. VAT each
QH47B	MC1496P	£0.457 £0.419 £0.359	1+ £1.410

## MC13175/6 UHF FM/AM Transmitter

Motorola



MC13175/6

The MC13175 and MC13176 are one chip AM/FM transmitter subsystems designed for AM/FM communication systems. They include a Colpitts crystal reference oscillator, UHF oscillator, ÷ 8 (MC13175) or ÷ 32 (MC13176) prescaler and phase detector forming a versatile PLL system. Typical applications are in the 260 to 470MHz and 902 to 928MHz bands, as well as local oscillator sources in UHF and 900MHz receivers, UHF and 900MHz video transmitters, and RF local area networks. The ICs can use readily available 3rd overtone or fundamental crystals for reference, and have a differential output for loop antenna or balun transformer networks. ASK modulation is possible by switching the output on and off. Other useful features include low operating supply voltage, UHF current controlled oscillator, adjustable power output (upto +10dBm) and power down feature. Supplied in 16-pin SO-16 surface mount package.

### Specification (f<sub>0</sub> = 320MHz, I<sub>mod</sub> = 2mA)

Power supply range:	1.8V to 5V DC, 7V DC max.
Total supply current:	14mA typical
Diff output power:	+4.7dBm typical -45dBm (I <sub>mod</sub> = 0mA)
Typical hold-in range	
MC13175:	6.5MHz
MC13176:	8MHz
Typical phase detector output error current	
MC13175:	25µA
MC13176:	27µA
Osc. enable time:	4ms
AM bandwidth:	25MHz

Maximum divider input frequency:	950MHz
Maximum output frequency:	950MHz

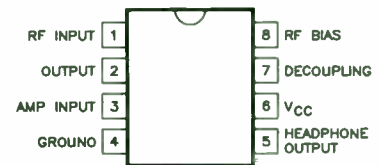
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 13471	Price each exc. VAT	inc. VAT each
GS10L	MC13175D	£1.670 £1.530 £1.310	1+ £2.870
GS11M	MC13176D	£1.670 £1.530 £1.310	1+ £2.840

## ZN416E AM Radio With Amplifier

GEC-Plessey

The ZN416E is a higher audio output version of the ZN414E in an 8-pin DIL package. Connect pin 6 to 1-3V approx., and between pin 1 and 8 connect as close as possible the two AM gangs in parallel of our AM/FM Varitune. In parallel with this connect a 5cm



416

ferrite rod aerial with about 80 turns of 30swg enamelled copper wire wound on it. Connect 0.01µF disc capacitors between pins 8 and 4, and pins 7 and 4. Connect 0.1µF disc capacitors between pins 2 and 4 and pins 2 and 3. Connect the battery negative to pin 4. This will form a complete AM radio. The output, pin 5, may be connected to the tip of our Personal Stereo Headphones and pin 4 to the ring (leave the sleeve unconnected) to provide the required 64Ω load.

### Characteristics (typical where different from ZN414)

Supply current	4mA (5mA with strong signal)
Voltage gain of output stage	18dB
Output	>170mV rms into 64Ω load

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2604	Price each exc. VAT	inc. VAT each
UR70M	ZN416E	£2.500 £2.300 £1.970	1+ £4.360

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## TDA1072A AM Receiver

**TeMic**

A complete AM receiver on a chip, the TDA1072A only requires comparatively few peripheral components to complete a high quality AM radio circuit. Unlike some other AM radio ICs, a minimum number of external tuned inductors are used to preserve reasonable performance, selectivity and quality of output. Only two of these, an RF input transformer and a single winding oscillator coil need be tuned either capacitively or inductively. The device includes a controlled RF preamplifier, multiplicative balanced mixer, separate local oscillator with gain control, a balanced full-wave detector, an audio preamplifier, internally linked AGC drive to RF and IF stages, a display amplifier for a field-strength indicator meter, and an electronic stand-by on/off switching input. The device is encapsulated in a single 16-pin DIL package.

### Specification

Supply voltage range:	7.5 min. to 18V typical
Supply current, no load:	23mA
RF DC bias input:	+V <sub>S</sub> /2
RF input impedances:	5.5kΩ (pins 14, 15)
Maximum RF input voltage:	2.5V pk-pk
Mixer output impedance:	500kΩ min. (pin 1)
Maximum conversion conductance:	6.5mA/V
Mixer output current:	1.2mA
Oscillator frequency range:	600kHz to 60MHz
Oscillator circuit impedance:	0.5kΩ to 200kΩ
Controlled oscillator amplitude:	130mV typical
Oscillator output DC:	6V
Oscillator output load current:	20mA max.
Oscillator output impedance:	25kΩ typical
IF amplifier DC input voltages:	2V (pins 3, 4)
IF amplifier input impedance:	3kΩ (pin 3)
Maximum IF input voltage:	90mV (pin 3)
IF amp. gain control range:	61dB
Audio output voltage:	310mV (pin 6)
Audio output impedance:	3.5kΩ
Meter driver output:	140mV max. (pin 9)
Meter driver current:	2mA min. (pin 9)
RF input for signal noise ratio	
= 6dB:	1.5µV
= 26dB:	15µV
= 46dB:	150µV
RF input for AGC operation:	30µV
Maximum RF input for 3% distortion:	500mV @ 80% modulation
Total distortion of recovered audio @ RF in = 1mV:	0.5%, 80% modulation
Signal to noise ratio of recovered audio @ RF in = 1mV:	50dB
IF bandwidth:	4.6kHz (-3dB)
IF selectivity:	60dB @ Δf = ±36kHz

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AH45Y	TDA1072A	£1.850 10+ £1.700 25+ £1.450 100+ £3.320 1+	

## TDA7000 FM Radio

**Philips**

An FM radio on a single chip requiring only a few simple peripheral components. In particular the chip requires only one simple coil and alignment is very easy. The chip includes an RF input stage, mixer, local oscillator, IF amplifier/limiter, phase demodulator, mute detector and mute switch. The output will directly drive a crystal earpiece or could be used with a TBA820M to form a complete portable FM radio.

### Specification

Supply voltage:	2.7V to 10V (4.5V typical)
Supply current:	8mA at 4.5V

Frequency range: 1.5MHz to 110MHz (The part of this range attainable on any finished design is determined by the components on pins 5/6)

Sensitivity: 1.5µV (for -3dB limiting, muting disabled)  
6µV (for -3dB muting)  
5.5µV (for 26dB signal to noise ratio)

Signal handling: 200mV  
Signal to noise ratio: 60dB

Total harmonic distortion: 0.7% (±22.5kHz modulation)  
2.3% (±75kHz modulation)  
50dB

AM suppression: 50dB  
Oscillator voltage pin 6: 250mV rms

Variation of oscillator frequency with supply voltage: 60kHz/V  
Selectivity: 45dB  
AFC range: ±300kHz  
Audio bandwidth: 10kHz  
AF output voltage: 75mV rms

Load resistance at: V<sub>S</sub> = 4.5V: ≥22kΩ  
V<sub>S</sub> = 9V: ≥47kΩ  
Note that the muting system can be disabled by feeding 20µA into pin 1. The interstation noise level can be decreased by choosing a low-value capacitor at pin 3. Omit this capacitor to achieve silent tuning.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

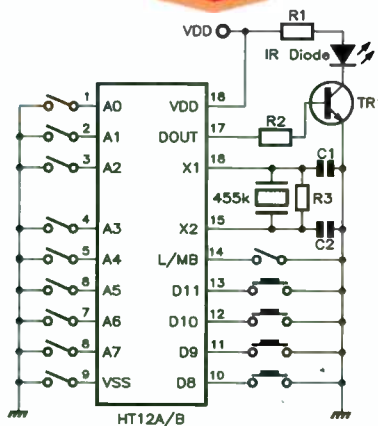
Order Code	Type	Price each exc. VAT	inc. VAT each
YH87U	TDA7000	£2.270 10+ £2.080 25+ £1.780 100+ £3.270 1+	

## REMOTE CONTROL IC'S

### HT12A, HT12B Remote Control Encoders with 38kHz IR Carrier

**Holttek**

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These devices feature 12 bit encoding consisting of 8 address bits and 4 data bits. HT12A has positive data code polarity and HT12B has negative data code polarity. The ICs have a built-in oscillator and provide a 38kHz carrier for infra-red systems. In addition, they have a low power and stand-by current requirement, and have a high noise immunity. Ideal for burglar and car alarm systems, garage door controllers, smoke and fire alarm systems, cordless telephones etc.

### Specification

Operating voltage:	2.4V to 5V DC
Stand-by current:	1µA max.
Operating current:	800µA max (5V)
'H' input voltage:	0.8V <sub>DD</sub> to V <sub>DD</sub>
'L' input voltage:	0 to 0.2V <sub>DD</sub>
Operating temp:	-20°C to +75°C

### Suggested Parts List

R1	Min Res 100Ω (M100R)
R2	Min Res 10k (M10K)
R3	Min Res 10M (M10M)
C1,2	Polystyrene 100pF (BX46A)
	Ceramic Resonator 455kHz (UL61R)

LED 5mm Red LED (UK48C)  
TR1 BC182L (QB55K)

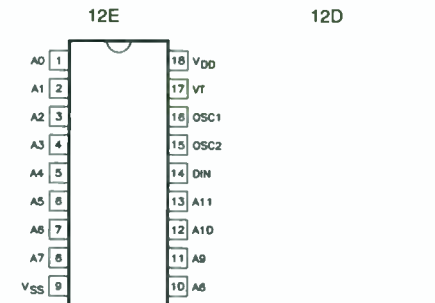
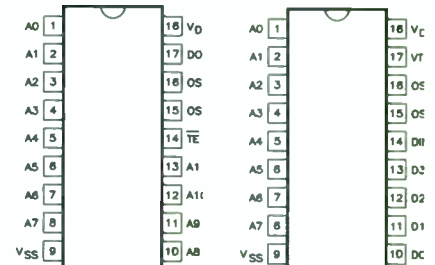
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JA32K	HT12A	£0.512 10+ £0.469 25+ £0.402 100+ £2.280 1+	
JA33L	HT12B	£0.512 10+ £0.469 25+ £0.402 100+ £2.280 1+	

## HT12E, HT12D & HT12F Remote Control Encoder/Decoders

**Holttek**

The HT12E encodes 12 bits of information and then serially transmits it upon receipt of a transmit enable signal to its active low TE pin. The data is transmitted on the pin marked DOUT, and can be easily interfaced to work with RF or infra-red transmission networks. Complementing the encoder are two decoder ICs, the HT12F and HT12D. The HT12F takes the encoded signal and decodes the whole of the 12 bits as being address data. If the received address matches with the address preset on the decoder IC then the decoder IC will make its valid transmission pin go high (VT). Using the HT12D device is very similar with the single exception that it decodes the first 8 bits of information and checks them against the first 8 bits of address preset on its pins. When both addresses match it makes available the last 4 bits of the received data word, on its four output pins. At the same time the decoder IC will send high its VT pin. This means that data can be sent from the encoder IC and only be decoded and therefore received by those decoder ICs with a matching 8-bit address. Features of the devices are low power, high noise immunity, low stand-by current of 1µA, wide operating voltage, 212 address code (28 for the HT12D), built-in oscillator requiring only a 5% resistor, four times transmission with three times receive check, and a minimum of external components. Applications include burglar alarm systems, smoke and fire alarm systems, car door controllers, car alarm systems, security systems, cordless telephones, and many remote control systems.



### Specification

Operating voltage, V <sub>DD</sub> :	2.4V to 12V, 5V typ (13V abs max)
Output drive current (sink), I <sub>O</sub> :	1.6mA typ, 1mA min (V <sub>DD</sub> =5V)
(source):	5mA typ, 2mA min (V <sub>DD</sub> =10V)
Stand-by current, I <sub>STB</sub> :	0.1µA typ, 1µA max (at V <sub>DD</sub> =3V) 0.1µA typ, 1µA max (at V <sub>DD</sub> =5V) 1µA typ, 2µA max



(at  $V_{DD}=10V$ )  
 $2\mu A$  typ,  $4\mu A$  max  
 (at  $V_{DD}=12V$ )

Operating current,  $I_{DD}$   
 HT12E, ( $F_{OSC}=3kHz$ ):  $40\mu A$  typ,  $80\mu A$  max  
 (at  $V_{DD}=5V$ )  
 $100\mu A$  typ,  $200\mu A$  max  
 (at  $V_{DD}=10V$ )

HT12D & HT12F,  
 ( $F_{OSC}=200kHz$ ):  $200\mu A$  typ,  $400\mu A$  max  
 (at  $V_{DD}=5V$ )  
 $400\mu A$  typ,  $800\mu A$  max  
 (at  $V_{DD}=10V$ )

Recommended oscillator parameters:

HT12E	HT12D & HT12F
1.1M $\Omega$ (3kHz)	62k $\Omega$ (150kHz)
750k $\Omega$ (4-3kHz)	33k $\Omega$ (240kHz)

NB. Recommend  $F_{OSC}$ (HT12D & HT12F)= $F_{OSC}$ (HT12E)\*50  
 Operating temperature,  
 $T_A$ :  $0^\circ C$  to  $70^\circ C$

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AE19V	HT12F	10+ £0.990	25+ £0.650
		100+ £0.490	1+ £1.890

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AE17T	HT12E	25+ £0.578	100+ £0.482
AE18U	HT12D	300+ £0.413	1+ £2.400
		100+ £0.650	1+ £2.400

address and 4 data lines (match with HT6034). Each encoder address/data input is externally 'trinary' programmable. The programmable address/data is transmitted together with the header bit via an infra-red or RF system. The ICs feature a built-in oscillator, low power and stand-by current, high noise immunity, and require minimal external components.

The devices are suitable for a wide range of applications including: burglar alarm systems, smoke and fire alarm systems, car alarms, security systems, garage door and car door controllers, cordless telephones etc. Supplied in an 18-pin DIL package.

**Specification**

Operating voltage: 2.4V to 12V DC (5V typical)  
 Stand-by current:  $4\mu A$  max.  
 Operating current:  $500\mu A$  max. (3V supply)  
 1.2mA max. (12V supply)  
 Oscillator frequency: 3kHz  
 'H' input voltage:  $0.8V_{DD}$  to  $V_{DD}$   
 'L' input voltage: 0 to  $0.2V_{DD}$   
 Operating temp:  $-20^\circ C$  to  $+75^\circ C$   
 Oscillator resistor is 1M $\Omega$  for frequency of 3kHz.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JA34M	HT6010	25+ £0.763	100+ £0.610
JA35Q	HT6014	300+ £0.509	1+ £1.830
		100+ £0.610	1+ £1.830

(match with HT6014).

The decoders receive serial address/data information from the encoders via an infra-red or RF system. It then compares the serial input information twice with its local address. If no errors or unmatched codes are encountered, the input data codes are decoded and transferred to the output pins. The VT pin goes high to indicate a valid transmission.

The ICs feature a built-in oscillator, low power and stand-by current, high noise immunity, and require minimal external components. The devices are suitable for a wide range of applications including: burglar alarm systems, smoke and fire alarm systems, car alarms, security systems, garage door and car door controllers, cordless telephones etc. Supplied in an 18-pin DIL package.

**Specification**

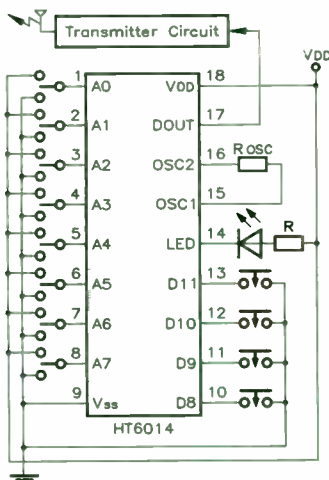
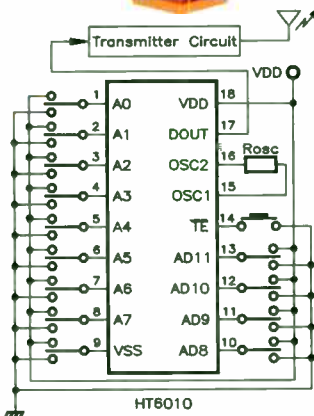
Operating voltage: 2.4V to 12V DC (5V typical)  
 Stand-by current:  $4\mu A$  max.  
 Operating current:  $500\mu A$  max.  
 Oscillator frequency: 100kHz  
 'H' input voltage: 3.5V to 5V (5V supply)  
 'L' input voltage: 0 to 1V (5V supply)  
 Operating temp:  $-20^\circ C$  to  $+75^\circ C$   
 The oscillator resistor is 91k $\Omega$  for 100kHz oscillator frequency

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JA36P	HT6030	25+ £0.763	100+ £0.610
JA37S	HT6034	300+ £0.509	1+ £1.830
		100+ £0.610	1+ £1.830

## HT6010/HT6014 12 Bit Encoders

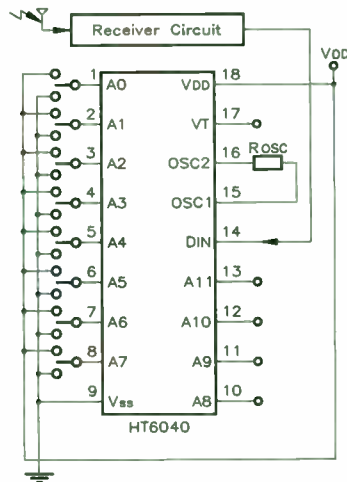
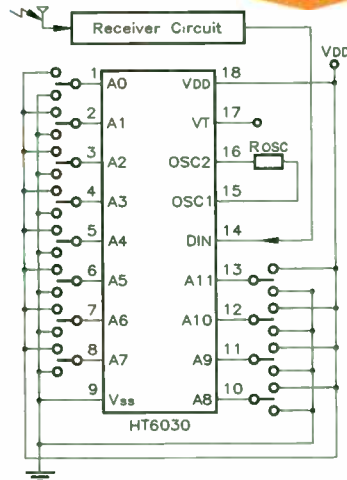
Holtek




These 12 bit encoders are designed for remote control systems and are intended to complement the 12 bit decoders (HT6030 and HT6034). The HT6010 has 8 address and 4 address/data lines (match with HT6030) and the HT6014 has 8

## HT6030/HT6034 12-Bit Decoders


Holtek



These 12 bit decoders are designed for remote control systems and are designed to complement the 12 bit encoders (HT6010 and HT6014). The HT6030 has 12 address lines (match with HT6010) and the HT6034 has 8 address and 4 data lines



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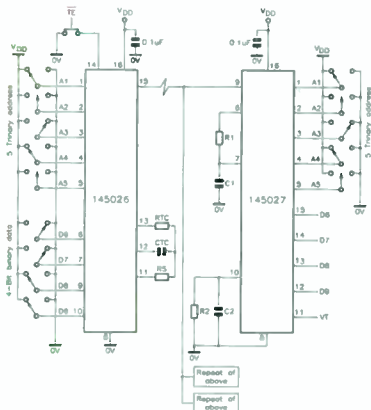
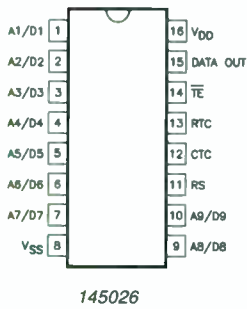


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## M145026B-1 Remote Control Encoder

SGS Thomson



An encoder which can generate up to 19,683 codes from 9 address lines by detecting 1, 0, or open circuit. To initiate the transmit sequence, pin 14 should be pulsed low. The encoder will now output on pin 15 a data stream representing the condition on each of the address/data pins in turn and then repeat the operation, so that two complete identical words are transmitted. If pin 14 is held low, the output will be continuous, otherwise two identical words are output for each pulse on pin 14. A 1 is transmitted as two long pulses, a 0 as two short pulses, and an open circuit as a long pulse followed by a short pulse. The device is constructed in CMOS and all characteristics are as the standard 4000B devices. If an external oscillator is used, it should be connected to pin 11 and pins 12 and 13 left open. The output can drive rf, ultrasonic or infra-red transmitters.

**Specification**  
 Supply voltage 4.5V to 15V (18V absolute max.)  
 Clock frequency 2MHz max at 5V,  
 5MHz max over 10V

Overall system propagation delay 182 clock cycles  
 Tolerance on timing components ±25%  
 Quiescent current 5nA at 5V, 10nA at 10V,  
 15nA at 15V  
 Operating current 100µA at 5V, 200µA at 10V,  
 300µA at 15V

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UJ49D	M145026B-1	£1.280	£1.120

## M145027/8B-1 Remote Control Decoders

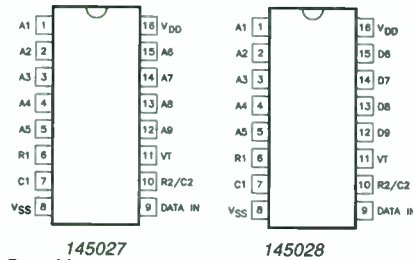
SGS Thomson

The 145027 receives the data from the 145026 and checks it for errors by comparing the two words which should be identical. If the first five bits match the address set up on pins 1 to 5, then the data contained in the last four bits is latched on pins 12 to 15, and pin 11 goes high to indicate that a valid transmission has been received. Note that pin 11 goes high on the rising edge of the second pulse in

the ninth bit of the second word. The data bits must be either 1 or 0. If an open circuit is transmitted it will be decoded as a 1. Thus data could be sent to up to 243 different receivers simultaneously, but will only be received by the one designated by the address.

The 145028 is the same but all the received data is regarded as address and the only output is the valid transmission pin 11 going high. Since pin 11 goes high before the second pulse in the ninth bit of the second word is completed, only a 1 or 0 can be received here, so the number of codes which can be detected is reduced to 13,122.

The system with the 145027 is suitable for use in remote controlled toys, low-speed data transmissions, paging systems, and the M145028 is for use in garage door openers, security monitoring, anti-theft devices etc.



### Parts List

f <sub>osc</sub> kHz	RTC	CTC	RS
362	10kΩ	120pF	20kΩ
181	10kΩ	240pF	20kΩ
88.7	10kΩ	490pF	20kΩ
42.6	10kΩ	1020pF	20kΩ
21.5	10kΩ	2020pF	20kΩ
8.53	10kΩ	5100pF	20kΩ
1.71	51kΩ	5100pF	100kΩ

f <sub>osc</sub> kHz	R1	C1	R2	C2
362	10kΩ	470pF	100kΩ	910pF
181	10kΩ	910pF	100kΩ	1800pF
88.7	10kΩ	2000pF	100kΩ	3900pF
42.6	10kΩ	3900pF	100kΩ	7500pF
21.5	10kΩ	8200pF	100kΩ	0-015µF
8.53	10kΩ	0-02µF	100kΩ	0-02µF
1.71	51kΩ	0-02µF	100kΩ	0-1µF

Use 1% polystyrene capacitors in series or parallel to get to within ±5% of value shown, and for 0.1µF use a Poly Layer capacitor. All resistors are Min Res.

### Specification

As 145026 except:  
 Max decoder frequency 240kHz at 5V,  
 410kHz at 10V,  
 450kHz at 15V  
 Quiescent current 30µA at 5V,  
 60µA at 10V,  
 90µA at 15V  
 Operating current 200µA at 5V,  
 400µA at 10V,  
 600µA at 15V

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UJ50E	M145027B-1	£2.000	£1.900
UJ51F	M145028B-1	£2.000	£1.900

## HT640 18-Bit Encoder

Holtek



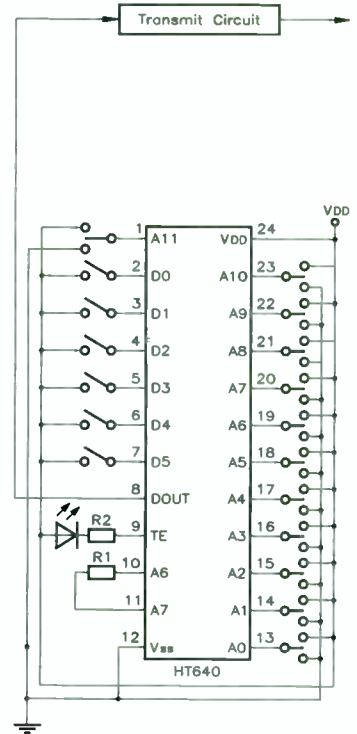
A CMOS remote control IC capable of encoding 18 bits of information consisting of 10 address and 8 data bits. Each address/data input is externally 'trinary' programmable. The encoded signal can easily interfaced with an infra-red or RF transmission system. The device features a built-in oscillator, low stand-by current, low power and high noise immunity, and requires minimal external components.

The IC is suitable for a wide range of applications including: burglar alarm systems, garage door controllers, car alarm system, smoke and fire alarm systems etc.

### Specification

Operating voltage: 2.4V to 12V DC  
 Standby current: 1µA max. (3V supply)  
 4µA max. (12V supply)  
 Operating current: 2.4mA max at 12V

Oscillator frequency: 100kHz (Rosc = 330kHz)  
 'H' input voltage: 0.8V<sub>DD</sub> to V<sub>DD</sub>  
 'L' input voltage: 0 to 0.2V<sub>DD</sub>  
 Operating temp: -20°C to +75°C  
 R1 oscillator resistor is typically 330k for a frequency of 100kHz

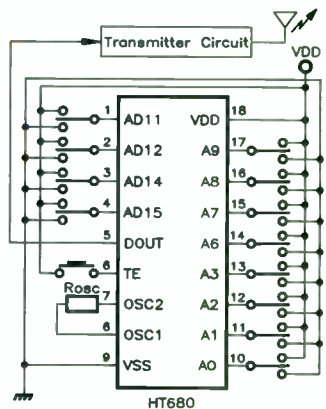


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JA45Y	HT640	£1.230	£0.986

## HT680 Encoder

Holtek



The HT680 is a basic 18-bit encoder that is designed to complement the HT691 (JA39N). The device has 8 address bits and 4 address/data bits. The remaining 'unpacked' bits, or dummy codes, are treated as floating. During an information transmission these bits are still located in their original position. The address pins are usually preset to transmit data codes with particular security codes selected by DIP switches or PCB wiring. Data bits are selected by push button or electronic switches.

The device features an in-built oscillator, low power and stand-by current requirements and high noise immunity. Minimal external components are required and the IC can easily be interfaced with an infra-red or RF transmission system. Ideal for burglar and car alarm systems, smoke and fire alarm systems, garage door controllers, security systems, cordless phones etc.

Supplied in a 18-pin DIL package.

**Specification**

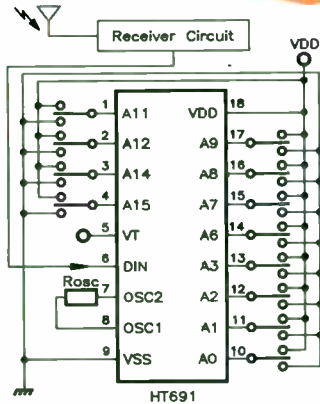
Operating voltage: 2.4V to 12V DC (5V typical)  
 Stand-by current: 4µA max.  
 Operating current: 500µA max. (3V supply)  
 2.4mA max. (12V supply)  
 Oscillator frequency: 100kHz  
 'H' input voltage: 0.8V<sub>DD</sub> to V<sub>DD</sub>  
 'L' input voltage: 0 to 0.2V<sub>DD</sub>  
 Operating temp: -20°C to +75°C  
 Oscillator resistor is 330kΩ for frequency of 100kHz.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JA38R	HT680	£0.822 25+ £0.657 100+ £0.548 300+	£2.630 1+

## HT691 Decoder

Hoitek



This basic 18-bit decoder is designed to complement the HT680 (JA38R), but only uses 12 address bits, the remaining 6 bits, or dummy codes, are left open. The received serial input data is compared twice to the local address, and if no errors or unmatched codes are encountered, the input data codes are decoded and then transferred to the output pins. The VT pin goes high to indicate a valid transmission.

The ICs feature a built-in oscillator, low power and stand-by current, high noise immunity, and require minimal external components. The devices are suitable for a wide range of applications including: burglar alarm systems, smoke and fire alarm systems, car alarms, security systems, garage door and car door controllers, cordless telephones etc. Supplied in a 18-pin DIL package.

**Specification**

Operating voltage: 3V to 12V DC (5V typical)  
 Stand-by current: 4µA max.  
 Operating current: 1mA max.  
 Oscillator frequency: 100kHz  
 'H' input voltage: 3.5V to 5V (5V supply)  
 'L' input voltage: 0 to 1V (5V supply)  
 Operating temp: -20°C to +75°C  
 Oscillator resistor is 330kΩ for frequency of 100kHz.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JA39N	HT691	£0.846 25+ £0.678 100+ £0.565 300+	£2.370 1+

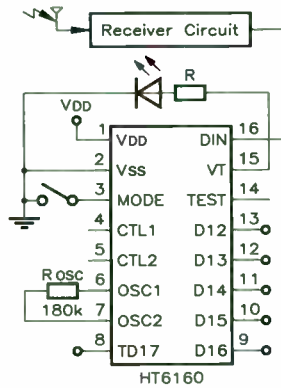
## HT6160 Programmable Decoder

Hoitek



An address programmable 3-word, 18-bit decoder designed to pair with the HT680 (JA38R), to form a programmable address remote control system. There are two modes of operation - program mode and normal mode. With MODE=0, the device is in program mode and encodes the data on the DIN pin as local address. The initial 12 bits of an 18 bit code are interpreted as the device address. With

MODE=1 (or floating), the device is in the normal mode and decodes the address and data on the DIN pin from the matching encoder. If the received address code matches the local programmed address code VT goes high and the data codes are placed on the output pins. Combination of the data output type and functions of the IC are controlled by the signals CTL1 and CTL2.



Initially the device is programmed by connecting the MODE pin to Vss and allowing the DIN to receive address code from the continuously transmitting encoder. The LED will flash at a 2Hz rate, and will stop at the end of the programming operation. The device will then check the input address code 7 times, and if no errors are detected the input address code is written to the internal memory. Note: this will be lost if power is removed. After programming, the device is returned to the normal operation mode (MODE pin left open, or connected to V<sub>DD</sub>). The decoder can now receive a data word transmitted from the encoder and interprets the initial 12 bits as address and the last 6 bits as data. The decoder then checks twice the receive address against the address stored in memory, and if matched, the VT pin goes high and the 6 data bits are decoded to activate the output pins, whose functions are listed below.

**CTL1 Connection**

	D12	D13	D14	D15	D16
V <sub>DD</sub>	M	M	N	N	N
V <sub>SS</sub>	L	L	N	N	N
RC	D	D	N	N	N

**CTL2 Connection**

	D12	D13	D14	D15	D16
V <sub>DD</sub>	N	N	M	M	M
V <sub>SS</sub>	N	N	L	L	L

TD17 is toggled by a 'HIGH' on D17 of encoder  
 N = no effect, M = momentary, L = latched.

**Specification**

Operating voltage: 2.4V to 5V DC  
 Stand-by current: 10µA max.  
 Operating current: 600µA  
 Oscillator frequency: 100kHz  
 'H' input voltage: 0.8V<sub>DD</sub> to V<sub>DD</sub>  
 'L' input voltage: 0 to 0.2V<sub>DD</sub>

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

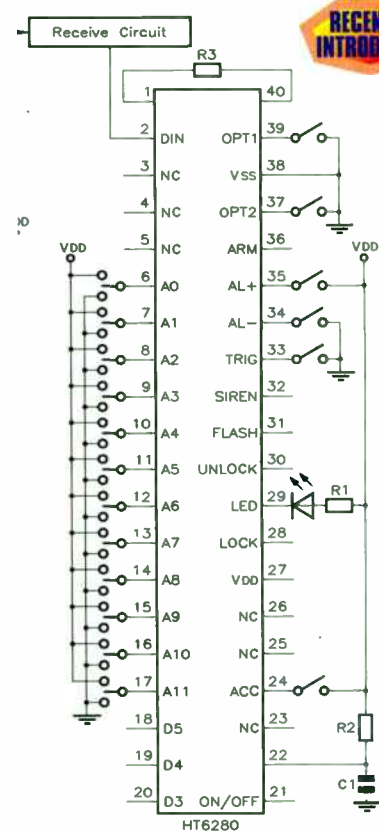
Order Code	Type	Price each exc. VAT	inc. VAT each
JA40T	HT6160	£1.050 25+ £0.845 100+ £0.704 300+	£3.000 1+

## HT6280 Car Alarm Decoder

Hoitek

The HT6280 is an 18-bit decoder designed for use in remote control car alarm systems. It can be used with the 18-bit encoder HT640 (JA45Y). After receiving the the 18-bits of data, the IC interprets the first 12 bits as address, and the last 6 bits as control signal data. If these 12 bits of address matches that of the locally set address (compared twice, successively) then the 6 data bits are latched and the control function executed. Three types of control function are incorporated in the device- arm/disarm, panic and power on/off. The device also provides 3 momentary data outputs for other user defined special purposes. The device will easily interface with an infra-red or RF system, and has low power dissipation and high noise immunity. A LED output is provide to indicate a valid transmission.

At power on the IC is in the arm state, and an ARM signal toggles the arm/disarm condition of the IC. If the IC is in the arm state, and a signal is received on the the ARM pin, the car lights can be made to flash twice, and the 'chirp' sounds twice. The alarm system will enter the disarm state. Similarly, if the ARM signal is received again, the car lights can be made to flash once, the 'chirp' sounds once, and the alarm system enters the armed state. Supplied in a 40-pin DIL package.



**Specification**

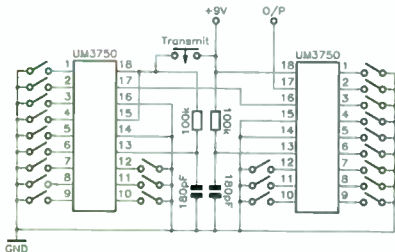
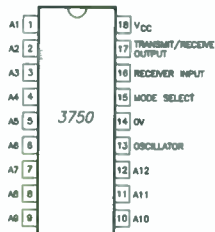
Supply voltage: 3V to 5V DC  
 Stand-by current: 4µA max.  
 Operating current: 400µA max.  
 System frequency: 100kHz  
 'H' input voltage: 0.8V<sub>DD</sub> to V<sub>DD</sub>  
 'L' input voltage: 0 to 0.2V<sub>DD</sub>  
 Operating temp: -20°C to +75°C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JA41U	HT6280	£1.520 25+ £1.220 100+ £1.010 300+	£4.690 1+

## UM3750 Encoder/Decoder

UMC



A single chip which includes both the encoder and decoder for a coded transmission system. When the code preset on the decoder matches the code transmitted from the encoder pin 17 goes low for 128ms. If a further match is received within that time, the output stays low for a further 128ms and so on. A total of 4096 different codes are possible making the device suitable for use in alarm control systems, security systems, garage door openers, and remote control. The system is protected against false transmissions because it only switches after receiving four valid codes and each valid one must be received within 64ms of the previous one. The system can be used with rf, ultrasonic or infra-red modulators and demodulators. A Min Res 100k and Ceramic 180pF are required with each chip.

### Specification

Supply voltage: 3V to 11V  
 Receive output: Active low, can sink 2mA  
 Clock frequency: 100kHz with components shown  
 $f \approx 2/RC$

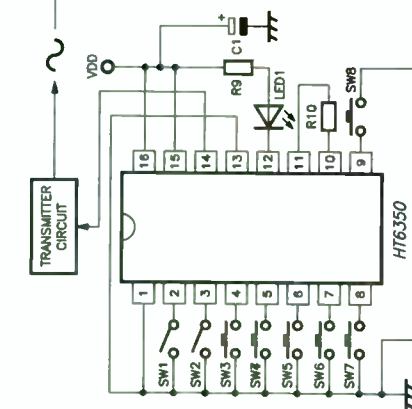
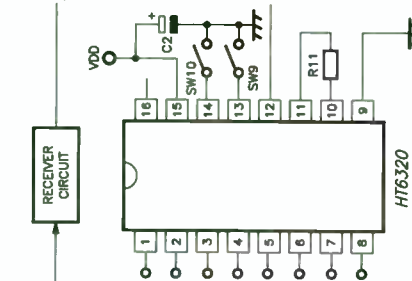
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
UK77J	UM3750	£1.290	£1.150	£1.090	£2.490

drive capability and is able to feed high current transistors arranged in a bridge circuit. Both ICs have a built-in oscillator and require just one resistor to set the frequency. Both devices are supplied in a 16-pin DIL package.

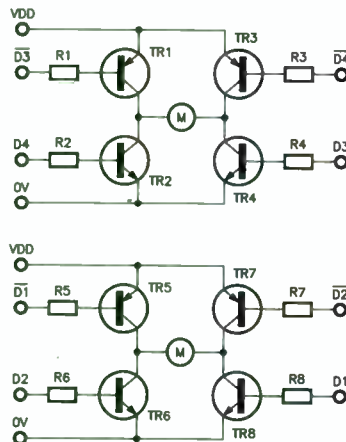
HT6350	HT6320	Function	
Encoder I/P	Decoder O/P		
D1	D2	D1 (D1)	D2 (D2)
0	1	1	0
1	0	Z	Z
		Z	1
		0	0
		Z	Z
		1	0
		0	1
		50%	0
		Z	Z
		Z	50%
		0	0
		1	0

Z = High Impedance



### Suggested Parts List

R1-9	Min Res 1k	(M1K)
R10,11	Min Res 390k	(390K)
C1,2	Minelect 100µF 16V	(RA55K)
TR1,3,5,7	TIP2955	(QH55K)
TR2,4,6,8	TIP3055	(QH56L)
LED1	3mm Green	(CJ56L)
SW1,2,9,10	Slide Switch	(FF77J)
SW3-8	Push Switch	(FH91Y)



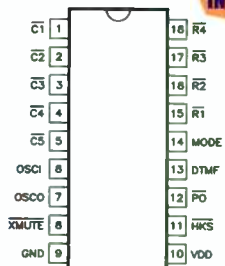
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AZ07H	HT6320	£1.190	£0.990	£0.920	£1.920
AZ08J	HT6350	£0.985	£0.788	£0.657	£2.090

## HT9205A/HT9212A Tone/Pulse Diallers

Holtek

RECENTLY INTRODUCED



HT9205A/12A

A choice of two DTMF/Pulse dialler ICs with memories featuring 'Last Number' and 'Save' redial. In addition, the HT9205A has three one-touch memories, and the HT9212A has 10 additional memories for those numbers most frequently used. The ICs will work from a 2V to 5.5V DC power supply and have a maximum retention current of 0.2µA. Supplied in an 18-pin DIL package.

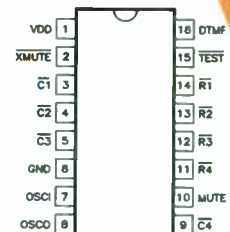
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AZ09K	HT9205A	£1.230	£0.985	£0.821	£2.180
AZ10L	HT9212A	£1.350	£1.080	£0.903	£2.460

## HT9201A Tone Dialler

Holtek

RECENTLY INTRODUCED



HT9201A

A simple, low-cost tone dialler IC that can be used with a standard keypad and features a built-in voltage regulator and 1µA standby current. The device requires an external 3.58MHz crystal and an operating voltage of 2.0V to 5.5V DC. Supplied in a 16-pin DIL package.

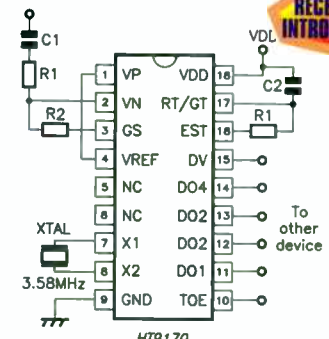
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AZ11M	HT9201A	£0.721	£0.576	£0.480	£1.080

## HT9170 DTMF Decoder

Holtek

RECENTLY INTRODUCED



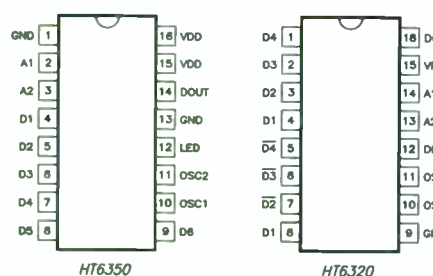
HT9170

This DTMF receiver IC offers excellent performance, and provides a tri-state data output for connection to suitable external devices and circuits. Digital counting techniques are used to detect and decode all the 16 DTMF tone pairs into a 4-bit code

## HT6350/HT6320 Encoder/Decoder

Holtek

RECENTLY INTRODUCED



A matched pair of CMOS encoder/decoder ICs specially designed for radio control of toy cars etc. There are five control functions available - forward (50% duty cycle), turbo forward (100%), backward, left and right turn. The HT6350 encodes an 8-bit (2-bit address, 6-bits data) message and serially outputs to the transmitting media, such as RF or infra-red. The HT6320 decodes the data from the receiver and checks that the 2-bit address matches the decoder address, and if correct, provides the feeds to control the motors etc. These low power, high noise immunity devices will operate from a 2.4V to 12V power supply, and have a typical stand-by current of 1µA. The decoder IC has a high output

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AZ07H	HT6320	£1.190	£0.990	£0.920	£1.920
AZ08J	HT6350	£0.985	£0.788	£0.657	£2.090

output. High-accuracy switched capacitor filters and dial tone rejection circuits are employed to eliminate the need for external filter circuits. The device operates from a 5V DC power supply and has a low power dissipation. Supplied in a 18-pin DIL package.

**Specification**

Supply voltage:	5V DC
Typical current:	3mA
Input signal range:	-29dBm to +1dBm
Input impedance:	10MΩ
Acceptable frequency deviation:	±1.5% max.
Frequency deviation rejection:	±3.5% min.

**Suggested Parts List**

- R1,2 Min Res 100k (M100K)
- R3 Min Res 300k (M300K)
- C1,2 Monores 0.1:F (RA49D)
- Xtal Resonator 3.579Mhz (DJ31J)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ12N	HT9170	£1.070	£1.280

## LM567CN Tone Decoder/Phase Locked Loop

National Semiconductor

**Features**

- ★ Wide frequency range (0.01Hz to 500kHz)
- ★ High stability of centre frequency
- ★ Independently controllable bandwidth (0 to 14%)
- ★ High out-band signal and noise rejection
- ★ Logic compatible output with 100mA current sinking capability
- ★ Inherent immunity to false signals
- ★ Frequency adjustment over a 20 to 1 range with an external resistor

**Applications**

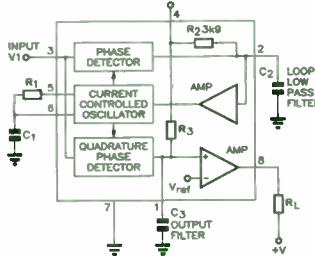
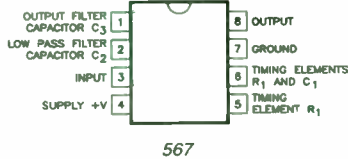
- ★ Carrier current remote controls
- ★ Ultrasonic controls (remote TV etc.)
- ★ Communications paging
- ★ Frequency monitoring and control
- ★ Wireless intercom
- ★ Precision oscillator

**Characteristics**

Max operating voltage:	10V
Positive voltage at input:	0.5V above supply
Negative voltage at input:	-10V DC
Output voltage:	15V DC
Operating current range:	7mA (12mA activated)

**Design Formulae**

$f_0 = 1.1/R_1.C_1$  where R1 is between 2kΩ and 20kΩ and f<sub>0</sub> is the centre frequency.  
 Bandwidth =  $1070\sqrt{V_i/f_0.C_2}$  where V<sub>i</sub> is the input rms voltage. C3 = 2(C2).

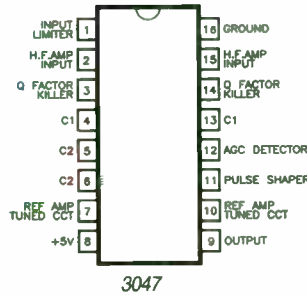


Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QH69A	LM567CN	£0.950	£1.150

## TDA3047/N4 Infrared Receiver

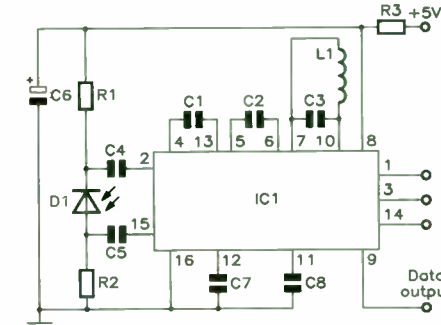
Philips



Infrared receiver IC featuring low power consumption and an HF amplifier with 66dB control range. In addition the IC contains a synchronous demodulator and reference amplifier, an AGC detector, pulse shaper, input voltage limiter, and a Q factor killer controlled by the AGC. The output from pin 9 is active high.

**Specification (typical at 25°C, VS = +5V)**

Supply voltage:	4.65 to 5.35V
Supply current:	2.1mA
Min input signal:	15μVp-p
Max input signal:	200mVp-p
Output current:	120μA



**Parts List**

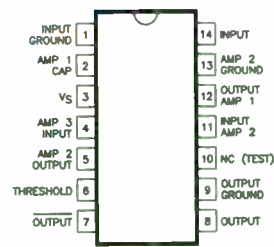
R1,2	Min Res 12k	(M12K)
R3	Min Res 22Ω	(M22R)
C1	Poly Layer 0.047μF	(WW37S)
C2,4,5	Poly Layer 0.022μF	(WW33L)
C3	Poly Layer 0.0047μF	(WW26D)
C6	PC Elect 100μF 10V	(FF10L)
C7	Poly Layer 0.022μF	(WW33L)
C8	Poly Layer 0.0068μF	(WW27E)
L1	Choke 4.7mH	(UK80B)
D1	Photodiode 357PD	(YH71N)
IC1	TDA3047	(UL25C)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL25C	TDA3047-N4	£1.620	£1.960

## TBA2800 Infrared Preamplifier

ITT Semiconductor

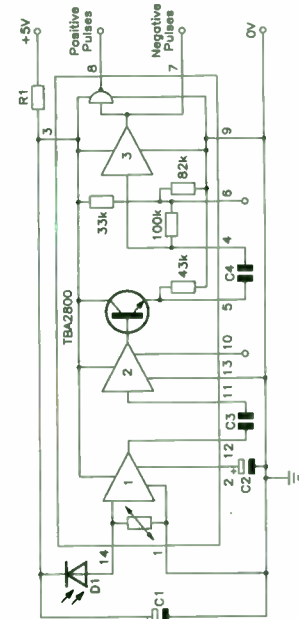


An infrared preamplifier consisting of a first gain-controlled amplifier featuring a wide dynamic range to ensure interference-free operation even with bright ambient light from the sun or 50Hz lamps including fluorescents. This amplifier can also reject

other intense infra-red transmissions, yet it is possible to bring the infra-red transmitter close to the receiver TBA2800 without malfunction from receiver overdrive. Amplifier 2 provides further amplification, whilst amplifier 3 separates the pulse-shaped signal from any noise and other unwanted signals. A final inverter provides both a positive and negative pulse output for ease of use. A resistor can be inserted between pin 6 and 0V to increase the sensitivity, but the input sensitivity is reduced.

**Specification (typical)**

Supply voltage:	+5V (4.5V to 5.5V)
Supply current:	1mA
Gain:	>70dB
Output pins 7 and 8:	1.6mA at 0.4V



**Parts List**

R1	Min Res 100Ω	(M100R)
C1	PC Elect 22μF 25V	(FF06G)
C2	PC Elect 2.2μF 100V	(FF02C)
C3	1% Polystyrene 1200pF	(BX57M)
C4	Poly Layer 0.01μF	(WW29G)
D1	Infrared Photodiode	(YH71N)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

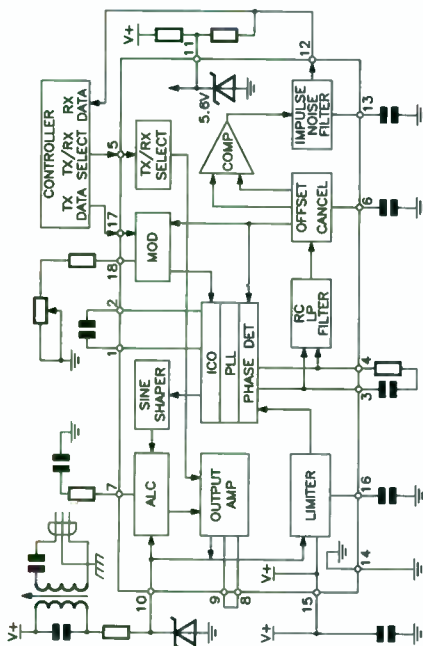
Order Code	Type	Price each exc. VAT	inc. VAT each
JU36P	TBA2800	£3.500	£4.190

ORDER BEFORE 5PM FOR SAME DAY DESPATCH

Tel: 01702 554000  
Fax: 01702 554001  
e-mail: Sales@maplin.co.uk

## LM1893N Mains Carrier Transceiver

National Semiconductor



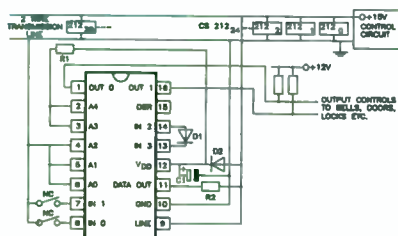
A chip designed to transfer data over the mains between remote locations within one site on the same phase. The chip performs as a power line interface for half duplex (bi-directional) communication of serial bit stream. In transmission mode, a sinusoidal carrier is FSK modulated and impressed on almost any power line via a rugged on-chip driver. In reception mode a PLL-based demodulator and impulse noise filter combine to give maximum range. Data speeds up to 4800 baud are possible with carrier frequencies in the range 50 to 300kHz. A full data sheet is available.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UF50E	LM1893N	10+ £8.14 50+ £6.720 300+ £5.600	1+ £10.160

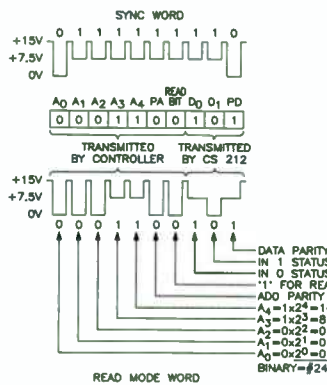
## CS212 Security Detector

Cherry Semiconductor



A 16-pin IC designed for data transmission over a simple 2-wire circuit. The IC is particularly suited to alarm systems but could have other applications. Up to 30 ICs can be used on one circuit and any one can look after two detectors (magnetic sensors, smoke alarms, movement detectors, pressure mats etc.) or one detector and its anti-tamper loop (or the loop could be a window foil etc.) Thus between 30 and 60 detectors are possible on one circuit. Each IC also has two outputs which (via relays etc) can operate the main alarm bell or siren, or door locks and so on.

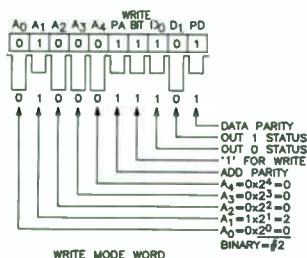
The controller must supply 15V to the circuit and the total maximum current which a full complement of 212's would draw from the circuit at any one time is about 20mA. The resistance of the line (which could be very long) must be taken into account and the ICs will function correctly from line voltages between 18V and 10V, which effectively sets the line length limit.



Each IC on one circuit must have its pins 2 to 6 connected differently from every other IC in the range 0 to 29. Pin 2 is binary 16 down to pin 6 which is binary 1. Used pins (for example if IC is 24th in the chain then pins 2 and 3) should be connected via a 10k resistor (R1) to the positive side of the circuit and all unused address pins must be connected to the ground side of the circuit. If the IC is being used to look after two sensors, then they should be connected between pin 7 and ground and pin 8 and ground. Sensors can be normally open or normally closed provided the control circuit can interpret the returned data correctly. If pin 7 is being used then pins 13 and 14 should be left open circuit. If the anti-tamper loop is being used then pin 7 should be connected to pin 9 and the anti-tamper loop connected in parallel with a diode (D1) if loop normally open, or in series with D1 if loop normally closed. Note that the IC must be close to the detector and particularly the anti-tamper wires must be short.

The two outputs pins 1 and 16 can also be controlled from the control circuit giving a maximum possibility of 60 outputs from a fully equipped loop. In security applications they could be used to set off the main bell, open door locks or whatever. These items will need a power source to run them. Pin 15 could be used in conjunction with the outputs so that up to four possible functions could be implemented depending on the state of the two outputs. Pin 15 provides a strobe pulse in turn when each output is updated and it too can sink about 1mA. All three pins are Darlington type open collector outputs.

Data is transmitted over the line by pulling the voltage down to half rail (7.5V) to indicate a logic 1 and to 0V to indicate a logic 0. The controller must first send a synchronisation word which consists of ten bits, a 0 followed by eight 1's followed by a 0. The clock rate can be anything up to 20kHz. The next five bits transmitted by the controller are the address bits, with the least significant bit first. The IC whose code on its pins 2 to 6 matches the received address now becomes active. The next bit sent by the controller is a parity bit. Odd numbered ICs expect to see a 1, even numbered ICs expect to see a 0. If the seventh bit transmitted by the controller is a 0 (read mode) then the IC reads the conditions on its pins 7,8,13 and 14. After transmitting this seventh bit, the controller must pull the line down to 7.5V and hold it there for three cycles.



The active 212 now transmits to the controller during these three cycles. If the 212 pulls the line down to 0V the controller interprets this as a 0 and if there is no change on the line, this indicates a 1. The first bit transmitted by the 212 will be a 1 if pin 8 is open circuit and a 0 if pin 8 is connected to ground. The second bit transmitted will be a 1 if pin 7 is open or

connected to pin 9 and the anti-tamper loop is open or short circuit, and a 0 if pin 7 is grounded or there is a diode between pins 13 and 14. The third bit is a parity bit which is a 1 if either of the preceding two bits were 1 or a 0 if both were 1 or both were 0. If the 212 had received an incorrect parity bit at bit 6 it would not read its input lines and transmit three 1's during its three cycle transmission slot. Thus if two 212's switch together, the controller simply will not see the incorrect one, but if only one switched, the controller must interpret the three 1's (i.e. no response) as a fault and repeat the address after a synchronisation word. The system is thus tolerant to a one bit fault in any address or data transmission. After the three cycle slot for the 212, the controller must pull the voltage back up to 15V and then send a synchronisation word and then continue as before. If the controller wishes to talk to the outputs of a particular 212, then it must send a 1 as its seventh bit (write mode). If the 212 activated by the preceding address in bits 1 to 5 of this word, sees a 1 in bit 7 and assuming the parity bit 6 was correct, it prepares to accept three more bits from the controller. The first of these bits will turn pin 1 on if it is a 1 (or off if it's a 0) and the second controls pin 16 in the same way. The third bit again is a parity bit, 1 if either of the preceding two bits were 1, and 0 if both were 1 or both were 0. If the 212 detects a wrong parity at any time, it will not update pins 1 or 16 and it will not be possible to activate it again until it has received a signal with correct parity in bit 6 and a 0 in bit 7. After a few retries, the fault should be interpreted as an alarm condition as it may mean the line has been cut. The IC will function correctly from line voltages up to 28V during fault conditions.

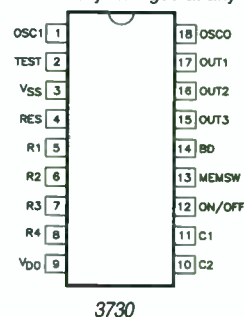
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UH600S	CS212	10+ £2.990 50+ £2.490 300+ £2.370	1+ £5.580

## UA3730 Security Lock with Alarm

UMC

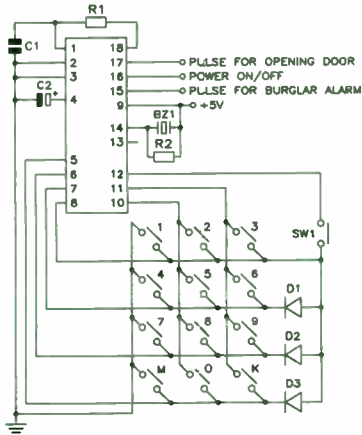
An electronic lock which can accept passwords of up to 12 digits, offering a million, million (1012) possible combinations. If a wrong password is entered three times, the alarm is triggered. The password can be easily changed at any time.



### Application Circuit

Whenever power is connected, the password is reset to zero, so battery back-up must be provided. Standby current is only 5µA so even a small battery will last a long time. To set up a password or change an existing one (with pin 13 connected to pin 14), first enter the current password (zero when first switched on) then press M, key in the new password - any number up to 12 digits long - and press M again. The buzzer will sound for a tenth of a second each time a key press is recognised. One minute after the last key is pressed, the circuit reverts to standby mode, unless SW1 is closed. If required, a door contact, SW1, can be fitted so that the switch makes when the door is open. If the door is opened without the correct password entry, the external burglar alarm is triggered. (Leave pin 12 open if SW1 not required.) When the correct password is entered - then press K to signify entry complete - pin 17 pulses low for 2 seconds to activate an electronic lock if fitted. Pin 16 also goes low and could be used for example, to turn the power on. If an incorrect password is entered and K pressed, the buzzer sounds for a fifth of a second. A second incorrect entry gives the same result. On the third occasion, however, pin 15 goes low for 1

minute to trigger an external burglar alarm. This output can be reset by entering the correct password and pressing K. If pin 13 is connected to ground, any entry followed by M will become the new password.



**Parts List**

R1	Min Res 12kΩ	(M12K)
R2	Min Res 4k7	(M4K7)
C1	1% Polystyrene 270pF	(BX50E)
C2	PC Elect 1µF 100V	(FF01B)
D1-3	1N4148	(QL80B)
BZ1	Buzzer	(JH24B)

**Specification (typical at V<sub>DD</sub> = 5V)**

Supply voltage: 3V to 6V  
 Standby current: 5µA  
 Operating current: <4mA  
 Input voltage (pins 15,16,17): 3.5V to 13.5V  
 Input current (pins 15,16,17): <15mA  
 Applications include door locks for homes, cars etc; electronic locks for computers, burglar alarm systems etc.

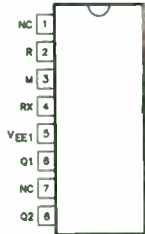
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UM98G	UA3730	10+ £2.05C 50+ £1.750 300+ £1.640	1+ £3.940

## MOTOR SOLENOID DECODER / DRIVER

### SAA1027 Stepper Motor Driver

**Philips**  
 A 16-pin IC designed to drive 4-phase unipolar stepping motors. The IC has a bi-directional 4-state counter, and a code converter so that the four outputs switch in the right order. Supply voltage 9-5V to 18V (typically 4.5mA at 12V). Output current possible is 350mA per output (500mA absolute max. at 25°C).



The motor will run clockwise when pin 3 is low (<4.5V), and counter-clockwise when pin 3 is high (>7.5V). The motor will step once for each low to high transition on pin 15. Pin 2 should be connected to pin 13 unless a reset function is required. Taking pin 2 low sets output pins 6 and 9 low, and pins 8 and 11 high.

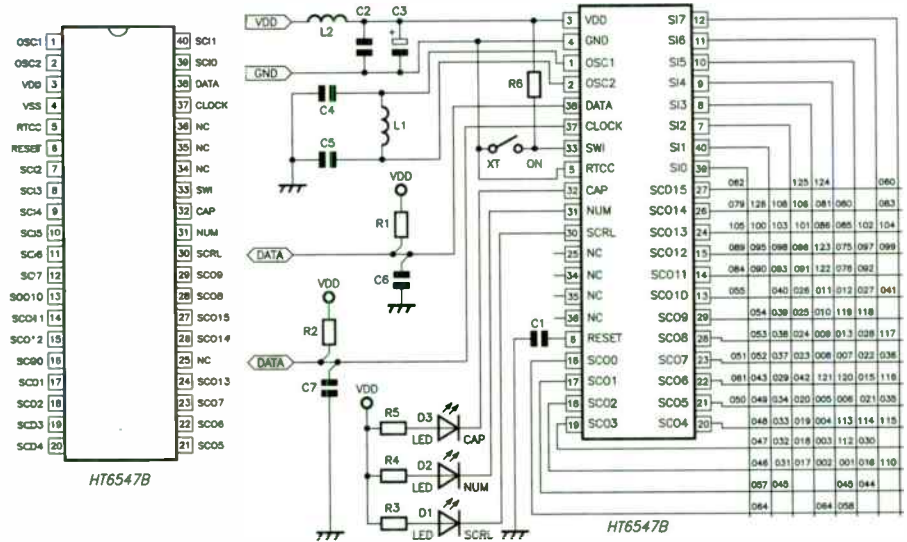
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QY76H	SAA1027	10+ £4.710 50+ £4.040 300+ £3.770	1+ £8.540

**† = While Stocks Last**

## HT6547B Keyboard Encoder

Holtek



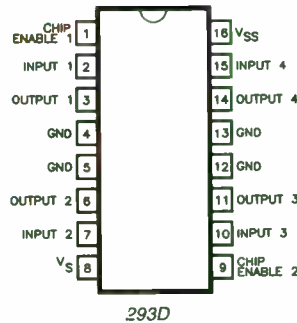
This fully compatible IBM PC XT/AT keyboard encoder IC uses very reliable CMOS technology to produce a device requiring the minimum of external components. Keyboard input data is held in a 16-character first-in/first-out buffer. The IC uses an external 3.58MHz system clock which can be generated from either a crystal, RC or LC oscillator circuit. The device supports both XT and AT type keyboards with either 101 or 102-key operation, and includes the outputs for the three standard LED indicators - Num Lock, Caps Lock and Scroll Lock. Supplied in a 40-pin DIL package.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ27E	HT6547B	10+ £1.990 25+ £1.500 100+ £1.400	1+ £3.990

## L293D Stepper Motor Driver

SGS Thomson



The L293D is a monolithic integrated high voltage, high current, 4-channel driver designed to accept standard DTL or TTL logic levels and drive inductive loads such as relays, solenoids, DC and stepping motors, and for switching power transistors. To simplify use as two bridges, each pair of channels is equipped with an enable input. A separate supply input is provided for the control logic, allowing operation of this at a lower voltage than the output stage. Inductive clamp diodes for the output stage are provided internally. This device is suitable for use in switching applications at frequencies up to 5kHz. It is encapsulated in a 16-pin DIL package.

**Specification**

Output stage supply voltage:	Logic level supply (V <sub>SS</sub> ) to 36V
Control logic supply voltage:	4-5V to 36V
Total quiescent output supply current:	2mA inhibit low, 16mA inhibit high
Total quiescent logic supply current:	16mA

**Suggested Parts List**

R1,2	Min Res 2k2	(M2K2)
R3,4,5	Min Res 300Ω	(M300R)
R6	Min Res 47k	(M47K)
C1,2	Mylar 0.1µF	(WW21X)
C3	Tant 47µF 16V	(WW76H)
C4,5	Ceramic 82pF	(WX55K)
C6,7	Ceramic 47pF	(WX52G)
L1,2	Inductor 100µH(AH32K)	(YH60Q)
LED1,2,3	Rect LED Green	
SW1	Slide Switch	(FF77J)

Input low voltage:	-0.3 to 1.5V
Input high voltage:	2.3 to V <sub>SS</sub> , 7V abs. max.
Inhibit low voltage:	-0.3 to 1.5V
Inhibit high voltage:	2.3 to V <sub>SS</sub> , 7V abs. max.
Low voltage inhibit current:	30µA
High voltage inhibit current:	10µA
Source output saturation voltage:	1-4V @ 1A out
Sink output saturation voltage:	1-2V @ 1A out
Clamp diode forward voltage drop:	1-3V
Rise and fall times:	250ns
Turn-on delay:	750ns
Turn-off delay:	200ns

Price each shown, but sold only in multiples of 25.

Order Code	Type	Price each exc. VAT	inc. VAT each
AH80B	L293D	25+ £2.960 100+ £2.540	1+ £4.450

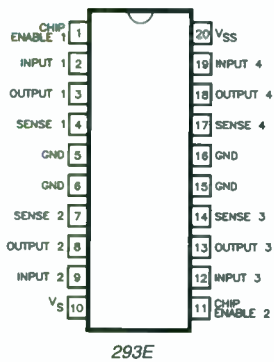
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## L293E Stepper Motor Driver

SGS Thomson



The L293E is a quad push-pull driver capable of delivering output current up to 1A per channel. Each channel is controlled by a TTL compatible logic input, and each pair of drivers, making a full bridge, is equipped with an inhibit input which if low turns off all four transistors forcing the output to float, and if high, enables normal output. A separate supply input is provided for the logic so that it may be run from a lower voltage supply to reduce dissipation. Additionally, the L293E has external connections for sensing resistors for switch-mode control by external measurement of resistor voltage drop. These comprise the 0V ends of all output stages (the emitters of the lower output switching transistors) being open-ended (not connected); these are pins 4, 7, 14, 17. The sensing resistors should be connected between these and 0V. If not required then connect pins 4, 7, 14, 17 directly to 0V. This device is suitable for use in switching applications at frequencies up to 5kHz. It is encapsulated in a 20-pin DIL package.

### Specification

Output stages supply voltage:	Logic supply level ( $V_{SS}$ ) to 36V max.
Control logic supply voltage:	4.5V to 36V max.
Total quiescent output supply current:	2mA inhibit low, 16mA inhibit high
Total quiescent logic supply current:	16mA
Input low voltage:	-0.3 to 1.5V
Input high voltage:	2.3 to $V_{SS}$ , 7V abs. max.
Inhibit low voltage:	-0.3 to 1.5V
Inhibit high voltage:	2.3 to $V_{SS}$ , 7V abs. max.
Low voltage inhibit current:	30µA
High voltage inhibit current:	10µA
Source output saturation voltage:	1.4V @ 1A out
Sink output saturation voltage:	1.2V @ 1A out
Sensing voltage (pins 4,7,14,17):	2V
Rise and fall times:	250ns
Turn-on delay:	750ns
Turn-off delay:	200ns

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

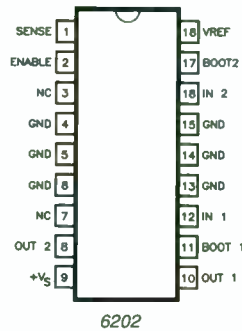
Order Code	Type	Price each exc. VAT	inc. VAT each
AH81C	L293E	£2.580 10+ £2.210 50+ £2.070 300+ £4.780 1+	

## L6202 Stepper Motor Driver

SGS Thomson

A push-pull DMOS full bridge driver for motor control applications realised in multi-power BCD technology which combines isolated DMOS power transistors with CMOS and bipolar circuits on the same chip. This makes it possible to optimise the logic circuitry and the power stages to achieve the best possible performance. The DMOS output transistors can operate at supply voltages up to 48V, and efficiently at high switching speeds, and have inductive clamp diodes supplied on-chip. All the logic inputs are TTL, CMOS and microcomputer compatible. Each channel (half bridge) of the device is controlled by a separate logic input, while a common enable input controls both channels, and will force both outputs floating if taken low. The

device is encapsulated in a 20-pin DIL package and includes thermal shutdown.



### Specification

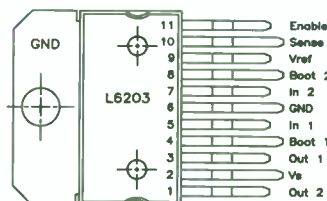
Supply voltage:	12V min. to 48V max.
Reference voltage:	13.5V
Quiescent supply current:	10mA
Commutation frequency:	up to 30kHz (100kHz max.)
Thermal shutdown temperature:	150°C
Dead time protection:	100ns
Source-drain leakage current:	1mA max. @ $V_S = 42V$
Source-drain on resistance:	0.3Ω typical
Sensing voltage:	-1V to 4V
Source-drain diode forward voltage drop:	0.9V @ $I_{DS} = 1.2A$
Reverse recovery time:	300ns
Forward recovery time:	200ns
Input low voltage:	-0.3 to 0.8V
Input high voltage:	2 to 7V max.
Turn-off delay:	300ns
Turn-on delay:	400ns

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AH83E	L6202	£4.110 10+ £3.520 50+ £3.290 300+ £10.360 1+	

## L6203 DMOS Full Bridge Driver

SGS Thomson



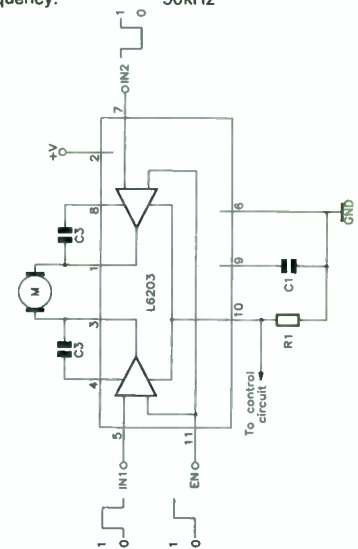
An 11-pin flat package IC with mixed bipolar, CMOS and DMOS technology. The IC can deliver 3A output current at supply voltages up to 52V with very high efficiency and fast switching speed. Each side of the bridge is controlled by a separate logic input, while a common enable input controls both sides. All inputs are TTL and CMOS compatible. The motor current can be controlled from pin 10. The other input pins control the motor according to the following table:

Pin	11	5	7	Function
1	1	0	0	Turn right
1	0	1	1	Turn left
1	1	1	1	Fast motor stop
1	0	0	0	Fast motor stop
0	1	1	1	Free running motor stop
0	0	0	0	Free running motor stop
0	1	0	0	No function

### Specification

Supply voltage:	12V to 52V
Reference voltage:	10.5V
Quiescent supply current:	10mA
Input (High) voltage:	2 to 7V
$R_{DS\ on}$ :	0.3Ω
Saturation	

voltage at 1A: 0.3V  
at 3A: 0.9V  
Commutation frequency: 50kHz



### Parts List

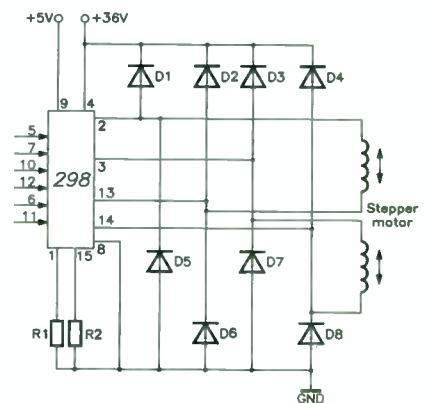
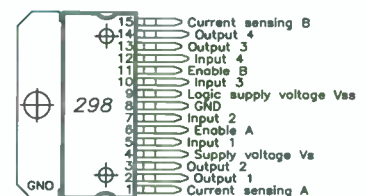
R1	W/W Min 0.22Ω	(W22R)
C1	Minidisc 0.1µF	(YR75S)
C2,3	HV Disc 10,000pF	(BX15R)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UK70M	L6203	£6.830 10+ £5.490 50+ £3.790 300+ £13.090 1+	

## L298N Dual Full Bridge Driver

SGS Thomson



A 15-lead flat package IC designed to accept TTL logic levels and drive inductive loads such as relays, solenoids, DC motors and stepping motors. Two inhibit inputs are provided to disable the device independently of the input signals.

### Specification

Pin 4 supply voltage:	7.5V to 46V
Pin 9 supply voltage:	5V (7V max)
Quiescent supply current pin 4:	15mA
current pin 9:	5mA
Source saturation voltage at 1A:	1.2V
voltage at 2A:	1.8V



Sink saturation voltage at 1A:	1.2V
voltage at 2A:	1.7V
Total drop at 1A:	<3.4V
Total drop at 2A:	<5.2V
Commutation frequency:	25kHz

**Parts List**

R1,2	W/W Min 0.47Ω	(W47R)
R3	Min Res 22k	(M22K)
C1	Polystyrene 3300pF	(BX31J)
D1-8	BYW98-150	(UK65V)

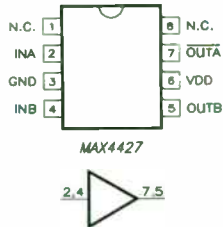
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2837	Price each exc. VAT	inc. VAT each
UK72P	L298N	10+ 50+ 300+ 1+	£3.250 £2.790 £2.600 £7.540

## POWER CONTROL IC'S

### MAX4427CPA Dual High-Speed MOSFET Driver

Maxim



The MAX4427 is a dual non-inverting monolithic power MOSFET driver, designed to convert TTL/CMOS inputs to high voltage/current outputs. Delay times are virtually independent of V<sub>DD</sub>, and the high current output drivers rapidly charge and discharge the gate capacitance of even the largest power MOSFETS to within millivolts of the supply rails. This produces the power MOSFETS minimum on resistance. The high speed device is ideal for switching power supplies and DC/DC converters because as it minimises power losses.

The device has easy-to-drive inputs that should be connected to ground if unused. Drivers can be paralleled by connecting both inputs and outputs together. Supplied in an 8-pin DIL package.

**Specification**

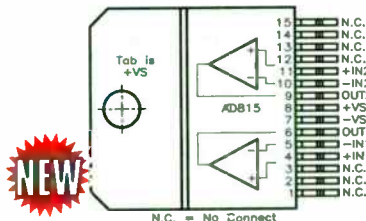
Power supply:	+4.5V to 18V
Supply current:	2.5mA typ, 8mA max.
Peak o/p current:	1.5A at 18V
Output voltage high:	V <sub>DD</sub> - 25mV min
low:	25mV max
Output resistance:	5Ω typ, 12Ω max
Rise time:	20ns typ
Fall time:	20ns typ
Delay time:	25ns typ

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 17932	Price each exc. VAT	inc. VAT each
NR47B	MAX4427CPA	10+ 50+ 200+ 1+	£2.140 £1.780 £1.520 £2.670

### AD815AY High Output Current Differential Driver

Analog Devices

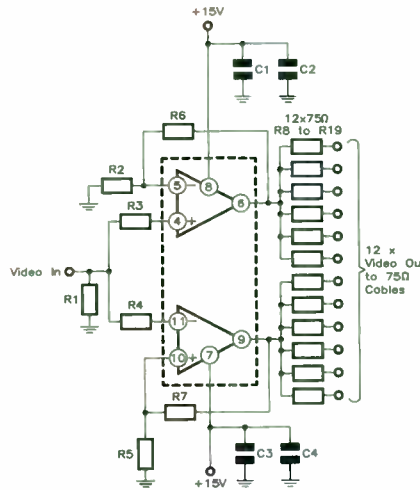


The AD815 consists of two high speed amplifiers capable of supplying a minimum of 500mA, and when configured as a differential driver, can

produce an output signal of 40V pk-pk from ±15V supplies. This can be increased further with a coupling transformer with a turns ratio greater than 1:1. The low harmonic distortion combined with the wide bandwidth and high current drive, make the device ideal for communication applications such as subscriber line interfaces for ADSL, HDSL and VDSL.

The excellent differential slew rate and high load drive make the AD815 suitable for fast dynamic control of coils or transformers such as CRT convergence and astigmatism control. The video performance is also very good, and allows the device to be used as a video distribution amplifier or twisted pair cable driver.

The circuit diagram is for a 12-way video distribution amplifier. The 75Ω back termination ensures that all outputs are relatively independent of each other with any small disturbances on one cable not affecting the other cables. Each amplifier is configured with a gain of two to compensate for this 'double termination' effect. When driving six video cables, the load seen by each amplifier output is resistive and is equal to 150Ω/6 or 25Ω. The differential gain is 0.05% and the differential phase is 0.45°.



**Suggested Parts List**

R1,8-19	Min Res 75Ω	(M75R)
R2,5,6,7	2 x Min Res 1k in parallel	(M1K)
R3,4	Min Res 100Ω	(M100R)
C1,3	Disc 0.1μF 50V	(BX03D)
C2,4	ERC 10μF 25V	(AN96E)

**Specification (V<sub>S</sub> = ±15V)**

Supply voltage:	±18V max
Quiescent current:	40mA max
PSRR:	-66dB
Bandwidth:	120MHz (G=1)
Diff slew rate:	900V/μs
THD:	-66dBc
Noise:	1.85nV/√Hz
Diff gain error:	0.05%
Diff phase error:	0.45°
Offset voltage input:	10mV typ
differential:	0.5mV typ
Offset voltage drift input:	20μV/°C
	10μV/°C
CMRR:	65dB typ
Crosstalk:	-65dB

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

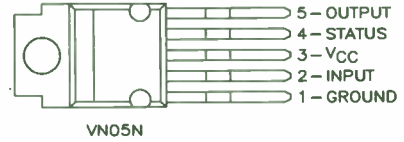
Order Code	Type 17402	Price each exc. VAT	inc. VAT each
NP24B	AD815AY	25+ 100+ 1+	£7.270 £5.330 £11.700

### High-Side Smart-Power Solid State Relays

SGS Thomson

- ★ 5V Logic level compatible input
  - ★ Thermal and under-voltage shut-down
  - ★ Load open-circuit warning
  - ★ Very low stand-by power consumption
- These monolithic devices are made using a 'Vertical Intelligent' Power MOS technology and are intended

for driving resistive or inductive loads with one side grounded. They typically provide power switching for microprocessor controlled automotive applications for driving motors and lamps. Two versions are available; VN05N can switch 12A continuously, while VN20N can switch up to 28A. Built-in thermal shut-down protects the chip from over-temperature and short-circuit conditions, and the input control is 5V logic level compatible.



The device has a diagnostic output which indicates open circuit (no load) and over-temperature conditions, which is derived from internal logic. To protect the device against short-circuit and over-current conditions over the full range of supply voltages and temperatures, the thermal protection section turns off the MOS power output switch at a minimum junction temperature of 140°C. When the temperature falls to about 125°C the switch is automatically turned on again. For short-circuits the response time is virtually instantaneous as the sensor is located in the region of the die where the heat is generated. The 'status' or diagnostic output is of open drain configuration. The positive going control input is internally clamped to 6V max.; if the input exceeds this level a series resistor must be included to limit the input current to not more than 10mA. The input stage is a Schmitt trigger with a hysteresis of 0.5V. Case style is TO220 and the tab is electrically connected to VCC and must be fitted with an insulating kit if bolted to a heatsink.

Specification	VN05N	VN20N
Continuous output current:	12A	28A
Power dissipation @ T <sub>C</sub> ≤ 25°C:	52W	80W
On-state resistance @ T <sub>j</sub> = 25°C:	0.18Ω	0.05Ω
Junction operating temperature:	-40 to 150°C	
Drain-source breakdown voltage:	60V	
Supply voltage:	26V max.	
Supply current, off-state:	50μA	
on-state:	15mA	
Signal input low:	0.8V	
Signal input high:	5V max. (see above)	
Status output current:	10mA max.	

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2955	Price each exc. VAT	inc. VAT each
AY97F	VN20N	10+ 50+ 300+ 1+	£3.160 £2.710 £2.530 £6.340
AY98G	VN05N	10+ 50+ 300+ 1+	£1.850 £1.460 £1.390 £2.790

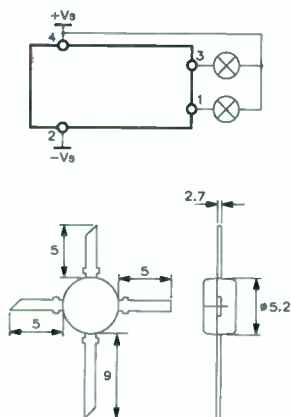
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e-mail: Sales@maplin.co.uk

## U880B Double Flasher

Termic



The U880B is a double lamp flasher with its own internal oscillator followed by a frequency divider to produce a clock running at a nominal frequency of 3.3Hz. The 4-pin device flashes a pair of lamps alternately at this speed, operating from a supply in the range 4.75V to 20.4V maximum. Low current filament lamps or LEDs use the positive supply as a common connection, and the two polarity protected output stages can sink up to 55mA nominally. No other external components are required as the device is entirely self-contained. An on-chip supply voltage monitor prevents normal operation until the supply is at least 4.2V, and the output stages are switched off when the supply falls to 3.8V. It is contained in a round, four-leaded encapsulation. To identify pin numbering, orient the device top-side up such that the longest lead points down. Pin 1 is then at the top and all others are numbered anti-clockwise (left = 2, bottom = 3, right = 4).

### Specification

Supply voltage range: 4.75 to 20.4V  
Supply current range: 3.2 to 6.5mA depending on +V<sub>S</sub>

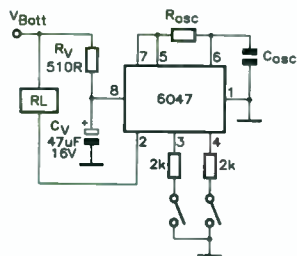
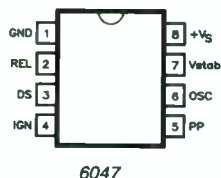
Output stage 'on' saturation: 700mV max. @ I<sub>out</sub> = 25mA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
AH42V	U880B	£1.100	£0.943	£0.880	£2.140

## U6047B

Termic



A timer for motor vehicles with a wide ranging adjustable delay time from 3.7 seconds to up to 20 hours. From small value capacitors this is made possible by all time sequences being determined by an RC oscillator and a frequency divider. The relay driver is integrated and, with the corresponding external circuitry, the circuit is resistant to load dump and interference voltages in accordance with DIN40839.

To prevent interference and help protect the device the supply (pin 8) should be buffered with an RC

filter, suggested values are 510Ω and 47µF. There is an internal 14V Zener diode between pins 8 and 1 (GND) as overvoltage protection, and with 510Ω in series the device can be operated over a wide supply range from 6V to 16V. It can also be supplied from a regulated 5V source, in which case the RC supply filter is not necessary. A time function can be started or interrupted by the three inputs TOG, ON and OFF. If the time function is triggered the relay is active, the relay contact dropping out after expiry of the delay time. There are two possible applications, use of the toggle (TOG) input or of the ON or OFF inputs. When the TOG input is taken high for the first time the relay is switched on by pin 2 after a debounce period has elapsed. If triggered again the relay is switched off, and thereafter each actuation of the TOG input changes the state of the relay. If left on, it is switched off after the time delay period.

Alternatively ON and OFF controls can be realised as a rocker switch since both must not be activated simultaneously. ON leads to activation of the relay after the debounce period, while OFF immediately switches it off. If OFF is not activated, the relay is switched off after the time delay expires. In practice a common commercial application for this device is as a window demister heater control, which will 'switch itself off' after the chosen delay time (in minutes) should the driver forget.

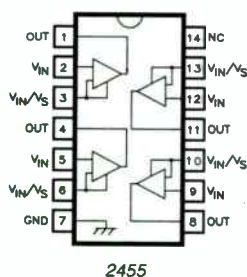
All timing sequences are derived from an internal oscillator which uses external RC components R<sub>osc</sub> and C<sub>osc</sub> to set a fundamental frequency f<sub>o</sub>. The oscillator not only produces the delay time but also the debounce time period. The delay time will be 73728 x 1/f<sub>o</sub> while the debounce period will be 6 x 1/f<sub>o</sub>. R<sub>osc</sub> can range from 59kΩ to 650kΩ and C<sub>osc</sub> from 1nF to 4.7µF, giving oscillator frequencies from 20kHz down to 1Hz (delay times of 3.7s to 1,229m). The relay driver output is an open collector Darlington transistor with integral 23V Zener diode for limitation of the inductive pulse from the relay winding at switch-off. Maximum collector current must not exceed 300mA. The remainder of the IC is protected as described above, and all inputs are protected by a series resistor, integral Zener diode and RF capacitor.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
AH44X	U6047B	£0.833	£0.714	£0.667	£2.380

## ULN2455M Automotive Lamp Monitor

Allegro



An IC capable of monitoring all types of automotive (motor vehicle) lamps, providing multiple LED outputs to pinpoint the area in which a lamp has failed. Type 2455 is a quad version capable of monitoring eight individual lamps or groups of lamps. The device can be used to monitor lamps, multiple low-voltage power supplies, or, with appropriate sensors, industrial processes.

Installation and operation has no effect on normal lamp operation and does not involve cutting any wires to insert resistors and such. The comparators sense the normal voltage drop in the supply wiring (approximately 20mV or so) for each of the lamps being monitored. Little additional wiring is necessary for installation because the system can be completely integral to the wiring assembly. No standby power is required as the operating voltage is obtained from the sensing leads of the device, which is only active when the lamp power is on. In principle the operation of the monitor is similar to that of a simple bridge circuit, where the top two legs of the bridge are formed by the wiring assembly resistance or through the use of discrete low value resistors. The bottom legs of the bridge

are the monitored lamps.

The two sensing inputs of each comparator are connected via separate connections to each end of the lamp's supply so that it can observe the voltage drop along the length of the lamp supply wire. Sense input #1 is attached to the supply source (as it is also the chip circuit supply) while sense input #2 connects to the lamp 'live side'. When the circuit detects a difference in voltage due to an open-filament, the appropriate open collector output driver is turned on.

Both devices are designed for use in the severe automotive environment. Lateral PNP transistors provide high-frequency noise immunity and differential transient-voltage protection. Reverse polarity protection, internal regulators and temperature compensation are all embodied in the circuit designs. A device failure will not affect lamp operation.

Supplied in a 14-pin DIL package.

### Specification

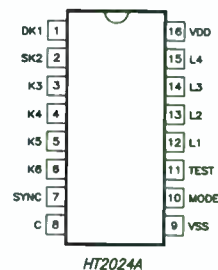
Supply voltage:	30V absolute max., 80V for 100ms
Peak reverse supply voltage:	30V
Output switch current sink (ON):	35mA max.
Output leakage current (OFF):	100µA max.
Output saturation voltage:	0.8V @ IC = 5mA
Differential switch voltage:	13mV typical
Sense input #1 current + supply:	1.7mA
Sense input #2 current:	300µA
Operating temperature range:	-40°C to +85°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
GX53H †	ULN2455M	£3.250	£1.950	£1.670	£3.820

## HT2040A Christmas Lights Controller

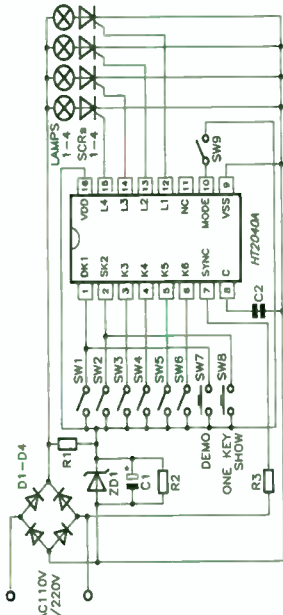
Hoitek



A low-cost, low power CMOS LSI device for controlling Christmas lights, or similar low wattage mains lamps. The IC has four outputs that directly drive the SCRs controlling the lamps. The lamps can be displayed in 10 different groups which are selected by input switches. Within each group, each lamp has an individual display pattern of which there are 12. Each group can be selected by using the DK1, SK2 and K3 to K6 pins, with each pin having two functions depending on the condition of the MODE pin. In addition, all groups can be displayed automatically by momentarily connecting DK1 to VDD with MODE connected to VSS. The groups can be selected sequentially by momentarily connecting pin SK2 to VDD with MODE connected to VSS. The device is designed to operate from a 5V DC supply, and has a built-in PLL circuit that can be synchronised to either 50Hz or 60Hz mains.

Select Pin	MODE open	Mode connected to VDD
DK1 active high	————	Show group 5
DK1 momentarily closed to VDD	Demo Function MODE to VSS	————
SK2 active high	————	Show group 6
SK2 momentarily closed to VDD	Sequential group display MODE to VSS	————

- K3 active high Show group 1 Show group 7
- K4 active high Show group 2 Show group 8
- K5 active high Show group 3 Show group 9
- K6 active high Show group 4 Show group 10



With the suggested components lamp rating for each SCR is 250W

**Suggested Parts List**

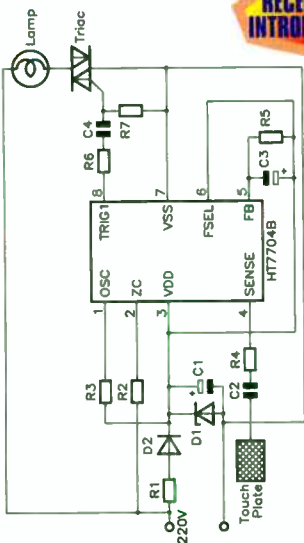
- R1 Carbon Film 100k 1W (C100K)
- R2 Min Res 33k (M33K)
- R3 Min Res 10M (M10M)
- C1 Gen Elect 47µF 16V (AU01B)
- C2 Met Polyester 0.1µF (CX00A)
- SCR1-4 CP106M (UM76H)
- D1-4 R250S (AY26D)
- ZD1 5.1V 500mW Zener (QH07H)
- SW1-6,9 Square Locking (YW41U)
- SW7,8 Push Button Switches (FF96E)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ25C	HT2040A	£0.411 50+ £0.352 300+ £0.328 1+	£3.390

## HT7704B Touch Dimmer

Hottek



The HT7704B is an 8-pin DIL IC designed to control the brightness of an incandescent lamp by changing the triggering angles of a suitable triac. A touch sensitive input is used to turn the lamp on/off and provide four steps of brightness. The device is very stable and tolerant, and will work with a highly

capacitive, highly resistive input line. Few external components are required. In use the first 'touch' turns the light on to its initial brightness level. The next three 'touches' will bring the lamp up to full brightness in stages. The fifth touch will turn the light off.

- Operating voltage: 4V to 10V (7V typical)
- Operating current: 200µA typical, 400µA max.
- Input high voltage: 0.8V<sub>DD</sub> min.
- Input low voltage: 0.2V<sub>DD</sub> Max.

**Suggested Parts List (max lamp load 800W)**

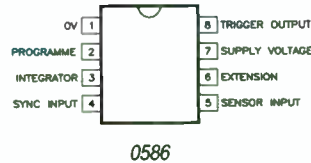
- R1 2W Res 47k (D47K)
- R2 Min Res 10M (M10M)
- R3 Min Res 150k (M150K)
- R4 Min Res 1k (M1K)
- R5 Min Res 3.3M (M3M3)
- R6 Min Res 200Ω (M200R)
- R7 Min Res 10k (M10K)
- C1 Gen Elect 100µF 16V (AT40T)
- C2 Poly Layer 470pF (RA38R)
- C3 Gen Elect 10µF 63V (AT77J)
- C4 Poly Layer 0.047µF (RA47B)
- D1 Zener 500mW 6.8V (QH10L)
- D2 1N4006 (QL78K)
- Triac T410800T (AH68Y)
- Touch Plate (YH01B)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JA44X	HT7704B	£0.391 10+ £0.335 50+ £0.313 300+ £2.100 1+	

## SLB0586A Electronic Dimmer

Siemens

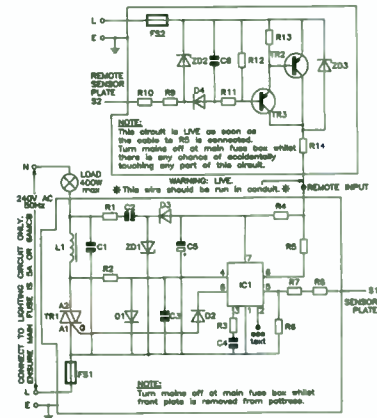


**Parts List**

- R1 1W Res 1k (C1K)
- R2 Min Res 1M5 (M1M5)
- R3 Min Res 100k (M100K)
- \*R4 1W Res 120k (C120K)
- \*R5 Min Res 470k (M470K)
- R6,7,8 Min Res 4M7 (M4M7)
- \*R9,10 Min Res 4M7 (M4M7)
- \*R11 Min Res 2M2 (M2M2)
- \*R12 Min Res 3M3 (M3M3)
- \*R13 Min Res 1M (M1M)
- \*R14 1W Res 220Ω (C220R)
- C1,2 IS Cap 0.1µF (JR34M)
- C3 Poly Layer 0.0068µF (WW27E)
- C4 Poly Layer 0.1µF (WW41U)
- C5 Minelect 100µF 10V (RK50E)
- \*C6 Poly Layer 0.01µF (WW29G)
- L1 RF Supp Choke 3A HW06G
- D1,2 1N4148 (QL80B)
- D3 1N4007 (QL79L)
- \*D4 1N4007 (QL79L)
- ZD1 BZY88C5V6 (QH08J)
- \*ZD2 BZY88C6V8 (QH10L)
- \*ZD3 BZX61C6V8 (QH10L)
- TR1 C225M (UR37S)
- \*TR2,3 BC557 (QQ16S)
- IC1 SLB0586 (UL43W)
- FS1 Fuse 20mm 2A (WR05F)
- \*FS2 Fuse 20mm 250mA (WR01B)
- S1 Touch Pad (e.g. HY01B)
- \*S2 Touch Pad (e.g. HY01B)
- 2 Fuse Clips (KU27E)
- \*2 Fuse Clips (KU27E)
- 1 Blanking Plate (HL86T)
- \*1 Blanking Plate (HL86T)

\*Only required if remote unit is built. A digital electronic dimmer IC which can turn lights etc. on and off and set the required brightness via a single sensor. Operation can also take place from remote sensors (or by infrared remote control with a suitable receiver circuit) or switched by an on/off switch connected between neutral and the 'Remote Input'. If remote sensor or switch is not required R4 and R5 are omitted and pin 6 linked to pin 7. If the sensor is tapped (touched) for between 50 and 400ms the light will be switched on and off successively. Three different dimming modes are

possible according to the connection of pin 2. If pin 2 is left open circuit then at switch on, lamp brightness will be at same level as it was when last switched off. If the sensor is held, brightness will increase to maximum or decrease to minimum, then rise or fall cyclically until the sensor is released. On successive dimming operations the brightness will increase if it was previously decreasing and vice versa. If pin 2 is connected to pin 7 then at switch on (if the sensor is tapped), lamp brightness will be at maximum. If the sensor is held, the lamp switches to minimum brightness at switch on, and then starts to increase to maximum then fall again and will continue to cycle until the sensor is released. On successive dimming operations (providing it has not been switched off in the meantime) the brightness will continue to increase or decrease in the direction it was previously moving.



If pin 2 is connected to pin 1, operation is the same as for connection to pin 7 except that on successive dimming operations, the brightness will move in the opposite direction from the way it was previously moving.

**Caution.** The circuits shown above are at 240V potential. They should be built on a Blanking Plate and then used to replace conventional light switches. Always switch the mains off at the main fuse box before unscrewing any blanking plate or switch plate and do not switch on again until all plates have been screwed back in position.

**Specification (typical at 25°C)**

- Supply voltage: -5.3V DC
- Supply current: 0.45mA
- Remote input current: 0.5µA
- Output current: >25mA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL43W	SLB0586A	£3.250 10+ £2.780 50+ £2.600 300+ £6.340 1+	

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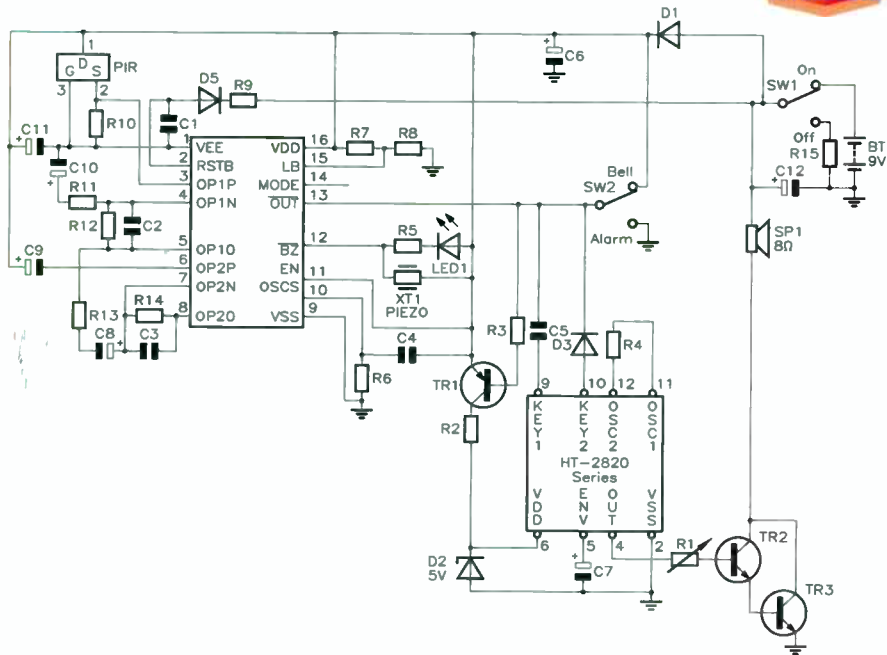
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## HT7630 PIR Controller

Holtek

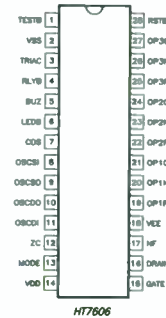
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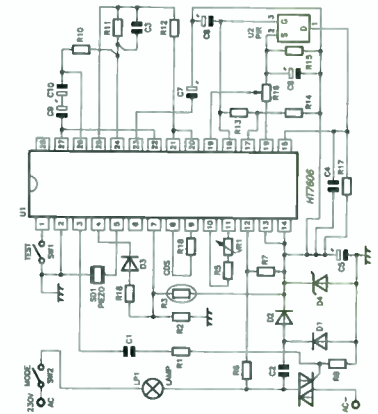
## HT7606 Low Power PIR Controller

Holtek

RECENTLY INTRODUCED



A low power PIR controller IC with an output that can directly drive a suitable triac for switching on mains lamps. The device features a built-in amplifier and comparator and has an adjustable output duration of 4 to 128 seconds. An external cadmium sulphide cell is used to set the ambient light at which the device will operate. Please note that R18 will need to be selected on test to suit individual requirements. The suggested PIR offers high sensitivity, low noise and uses a ceramic ferroelectric dual sensing element. The IC is designed to operate from a 4.5V to 12V DC supply rail and has a low stand-by current of only 30µA max. There is 'beep' facility to indicate when the system is going active. Supplied in a 28-pin DIL package.



The HT7630 is a low power PIR controller IC designed for battery operated door bell or alarm applications. The device contains an op-amp, comparators, a timer, voltage regulator, oscillator and control circuits. When the PIR detects human movement the IC will output an active low signal to trigger a sound generator IC (AZ44X or AZ45Y, but others in the range can be used if slight modification to circuit is made.). The output duration is 4s for a door bell and 32s for an alarm applications (set by MODE pin). The IC also provides an LB input pin for low battery detection during PIR warm-up. An EN input pin for output enable/disable control and a BZ pin for status indication. A LED or piezo buzzer can be connected to BZ to indicate PIR warm-up, triggering, alarm triggered memory and low battery.

### Specification (V<sub>DD</sub> = 9V)

Operating voltage: 5V to 12V DC  
 Regulated output: 4V DC typical (9V DC supply)  
 Stand-by current: 30µA max.  
 Operating current: 75µA max.  
 Oscillator frequency: 8kHz typ. (R6=910k, C4=100pF)  
 Operating temperature: -25°C to +75°C

### Suggested Parts List

R1	Sub-Min Horz 1M	(UH09K)
R2	Min Res 2k2	(M2K2)
R3	Min Res 100k	(M100K)
R4	Min Res 150k	(M150K)
R5	Min Res 560R	(M560R)
R6	Min Res 910k	(M910K)
R7	Min Res 2.7M	(M2M7)
R8	Min Res 9.1M (8.2M + 1M)	(M8M2)
R9	Min Res 220k	(M220K)
R10	Min Res 10k	(M10K)
R11,13	Min Res 22k	(M22K)
R12,14	Min Res 1M	(M1M)
R15	Min Res 47R	(M47R)
C1,5	Minidisc 0.1µF 16V	(YR75S)
C2,3	Minidisc 0.22µF 16V	(JL01B)
C4	Polystyrene 100pF	(BX46A)
C6,11,12	Gen Elect 100µF 16V	(AT40T)
C7	Gen Elect 1µF 63V	(AT74R)
C8,10	Gen Elect 22µF 16V	(AT37S)
C9	Gen Elect 10µF 63V	(AT77J)
D1	1N4001	(QL73Q)
D2	500mW Zener 5.1V	(QH07H)
D3,5	1N4148	(QL80B)
D4	Red LED 5mm	(UK48C)
TR1	BC212L	(QB60Q)
TR2,3	BC182L	(QB55K)
HT28201	provides motor cycle sounds	(AZ44X)
PIR	PIS201S IR Detector	(AJ77J)
SW1,2	SP Slide Sw	(FF77J)

### Suggested Parts List

R1	Min Res 68Ω	(M68R)
R2	Min Res 18k	(M18K)
R3	CdS Photocond Cell	(HB10L)
R4	Min Res 680k	(M680K)
R5	Min Res 100k	(M100K)
R6	Min Res 4.7M	(M4M7)
R7,11	Min Res 3.9M	(M3M9)
R8	Min Res 10k	(M10K)
VR9,16	Cermet 1M	(WR445Y)
R10	Min Res 2.2M	(M2M2)
R12	Min Res 12k	(M12K)
R13	Min Res 3.3M	(M3M3)
R14	Min Res 1.5M	(M1M5)
R15	Min Res 470k	(M470K)
R17	Min Res 2M	(M2M)
R18	Select on test	
C1,4	Polyester 0.1µF	(BX76H)
C2	Metallised Film 0.22µF	(JR35Q)
C3	Polyester 0.22µF	(BX78K)
C5,8	PC Elect 100µF 25V	(FF11M)
C6	PC Elect 47µF 25V	(FF08J)
C7,9,10	PC Elect 10µF 50V	(FF04E)
TRIAC	BTA08-800B	(AY29G)
D1,2,3	1N4001	(QL73Q)
D4	12V 500mW Zener	(QH16S)
PIR	Infrared Detect E600STO	(UR69A)
SD1	Piezo Sounder	(FM59P)
SW1	Slide Switch	(FF77J)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

30

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JA43W	HT7630	10+ £0.548 50+ £0.469 300+ £0.438	1+ £2.800

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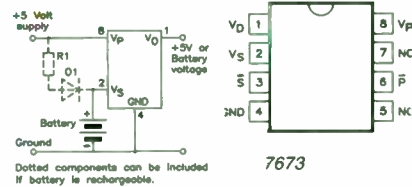
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Order Code	Type	Price each exc. VAT	inc. VAT each
JA42V	HT7606S	10+ £0.998 50+ £0.855 300+ £0.798	1+ £4.770

## ICL7673CPA Automatic Battery Back-up Switch

Harris



An 8-pin DIL IC designed to simplify the switching between two power supplies, main and battery back-up. Logic outputs are provided that can be used to indicate which supply is connected, and can also be used to increase the power switching capability of the circuit by driving external PNP transistors.

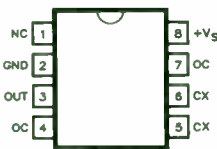
### Characteristics

Input voltage: 2.5V to 15V  
 Quiescent supply current: 1.5µA  
 Switch resistance: 8Ω (V<sub>D</sub>=5V, I=15mA)  
 (V<sub>P</sub> to V<sub>O</sub>): 40Ω (V<sub>S</sub>=3V, I=1mA)  
 (V<sub>S</sub> to V<sub>O</sub>):  
 Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2004	Price each exc. VAT	inc. VAT each
UH36P	ICL7673CPA	£1.040	£1.980

## U2401B Battery Charger

Temtec



A Ni-Cd battery charger control IC in a single 8-pin DIL package which features charging time selection performed through the connection of pin 1 to either supply +V, 0V or floating. An internal divider by 32768 divider provides the fundamental time period from the internal oscillator, with extra divisions being added depending on pin 1. If pin 1 is connected to +V the fundamental time n is further divided by 60, if left floating n is divided by 36, and if connected to 0V the time is n (divided by 1). The clock oscillator frequency is set by a single capacitor between pins 5 and 6. The clock frequency can be derived by:

$$f_{osc}(Hz) = \frac{10^4}{2C_X(nF)}$$

Or the time delay T<sub>d</sub>, and period duration, T, in seconds by:

$$T_d(s) = \frac{2 \times C_X(nF)}{10^4} K$$

Where C<sub>X</sub> ≥ 100pF and K = 32768 x 1, 36 or 60. The output from pin 3 is short circuit protected and limited to a current of typically 150mA and includes a Zener diode. The output pulse width is 1024 times the period duration, T, of the oscillator frequency. Pin 4 can be used to override the timer to reset it or start again. If open circuit (floating) the charger is enabled. If connected to +V the timer is reset and the output pulse is stopped, and if connected to 0V, the maximum time duration is 16 x T of the oscillator frequency. An internal power-up monitor allows the circuit to operate at up to 3.6V, but a 4.5V minimum supply is recommended against voltage fluctuations. It has an internal voltage limitation of typically 15V which allows +12V to be directly connected to the supply pin, although it is recommended that a series resistor be included with a decoupling capacitor.

### Specification

DC supply current  
 at 5V: 1.2mA  
 at 12V: 2mA  
 during output pulse  
 5V: 2.6mA min.  
 during output pulse

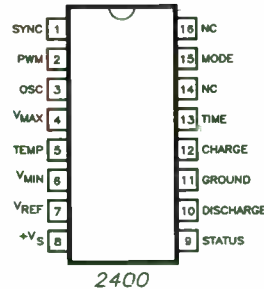
12V: 7.5mA min.  
 Minimum supply voltage: 4.5V  
 Supply voltage limitation: 13.2V min. to 16.3V max.  
 Voltage monitoring functions enabled: @ 3-6V  
 all reset: @ 2.4V

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2004	Price each exc. VAT	inc. VAT each
AH41U	U2401B	£0.917	£2.740

## U2400B Battery Charger

Temtec



A Ni-Cd battery charging and control device in a single 16-pin DIL package which particularly supports the fast charging of Ni-Cd cells. One of three charging times can be selected simply by connecting pin 13 to supply +V for a 12 hour pulsed charge, to 0V for a 1 hour continuous charge, or left floating for a fast 1/2 hour charge. Before charging begins the device first discharges the cell completely to preserve long life for the cell. A central control block monitors time, temperature and voltage during charging, and switches the output off when the specified charge is attained. It includes an LED signal lamp driver and when switched on, a red LED connected between the display output pin 9 and +V (via 330Ω) is lit if no battery is connected. When a battery is inserted, presenting a minimum voltage of 180mV approx. at pin 4 (after a potential divider as appropriate for multiple cells), the predisharge phase is started with a 2 second delay. The positive going discharge output at pin 10 is activated for switching an NPN discharge transistor, accompanied by the red LED flashing. The discharge procedure is stopped when a voltage at pin 6 falls below 530mV. The charge phase follows with an output from pin 12 indicated by the flashing of a green LED between pin 9 and 0V (with 330Ω resistor).

After the programmed charging period as set by pin 13, trickle charge mode is selected, indicated by a constantly lit green LED. Battery temperature can be monitored by a thermistor based sensing network connected to pin 5. The display, charge and discharge outputs will be made inactive by overtemperature or overvoltage, and the timer clock interrupted during all three phases and in each mode, when the limits at pins 4 or 5 are exceeded.

### Specification

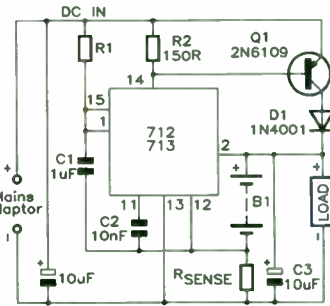
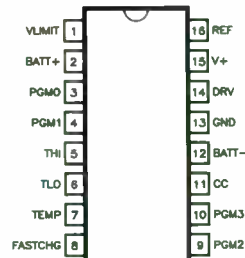
Supply voltage range: 5 to 25V DC  
 Current consumption: 1.5 to 5mA without load  
 Discharge output drive current: 100mA min.  
 Charge output drive current: 100mA min.  
 Reference voltage output (pin 7): 3V nominal  
 Oscillator frequency: 200Hz with 15nF between pin 3 and 0V, and 430kΩ between pins 3 and 7  
 Charge times, 200Hz oscillator: 12hrs, 1hr or 30m (set by pin 13)  
 LED (status) drive current: 15mA max. (8mA min.)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2003	Price each exc. VAT	inc. VAT each
AH40T	U2400B	£2.410	£4.540

## MAX712/3 Fast Charge Controllers

Maxim



The MAX712 and MAX713 are nickel cadmium (Ni-Cd) battery fast charge controllers which will fast charge batteries from a DC source at least 1V higher than the maximum battery voltage. 1 to 16 series cells can be charged at rates up to 4C. A voltage-slope detecting analogue-to-digital converter, timer, and temperature window comparator determine charge completion. The MAX712 or 713 are powered by the DC source via an on-chip +5V shunt regulator, and draw a maximum of 5µA from the battery when not charging. A low-side current-sense resistor allows the battery charge current to be regulated while still supplying the power to the battery's load. The MAX712 terminates fast charge by detecting zero voltage slope, while the MAX713 uses a negative voltage-slope detection scheme. Both devices are identically packaged as 16-pin DIL and share the same pin numbering and basic functions. An external power PNP transistor, blocking diode, three resistors and three capacitors are all the extra components required.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2003	Price each exc. VAT	inc. VAT each
AY36P	MAX712	£5.710	£7.520
AY37S	MAX713	£3.290	£5.860

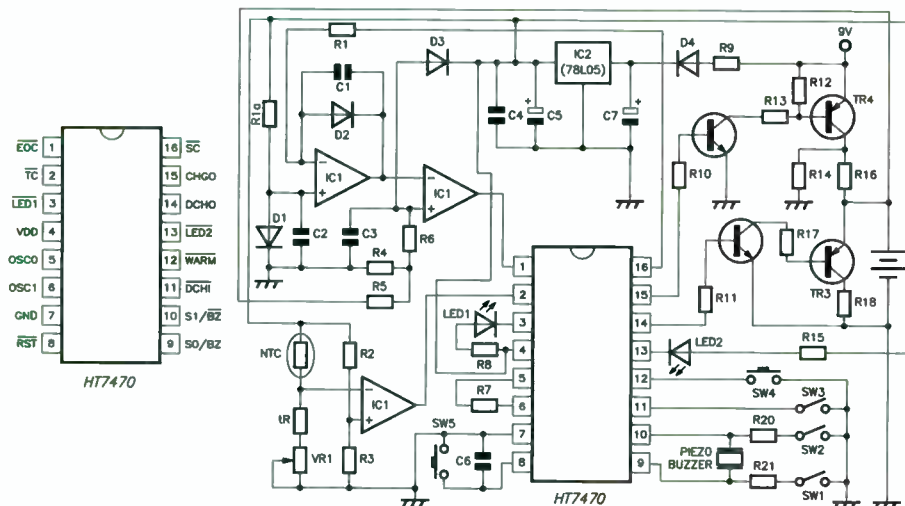
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## HT7470 Fast NiCd Charger

Holtek



A sophisticated NiCd battery charger IC to maximise life and performance of expensive NiCd batteries. The IC features a high resolution differential voltage detector to determine peak charging voltage with automatic switching from fast to trickle charge. The fast charge rate can be set from C/2 to 4C with a trickle rate of C/10. The device is designed to operate from a 3.5V to 5.5V DC power rail and features auto cut-off for defective battery, adjustable thermal protection, built-in safety timer, battery warm-up option, maximum voltage protection, auto-start function and direct drive LED displays and piezo alarm buzzer.output. Supplied in a 16-pin DIL

Charge rate is set by switch S1 & S0, and the device adjusts the internal parameters such as safety timer, trickle charge duty cycle and warm-up interval by referring to these charge rate inputs to make the system safe. The warm-up function improves battery efficiency, and during warm-up discharge is inhibited. During battery warm-up, full charge detection and abnormal charge detection are always enabled. Warm-up time is indicated in the following table.

Charge Rate	4C	2C	1C	C/2
S1/S2	1/1	1/0	0/1	0/0
Charge Count	150	300	600	1200
Time (min)	3.5	7	14	28

0 = closed, 1 = open

The HT7470 is a universal fast charge controller, and can be adjusted to charge most rated voltage cells by adjusting the RC network and the integral time constant of the A/D converter. The RC network is configured as shown (R4,R6,C3) and the R5 resistance is listed in the table. Note that the integral time constant of the A/D converter is 38.54ms, and the minimum battery voltage is 2.4V, then:

$$R5 = ((\text{Battery voltage} - 2.4) \times 2k) / 2.4$$

Battery Voltage	R5
2.4V	0
3.6V	1k
4.8V	2k
6.0V	3k
7.2V	4k
8.4V	5k
9.6k	6k
ditto	

Battery state is indicated by LED1, LED2 and the buzzer, each state being represented in the following table

Mode	LED1	LED2	Buzzer
Charging	on	off	off
Warming	on	off	off
Discharge	on	on	off
Full charge	slow flash	off	off
Warm-up (wait period)	fast flash	off	off
Abnormal	flash	flash	tone (1min)
Standby	off	off	off

To calculate R16 & R18 use the following example that is based on a 7.2V/0.6Ah battery, charge rate 2C.

$$R16 = (12V - 7.2V \times Ka) / (0.6 \times 2) = 2.4\Omega (5W)$$

$$R18 = 7.2 / (0.6 \times 2) = 6\Omega (5W)$$

where Ka is given by the following table:

Charge Rate	4C	2C	1C	C/2
Ka	1.5	1.25	1.125	1.063

Note the thermistor should be mounted against the battery for temperature monitoring.

### Suggested Parts List

R1	Min Res 180k	(M180K)
R2,3	Min Res 15k	(M15K)
R4,10,11,12	Min Res 1k	(M1K)
R5	See Text	
R6	Min Res 2k	(M2K)
R7	Min Res 18k	(M18K)
R8,15	Min Res 470Ω	(M470R)
R9	Min Res 20Ω	(M20R)
R13,17	3W 100Ω	(W100R)
R14	Min Res 750Ω	(M750R)
R16,18	See Text	
tR	Min Res 4.7k	(M4K7)
R20,21	Min Res 10k	(M10K)
VR1	Hor Presët 10k	(UH03D)
NTC	Thermistor 15k	(FX22Y)
C1	Polyester 0.47µF	(CX02C)
C2,3,4,6	Polyester 0.1µF	(CX02C)
C5	Minelect 100µF 16V	(RA55K)
C7	GenElect 220µF 16V	(AT11M)
D1,2,3	1N4148	(QL80B)
D4	1N4001	(QL73Q)
IC1	LM324	(UF26D)
IC2	5V Reg.	(CH35Q)
IC3	HT7470	(AZ30H)
TR1,2	2N3702	(QR28F)
TR3,4	TIP2955	(QH55K)
D1,2,3	1N4148	(QL80B)
D4	1N4001	(QL73Q)
LED1	5mm Green	(WL28F)
LED2	5mm Red	(WL27E)

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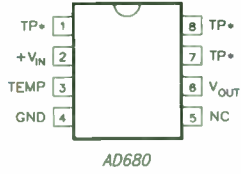
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ30H	HT7470	£0.985 50+ £0.821 300+ £0.704 1+	£2.930

**VOLTAGE REFERENCES**

**AD680JN LoW-Power 2.5V Reference**

Analog Devices



AD680



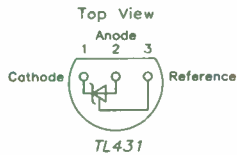
A bandgap voltage reference that provides a fixed 2.5V output from a voltage input between 4.5V to 36V, and operates from a very low quiescent current (typically 250µA). Laser trimming of both initial accuracy and temperature coefficients results in low errors over the specified temperature range - without the need for external components. The device has a maximum variation of 10mV between 0°C and +70°C. The very low noise (typically 8µV pk-pk from 0.1Hz to 10Hz), and spectral density noise (typically 250nV√Hz), make the IC suitable for use as a reference for DAC which require an external precision reference source. The device is also ideal for ADC, and in general, can offer better performance than the standard on-chip reference. The temperature output pin enables the AD680 to be configured as a temperature transducer. Supplied in a 8-pin DIL package.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP38R	AD680JN	£1.930 25+ £1.410 100+	£3.100 1+

**TL431CZ Programmable Voltage Reference**

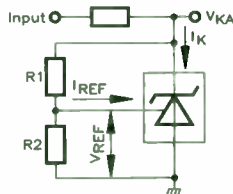
SGS-Thomson



TL431



The TL431 is a programmable shunt voltage reference with guaranteed temperature stability over the entire operating temperature of 0°C to +70°C. The output voltage may be set to any voltage between  $V_{ref}$  (2.5%V approx.) and 36V with just two external resistors. The device has a sink current capability of 1 to 100mA, and a typical output impedance of 0.22Ω. Supplied in a TO92 package.



$V_{KA} = V_{ref}(1 + R1/R2) + I_{ref} \cdot R$   
For  $V_{ref} = V_{KA}$  connect directly pin 3 to 1

**Specification**

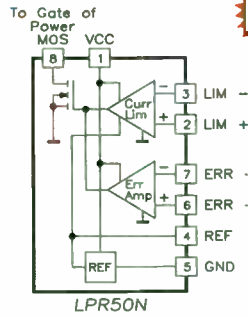
- Cathode/anode voltage:  $V_{ref}$  to 36V
- Cathode current: 1 to 100mA
- $V_{ref}$ : 2.495V
- $V_{ref}$  deviation over temperature range: 3mV typ
- Min cathode current for regulation: 0.5mA typ
- Dynamic impedance: 0.22Ω typ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP98G	TL431CZ	£1.980 25+ £1.650 100+ £1.520 500+	£2.900 1+

**LPR30N Low Dropout Regulator Controller**

SGS-Thomson

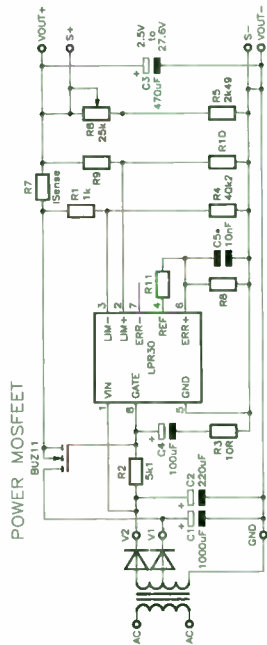


LPR30N



The LPR30 is a very low dropout voltage regulator controller designed to be used with an external N-channel power MOSFET to provide a very high current, low dropout linear voltage regulator. The dropout voltage of the device is as low as the  $R_{DS(on)}$  of the external power MOSFET multiplied by the output current. The output current is only limited by the capability of the MOSFET. The device requires an additional separate supply to provide the control voltage for the external MOSFET gate input.

The output voltage can be set from as low as 1V to over 50V and can be constant-current limited when the controller detects 50mV across an external sense resistor. Supplied in an 8-pin DIL package



**Specification**

- Supply voltage  $V_{CC}$ : 5V to 30V max
- Supply current: 4mA max
- $V_{REF}$ : 2.5V
- Ref o/p current: 20mA min
- PSRR: 70dB
- O/P noise: 50µV
- Open loop gain error amp block: 80dB
- current limit block: 50dB

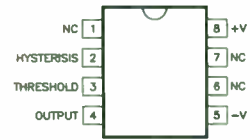
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP98H	TSH150IN	£3.420 25+ £2.850 100+ £2.630 500+	£5.020 1+

**ICL8211CPA Voltage Detector**

Harris

A highly accurate micropower integrated circuit intended primarily for precise voltage detection and generation. The IC provides a 7mA current limited output sink when the voltage applied to 'Threshold' is less than 1.15V - the internal reference. A low current output 'Hysteresis' is also turned on at this point and may be used to provide positive and noise free output switching using a simple feedback network.



8211

Applications include low battery indicators, power supply malfunction detectors for volatile memory systems etc. Supply voltage 2V to 30V at 22µA supply current.

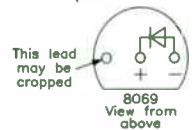
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YH43W	ICL8211CPA	£0.875 10+ £0.729 50+ £0.625 300+	£2.520 1+

**ICL8069CCZR Voltage Reference**

Harris

A 1.2V temperature compensated voltage reference with excellent stability and reverse currents down to 50µA. For use with A/D, D/A converters, threshold detectors etc. Stability of VR with change in IR from 50µA to 5mA is excellent, the change in VR being <20mV. Reverse dynamic impedance is typically 1Ω. Temperature coefficient: 0.005%/°C.



Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YH38N	ICL8069CCZR	£0.736 10+ £0.614 50+ £0.526 300+	£2.470 1+

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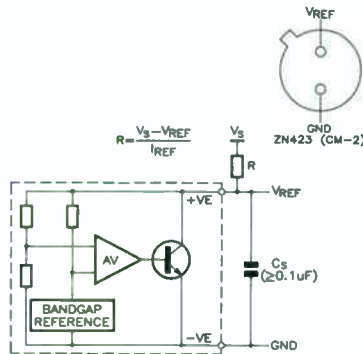
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## ZN423 Precision Voltage Reference Source

GEC-Plessey



A monolithic IC using the energy bandgap voltage of a base-emitter junction to produce a precise, stable, reference source of 1.26V. This is derived via an external dropping resistor for supply voltages of 1.5V and above. Unlike conventional Zener diodes, the temperature coefficient remains constant with reference current.

### Specification

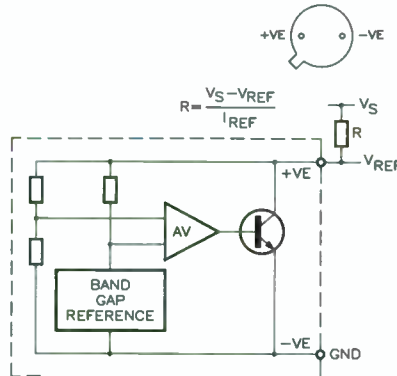
Output voltage:	1.26V
Reference current:	1.5mA to 12mA
Slope resistance:	1.5Ω
	(reference current 5mA)
Temperature coefficient:	30ppm/°C
External resistor:	100Ω minimum
RMS noise voltage:	6µV
Power supply ratio:	60dB

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 3006	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
GS86T	ZN423	£1.040	£0.867	£0.743	£1.410

## ZN458/B 2.45V Precision Reference Regulator

GEC-Plessey



A monolithic IC that provides a stable reference source of 2.45V in a two lead package without the need for an external shaping capacitor. The device has excellent long term stability (10ppm), low noise (10µV), and is available with a maximum change in reference voltage of either 17mV or 5mV.

### Specification ZN458 ZN458B

Maximum change in reference voltage:	17mV	5mV
Maximum dissipation:	300mW	300mW
Typical output voltage (2mA):	2.45V	2.45V
Maximum slope resistance:	0.2Ω	0.2Ω
Reference current:	2.0mA to 120mA	
Temperature coefficient (-20°C to +70°C):	99ppm/°C	
RMS noise voltage:	10µV	10µV

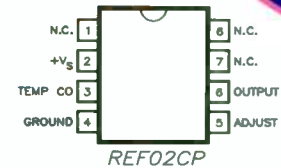
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Order Code	Type 3007	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
DB54J	ZN458	£1.520	£1.260	£1.080	£2.350
DB55K	ZN458B	£1.660	£1.380	£1.180	£2.540

## REF-02CP +5V Precision Reference

Analog Devices

NEW LOW PRICE



A precision bandgap reference giving 5V ±1%. The device has short circuit protection, an adjust pin for up to ±6% adjustment and excellent stability with large changes in temperature, load current and input voltage. The circuits shown for the 10V Ref can be used with this device. In addition, this device has an output on pin 3 whose voltage changes linearly with temperature, from 577.5mV at 0°C to 724.5mV at 70°C. The current on this pin must not exceed 50nA and capacitance must be less than 30pF.

### Specification (typical at 25°C)

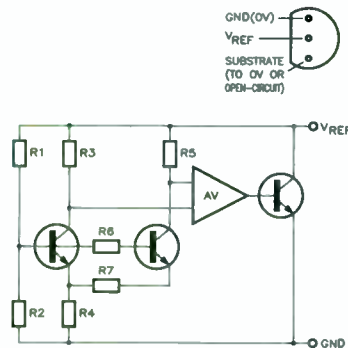
Output voltage:	5V ±0.05V
Adjustment range:	±6%
Supply voltage:	7V to 30V
Output voltage noise:	12µV peak-to-peak
Line regulation:	0.009%/V
Load regulation:	0.006%/mA
Supply current:	1mA
Load current:	21mA
Sink current:	-0.5mA
Short circuit current:	30mA
Temperature coefficient:	20ppm/°C
Voltage output:	630mV at 25°C ±2.1mV/°C

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2980	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
UL09K	REF-02CP	£3.440	£2.870	£2.460	£6.030

## Precision Reference ICs

Zetex



A range of ICs that use the bandgap principle to provide a precise stable reference voltage. Because of their low operating current range, the devices are suitable for all low power and battery applications.

Specification	REF12Z	REF25Z	REF50Z
Output voltage:	1.26V	2.5V	5.0V
Operating current range:	0.09 – 2.5mA	0.06 – 5.0mA	0.06 – 5.0mA
Typical slope resistance:	2.5Ω	1.2Ω	1.2Ω
Temperature coefficient:	40ppm/°C	35ppm/°C	35ppm/°C
RMS noise voltage:	1µV/√Hz	13µV	13µV

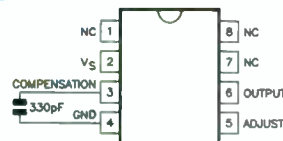
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 3011	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
DB57M	REF12Z	£1.100	£0.917	£0.786	£1.610
DB58N	REF25Z	£1.180	£0.983	£0.843	£1.680
DB59P	REF50Z	£1.190	£0.999	£0.856	£2.010

## REF-03CNB +2.5V Precision Reference

Analog Devices

NEW LOW PRICE



A precision bandgap reference giving 2.5V ±1%. The device has short circuit protection, an adjust pin for up to ±6% adjustment and excellent stability with large changes in temperature, load current and input voltage. The circuits shown for the 10V Ref can be used with this device except that in addition a 330pF capacitor must be connected between pins 3 and 4.

### Specification (typical at 25°C)

Output voltage:	2.5V ±0.025V
Adjustment range:	±6%
Supply voltage:	4.5V to 30V
Output voltage noise:	5µV peak-to-peak
Line regulation:	0.001%/V
Load regulation:	0.01%/mA
Supply current:	1mA
Load current:	20mA
Sink current:	-0.5mA
Short circuit current:	30mA
Temperature coefficient:	0.7ppm/°C

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2982	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
RA84F	REF-03CNB	£2.800	£2.330	£2.000	£4.930

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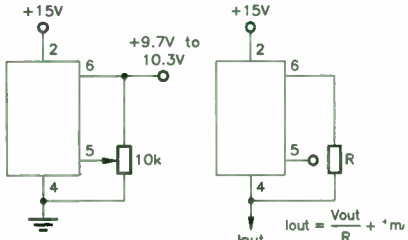
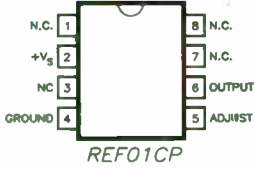
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## REF-01CP

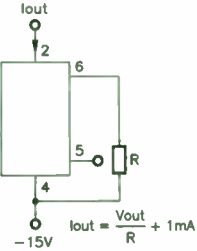
### +10V Precision Reference

Analog Devices



Output adjusted

Precision Current Source



Precision Current Sink

A precision bandgap voltage reference giving 10V ±1%. The device has short circuit protection, an adjust pin for up to ±3% adjustment and excellent stability with large changes in temperature, load current and input voltage.

#### Precision Current Sink

#### Specification (typical at 25°C)

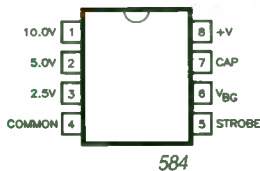
- Output voltage: 10V ±0.1V
- Adjustment range: ±3.3%
- Supply voltage: 12V to 30V
- Output voltage noise: 25µV peak-to-peak
- Line regulation: 0.009%/V
- Load regulation: 0.006%/mA
- Supply current: 1mA
- Load current: 21mA
- Sink current: -0.5mA
- Short circuit current: 30mA
- Temperature coefficient: 20ppm/°C

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2079	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
UL08J	REF-01CP	£2.550	£2.130	£1.820	£4.380

## AD584JN Pin Programmable Precision Voltage Reference

Analog Devices



A precision voltage reference device that is pin-programmable to give four outputs: 10.000V, 7.500V, 5.000V and 2.500V. Other output voltages that can be above, between or below the four standard voltages are available by using external resistors.

Programming (power is applied to pins 8 and 4 and output is between pins 1 and 4.):

- 10.0V: All other pins open
- 7.5V: Join pins 2 and 3
- 5.0V: Join pin 2 to the output pin 1
- 2.5V: Join pin 3 to the output pin 1

By buffering each voltage programming pin with

a unity gain non-inverting op-amp, multiple outputs are available.

The strobe pin can be used to turn the device off and on. When used as a power supply reference, the supply can be switched off with a single, low power signal. The output is configured to sink or source currents, so small reverse currents can be tolerated in circuits using the device without damage to the reference, and without disturbing the 10V, 7.5V and 5.0V outputs. Housed in an 8-pin DIP package.

#### Specification

- Output voltage tolerance
  - 10.000V: ±30mV maximum
  - 7.500V: ±20mV maximum
  - 5.000V: ±15mV maximum
  - 2.500V: ±7.5mV maximum
- Output voltage change: 30ppm/°C
- Quiescent current: 0.75mA
- Output current with  $V_{in} \geq V_{out} + 2.5V$ 
  - source @ +25°C: 10mA
  - source 0°C to +70°C: 5mA
  - sink 0°C to +70°C: 5mA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2012	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
DC10L	AD584JN	£4.920	£4.100	£3.510	£8.030

## LM334N Adjustable Current Source

SGS Thomson



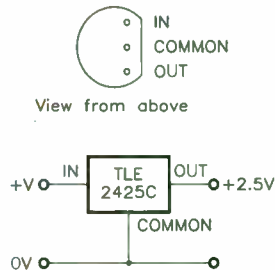
This IC in a TO92 package is a 3-terminal adjustable current source with a 10,000 to 1 range in operating current, excellent current regulation and a wide dynamic voltage regulation of 1V to 40V. Current is established with one resistor connected between pins 1 (R) and 3 (V-), and no other parts are required. The current is equal to 0.0677V divided by the resistor in ohms (i.e. for 1mA, R = 68Ω) at 25°C. Currents may be set in the range 1µA to 10mA and regulation is 0.02% per volt. Initial current accuracy is ±3% typical. Reverse voltages of up to 20V will draw only a few microamps allowing the device to act as a rectifier and current source in AC applications. The current is also directly proportional to the temperature at the rate +0.33% per °C. Zero drift operation can be obtained by adding one resistor and one diode. Applications include bias networks, surge protection, low power reference, ramp generation, LED driver, and temperature sensing.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2588	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
WQ32K	LM334N	£0.700	£0.583	£0.500	£1.410

## TLE2425CLP Precision Virtual Ground

Texas Instruments



Comprising a high performance precision op amp and precision micropower voltage reference, this IC eliminates the separate resistors, capacitors, op

amps, and voltage references that have typically been used to provide the reference voltage in signal-conditioning circuits to terminate signal grounds and in interfacing A/D and D/A converters. The IC gives increased dynamic signal range, improved signal-to-noise ratio, lower distortion and improved signal accuracy. Both input and load regulation exceed 12 bits of accuracy on a single 5V system.

#### Specification (typical at $V_{IN} = 5V, 25°C$ )

- Input voltage: 4V to 40V
- Output voltage: 2.5V ±0.8%
- Output current: 20mA sink and source
- Bias current: 170µA
- Input regulation: 1.5µV/V
- Output impedance: 0.0075Ω
- Output regulation source: 45µV (0 to -10mA), 150µV (0 to +20mA), 65µV (0 to +10mA)
- Sink: 55mA sink, -50mA source
- Ripple rejection: 80dB

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2892	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
CR12N	TLE2425CLP	£0.990	£0.825	£0.707	£1.630

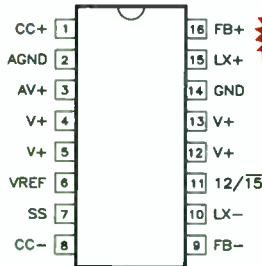
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## VOLTAGE REGULATORS

### MAX743CPE Dual Output Switch-Mode Regulator

Maxim



power supplies. From a +5V supply the device can provide either a  $\pm 12V$  or  $\pm 15V$  dual supply with switching between output voltages under logic control. Output current is typically  $\pm 100mA$  or  $\pm 125mA$ . The device relies on simple inductors and will regulate both outputs, independently, to within  $\pm 4\%$  over all conditions of line voltage, temperature and load current. Efficiency is typically 75% to 82% over most of the load range.

Operating at 200kHz with current mode feedback allows the IC to be used with small, low-cost external components. Thermal shutdown and cycle-by-cycle current sensing prevents overheating and offers excellent power switching transistor protection. With undervoltage lock-out and programmable soft-start, the MAX743 is an inherently reliable and easy-to-use device. Supplied in 16-pin DIL package.

#### Specification

Supply voltage: +5V  
 Output voltage:  $\pm 12V$  (125mA) or  $\pm 15V$  (100mA)  
 Efficiency: 82% typ  
 Line regulation: 0.05%

Load regulation: 1%  
 Reference voltage: 2V  
 Oscillator frequency: 200kHz typ  
 Undervoltage lock-out: 3.8V min, 4.2V max  
 Thermal shutdown: 190°C  
*Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.*

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	200+	
NR56L	MAX743CPE	£6.780	£5.650	£4.840	£1+ £8.470

The MAX743 DC/DC converter contains all the active circuitry needed to build small, dual-output

## 0.1A Fixed Regulators

Type No. manufacturer	Manu-Current	Output Regulation (typ)	Line Regulation (typ)	Load Reg. (typ)	Ripple cent (typ)	Quies Range (typ)Crt.	Input Voltage (V)	Output Noise Voltage (µV)	Short Circuit Current (mA)	Case Style	Order Code	Price each exc. VAT				Inc VAT
												10+	50+	300+	1+	
LM79L15ACZ	NSC	-15V $\pm 5\%$	1.5	0.3	52	3	-17.5V to -35V	90	-	TO92N	WQ87U	£0.276	£0.230	£0.184	£0.530	
MC79L15ACP	MOT	-15V 5%	1.5	0.3	52	3	-17.5V to -35V	90	-	TO92N	AV07H	£0.359	£0.299	£0.256	£0.720	
LM79L12ACZ	NSC	-12V 5%	1	0.2	55	3	-14.5V to -35V	80	-	TO92N	WQ86T	£0.250	£0.208	£0.167	£0.530	
MC79L12ACP	MAX	-12V 5%	1	0.2	55	3	-14.5V to -35V	80	-	TO92N	AV06G	£0.350	£0.292	£0.250	£0.720	
LM79L05ACZ	NSC	-5V 5%	1	0.2	60	3	-7V to -25V	40	-	TO92N	WQ85G	£0.298	£0.248	£0.199	£0.530	
MC79L05ACP	MOT	-5V 5%	1	0.2	60	3	-7V to -25V	40	-	TO92N	AV05F	£0.318	£0.265	£0.227	£0.720	
LM78L05ACZ	NSC	+5V 4%	0.36	0.4	62	3	+7V to +30V	40	-	TO92R	QL26D	£0.280	£0.233	£0.190	£0.580	
MC78L05ACP	MOT	+5V 4%	0.36	0.4	62	3	+7V to +30V	40	-	TO92R	AV02C	£0.200	£0.167	£0.143	£0.720	
LM78L12ACZ	NSC	+12V 4%	0.25	0.25	54	3	+14.5V to +35V	80	-	TO92R	WQ77J	£0.280	£0.233	£0.187	£0.460	
MC78L12ACP	MOT	+12V 4%	0.25	0.25	54	3	+14.5V to +35V	80	-	TO92R	AV03D	£0.318	£0.265	£0.227	£0.750	
LM78L15ACZ	NSC	+15V 4%	0.25	0.25	51	3.1	+17.5V to +35V	90	-	TO92R	QL27E	£0.280	£0.233	£0.187	£0.460	
MC78L15ACP	MOT	+15V 4%	0.25	0.25	51	3.1	+17.5V to +35V	90	-	TO92R	AV04E	£0.318	£0.265	£0.227	£0.750	

## 0.1A Variable Regulators

Type No. (typ)	Manu-ufacturer (typ)	Output Voltage (typ)	Line Regulation (typ)	Load Regulation (typ)	Ripple Rej. ance (typ)	Quiescent Current (typ)	Input Voltage Range (V)	Output Noise (µV)	Short Circuit (mA)	Case Style	Order Code	Price each exc. VAT				Inc. VAT
												10+	50+	300+	1+	
LM337LZ	NSC	-1.2V to -37V	0.01	0.3	60	0.01	-3V to -40V	200	-	TO92n	AV31J	£0.980	£0.860	£0.730	£1.210	
LM317LZ	NSC	+1.2V to +37V	0.01	0.1	80	3.5	+3V to +40V	150	200	TO92s	RA87U	£0.452	£0.377	£0.301	£1.040	
LM317LZ	SGS	+1.2V to +37V	0.01	0.1	80	3.5	+3V to +40V	150	200	TO92s	AV26D	£0.350	£0.290	£0.250	£0.600	
LM317LZ	MOT	+1.2V to +37V	0.01	0.1	80	3.5	+3V to +40V	150	200	TO92s	AV27E	£0.480	£0.400	£0.343	£0.820	
LM723CN	SGS	+2V to +37V	0.01	0.03	74	4	+2V to +37V	86	-	DIL-14	AV33L	£0.380	£0.317	£0.271	£0.860	
TL431CLP	MOT	+V <sub>ref</sub> to +36V	-	-	-	-	+V <sub>ref</sub> to +36V	5	150	TO92t	AV01B	£0.351	£0.292	£0.251	£0.860	
TL431CLP	TI	+V <sub>ref</sub> to +36V	-	-	-	-	+V <sub>ref</sub> to +36V	5	150	TO92ta	AV00A	£0.498	£0.415	£0.356	£0.860	

## 0.4A Fixed Regulators

Type No.	Manu-ufacturer	Output Voltage (typ)	Line Regulation (typ)	Load Regulation (typ)	Ripple Rej. (typ)	Quiescent Current (typ)	Input Voltage Range (V)	Output Noise Voltage (µV)	Short Circuit Current (mA)	Case Style	Order Code	Price each exc. VAT				Inc. VAT
												10+	50+	300+	1+	
LM2930A	SGS	+5V $\pm 4\%$	5mV	15mV	-8	22	+6V to +35V	140	400	TO220c	AH87U	£1.260	£1.050	£0.907	£1.960	

## 0.5A Fixed Regulators

Type No.	Manu-ufacturer	Output Voltage (typ)	Line Reg. (typ)	Load Reg. (typ)	Ripple Rej. (typ)	Quiescent Current (typ)	Input Voltage Range (V)	Output Noise (µV)	Short Circuit Voltage (mA)	Case Style	Order Code	Price each exc. VAT				Inc. VAT
												10+	50+	300+	1+	
LM79M15CT	NSC	-15V $\pm 4\%$	0.06	0.45	59	1.5	-17.5V to -30V	375	140	P1n	WQ90X	£0.840	£0.700	£0.560	£1.080	
LM79M12CT	NSC	-12V $\pm 4\%$	0.075	0.55	60	1.5	-14.5V to -30V	300	140	P1n	WQ89W	£0.840	£0.700	£0.560	£1.080	
LM79M05CT	NSC	-5V $\pm 4\%$	0.14	1.5	60	1	-7V to -25V	125	140	P1n	WQ88V	£0.880	£0.733	£0.587	£1.210	
L78M05CV	ST	+5V $\pm 4\%$	0.06	0.4	80	4.5	+7V to +25V	40	300	P1d	QL28F	£0.402	£0.335	£0.268	£0.860	
L78M12CV	ST	+12V $\pm 4\%$	0.07	0.2	80	4.8	+14.5V to +30V	75	240	P1d	QL29G	£0.490	£0.390	£0.267	£0.860	
L78M15CV	ST	+15V $\pm 4\%$	0.07%	0.17%	70	4.8	+17.5V to +35V	90	240	P1d	QL30H	£0.400	£0.333	£0.267	£1.080	
MC78M05CDT	MOT	+5V $\pm 4\%$	0.06%	0.2%	70		+7V to +35V		200	DPAK	GS08J	£0.380	£0.317	£0.271	£0.630	

## 0.5A Variable Regulators

Type No.	Manu-ufacturer	Output Voltage (typ)	Line Reg. (typ)	Load Reg. (typ)	Ripple Rej. (typ)	Quiescent Current (typ)	Input Voltage Range (V)	Output Noise (µV)	Short Circuit Voltage (mA)	Case Style	Order Code	Price each exc. VAT				Inc VAT
												10+	50+	300+	1+	
LM317MP	NSC	+1.2V to 37V	0.01	0.1	80	3.5	+3V to +40V	150	800	P4c	RA86T	£1.140	£0.920	£0.730	£1.480	

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Export carriage charges (1.2 etc.) and price information see back of catalogue. † symbol in price block indicates While Stocks Last.

## 1A Fixed Regulators

7937

Type No.	Manu- facturer	Output Voltage (typ)	Line Reg. (typ)	Load Reg. (typ)	Ripple Rej. (typ)	Quiescent Current (typ)	Input Voltage Range	Output Noise	Short Circuit Voltage	Case Style Current	Order Code	Price each exc. VAT				Inc. VAT
		(V)	(%/V)	(%)	(dB)	(mA)	(V)	(µV)	(mA)			10+	50+	300+	1+	
MC7824CT	MOT	-24V±4%	-	-	-	8	-26V to -40V	-	-	P1n	AH87U	£1.260	£1.050	£0.907	£1.960	
L7915CV	ST	-15V±4%	0.075	0.055	60	1.5	-17.5V to -30V	375	230	P1n	QL36P	£0.243	£0.203	£0.174	£0.990	
LM7915CT	NSC	-15V±4%	0.075	0.055	60	1.5	-17.5V to -30V	375	230	P1n	AV21X	£0.700	£0.583	£0.467	£0.860	
MC7915CT	MOT	-15V±4%	0.075	0.055	60	1.5	-17.5V to -30V	375	230	P1n	AV140	£0.480	£0.400	£0.320	£0.970	
L7912CV	ST	-12V±4%	0.085	0.07	60	1.5	-14.5V to -30V	300	350	P1n	WQ93B	£0.325	£0.260	£0.173	£0.990	
LM7912CT	NSC	-12V±4%	0.085	0.07	60	1.5	-14.5V to -30V	300	350	P1n	AV20W	£0.417	£0.348	£0.278	£0.860	
MC7912CT	MOT	-12V±4%	0.085	0.07	60	1.5	-14.5V to -30V	300	350	P1n	AV13P	£0.480	£0.400	£0.320	£0.970	
L7908CV	ST	-8V±4%	50mV	26mV	62	-	-10V to -35V	52µ	1.5	P1d	AW76H	£0.570	£0.390	£0.340	£1.300	
L7905CV	ST	-5V±4%	0.06	0.2	60	1	-7V to -25V	125	750	P1n	WQ21A	£0.950	£0.790	£0.710	£1.870	
LM7905CT	NSC	-5V±4%	0.06	0.2	60	1	-7V to -25V	125	750	P1n	AV19V	£0.280	£0.233	£0.187	£0.860	
MC7905CT	MOT	-5V±4%	0.06	0.2	60	1	-7V to -25V	125	750	P1n	AV12N	£0.370	£0.308	£0.246	£0.970	
7805	Value	+5V±4%	0.06	0.2	78	4.2	+7V to +25V	40	750	P1dt	CH35Q	£0.190	£0.150	£0.130	£0.490	
L7805CP	ST	+5V±4%	0.06	0.2	78	4.2	+7V to +25V	40	750	P1dt	CR14Q	£0.610	£0.427	£0.366	£1.140	
L7805CV	ST	+5V±4%	0.06	0.2	78	4.2	+7V to +25V	40	750	P1d	QL31J	£0.550	£0.460	£0.390	£0.990	
LM7805CT	NSC	+5V±4%	0.06	0.2	78	4.2	+7V to +25V	40	750	P1d	AV16S	£0.280	£0.233	£0.187	£0.860	
MC7805CT	MOT	+5V±4%	0.06	0.2	78	4.2	+7V to +25V	40	750	P1d	AV08J	£0.329	£0.274	£0.219	£0.970	
MC7805CD2T	MOT	+5V±4%	0.06	0.2	78	4.2	+7V to +25V	40	750	D <sup>2</sup> PAK	GS09K	£0.620	£0.617	£0.529	£1.140	
L7806CV	ST	+6V±4%	0.06	0.2	78	4.2	+8V to +25V	40	750	P1d	AV69A	£0.520	£0.390	£0.340	£1.300	
L7806CP	ST	+8V±4%	0.06	0.2	72	4.2	+10.5V to +25V	52	450	P1dt	CR15R	£0.610	£0.418	£0.358	£1.140	
L7808CV	ST	+8V±4%	0.06	0.2	72	4.2	+10.5V to +25V	-	-	P1n	AW70M	£0.520	£0.390	£0.340	£1.300	
7812	Value	+12V±4%	0.06	0.2	71	4.3	+14.5V to +30V	75	350	P1dt	CH36P	£0.190	£0.150	£0.130	£0.490	
L7812CP	ST	+12V±4%	0.06	0.2	71	4.3	+14.5V to +30V	75	350	P1dt	CR16S	£0.610	£0.418	£0.358	£1.140	
L7812CV	ST	+12V±4%	0.085	0.07	71	4.3	+14.5V to +30V	75	350	P1d	QL32K	£0.435	£0.363	£0.311	£0.990	
LM7812CT	NSC	+12V±4%	0.085	0.07	71	4.3	+14.5V to +30V	75	350	P1d	AV17T	£0.700	£0.583	£0.467	£0.860	
MC7812CT	MOT	+12V±4%	0.085	0.07	71	4.3	+14.5V to +30V	75	350	P1d	AV09K	£0.308	£0.257	£0.206	£0.970	
7815	Value	+15V±4%	0.075	0.055	70	4.4	+17.5V to +30V	90	230	P1d	CH37S	£0.190	£0.140	£0.130	£0.490	
L7815CV	ST	+15V±4%	0.075	0.055	70	4.4	+17.5V to +30V	90	230	P1d	QL33L	£0.414	£0.345	£0.295	£0.990	
LM7815CT	NSC	+15V±4%	0.075	0.055	70	4.4	+17.5V to +30V	90	230	P1d	AV18U	£0.341	£0.284	£0.227	£0.970	
MC7815CT	MOT	+15V±4%	0.075	0.055	70	4.4	+17.5V to +30V	90	230	P1d	AV10L	£0.492	£0.410	£0.328	£0.970	
L7824CV	ST	+24V±4%	6mV	12mV	>50	-	+30V to +36V	170	1.5	P1d	AW75S	£0.600	£0.390	£0.340	£1.300	
MC7824CT	MOT	+24V±4%	-	-	-	8	+26V to +40V	-	-	P1d	AV11M	£0.440	£0.367	£0.293	£0.970	

Packages marked with a † have isolated tabs with respect to their ground terminal

## 1.5A Variable Regulators

7983

Type No.	Manu- facturer	Output Voltage (typ)	Line Reg. (typ)	Load Reg. (typ)	Ripple Rej. (typ)	Quiescent Current (typ)	Input Voltage Range	Output Noise Voltage	Short Circuit Current	Case Style	Order Code	Price each exc. VAT				Inc. VAT
		(V)	(%/V)	(%)	(dB)	(mA)	(V)	(µV)	(mA)			10+	50+	300+	1+	
LM337T	NSC	-1.2V to -37V	0.01	0.3%	60	0.1	-3V to -40V	200	-	TO92n	AV32K	£0.420	£0.350	£0.280	£0.820	
KA317T	SAM	+1.2V to +37V	0.01	0.1%	80	3.5	+3V to +40V	150	2,200	P1e	AV30H	£0.646	£0.538	£0.431	£0.880	
LM317T	ST	+1.2V to +37V	0.01	0.1%	80	3.5	+3V to +40V	150	2,200	P1e	UF27E	£0.530	£0.442	£0.379	£1.430	
LM317T	NSC	+1.2V to +37V	0.01	0.1%	80	3.5	+3V to +40V	150	2,200	P1e	AV29G	£0.408	£0.340	£0.272	£0.990	
LM317T	MOT	+1.2V to +37V	0.01	0.1%	80	3.5	+3V to +40V	150	2,200	P1e	AV28F	£0.420	£0.350	£0.280	£1.210	

## 2A Fixed Regulators

7936

Type No.	Manu- facturer	Output Voltage (typ)	Line Regulation (typ)	Load Regulation (typ)	Ripple Rej. (typ)	Quiescent Current (typ)	Input Voltage Range	Output Noise Voltage	Short Circuit Current	Case Style	Order Code	Price each exc. VAT				Inc VAT
		(V)	(%/V)	(%)	(dB)	(mA)	(V)	(µV)	(mA)			10+	50+	300+	1+	
L78S05CV	ST	+5V ±4%	100mV (max)	80mV (max)	54	8	+8V to +35V	40	500	P1d	UJ54J	£0.550	£0.440	£0.293	£1.390	
L78S09CV	ST	+9V ±4%	130mV (max)	100mV (max)	47	8	+12V to +35V	60	500	P1d	UJ55K	£0.550	£0.440	£0.293	£1.390	
L78S12CV	ST	+12V ±4%	240mV (max)	150mV (max)	47	8	+15V to +35V	75	500	P1d	UJ56L	£0.973	£0.778	£0.519	£1.390	
L78S15CV	ST	+15V ±4%	300mV (max)	150mV (max)	46	8	+18V to +35V	90	500	P1d	UJ57M	£1.040	£0.832	£0.555	£1.390	

## 2A Variable Regulators

7940

Type No.	Manu- facturer	Output Voltage (typ)	Line Reg. (typ)	Load Reg. (typ)	Ripple Rej. (typ)	Quiescent Current (typ)	Input Voltage Range Voltage	Output Noise	Short Circuit Current	Case Style	Order Code	Price each exc. VAT				Inc. VAT
		(V)	(%/V)	(%)	(dB)	(mA)	(V)	(µV)	(mA)			10+	50+	300+	1+	
L200CH	ST	+2.85V to +36V	-	0.15	60	4.2	+32V to +40V	80	3,600	P5a	AV36P	£1.510	£1.250	£1.000	£2.570	
L200CV	ST	+2.85V to +36V	-	0.15	60	4.2	+32V to +40V	80	3,600	P5a	YY74R	£1.740	£1.390	£0.931	£2.380	

## 3A Fixed Regulators

7941

Type No.	Manu- facturer	Output Voltage	Line Reg. (typ)	Load Reg. (typ)	Ripple Rej. (typ)	Quiescent Current (typ)	Input Voltage Range (typ)	Output Noise	Short Circuit Voltage	Case Style Current	Order Code	Price each exc. VAT				Inc. VAT
		(V)	(%/V)	(%)	(dB)	(mA)	(V)	(µV)	(mA)			10+	50+	300+	1+	
MC78T05CT	MOT	+5V ±4%	0.085	0.07	71	4.3	+7.5V to +30V	75	350	P1d	AV23A	£1.980	£1.650	£1.320	£4.380	
MC78T12CT	MOT	+12V ±4%	0.085	0.07	71	4.3	+14.5V to +30V	75	350	P1d	AV24B	£1.990	£1.660	£1.330	£4.380	
MC78T15CT	MOT	+15V ±4%	0.085	0.07	71	4.3	+17.5V to +30V	75	350	P1d	AV25C	£1.980	£1.650	£1.320	£4.380	

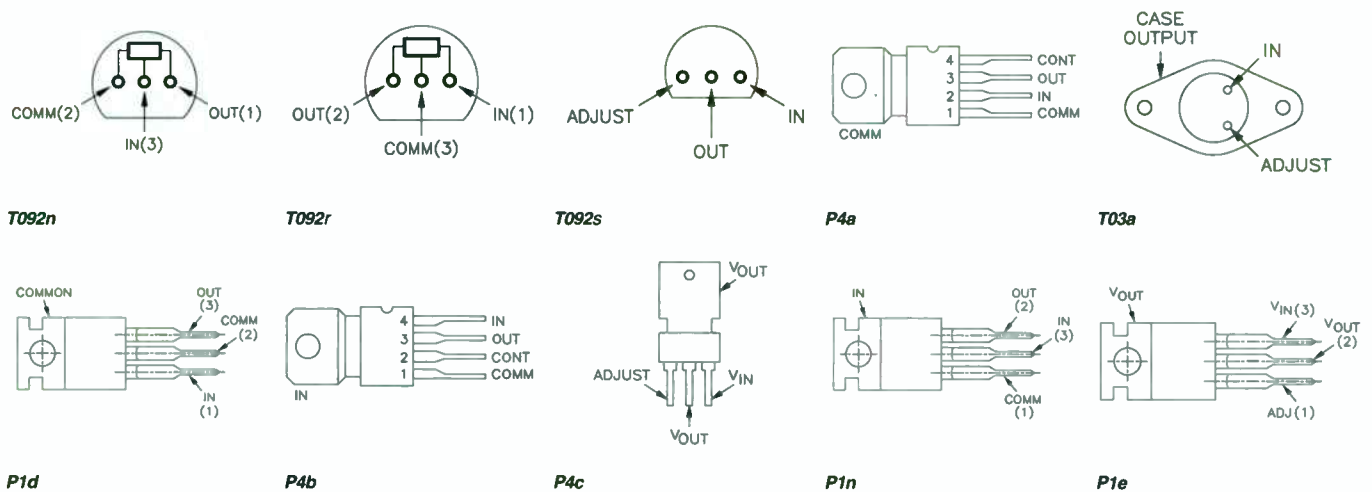
## 5A Variable Regulator

7942

Type No.	Manu- facturer	Output Voltage (typ)	Line Reg. (typ)	Load Reg. (typ)	Ripple Rej. (typ)	Quiescent Current (typ)	Input Voltage Range	Output Noise Voltage	Short Circuit Current	Case Style	Order Code	Price each exc. VAT				Inc. VAT
		(V)	(%/V)	(%)	(dB)	(mA)	(V)	(µV)	(mA)			10+	50+	300+	1+	
LM338K	NSC	+1.2V to 32V	0.005	0.1	75	3.5	+3V to +35V	150	8,000	TO3a	RA88V	£6.520	£6.270	£5.370	£8.490	

\* Identifies New Product

## Pin-Out Drawings - Viewed From Above



### The Abbreviations

- |                              |                         |
|------------------------------|-------------------------|
| AD - Analog Devices          | PC - Philips Components |
| ATM - Atmel                  |                         |
| BB - Burr-Brown              |                         |
| DAL - Dallas                 |                         |
| EL - Elantec                 | RAY - Raytheon          |
| FA - Fagor                   | SAM - Samsung           |
| HA - Harris                  | SEM - Semelab           |
| HIT - Hitachi                | SIE - Siemens           |
| LT - Linear Technology       | SIG - Signetics         |
| MAX - Maxim                  | SLX - Siliconix         |
| ME - Micro Electronics       | ST - SGS-Thomson        |
| MOT - Motorola               | TFK - Temic             |
| NEC - NEC                    | TI - Texas Instruments  |
| NSC - National Semiconductor | TOSH - Toshiba          |
|                              | ZET - Zetex             |

## LE50CD Surface Mount 5V 100mA Very Low Dropout Regulator

SGS-Thomson

A surface mount 5V, 100mA regulator with a very low dropout voltage of typically 0.2V, and a low quiescent current. The device is ideal for low power, low noise applications, in particular battery powered systems. In addition, there is a logic control inhibit input which can be used to put circuitry, that the regulator supplies, into a stand-by mode to further reduce system power consumption. Supplied in an 8-pin SO-8 package.

low noise applications, in particular battery powered systems.

### Specification

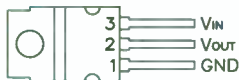
- Output voltage: 5V
- Input voltage: 18V
- Output current limit: 150mA
- Line regulation: 4mV typ
- Load regulation: 3mV typ
- Quiescent current: 1.5mA typ
- PSRR: 76dB
- Dropout voltage: 0.2V at 100mA typ
- O/P noise voltage: 50µV
- O/P bypass capacitance: 10µF

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP93B	LE50CZ	25+ £0.580 100+ £0.483 500+ £0.446	1+ £0.650

## LD1117V50 5V 800mA Very Low Dropout Regulator

SGS-Thomson



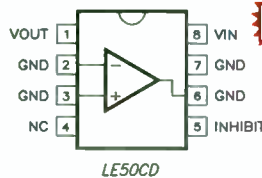
A TO-220 5V, 800mA regulator with a very low dropout voltage of typically 1V, and a low quiescent current. The device has a very tight output tolerance - within ±1% at 25°C, and has internal current and thermal limiting.

### Specification

- Output voltage: 5V
- Input voltage: 15V
- Output current: 800mA min
- Line regulation: 1mV typ
- Load regulation: 1mV typ
- Quiescent current: 5mA typ
- PSRR: 75dB
- Dropout voltage: 1V at 100mA typ  
1.15V at 800mA typ
- O/P noise voltage: 50µV

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP91Y	LD1117V50	25+ £1.040 100+ £0.867 500+ £0.800	1+ £1.290



### Specification

- Output voltage: 5V
- Input voltage: 18V
- Output current limit: 150mA
- Line regulation: 4mV typ
- Load regulation: 3mV typ
- Quiescent current on mode: 1.5mA typ
- off mode: 50µA typ
- PSRR: 76dB
- Dropout voltage: 0.2V at 100mA typ
- O/P noise voltage: 50µV
- O/P bypass capacitance: 10µF

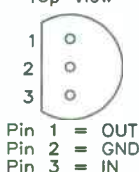
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP92A	LE50CD	25+ £0.620 100+ £0.517 500+ £0.477	1+ £0.910

## LE50CZ 5V 100mA Very Low Dropout Regulator

SGS-Thomson

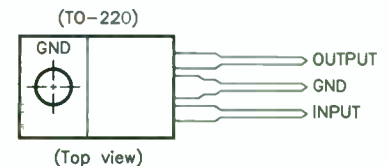
Top View



A TO-92 packaged 5V, 100mA regulator with a very low dropout voltage of typically 0.2V, and a low quiescent current. The device is ideal for low power,

## L4931CV50 5V 250mA Very Low Dropout Regulator

SGS-Thomson



A TO-220 packaged 5V, 250mA regulator with a very low dropout voltage of typically 0.4V, and a low quiescent current. The device is ideal for low power, low noise applications, in particular battery powered systems.

### Specification

- Output voltage: 5V
- Input voltage: 20V
- Output current limit: 300mA
- Line regulation: 3.5mV typ
- Load regulation: 3mV typ
- Quiescent current: 4mA typ
- PSRR: 70dB
- Dropout voltage: 0.4V at 250mA typ
- O/P noise voltage: 50µV
- O/P bypass capacitance: 10µF

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP94C	L4931CV50	25+ £0.740 100+ £0.617 500+ £0.569	1+ £1.080

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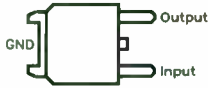
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## LF50CDT Surface Mount 5V 500mA Very Low Dropout Regulator

SGS-Thomson

A surface mount 5V, 500mA regulator with a very low dropout voltage of typically 0.4V, and a low quiescent current. The device is ideal for low power, low noise applications, in particular battery powered systems. Supplied in a 3-pin surface mount DPAK package.



**Specification**

Output voltage:	5V
Input voltage:	16V
Output current limit:	1A
Line regulation:	3mV typ
Load regulation:	2mV typ
Quiescent current:	0.5mA typ
PSRR:	76dB
Dropout voltage:	0.2V at 200mA typ 0.4V at 400mA typ
O/P noise voltage:	50µV
O/P bypass capacitance:	10µF

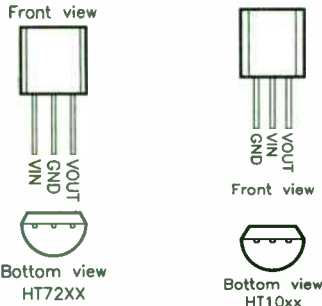


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

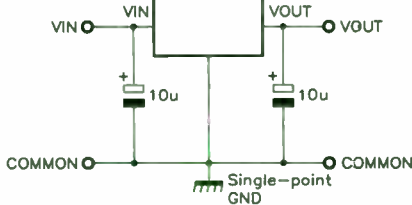
Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
NP95D	LF50CDT	£1.140	£0.950	£0.877	£1.670

## Low Dropout Regulators

Hoftek



A range of fixed voltage regulators that offers very low dropout voltage (100mV) and negligible power consumption. This, combined with a space saving TO92 package, makes them suitable for any battery powered application up to a maximum input of 24V (depending on device). All have an output tolerance of 5% and a low temperature coefficient, typically 0.015%/oC for the HT7xxx series.



Order Code	Type	O/P V/I	Max. I/P	Power
GV11M	HT1030	3V/30mA	12V	3.5µA
BH68Y	HT1050	5V/30mA	12V	3.5µA
LE77J	HT7230	3V/100mA	24V	500µA
LE79L	HT7250	5V/100mA	24V	500µA
CH49D	HT7290	9V/100mA	24V	500µA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
GV11M	HT1030	£0.625	£0.320	£0.310	£0.630
BH68Y	Voltage Reg HT1050	£0.525	£0.420	£0.290	£0.990
LE77J	3.0V REG	£0.387	£0.344	£0.258	£0.740
LE79L	5.0V REG	£0.385	£0.342	£0.257	£0.740
CH49D	HT7290	£0.525	£0.320	£0.220	£0.740

## LP2950C 5V Micropower Voltage Regulator (Top view)

National Semiconductor

A micropower voltage regulator with a very low quiescent current (75µA typical) and a very low dropout voltage, typically 40mV for light loads, and 360mV at 100mA. The device is ideally suited for battery powered equipment, and the quiescent current increases only slightly in dropout, prolonging battery life. A tight initial tolerance of typically 0.5%, extremely good load and line regulation and a very low output voltage temperature coefficient also makes the device useful as a low power voltage reference. The TO92 package is pin compatible with other similarly encapsulated 5V regulators, and so the device can directly replace them.



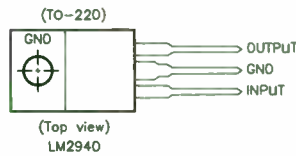
**Specification**

Input supply voltage range:	-0.3 to +30V max.
Output voltage:	5V
Output temperature coefficient:	20ppm/°C typical
Line regulation:	0.03% max.
Load regulation:	0.04% max.
Input/output dropout voltage:	380mV @ 100mA output
Current limit:	160mA
Thermal regulation:	0.05%/W
Output noise:	430µA into 1µF
Reference voltage:	1.235V typical (1.25V max.)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	100+	1+
AV35Q	Reg LM2950CZ NSC	£1.990	£1.630	£1.080	£2.390

## Top Value Regulators



This range of three terminal standard voltage regulators provides an economical and attractive alternative to branded manufacturers products. In a market where the increasing demand for all semiconductors is driving prices ever higher, our experienced team are committed to sourcing new products which offer good solid value for money, backed up by the quality and service you have come to expect from Maplin.

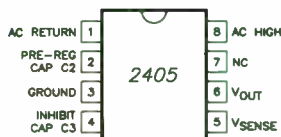
Output voltages for the three devices are +5V, +12V and +15V, with an output regulation figure of ± 4%. Maximum input voltage is 35 Volts and the devices are supplied in the standard TO-220 package (see pinout P1d), which does require a heatsink if high power dissipation is required. Note that the devices are all internally short circuit and thermal overload protected and will shut down when such conditions occur. Data sheets are available.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	50+	300+	1+
CH35Q	7805 Value Brand	£0.190	£0.150	£0.130	£0.490
CH36P	7812 Value Brand	£0.190	£0.150	£0.130	£0.490
CH37S	7815 Value Brand	£0.190	£0.140	£0.130	£0.490

## HV3-2405-5 Single Chip Power Supply

Harris



A single chip power supply that can supply up to 50mA at 5V to 24V regulated DC when the input is anything between 28V and 264V AC rms. Thus the

unit may be connected directly to the mains (via a current limit resistor) anywhere in the world and will supply the same regulated output. The IC eliminates the need for a mains transformer, bridge rectifier and separate voltage regulator. Note however, that if mains isolation is required, an isolation transformer (LW33L) should be used.

The output voltage is +5V regulated if pins 5 and 6 are linked. Output voltages from 5V up to 24V are possible by modifying the output circuit as shown in Figures 1, 2 and 3. Figure 1 is the simplest circuit, where R3 = 1000 (VOUT - 5). E.g., for 12V output, R3 = 1000(12 - 5) = 7kΩ (2k7 and 4k3 in series). The circuit of Figure 2 will improve the accuracy of the output voltage. In this case R5 should be 1kΩ.

$$R4 = \frac{1000 (V_{OUT} - 5)}{6}$$

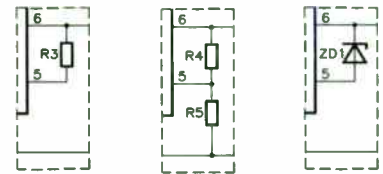
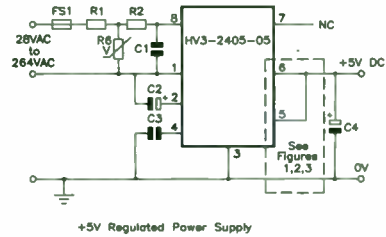
E.g., for 12V output,

$$R3 = \frac{1000(12-5)}{6} = \frac{7200}{6} = 1k2$$

Figure 3 shows how to set the output voltage using a zener diode. In this case the output voltage is 5V plus the zener voltage. This circuit has the added advantage that 5V is also available at pin 5, but ensure that the total of the currents on pins 5 and 6 does not exceed 50mA, and note that the current from pin 5 flows through the zener, so be careful not to exceed the zener's power rating.

**Specification**

Input voltage range:	18V rms to 264 V rms
Input frequency range:	48Hz to 440Hz
Output current:	at least 50mA
Output voltage:	5V DC to 24V DC
Line and load regulation:	<5%



Typical for circuit shown  $V_{IN} = 240V$  AC 50Hz,  $V_{OUT} = +5V$  DC,  $I_{OUT} = 50mA$ , 25°C.

Output voltage:	5V ±2%
Output ripple:	22mV
Line regulation (80V rms to 264V rms):	10mA
Load regulation (5mA to 50mA):	<20mV
Output current:	50mA max
Short circuit current:	95mA
Dropout voltage (pin 2 to 6):	2-2V
Current into pin 5:	1mA

**Parts List**

R1,2	W/W Min 68Ω	(W68R)
R3,4	See text (Min Res)	
R5	Min Res 1k	(M1K)
R6	Suppressor 250V AC	(HW13P)
C1	IS Cap 0.047µF	(JR33L)
C2	PC Elect 470µF 35V	(FF16S)
C3	Ceramic 150pF	(WX58N)
C4	PC Elect 1µF 100V	(FF01B)
ZD1	See text	
FS1	Fuse 20mm 500mA	(WR02C)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
CR13P	HV3-2405-5	£2.410	£2.070	£1.930	£4.350

## Fixed 5V 0.5/1A SMD Regulators

Motorola

These surface mount regulators have solderable tabs for heatsinking via the track or PCB land.

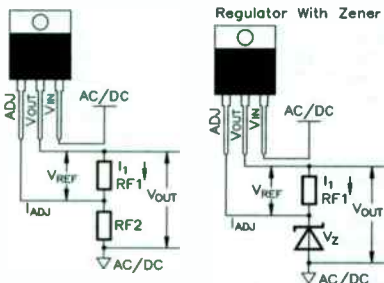
Type	Voltage	Current	Input Voltage	Short Circuit Current	Line Reg.	Load Reg.	Ripple Rej.	Case Style	Order Code
MC78M05CDT	5V ±4%	0.5A	+7V to +35V	0.2A	0.06%	0.2%	78dB	DPAK	GS08J
MC7805CD2T	5V ±4%	1A	+7V to +35V	50mA	0.06%	0.2%	80dB	D2PAK	GS09K

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
GS08J	MC78M05CDT	£0.380	£0.630
GS09K	MC7805CD2T	£0.620	£1.140

## HIP5600IS High Voltage Linear Regulator

Harris



An adjustable positive linear voltage regulator capable of operating up to either 400V DC or 280V AC. The output voltage is adjustable from 1.2V DC to within 50V of the peak input voltage with just two external resistors. The chip has thermal shutdown and output current limiting, and can withstand an input to output voltage as high as 400V peak. As well as normal regulator applications, the device can be used as an AC/DC converter and start-up circuits for switch mode power supplies.

Nominal V <sub>OUT</sub>	RF1	RF2
3.3V	3.6k	5.6k
4.9V	2.7k	7.5k
12V	1.8k	15k
14.8V	1.1k	12k

The output can be set by using a Zener diode which results in improved ripple rejection ratio. An optional 10µF bypass capacitor from V<sub>ADJ</sub> to ground will also improve the ripple rejection by preventing the ripple at the adjust pin from being amplified.

### Regulator with Zener

V <sub>OUT</sub>	V <sub>Z</sub>
3.7V	2.5V
5.1V	3.9V
10.3V	9.1V
12.2V	11V
16.2V	15V

Note that V<sub>OUT</sub> = 1.18 + V<sub>Z</sub>  
RF1 = 10k

A 10µF minimum output capacitor is required for stability and, depending on the source impedance, a 0.022µF input capacitor may be required. A minimum load current of 1mA is required to maintain output voltage regulation. Housed in a TO220 package. Note that the device does not provide isolation from AC.

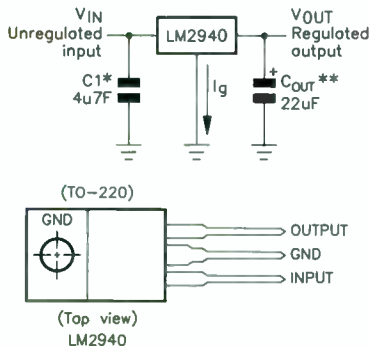
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
DT24B	HIP5600IS	£1.550	£3.380



## LM2940CT 1A Low Dropout Regulator

National Semiconductor



A positive voltage regulator that can source 1A of output current with a dropout voltage of typically, 0.5V and a maximum of 1V, over the entire temperature range. A quiescent current reduction circuit has been included which reduces the ground current when the differential between the input voltage and the output voltage exceeds approximately 3V. The quiescent current with 1A of output current and an input-output differential of 5V is therefore only 3mA. Higher quiescent currents only exist when the regulator is in the dropout mode (V<sub>IN</sub> - V<sub>OUT</sub> = 3V).

Also designed for vehicular applications, the device, and all regulated circuitry, is protected from reversed battery installation, or double-battery 'jump-start' scenarios. During line transients, such as load dump where the input can temporarily exceed max. V<sub>IN</sub>, the device will shut down to protect its internal circuits and the load. It cannot be harmed by temporary mirror-image insertion. Thermal overload and short-circuit protection is included.

### Specification

Output voltage:	5V typical ±0.15V max.
Line regulation:	20mV
Load regulation:	35mV
Output impedance:	35mΩ
Quiescent current:	10mA max.
Output noise:	150µV rms
Ripple rejection:	72dB min.
Long term stability:	20mV/1000 hrs
Dropout voltage:	0.5V min.
Maximum input voltage:	26V
Operating temperature range:	0°C to +125°C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AV22Y	Reg LM2940CT-50 NSC	£0.800	£1.710

## LM2930A

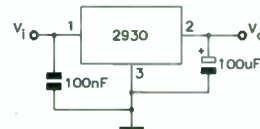
SGS Thomson



A very low voltage drop 5V regulator which features an output current rating of 400mA with a dropout voltage of 0.4V typical. At 150mA the dropout voltage

falls to 0.2V. Moreover, the device includes a ±40V input overvoltage protection, plus reverse polarity protection, thermal shutdown and foldback current limiting. It is designed primarily for automotive applications and protects both itself and the load from load dump field decays, transients and incorrect battery connection. The low voltage drop of this device allows correct operation even during starting, when the battery voltage can fall below 6V. The LM2930A is encapsulated in a TO220 3-pin package.

An output decoupling capacitor of 100µF minimum is required for stability, not allowing for actual value variations (larger values are preferred). However, output capacitors may be increased in size to any desired value above the minimum; one possible advantage of this would be to maintain the output voltages during brief conditions of negative input transients that might be characteristic of a particular system.



### Specification

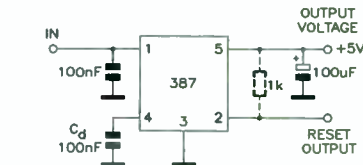
Maximum DC input voltage:	35V
Maximum reverse input voltage:	-18V
Load dump:	+40V for >5ms
Field decay:	-40V for >5ms
Output voltage:	5V
Line regulation:	5mV (50mV max.)
Load regulation:	15mV
Output impedance:	200mΩ
Quiescent current:	22mA, I <sub>OUT</sub> = 150mA
Output noise voltage:	140µVrms
Long term stability:	20mV/1000hrs
Supply voltage rejection:	60dB
Dropout voltage:	0.4V @ I <sub>OUT</sub> = 400mA
Output short circuit current:	230mA (foldback active)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AH87U	LM2930A	£1.260	£1.960

## L387A Voltage Regulator

SGS Thomson



The L387A is a very low drop voltage regulator in a 5-pin TO220 package specially designed to provide stabilised 5V supplies in consumer and industrial applications. Due to its very low input/output voltage drop, this device is very useful in battery powered equipment, reducing consumption and prolonging battery life. A reset output makes the L387A particularly suitable for microprocessor systems. This output provides a reset signal when power is applied, after an external programmable delay, and goes low when power is removed, inhibiting the microprocessor. Hysteresis is built into the response to the reset delay capacitor which raises the immunity to ground noise.

### Specification

Output voltage:	5V nominal (4-8 min. to 5-2 max.)
Output current:	500mA max.
Maximum operating input voltage:	26V
Line regulation:	5mV @ V <sub>IN</sub> = 6 to 26V, I <sub>OUT</sub> = 5mA

This symbol beside an order code in the price block indicates WHILE STOCKS LAST

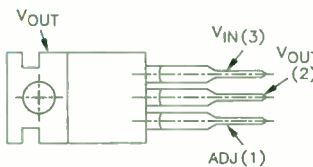
Load regulation: 15mV @  $I_{out} = 50$  to 500mA  
 Dropout voltage: 0.6 @  $I_{out} = 500$ mA  
 Quiescent current: 100mA @  $I_{out} = 500$ mA,  $V_{in} = 6$ V  
 Supply voltage rejection: 60dB @  $I_{out} = 350$ mA into 100 $\mu$ F  
 Output short-circuit current: 1.2A  
 Reset output low voltage: 0.8V max.  
 Reset output leakage current: 50 $\mu$ A  
 Reset delay time: 25ms,  $C_D = 100$ nF

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AH85G	L387A	£2.140	£1.830	£1.710	£3.430

## LM317 3-Terminal Adjustable Voltage Regulators

Various



The LM317 is an adjustable, positive, 3-terminal voltage regulator capable of supplying 100mA (LZ type), 500mA (MP type) or 1.5A (T type) over a 1.2V to 37V output range. Both line and load regulation are better than standard fixed regulators. Full overload protection is included on-chip with current limiting, thermal and safe area protection. This remains fully functional even if the adjustment terminal is disconnected.

### Specification

Output voltage: 1.2V to 37V  
 Input/output differential voltage: 40V max.  
 Operating junction temperature: -25°C to +125°C  
 Line regulation: 0.01%/V  
 Load regulation: 0.1%  
 Adjustment pin current: 50 $\mu$ A  
 Reference voltage: 1.25V typical  
 Output noise: 0.003% of  $V_{out}$   
 Ripple rejection ratio: 65dB  
 Long term stability: 0.3% @ 125°C

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
RA86T	LM317MP	£1.140	£0.920	£0.730	£1.350

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
RA87U	LM317LZ	£0.452	£0.377	£0.301	£1.040
AV26D	Reg LM317LZ SGS	£0.300	£0.250	£0.214	£0.640
AV27E	Reg LM317LZ MOT	£0.480	£0.400	£0.343	£0.820
UF27E	LM317T	£0.530	£0.442	£0.379	£1.430
AV28F	Reg LM317T MOT	£0.420	£0.350	£0.280	£1.210
AV29G	Reg LM317T NSC	£0.408	£0.340	£0.272	£0.990
AV30H	Reg KA317T SAMSUNG	£0.646	£0.538	£0.431	£0.890

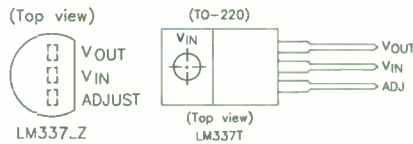
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## LM337 3-Terminal Negative Adjustable Regulator

National Semiconductor



An adjustable, 3-terminal, negative voltage regulator capable of supplying 100mA (LM337LZ) or 1.5A (LM337T) over a range of -1.2V to -37V. It is exceptionally easy to use and requires only two external resistors to set the output voltage. Besides having a higher performance compared with fixed regulators, the LM337 offers full overload protection with current limiting, thermal overload protection and safe area protection. All overload protection circuitry remains fully functional even if the adjustment terminal is disconnected. The adjustment terminal can be bypassed with a capacitor to ground to achieve very high ripple rejection ratios that are difficult to achieve with standard 3-terminal regulators.

Output voltage is set by connecting a twin resistor divider between output and circuit ground and connecting the adjustment pin to the junction. A precision current regulator can also be made by connecting a fixed resistor only between the adjustment and output pins, and connecting the load to the adjustment pin. The device is available in TO92 package (LM337LZ) and TO220 package (LM337T).

### Specification

Output voltage: -1.2V to -37V  
 Input/output differential voltage: -40V max.  
 Operating junction temperature: -25°C to +125°C  
 Line regulation: 0.01%/V  
 Load regulation: 0.1%  
 Adjustment pin current: 50 $\mu$ A  
 Reference voltage: 1.25V typical  
 Output noise: 0.003% of  $V_{out}$   
 Ripple rejection ratio: 65dB  
 Long term stability: 0.3% @ 125°C

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

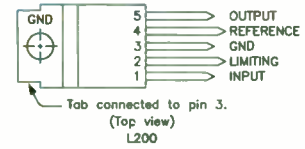
Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	100+	1+
AV31J	Reg LM337LZ NSC	£0.980	£0.860	£0.730	£1.210

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
AV32K	Reg LM337T NSC	£0.420	£0.350	£0.280	£0.820

## L200C Adjustable Voltage and Current Regulator

SGS Thomson



A monolithic IC for adjustable voltage (up to 36V) and current (up to 2A) regulation. It has current and power limiting, thermal shutdown and input over voltage protection up to 60V. The device can be used to replace fixed voltage regulators where high output-voltage precision is required, eliminating the need to stock a range of fixed voltage regulators. Type L200CV has straight pins for vertical mounting onto a PCB, while L200VH has angled pins for mounting flat onto a PCB.

### Specification

DC input voltage: 40V max.  
 Peak input voltage: 60V max. for 10ms  
 Output voltage range: 2.85 to 36V  
 Output current range: 0.1A to 2A  
 Quiescent current: 4.2mA  
 Load regulation: 0.15% @ 2A  
 Line regulation: 60dB  
 Supply voltage regulation: 60dB @ 100Hz  
 Dropout voltage between pins 1 & 5: 2V typical  
 Output noise: 80 $\mu$ V  
 Reference voltage (pin 4): 2.77V

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		10+	50+	300+	1+
AV36P	Reg L200CV SGS	£1.510	£1.250	£1.000	£2.570
YY74R	L200VH	£1.740	£1.390	£0.931	£2.390

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## LM723C Variable Voltage Regulator

National Semiconductor/SGS-Thomson

Formulae for Various Output Voltages

Outputs from +2 to +7 Volts  
(Figure 1)

$$V_{OUT} = [V_{REF} \times \frac{R_2}{R_1 + R_2}]$$

Outputs from +7 to +37 Volts  
(Figures 2,4)

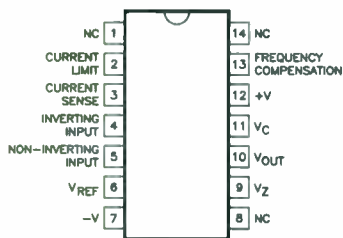
$$V_{OUT} = [V_{REF} \times \frac{R_1 + R_2}{R_2}]$$

Current Limiting

$$I_{LIMIT} = \frac{V_{SENSE}}{R_{SC}} \quad V_{SENSE} = 0.7V.$$

Outputs from -6 to -250 Volts  
(Figure 3)

$$V_{OUT} = [\frac{V_{REF}}{2} \times \frac{R_1 + R_2}{R_2}]; R_3 = R_4$$



723

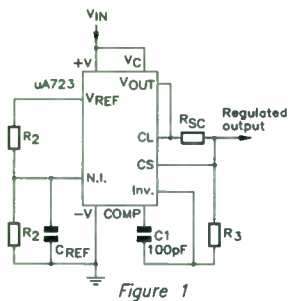


Figure 1

Basic Low Voltage Regulator

( $V_{OUT} = 2V$  to  $7V$ )

$$R_3 = (R_1 \times R_2) + (R_1 + R_2) \text{ for min temp drift}$$

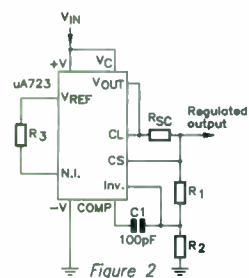


Figure 2

Basic High Voltage Regulator

( $V_{OUT} = 7V$  to  $37V$ )

$R_3$  is as Fig. 1 but can be omitted

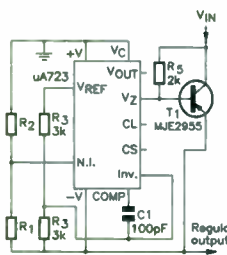


Figure 3

Negative Voltage Regulator

For metal can applications where  $V_Z$  is needed connect a 6.2V Zener in series with  $V_{OUT}$

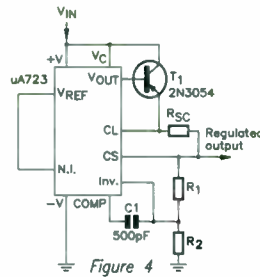


Figure 4

Positive Voltage Regulator  
(External NPN pass transistor)

AV33L is the SGS Version.

QL21X is the National Semiconductor Version.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AV33L	Reg LM723CN SGS	£0.380	£0.460
		10+	50+
		300+	1+
		£0.271	£0.860

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QL21X	LM723 DIL14	£0.566	£0.685
		25+	100+
		300+	1+
		£0.453	£1.130

## LM338K 5A Adjustable Regulator

National Semiconductor

An adjustable, 3-terminal, positive voltage regulator capable of supplying 5A over a range of +1.2V to +37V. It is exceptionally easy to use and requires only two external resistors to set the output voltage.

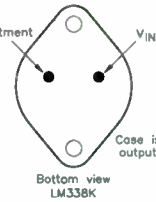
Time dependent current limiting allows peak currents up to 12A to be drawn for short periods, enabling the device to be used with heavy transient loads and speeding start-up under full-load conditions. If sustained, current limit decreases to a safe value to protect the regulator.

Specification

Reference voltage:	1.24V
Line regulation:	0.02%/V
Load regulation:	0.1%
Adjustment pin current:	45µA
Temperature stability:	1%
Current limit:	1A typical
Output noise:	$V_{in} - V_{out} = 30V$
Ripple rejection ratio:	0.003% of $V_{out}$
	60dB

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
RA88V	LM338K	£6.520	£6.270
		10+	50+
		300+	1+
		£5.370	£8.490

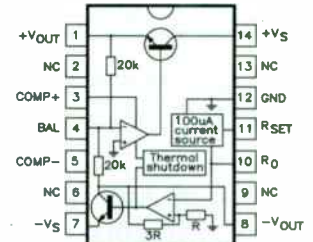


Bottom view LM338K

## RC4194N Dual Tracking Regulator

Raytheon

The RC4194 is a dual tracking voltage regulator giving balanced output voltages between  $\pm 50mV$  and  $\pm 35V$ , at an output current of  $\pm 200mA$ . Designed mainly for on-card regulation applications to eliminate problems of single point regulation. Other features include overcurrent shut-down, 3W power dissipation and simultaneous adjustment of both output rails from a single resistor. An ideal regulator for use with dual rail operation amplifiers.



4194

Specification

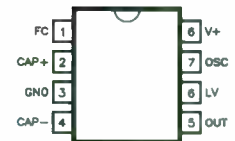
Supply voltage, $V_S$ :	$\pm 35V$ max, $\pm 9.5V$ min
Output voltage range:	0.05V to $\pm 35V$
Ripple rejection, dB:	70dB
Short-circuit current:	300mA
Operating temperature, $T_A$ :	0°C to 70°C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

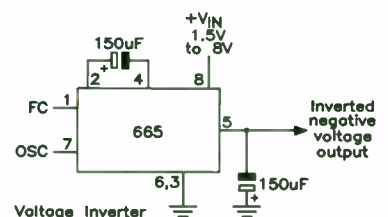
Order Code	Type	Price each exc. VAT	inc. VAT each
AEO4E	RC4194N	£1.610	£1.380
		25+	100+
		300+	1+
		£1.290	£3.200

## MAX665

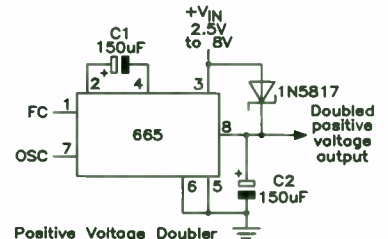
Maxim



665



Voltage Inverter



Positive Voltage Doubler

The MAX665 charge-pump inverter converts a +1.5V to +8V input to a corresponding -1.5V to -8V output. Using only two low-cost capacitors to produce 100mA, the MAX665 replaces switching regulators, eliminating inductors and their associated cost, size and EMI. Greater than 90% efficiency over most of its load-current range, combined with a 200µA typical operating current provides ideal performance for both battery-powered and PCB level voltage conversion applications. It can also double the output of an input power supply or battery, providing +9.35V at 100mA from a +5V input. A frequency control pin (FC) selects either 10kHz or 45kHz operation to optimise capacitor size and quiescent current. The oscillator frequency can also

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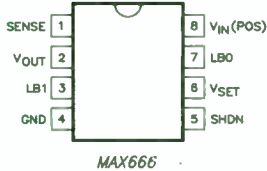
be adjusted with an external capacitor or driven with an external clock. The MAX665 is encapsulated in an 8-pin DIL package.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2965	Price each exc. VAT	inc. VAT each
AY39N	MAX665	25+ £4.790 100+ £4.110 300+ £3.830	1+ £7.770

## MAX666 5V/Adjustable Micropower Voltage Regulator

Maxim



A dual-mode, micropower regulator that can function either as a fixed 5V regulator, or as an adjustable output regulator according to the level on 'Vset'. If 'Vset' is 0V, the device behaves as a fixed 5V regulator. If 'Vset' > 50mV then this pin becomes a feedback connection point for a twin resistor divider, which can be used to set the actual output voltage as a ratio above 'Vset', as follows:  $V_{out} = V_{set} \times (R1 + R2)/R1$ , where  $V_{set} = 1.3V$  or, to simplify resistor selection:  $R2 = R1 \times (V_{out}/1.3V - 1)$ . The fixed 5V option allows simple installation in 5V only applications. The MAX666 also includes on-chip low-battery detection circuitry. An open drain output, 'LBO', switches on if a sensing pin, 'LB1', falls below 1.3V. A 'SHUTDOWN' input, pin 5, can be taken high to make the output high impedance. User adjustable current limiting is also possible by inserting a resistor between 'Vout' and 'SENSE', and taking the output from 'SENSE'. Limiting begins when the voltage drop across the resistor exceeds 0.5V.

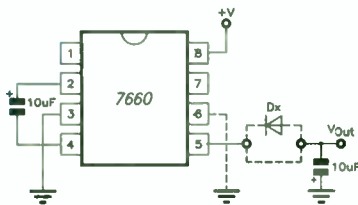
Specification	Value
Input voltage:	2.2V to 16.5V
Quiescent current:	6µA
Output voltage:	5V (fixed mode)
Line regulation:	0.03%/V
Load regulation:	3.0W typical
Reference voltage:	1.3V
Reference temp. coefficient:	±100ppm/°C
Vset input current:	±0.01nA
Shutdown input voltage:	1.4V
Shutdown input current:	±0.01nA
SENSE input threshold:	0.5V
SENSE input impedance:	3MΩ
Output current (Vout pin):	40mA
Minimum load current:	5.0µA

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 3070	Price each exc. VAT	inc. VAT each
AW49D	Reg MAX666CPA MAXIM52.910	25+ £2.500 100+ £2.330 300+ £2.330	1+ £4.810

## SI7660CJ Voltage Converter

Siliconix



Simple Negative Converter

A voltage converter that will provide a negative voltage output numerically equal to the positive voltage input in the range 1.5V to 10V. Pin 6 should be tied to ground for supply voltages below 3.5V

and for supply voltages in excess of 6.5V a diode should be connected in series with the output. The output is like an ideal voltage source in series with 70Ω so for a load current of -10mA and a supply voltage of +5V, the output voltage will be -4.3V.

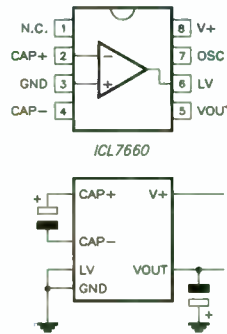
Specification	Value
Supply current ( $R_L = \infty$ ):	170µA
Supply voltage:	1.5V to 10V
Power dissipation:	300mW max
Max load current:	Supply V - Min $V_{out}$ < 40mA
	70

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2967	Price each exc. VAT	inc. VAT each
YY75S	SI7660CJ	25+ £1.030 100+ £0.891 300+ £0.831	1+ £2.640

## ICL7660CPA Switched Capacitor Voltage Converter

Maxim



The ICL7600 is a monolithic, CMOS switched-capacitor voltage convert that will invert, double, divide, or multiply the input voltage. The device combines low quiescent current with high efficiency - typically 98%, plus on-chip oscillator control circuitry and four power MOSFET switches. Typical applications include producing a -5V supply from a +5V supply, generating a 6V supply from a 3V lithium battery, or 3V from a 1.5V alkaline battery. Supplied in an 8-pin DIL package.

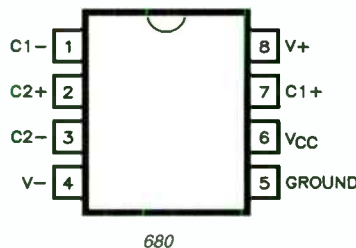
Specification	Value
Supply voltage $R_L = 10k\Omega$	
LV open:	3V to 10V
LV to gnd:	1.5V to 3.5V
Supply current:	110µA typ with no load
Power dissipation:	727mW max continuous
O/P resistance:	55Ω typ 20mA load
Oscillator frequency:	10kHz typ
Efficiency	
power:	98%
voltage conversion:	99.9%

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 17846	Price each exc. VAT	inc. VAT each
NRS4J	ICL7660CPA	10+ £1.780 50+ £1.480 200+ £1.270	1+ £2.220

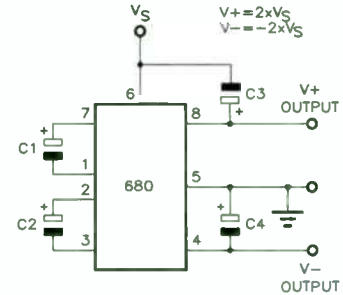
## MAX680CPA Voltage Doubler

Maxim



A voltage converter that can provide ±10V outputs from a single +5V supply or ±6V outputs from a +3V lithium battery. The surrounding circuit requires just four low cost capacitors to provide positive and negative output voltages with both numerically equal

to double the supply voltage. Output currents up to 10mA simultaneously are possible although the output voltage will be reduced as the source impedance is around 150Ω for V+ and 90Ω for V-. All four capacitors can be PC Elect 22µF 25V or Minelect 22µF 16V for space saving.



Positive and negative converter

Positive and Negative Converter

The following equations show how to calculate the output voltage for different output currents and as an example, the values are shown if the supply voltage is +5V and 10mA is drawn from both outputs.

$$V_{DROPO-} = I_{L-} \times R_{S-} = 0.01 \times 90 = 0.9V$$

$$V_{DROPO+} = (I_{L+} + I_{L-}) \times R_{S+} = (0.01 + 0.01) \times 150 = 3V$$

$$V_{+} = 2V_S - V_{DROPO-} = (2 \times 5) - 0.9 = 9.1V$$

$$V_{-} = -(2V_S - V_{DROPO+} - V_{DROPO-}) = -(2 \times 5) - 3 - 0.9 = -6.1V$$

The output resistance can be reduced by paralleling devices (i.e. pins 4,5,6 and 8 are commoned). The effective output resistance is then 150Ω divided by the number of devices. Each device needs its own C1 and C2, but all can share a single set of C3 and C4.

Specification (typical 25°C)	Value
Supply voltage:	2V to 6V
Supply current:	0.5mA ( $V_S = 3V$ ), 1mA ( $V_S = 5V$ )
Positive output source resistance:	150Ω
Negative output source resistance:	90Ω
Oscillator frequency:	8kHz
Power efficiency:	85%

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2965	Price each exc. VAT	inc. VAT each
CR00A	MAX680CPA	25+ £2.100 100+ £1.800 300+ £1.680	1+ £4.620



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## L4904A

SGS Thomson

The L4904A is a monolithic, low voltage drop, dual 5V regulator designed mainly for supplying microprocessor systems. Reset and data save functions during switch on and switch off can be used to generate appropriate signals for the microprocessor.

In the case of power supplies for such systems, it is necessary to provide power continuously to avoid loss of data in volatile memories and time-of-day clocks, or to save data when the primary supply is removed. The L4904A makes it very easy to supply such circuits as it provides two voltage regulators, both of which are high precision 5V types, with separate inputs, plus a reset output for the data save function.

Output VO1 features a 5V internal reference without the need for a voltage divider between the output and the error amplifier, a very low drop series regulator element utilising current mirrors, and permits high output impedance and then very low leakage current even in power-down conditions. This output may then be used to supply circuits continuously, such as volatile RAMs, allowing the use of a back-up battery. It also features low current consumption (0.6mA typical) to minimise battery drain.

The VO2 output can supply other non-essential 5V circuits which may be powered down when the system is inactive, or that must be powered down to prevent incorrect operation for supply voltages below the minimum value.

The reset output can be used as a 'power-down interrupt', permitting RAM access only in correct power conditions, or as a 'back-up enable' to transfer data into a non-volatile shadow memory when the supply is interrupted.

### Specification

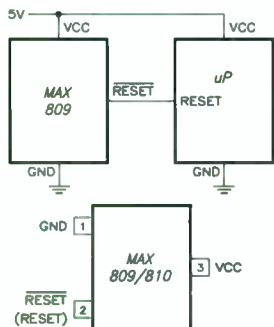
Input voltage range:	>6V to 20V max.
Input threshold voltage:	6.4V
Output voltage 1:	4.95 to 5.15V
Output current 1:	50mA
Output leakage current 1:	1µA
Output 1 drop-out voltage:	0.7V
Output voltage 2, high:	5V
Output voltage 2, low:	0.1V
Output current 2:	100mA
Line regulation, 1 & 2:	5 to 50mV
Load regulation 1:	5 to 20mV
Load regulation 2:	10 to 50mV
Supply voltage rejection:	84dB
Quiescent current 1:	0.6mA
Total quiescent current:	4.5mA
Reset threshold voltage:	4.9V
Reset pulse delay:	11ms max.
Thermal shutdown:	@ 150°C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AH86T	L4904A	25+ £1.230 100+ £1.050 300+ £0.987	1+ £2.170

## MAX809/810 3-pin Microprocessor Reset Circuit

Maxim



The MAX809/810 are microprocessor supervisory circuits used to monitor the power supplies in microprocessor and digital systems. They are low

cost devices providing excellent circuit reliability, and requiring no external components or adjustment when used with 5V powered circuits.

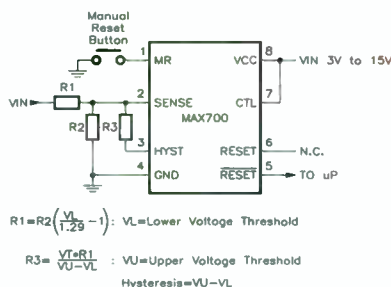
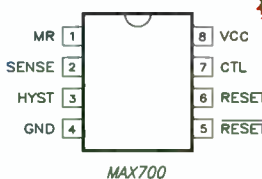
The device will produce a reset signal whenever the V<sub>CC</sub> supply falls below 4.6V, and will continue to produce the reset pulse until at least 140ms after V<sub>CC</sub> has risen above 4.6V. The MAX809 produces an active low RESET output, which is guaranteed to be in a correct state for V<sub>CC</sub> down to 1V. MAX810 produces an active high RESET output. The reset comparator is designed to ignore fast transients on V<sub>CC</sub>. The device requires only 24µA approx. of supply current so is suitable for portable or battery powered equipment and is supplied in a 3-pin SOT package.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NR43W	MAX809LEUR-T	10+ £1.240 50+ £1.030 200+ £0.886	1+ £1.550
NR44X	MAX810LEUR-T	10+ £1.240 50+ £1.030 200+ £0.886	1+ £1.550

## MAX700/2CPA Power Supply Monitor with Reset

Maxim



The MAX700 and MAX702 are supervisory ICs used to monitor the power supplies in microprocessor (µP) and digital systems. The RESET/RESET outputs of the device are guaranteed to be in the correct state for V<sub>CC</sub> voltages down to +1V. The ICs provide excellent reliability and low cost by eliminating the need for many external components and adjustments when used with +5V powered circuits.

The MAX702 produces a low on RESET when V<sub>CC</sub> falls to 4.65V, and also provides a debounced manual reset input. The MAX700 provides preset or adjustable voltage detection so thresholds other than the nominal 4.65V can be selected, as well as adjustable hysteresis. The primary function of the two RESETs is to provide a system reset.

Accordingly, an active reset signal is supplied for low supply voltages and for at least 200ms after the supply voltage reaches its operating value.

Supplied in an 8-pin DIL package.

### Specification

Monitor voltage range:	3V to 15V
Min V <sub>CC</sub> for valid reset output declining supply:	1V typ
Supply current:	100µA
Reset threshold power up:	4.65V
power down:	4.62V
Reset o/p pulse width:	350ms
RESET output low:	0.4V
high:	V <sub>CC</sub> - 0.4V
MR i/p threshold:	0.7V
<b>MAX700 only</b>	
RESET output low:	0.4V
high:	V <sub>CC</sub> - 0.4V
Internal hysteresis:	30mV
SENSE i/p threshold:	1.29V
HYST i/p on resistance:	500Ω

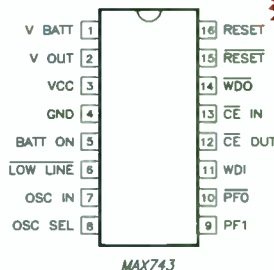
CTL i/p threshold: 2V  
CTL pulldown current: 30µA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NR58N	MAX700CPA	10+ £2.940 50+ £2.450 200+ £2.100	1+ £3.670
NR48C	MAX702CPA	10+ £2.940 50+ £2.450 200+ £2.100	1+ £3.670
NR53H	MAX705CPA	10+ £3.360 50+ £2.800 200+ £2.400	1+ £4.200

## MAX691CPE Microprocessor Supervisor

Maxim



The MAX691 supervisor IC is designed for power supply monitoring and battery control functions for microprocessor (µP) systems. It includes µP reset and back-up battery changeover, watchdog timer, CMOS RAM write protection, and failure warning. The MAX691 provides the following functions:

1. A reset output during power-up/down and brown conditions.
2. Battery backup switching for CMOS RAM, CMOS µP, or other low power logic.
3. Write protection of CMOS RAM or EEPROM.
4. A reset pulse if the optional watchdog timer has not been toggled within a specified time.
5. Adjustable reset and watchdog timeout periods.
6. A 1.3V threshold detector for power fail warning, low battery detection, or to monitor a power supply other than +5V.
7. Separate outputs for indicating a watchdog, backup-battery switchover, and low V<sub>CC</sub>.

System reliability and accuracy is significantly improved with the MAX691 compared to comparable circuits using ICs and discrete components. Supplied in a 16-pin DIL package.

### Specification

Operating voltage range	V <sub>CC</sub> : 4.75V to 5.5V
	V <sub>BATT</sub> : 2.0V to 4.25V
Quiescent current operating:	3.5mA with I <sub>OUT</sub> = 50mA
battery back-up:	0.6µA typ
Battery switchover threshold V <sub>CC</sub> - V <sub>BATT</sub> power up:	70mV
power down:	50mV
Reset voltage threshold:	4.65V typ
Reset timeout delay:	50ms
Watchdog timer period internal oscillator long period:	1.6s
short period:	100ms
Watchdog timer period external clock min/max long period:	3840 to 4097 cycles
short period:	768 to 1025 cycles
Power fail detector input threshold:	1.3V
Osc in freq. range:	0 to 250kHz
Osc. freq.:	4kHz with external cap

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NR57M	MAX691CPE	10+ £4.840 50+ £4.030 200+ £3.450	1+ £6.050



## DS1233 Econo Reset

Dallas Semiconductors

This compact device provides a complete CPU power monitor and Reset circuit with push-button override facility for 5V microprocessors and microcontrollers. It will generate a reset signal either upon closure of a connected push-button, which will be debounced and a 350ms signal generated, or upon Vcc dropping 10% below 5V. When power returns to normal levels, the Reset output will remain active for 350ms to allow the system to stabilise.



PIN 1	GROUND
PIN 2	RESET
PIN 3	Vcc

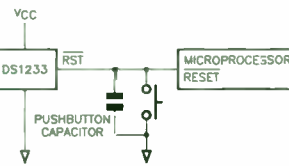
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE15R	EconoReset 5V	25+ £0.990 100+ £0.890 300+ £0.750 1+ £1.790	

## DS1233A Econo Reset

Dallas Semiconductors

This compact device provides a complete CPU power monitor and Reset circuit with push-button override facility for 3-3V microprocessors and microcontrollers. It will generate a reset signal either upon closure of a connected push-button, which will be debounced and a 350ms signal generated, or upon Vcc dropping 10% below 3-3V. When power returns to normal levels, the Reset output will remain active for 350ms to allow the system to stabilise.

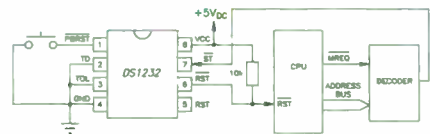


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE16S	EconoReset 3.3V	25+ £0.971 100+ £0.907 300+ £0.850 1+ £1.790	

## DS1232 CPU PSU Monitor/ Watchdog Timer

Dallas Semiconductors



The DS1232 power monitor detects out of tolerance power supply conditions and warns a processor based system of impending power failure by halting the processor, and asserts Reset as Vcc falls below a selectable 5% (TOL to ground), or 10% (TOL to Vcc), threshold. When power returns, the processor is held inactive until well after power conditions have stabilised. It also incorporates a watchdog timer circuit which forces the processor to a Reset state if the strobe input is not driven low prior to timeout (normally connect to an address decoder, MREQ or ALE signal in the system which would only become inactive in case of processor crashes. A separate push-button input is provided. Grounding this input by means of a push-button generates a clean reset signal at the Reset outputs (both active high and active low outputs are provided).

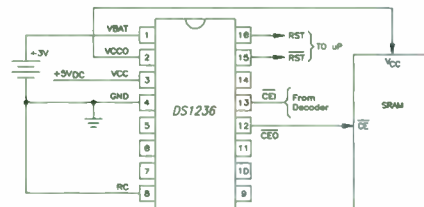
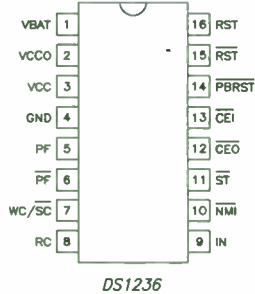
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE14Q	CPU PSU Mon+Rst	25+ £2.070 100+ £1.930 300+ £1.810 1+ £4.490	

## DS1236 MicroManager

The DS1236 not only monitors CPU power supply to generate a Reset output in case of failure, but gates the system Chip Enable signal for RAM and controls 3V battery switching to effectively convert CMOS SRAM into non-volatile memory, which will retain its contents after the main power supply is removed. This makes it ideal for laptop or other portable processor based equipment as 'wake-up/sleep' controls with less than 100nA battery current consumption are also provided.

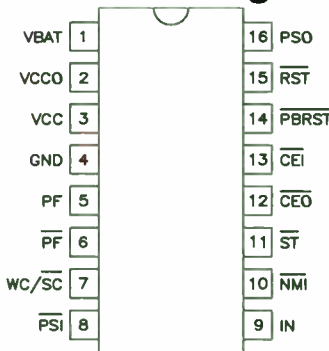
This device also provides the watchdog facility offered by the other members of the range as well as a Non Maskable Interrupt output which can warn the processor of impending power failure before shutdown. In addition to these features, external power switching is also possible for high power applications and a 'freshness seal' may be invoked to electrically disconnect a back-up battery prior to any system failure.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE17T	DS1236	25+ £4.720 100+ £4.410 300+ £4.130 1+ £5.640	

## DS1239 MicroManager



The DS1239 offers the highest level of PSU monitoring, control and system protection for any microprocessor or microcontroller based equipment. It monitors CPU power supply to generate a Reset output in case of failure or fluctuation, and also gates the system Chip Enable signal to protect RAM. It controls 3V battery switching to retain memory contents after the main power supply is removed. This makes it ideal for use with laptop or other portable processor based equipment - as 'wake-up/sleep' controls with less than 100nA battery current consumption are also provided.

This device also provides the hardware watchdog monitor facility offered by the other members of the range to restart the system after processor lock up

and a Non Maskable Interrupt output which can warn the processor of impending power failure before shutdown. External power switching output control is provided for high power applications and a 'freshness seal' may be invoked to electrically disconnect a back up battery prior to any system failure.

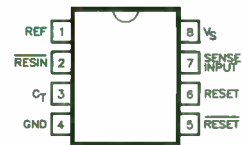
In addition to this very comprehensive range of features, the power switching output may be toggled by a keypad or similar button to control an external mains power supply connection, via a low current opto-triac isolator and triac.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE18U	DS1239	25+ £4.040 100+ £3.770 300+ £3.530 1+ £6.490	

## TL7702/5A Voltage Supply Supervisors

SGS Thomson



7702/5

Supply voltage supervisor ICs specifically designed for use as reset controllers in microcomputer and microprocessor systems. During power-up, the device tests the supply voltage and keeps both the active high and active low RESET outputs active as long as the supply voltage has not reached its nominal voltage value. Taking RESIN low has the same effect. To ensure that the microcomputer system has reset, the device then initiates an internal time delay that delays the return of the reset outputs to their inactive states. Since the time delay for most microcomputers and microprocessors is in the order of several machine cycles, the device internal time delay is determined by an external capacitor connected to the CT input pin 3. Delay time,  $t_d$ , is found by:  $t_d = 1.3 \times 104 \times CT$ , where CT is in farads and  $t_d$  in seconds. In addition, when the supply voltage drops below the nominal value, the outputs will be active until the supply voltage returns to the nominal value. An external capacitor (typically 100nF) must be connected to the REF output pin 1 to reduce the influence of fast transients in the supply voltage.

Three types are available: in TL7702ACP/A the sense input threshold is +VS -1V, or 6V, whichever is less, whereas for TL7705ACP/A the sense threshold is 10V, and the operating temperature range of both is 0 to 70°C, and both are packaged as 8-pin DIL. The TL7705ACD1/A is as TL7705ACP/A but packaged as 8-pin SO8 (surface mount).

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AH71N	T27702ACP/A	25+ £0.550 100+ £0.471 300+ £0.440 1+ £1.360	
AH73Q	TL7705ACP/A	25+ £0.550 100+ £0.471 300+ £0.440 1+ £1.360	
AH72P	TL7705ACD1/A	25+ £0.550 100+ £0.471 300+ £0.440 1+ £1.360	

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## MAX1232CPA Microprocessor Monitor

Maxim

An 8-pin DIP packaged microprocessor supervisory IC, used for power supply monitoring and housekeeping functions. Whenever the power supply falls below either 5% or 10% (programmable), software execution ceases or manual reset is performed, and the IC sends a reset pulse of at least 250ms duration, for processor reset. The watchdog timer can be set for timeouts of 150ms, 600ms or 1-2s. Whenever one of these conditions holds true the reset lines are held active for at least 250ms. Applications include computers, controllers, intelligent instruments, automotive systems and critical microprocessor power monitoring.

### Specification

Supply voltage,  $V_{CC}$ : 4.5V to 5.5V, 5V typ  
 Input high-level,  $V_{IH}$ : 2V to  $V_{CC} + 0.3V$  max  
 Input low-level,  $V_{IL}$ : -0.3V to 0.8V  
 Output current  $R_{ST}$ ,  $I_{OH}$ : 1mA min, 12mA typ  
 Operating current,  $I_{CC}$ : 50µA to 200µA max  
 $V_{CC}$  5% trip point,  $V_{CCTP}$ : 4.50V to 4.74V, 4.74V typ  
 $V_{CC}$  10% trip point,  $V_{CCTP}$ : 4.25V to 4.49V, 4.37V typ

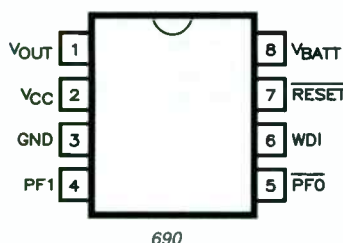
Note that the active low reset pin is internally pulled up to  $V_{CC}$  with an internal impedance of typically 40kΩ. The active low push-button reset must be held low for longer than 20ms to guarantee a reset. Tolerance is set by grounding the TOL pin for 5% or connecting it to  $V_{CC}$  for 10%. Similarly the watchdog timer is set to 150ms by connecting the TD pin to ground, 600ms by leaving it floating or 1-2s by tying it to  $V_{CC}$ . Software strobes are applied to the active low ST pin.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5505	Price each exc. VAT	inc. VAT each
AD97F	MAX1232CPA	25+ £1.970 100+ £1.690 300+ £1.580	1+ £3.160

## MAX690A Microprocessor Supervisor

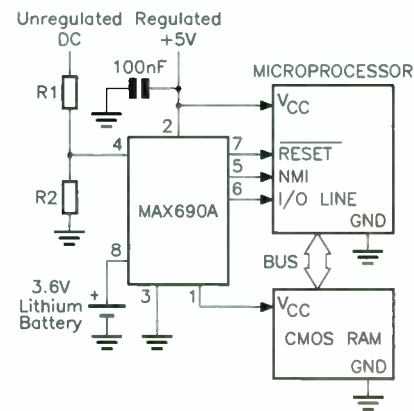
Maxim



The MAX690A reduces the complexity and number of components required for power-supply monitoring and battery-control functions in microprocessor systems. Significantly improves system reliability and accuracy compared to an arrangement of separate ICs and discrete components.

The chip performs four basic functions: it generates a RESET output during power-up for the CPU, and also during power-down and 'brown-out' conditions. This is complemented by a 1.25V threshold detector or Power Failure Input (PFI) for low battery detection, or to monitor a power supply other than +5V. It also handles all battery back-up switching for CMOS RAM and will trickle charge the back-up battery during normal power-up time. In addition a RESET pulse will be generated by a 'watchdog' timer if the WDI input has not been toggled within 1.6 seconds. In the application shown below this is used to monitor the I/O line to ensure that normal processor activity is happening; if the processor should hang up or its software crash, then it will automatically be re-booted from start by the MAX690A. Also in the example shown the PFI is used to monitor the unregulated supply and generate an NMI upon power failure; this interrupt could be used to initiate data-preserving software. To conserve battery power, the power failure detector is turned off and PFO is forced low when VBATT connects to VCC. The device is encapsulated in an 8-pin DIL package and replaces

several chips, which together serve supply monitoring and memory back-up functions very simply, with the absolute minimum number of additional external components.



### Specification

Operating voltage,  $V_{CC}$ : 1.0V min., 5-5V max.  
 $V_{BATT}$ : 1.0V min., 5-5V max.  
 Supply current  
 Run mode: 200µA  
 Battery back-up mode: 0.05µA  
 $V_{OUT}$  voltage drop  
 Run mode:  $V_{CC} - 0.25V @ 50mA$   
 Battery back-up mode:  $V_{BATT} - 0.02V @ 250µA$   
 Absolute maximum  
 $V_{OUT}$  current  
 Run mode: 250mA  
 Battery back-up mode: 50mA  
 Current sink, RESET, PFO: 3-2mA typical, 20mA absolute max.

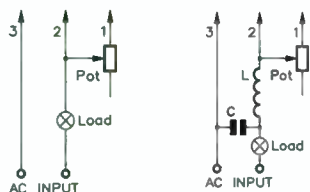
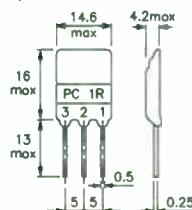
(I<sub>SOURCE</sub> = 800µA @  $V_{CC} = 1.5V$ )  
 Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2219	Price each exc. VAT	inc. VAT each
GX05F	MAX690ACPA	10+ £3.300 25+ £2.990 100+ £2.790	1+ £4.990

## SWITCHING REGULATORS

### 1A Power Controller (PC1R)

Designed primarily for use as a light dimmer, the PC1R is a completely integrated thick film hybrid circuit that can control up to 250W at 240V AC. The IC requires only the addition of a Pot Lin 220k to give full control. If required suppression components may be added as shown: (C = IS Cap 0.1µF, L = RF Supp Choke 1A).



### Characteristics

Max RMS on-state current: 1.1A  
 Peak on one cycle surge current: 120A  
 Off state leakage current: 1.5mA max  
 Minimum holding load current: 25mA  
 Input voltage 50Hz: 240V RMS  
 Repetitive peak voltage: 600V  
 Forward volts drop at max current: 1.5V

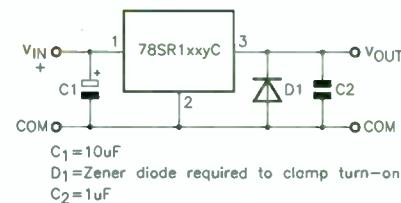
Hysteresis: 5% (typical)  
 Total conduction phase angle: 0 to 160° (typical)  
 Controlled conduction phase angle: 30 to 160° (typical)  
 Power transfer at max current: 99%  
 Insulation withstand capability: 2000V for 1 minute  
 Ambient operating temperature: -40 to +70°C

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

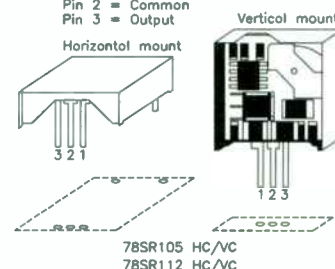
Order Code	Type 2201	Price each exc. VAT	inc. VAT each
QY37S	1A Power Controller	10+ £1.490	1+ £2.670

## 78SR1 Series Step-Down Switching Regulators

Power Trends



Pin 1 = Input  
 Pin 2 = Common  
 Pin 3 = Output



78SR105 HC/VC  
 78SR112 HC/VC

High efficiency (>85%) 3-terminal integrated switching regulators (ISRs) that are as easy to use as conventional linear 3-terminal regulators. They have a maximum output current of 1.5A and an output voltage accuracy laser trimmed to industry standard. Excellent line and load regulation is combined with internal short-circuit and over-temperature protection.

The device comprises a miniature DC-DC converter incorporating a ferrite step-down inductor, and can be used to power a diversity of circuits in a variety of industrial applications.

Type 105 has a 5V output, and type 112 has a 12V output. Each type is available as either vertical (VC) or horizontal (HC) PCB mounting.

### Specification

Output current: 0.1 to 1.5A  
 Current limit: 3A  
 Short-circuit current: 3-5A  
 Input voltage range: 7 to 30V DC, 5V type  
 14.5 to 30V DC, 12V type

type

Static voltage tolerance: ±1.0% $V_o$   
 Ripple rejection: 45dB @ 120Hz  
 Line regulation: ±0.2% $V_o$   
 Load regulation: ±0.1% $V_o$   
 Ripple/noise: 50mV<sub>pp</sub> 5V type  
 80mV<sub>pp</sub> 12V type

Transient response: 100µs (load change)  
 Efficiency: 85% 5V type  
 90% 12V type

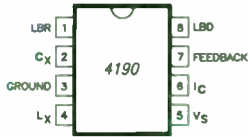
Switching frequency: 650kHz typical  
 meets FCC Class B  
 Operating temperature: +60°C max.  
 Weight: 7g

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 9072	Price each exc. VAT	inc. VAT each
AW80B	Reg 78SR105HC PTTREND	5+ £12.990 10+ £10.920 100+ £9.990	1+ £17.990
AW81C	Reg 78SR112HC PTTREND	5+ £12.990 10+ £10.920 100+ £9.990	1+ £17.990
AW82D	Reg 78SR105VC PTTREND	5+ £12.990 10+ £10.920 100+ £9.990	1+ £17.990
AW83E	Reg 78SR112VC PTTREND	5+ £12.990 10+ £10.920 100+ £9.990	1+ £17.990

## RC4190N Micropower Switching Regulator

Raytheon

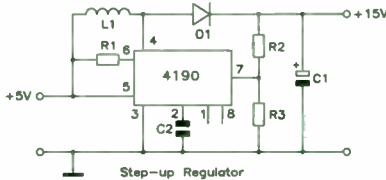


A versatile low power switch mode regulator for DC to DC conversions with load powers up to 400mW or 10W with external power transistor. Applications include on-card circuits where a non-standard voltage is needed or in battery operated instruments where the IC can be used to extend battery life.

In the Step-up Regulator circuit, the output will deliver 15V at 25mA from a 5V supply. In the Battery Life Extender circuit, the output falls to 7V as the battery runs down and is then held at 7V until the battery voltage reaches 2.2V, at which time pin 8 goes low and LED1 will light until the battery voltage reaches 1.8V.

### Specification (typical at $V_s = 6V$ )

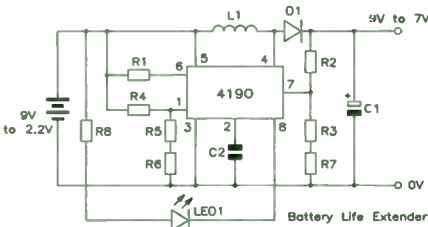
- Supply voltage: 2.2V to 24V
- Reference voltage: 1.31V
- Switch current: 200mA
- Supply current: 215µA
- Efficiency: 85%
- Line regulation: 0.04%
- Load regulation: 0.2%
- Operating frequency: 25kHz (100Hz to 75kHz)
- Reference set current: 5µA
- Low battery output current: 1.5mA



### Parts List

#### Step-up Regulator

- R1 Min Res 750k (M750K)
- R2 Min Res 180k (M180K)
- R3 Min Res 18k (M18K)
- C1 PC Elect 220µF 35V (JL22Y)
- C2 Ceramic 100pF (WX56L)
- D1 1N4148 (QL80B)
- L1 Choke 1mH (WH47B)



#### Battery Life Extender

- R1 Min Res 1M (M1M)
- R2 Min Res 110k (M110K)
- R3 Min Res 12k (M12K)
- R4 Min Res 910k (M910K)
- R5,6 Min Res 130k (M130K)
- R7 Min Res 13k (M13K)
- R8 Min Res 470Ω (M470R)
- C1 PC Elect 47µF 25V (FF08J)
- C2 Ceramic 47pF (WX52Q)
- D1 1N4148 (QL80B)
- L1 Choke 1mH (WH47B)
- LED1 Low Current LED (UK48C)

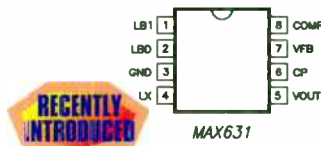
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UR15R	RC4190N	£1.990 25+ £1.490 100+ £1.340 1+	£2.900



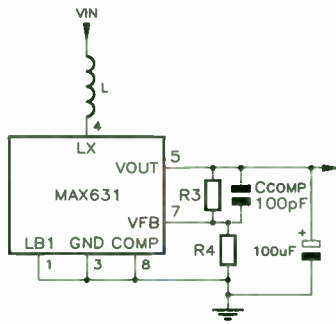
## MAX631ACPA 5V/Adjustable Step-Up Switching Regulator

Maxim



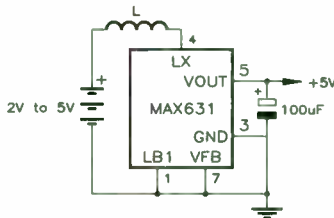
The MAX631 is a fixed 5V, or adjustable, step-up DC/DC converter for use in low power, high efficiency switching regulator applications. The only external components required are an output filter capacitor and a low-cost inductor. A low battery detection circuitry is included on the IC. Although primarily a fixed 5V output device, by adding an external voltage divider, (R3 & R4) other output can be set. If R4 is in the range 10kΩ to 10MΩ range (typically 100kΩ), then:

$$R3 = R4 \left( \frac{V_{out}}{1.31V} - 1 \right)$$



Additionally, a charge pump output is included to generate a negative voltage which will normally be  $(V_{out} - 1.2V)$ , where 1.2V is the forward voltage drop of two silicon diodes. Two capacitors will also be required to produce the negative voltage. The device has a typical efficiency of 80%.

The inductor should be about 330µH (order code AH35Q), and decoupling capacitor is 100µF 16V low ESR capacitor (order code RA55K). Supplied in an 8-pin DIL package.



### Specification

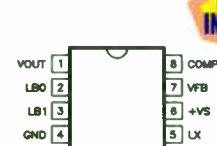
- Operating voltage range: 2V to 16.5V
- Start-up voltage: 1.3V typical
- Supply current: 0.135mA typical
- Vout Voltage: 5V (±5% tolerance)
- Efficiency: 80%
- Oscillator frequency: 45kHz typically
- LX output current: 450mA peak
- LBO output current: 50mA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VQ43W	MAX631ACPA	£3.250 25+ £3.120 100+ £2.480 1+	£3.940

## MAX638ACPA 5V/Adjustable Step-Down Switching Regulator

Maxim

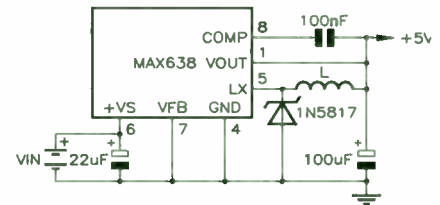


MAX638

The MAX638 is a fixed 5V, or adjustable, step-down DC/DC converter for use in low power, high efficiency switching regulator applications. The only external components required are an output filter capacitor, a fast recovery Schottky diode, a low-cost inductor and two capacitors. A low battery detection circuitry is included on the IC.

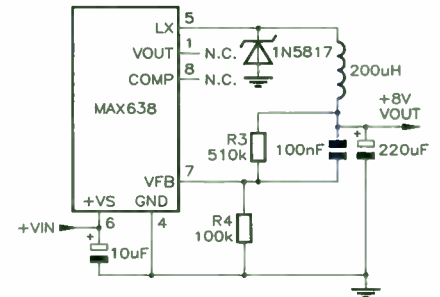
Although primarily a fixed 5V output device, by adding an external voltage divider, (R3 & R4) other output voltages can be set. If R4 is in the range 10kΩ to 10MΩ range (typically 100kΩ), then:

$$R3 = R4 \left( \frac{V_{out}}{1.31V} - 1 \right)$$



The device has a typical efficiency of 85%.

The inductor should be about 150µH (order code AH33L), and decoupling capacitor is a 100µF 16V low ESR capacitor (order code RA55K). The Schottky diode is a 1N5817 (order code JA46A). Supplied in an 8-pin DIL package.



### Specification

- Operating voltage range: 5V to 16.5V
- Reference voltage: 1.31V typical
- Supply current: 0.135mA typical
- Vout Voltage: 5V (±5% tolerance)
- Efficiency: 85%
- Oscillator frequency: 65kHz typically
- LX output current: 525mA peak
- LBO output current: 50mA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VQ44X	MAX638ACPA	£3.090 25+ £2.990 100+ £2.480 1+	£4.680

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UR15R	RC4190N	£1.990 25+ £1.490 100+ £1.340 1+	£2.900



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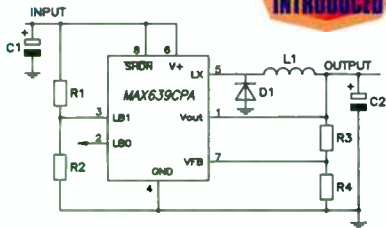
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## MAX639CPA Step Down DC/DC Converter

Maxim



The MAX639 is a step down switching regulator that can provide a 5V output (VFB = GND) from an input voltage 4V to 11.5V DC. Or, by using an external voltage divider connected to VFB, the output can be user adjusted from 1.3V to the input voltage. The device is very efficient (>90%) over a wide range of load currents, and will deliver upto 225mA. The device uses only 10µA of supply current. There is an internal 1A power MOSFET switch making the IC ideal for minimum component, and low/medium power applications.

For a user defined output voltage, then R3 and R4 are determined by the following equation:

$$R3 = R4((V_{out}/V_{FB \text{ threshold}}) - 1)$$

where R4 is any resistance in the 10kΩ to 1MΩ range (typically 100kΩ), and the VFB threshold is typically 1.28V.

Similarly, for the low-battery detector, R1 and R2 are determined from the following equation:

$$R1 = R2((V_{LB}/LBI \text{ Threshold}) - 1)$$

where R2 is any resistance in the 10kΩ to 1MΩ range (typically 100kΩ). The LBI threshold is typically 1.28V, and VLB is the desired low-battery detection voltage.

If the fixed 5V output is required and no low battery detection is needed then the relevant pins (VFB and LBI) are connected to ground. The inductor is typically a 100µH low resistance type (order code AH32K), C1 and C2 can be 100µF electrolytics (order code RA55K). D1 needs to be a high speed type - for load currents upto 100mA a 1N4148 (order code QL80B) will perform well for higher currents use a

Supplied in an 8-pin DIL package.

### Specification

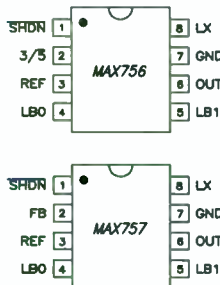
- Supply voltage: 4V to 11.5V
- Supply current: 10µA typical no load
- Dropout voltage: 0.5V (I<sub>out</sub> = 100mA)
- Fixed output: 5V
- Efficiency: 91% (Load = 100mA, L = 100µH)
- Switch on-time: 12.5µs (V<sub>out</sub> = 5V)
- Switch-off time: 11.7µs (V<sub>out</sub> = 5V)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VQ45Y	MAX639CPA	£3.340	£4.490

## MAX756/757 3.3V/5V Step-Up DC/DC Converter

Maxim



A pair of CMOS DC/DC switching regulators for small, low input voltage, or battery powered systems. Both devices will work down to 0.7V and

provide a pin-selectable output voltage of 3.3V or 5V (MAX756), or an adjustable output from 2.7V to 5.5V (MAX757). Typical full load efficiencies are greater than 87% at 200mA. A low battery detector output is provided on pin 4.

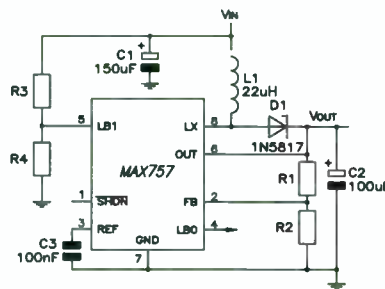
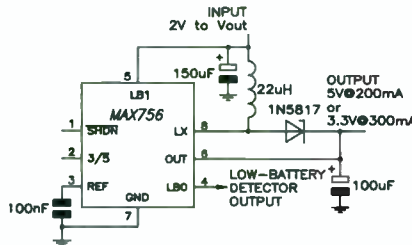
The output of the MAX757 is set by two resistors R1 & R2 which form a voltage divider between the output and the FB pin (2). Output is set by the equation

$$V_{OUT} = V_{REF} ((R2 + R1)/R2) \text{ where } V_{REF} = 1.25V$$

FB has a maximum input bias current of 100nA so large values of resistor can be used (10kΩ to 200kΩ)

The low battery monitor is set by two resistors R3 & R4 which form a voltage divider between the input voltage and the LBI pin (5). Values are determined by the equation

$$R3 = ((V_{IN}/V_{REF}) - 1)R4 \text{ where } V_{REF} = 1.25V$$



Again, LBI current is less than 100nA, so large values of resistor are acceptable (10kΩ to 200kΩ) The devices are ideal for palmtop computers, portable data collection equipment, medical instrumentation, 2/3 cell battery operated equipment etc. Supplied in an 8-pin DIL package.

### Specification

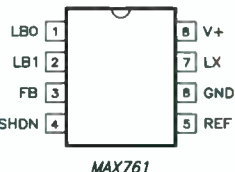
- Output voltage and load for V<sub>IN</sub> >2V and <3V.
- MAX756 Pin 2=0V: 5V at 200mA max.
- MAX756 Pin 2=3V: 3.3V at 300mA max.
- MAX757: 5V at 200mA max.
- Start-up voltage: 1.1V typical 10mA load
- Min operating supply: 0.7V (20mA load)
- Quiescent current: 60µA no load, 20µA typical in shutdown

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VQ40T	MAX756CPA	£2.640	£3.290
VQ41U	MAX757CPA	£2.640	£3.290

## MAX761CPA 5V to 12V DC/DC Converter

Maxim



The MAX761 is a high efficiency DC/DC converter that will provide a 12V, 150mA output from a 5V input. The device has a low supply current require-

ment, fast start-up time, shutdown capability, and small size which makes this device ideal for flash memory programming, PCMCIA cards or battery powered applications.

The IC features an internal 1A power MOSFET, high frequency switching (up to 300kHz), and a unique current limited pulse-frequency modulated (PFM) control circuit. This provides the benefits of a pulse-width modulated converter (high efficiency with heavy loads), but requires less than 110µA of supply current. In shutdown mode this drops to only 5µA. The device requires very few external components and is supplied in an 8-pin DIL package.

### Specification

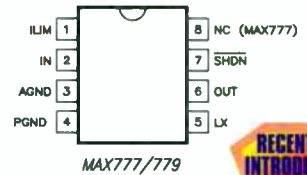
- Supply voltage: 2V to 16.5V
- Output voltage: 12V ±0.48V at 150mA
- Supply current: 110µA max non-bootstrapped
- Max switch-on time: 8µs
- Min switch-off time: 1.3µs
- Load regulation: 0.0042%/mA
- Line regulation: 0.08%/V
- Efficiency: 86%
- Ref voltage: 1.5V

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

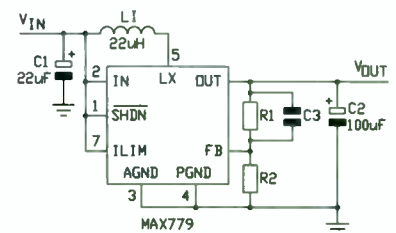
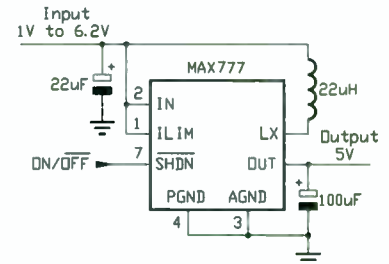
Order Code	Type	Price each exc. VAT	inc. VAT each
NR61R	MAX761CPA	£3.280	£4.100

## MAX777/779CPA Step-Up DC/DC Converters

Maxim



The MAX777/779 are pulse-skipping DC/DC converters that step-up from low-voltage inputs (1V guaranteed). They require only three external components - an inductor typically 22µH, (AH28F) and two capacitors (22µF - DT57M, and 100µF - DT61R). The MAX777 delivers 5V output and the MAX779 output is adjustable from 2.5V to 6V through an external resistive divider. In shut-down mode, the device disconnects the output from the source which eliminates current drain normally associated with similar devices when off or in shut-down. Because the device operates at high frequency (upto 150kHz), small value inductors can be used i.e. surface mount. With a 2V input, the ICs will deliver 200mA at 5V.



The MAX779 output is set by two resistors R1 and R2 which form a voltage divider between the output and the FB pin (8). The output can be set from 2.5V to 6V by the equation

$$V_{out} = (0.2025)((R1 + R2)/R2)$$

Since FB is 4nA maximum, then large values of R2 (10kΩ to 50kΩ) can be used. For 1% error the current through R2 should be at least 100 times FB's bias current. For values of R1 > 50kΩ, can create large ripple on the output, to reduce ripple track and leads lengths around Fb should be as short as possible. C3 (100pF to 50nF) across R1 will help to reduce ripple.

**Specification**

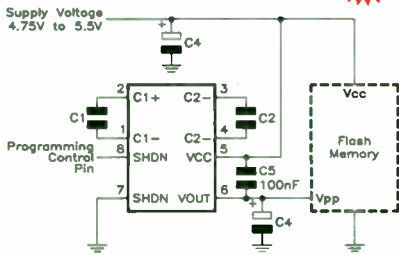
Operating voltage range: 1V to 6.2V DC  
Output voltage: 5V typical  
Output voltage range: 2.5V to 6V DC (MAX779)  
Efficiency: 82% (load = 100mA)  
Supply current: 190µA typ (no load)  
Output current: upto 240mA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
VQ42V	MAX777LCPA	£3.140	£4.740
VQ56L	MAX779LCPA	£3.140	£4.740

**ST662AN 5V to 12V DC/DC Converter**

SGS-Thomson



The ST662 is a regulated charge-pump DC/DC converter providing +12V 30mA output from an input supply as low as 4.75V - without the need for an inductor. The device is primarily intended to supply programming voltage for byte-wide flash memories and features a programmable shut-down pin that reduces the supply current to just 1µA.

The circuit requires just four capacitors - C1,2 are 0.22µF (DT99H), C3,4 are 4.7µF 16V (AN93B), and C5 is a 0.1µF (DT98G). Supplied in an 8-pin DIL package.

**Specification**

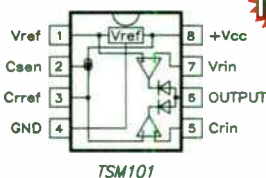
Output voltage: 12V typ from 4.75V to 5.5V input supply  
Output current: 30mA max.  
Quiescent current: 100µA typ  
Shutdown current: 1µA typ  
Shutdown input threshold  
low: 0.4V max  
high: 2.4V min  
Oscillator frequency: 400kHz  
Power efficiency: 72%

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP97F	ST662AN	£1.120	£1.640

**TSM101CN Voltage/Current Controller**

SGS-Thomson



The TSM101 IC features a high stability series band-gap voltage reference, two OR-ed op-amps and a current source. The device compares the DC voltage and the current level at the output of a

switching power supply to an internal reference. Feedback is provided through an optocoupler to the PVM controller IC in the Primary circuit. The controlled current generator can be used to modify the level of current limitation by offsetting the information coming from the current sensing resistor. The device is designed to be used in battery chargers with a constant voltage and limited output current, but other applications include voltage supervisors, overvoltage protection etc. Supplied in an 8-pin DIL package.

**Specification**

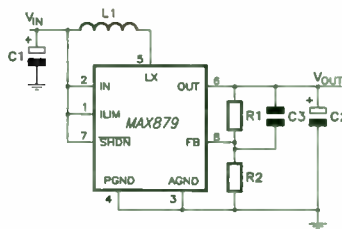
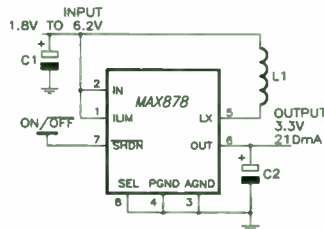
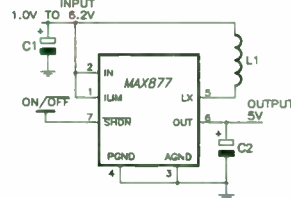
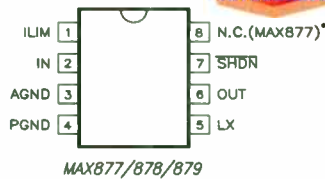
Supply voltage: 4.5v to 32V  
Total supply current: 2mA  
I/P offset voltage: 1mV typ  
O/P sink current: 15mA typ  
Voltage gain: 15V/mV  
PSRR: 90dB  
CMRR: 80dB  
GBP: 1MHz  
Reference voltage: 1.24V typ  
Temperature stability voltage: 30ppm/°C  
current: 500ppm/°C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP90X	TSM101CN	£0.654	£0.960

**MAX877/8/9CPA Step-Up/Step-Down, DC/DC Converters**

Maxim



A range of pulse-skipping, step-up/step-down DC-DC converters that provide a regulated output from inputs that can be above or below the output. The devices require just three external components- an inductor (typically 22µH) and two filter capacitors. A unique high-power, internal synchronous rectifier design enables the device to regulate in a switched linear mode if the input voltage is higher than the desired output voltage. When the input voltage falls

below the output voltage the device will smoothly switch into a pulse-skipping boost mode and step up from input voltages as low as 1V. In shutdown, the device disconnects the output from the source. This stops the current drain from input to output associated with conventional step-up converters. Typical applications include 2/3 NiCd cells to 3V/3.3V conversion, 3/4 alkaline cells to 5V conversion, lithium cell to 3V/3.3V conversion, pagers, palmtop and notebook computers, battery powered and hand-held instruments.

Type	Output	Input
MAX877	5V	2.5V to 6.2V
MAX878	3.0V or 3.3V	1.5V to 6.2V
MAX879	2.5V to 6.2V	2.5V to 6V

The MAX 878 output is pin selectable. The MAX 879 requires two additional resistors to set the output voltage (voltage divider). The output voltage can be set from 2.5V to 6.0V by the equation

$$V_{OUT} = V_{REF}(R1 + R2)/R2$$

where  $V_{REF} = 0.02025V$ , simplified this becomes:  
 $R1 = R2 ((V_{OUT}/V_{REF}) - 1)$   
Since the input current at FB has a maximum of 40nA, large values (10k to 50k for R2) can be used without significant accuracy loss.

**Suggested Parts List**

- R1,2 See Text
- C1 Tant 22µF 16V (WW72P)
- C2 Tant 100µF 10V (WW79L)
- C3 100pF to 50nF see text
- L1 Inductor 22µH (AH28F)

C3 is a 'lead' compensating capacitor used to reduce ripple.

**Specification**

Output current: 210mA  
Minimum start-up voltage  
877/879 (output 5V): 2.5 (<180mA)  
878/879 (output 3.3V): 1.5V (<120mA)  
with no load: 1V  
Operating voltage: 6.2V max.  
Efficiency: 82% approx.  
Typical supply current: 195nA (no load)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
DT27E	MAX877LCPA	£3.910	£4.920
DT28F	MAX878LCPA	£3.910	£4.920
DT29G	MAX879LCPA	£3.910	£4.920

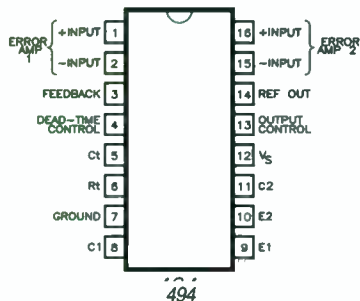
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## TL494CN Switch Mode Power Supply

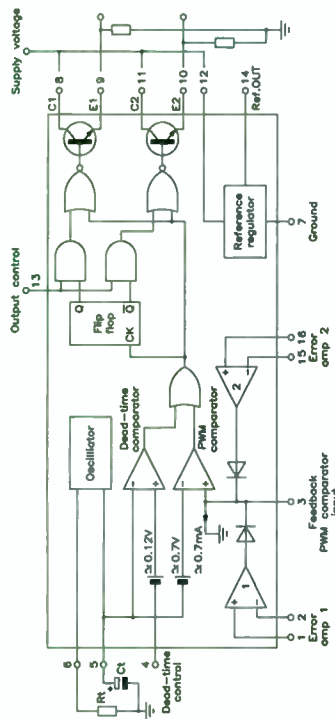
### Texas Instruments

A fixed frequency, pulse width modulation control circuit designed primarily for switch mode power supply control. The chip contains two error amplifiers, an adjustable oscillator, a dead-time control comparator, pulse-steering control flip-flop, a 5V 1% precision regulator and output control circuits.



### Specification

Supply voltage: 7V to 40V  
 Collector output voltage: 40V max  
 Collector output current: 200mA each max  
 Current into pin 3: 0.3mA max  
 Timing capacitor Ct: 470pF to 10µF  
 Timing resistor Rt: 1.8kΩ  
 Oscillator frequency: 1kHz to 300kHz



### Characteristics (with $V_S = 15V, f = 10kHz$ ) typical

#### Reference section

Output voltage at 1mA: 5V  
 Input regulation 7 to 40V: 2mV  
 Output regulation 1 to 10mA: 1mV

#### Oscillator section

Frequency  
 Ct = 0.01µF, Rt = 12kΩ: 10kHz

#### Amplifier sections

Input offset voltage: 2mV  
 Input offset current: 25nA  
 Input bias current: 0.2µA  
 Open-loop voltage gain: 95dB  
 Common mode input voltage: -0.3V to  $V_S - 2V$   
 Unity gain bandwidth: 800kHz  
 Output source current: >-2mA

#### Output section

Collector-emitter saturation voltage  
 (common emitter):  $V_E = 0V, I_C = 200mA: 1.1V$   
 (emitter follower):  $V_C = 15V, I_E = -200mA: 1.5V$

Output control input current  
 ( $V_{IN} = V_{REF}$ ): 3.5mA max

#### Dead-time control section

Input bias current  
 ( $V_{IN} = 0$  to 5.25V): -2µA  
 Max duty cycle ( $V_{IN} = 0V$ ): >45%  
 Input threshold voltage  
 (Zero duty cycle): 3V  
 (Max duty cycle): 0V

#### PWM comparator section

Input threshold voltage  
 (Zero duty cycle): 4V

#### Whole device

Supply current: 7.5mA average

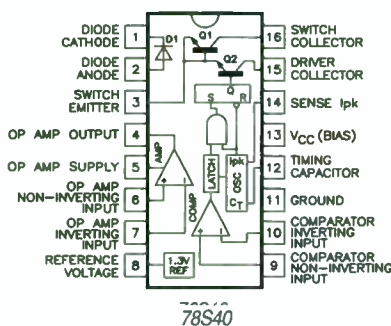
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
RA85G	TL494CN	10+ £0.800 25+ £0.670 100+ £0.500	1+ £1.740

## L78S40 Switching Regulator

### National Semiconductor

A versatile switching regulator subsystem consisting of a temperature-compensated voltage reference, an oscillator whose duty-cycle is controllable and having an active current limit circuit, an error amplifier, a high current, high voltage output switch, a power diode and an uncommitted op-amp. It may be used to generate higher or lower regulated voltage supplies or even ones of opposite polarity from the power rail available. The output is adjustable from 1.3V to 40V and will directly supply currents up to 1.5A or drive external transistors for larger currents.



### Characteristics (typical)

Supply voltage: 2.5V to 40V  
 Supply current: 1.8mA @  $V_{IN} = 5V$   
 2.3mA @  $V_{IN} = 40V$   
 Op-amp supply current: 2.2mA max @  $V_{IN} = 5V$   
 3.2mA max @  $V_{IN} = 40V$

40V  
 Reference voltage: 1.245V  
 $V_{REF}$  line regulation: 0.04mV/V  
 $V_{REF}$  load regulation: 0.2mV/mA  
 Oscillator voltage swing: 0.5V  
 Oscillator max frequency: 75kHz  
 Current limit sense voltage: 250mV min/350mV max  
 Output transistor  $h_{FE}$ : 70

Power diode:  
 forward voltage drop: 1.25V @ 1A

Comparator:  
 input offset voltage: 1.5mV  
 input bias current: 35nA  
 input offset current: 5nA

Op-amp:  
 input offset voltage: 4mV  
 input bias current: 30nA  
 input offset current: 5nA  
 voltage gain: 108dB  
 output source current: 150mA  
 output sink current: 35mA  
 slew rate: 0.6V/µs

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UF37S	L78S40	10+ £1.350 25+ £1.080 100+ £1.010	1+ £2.180

## L4960 2.5A Power Switching Regulator

### SGS Thomson

A switch-mode voltage regulator capable of delivering between 5.1V and 40V at 2.5A maximum. The device features soft start, internal current limiting and thermal shutdown. Very few external components are required and because of the very high switching frequencies a reduction in the size and cost of them is achieved. The device has a close tolerance on-chip reference  $\pm 2\%$ . The unregulated voltage on pin 1 should be designed to fall to about 4V above the output voltage at maximum current. Under these conditions a heatsink of 6°C/W is required.

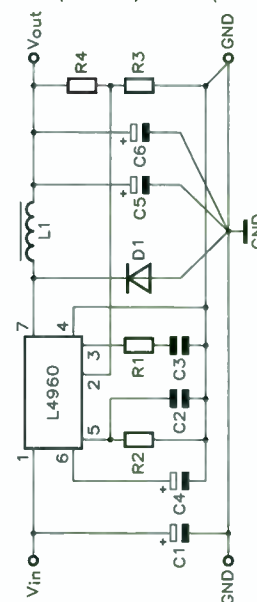


### Specification

Output voltage range: 5.1V to 40V  
 Input voltage range: 9V to 46V  
 Line regulation: 15mV  
 Load regulation: 10mV  
 Internal reference voltage: 5.1V  $\pm 0.1V$   
 Dropout voltage: 1.4V  
 Maximum current: 2.5A  
 Current limit threshold: 3 to 4.5A  
 Switching frequency: 100kHz

The output voltage is 5.1V with R4 short circuit. For higher voltages R4 should be set according to the following table:

$V_{out}$	R4	
9V	3k6	(M3K6)
12V	6k2	(M6K2)
15V	9k1	(M9K1)
18V	12k	(M12K)
24V	18k	(M18K)
30V	23k (11k+12k)	(M11K)+(M12K)



### Parts List

R1	Min Res 15k	(M15K)
R2	Min Res 4k3	(M4K3)
R3	Min Res 4k7	(M4K7)
R4	Min Res - see table	
C1	SMPS Cap 100µF 100V	(JL49D)
C2	Polystyrene 220pF	(BX37S)
C3	Polyester 0.033µF	(BX73Q)
C4	PC Elect 2.2µF 100V	(FF02C)
C5,6	SMPS Cap 220µF 50V	(JL51F)
D1	BYW80-150	(UK63T)
L1	Toroid 150µH 5A	(JL72P)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

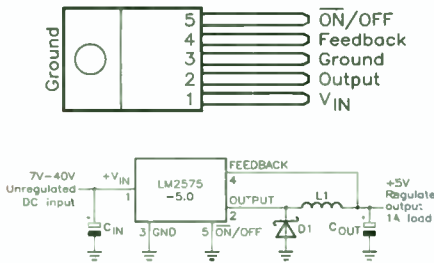
Order Code	Type	Price each exc. VAT	inc. VAT each
UK64U	L4960	10+ £2.550 25+ £2.040 100+ £1.910	1+ £4.530



## LM2574/75/76 Step-Down Voltage Regulators

### National Semiconductor

These families of devices provide step-down regulation in a range of output currents to suit a great number of power supply and regulation applications. Providing 1.0A and 3.0A respectively, a realistic balance between cost and output power can be achieved. All devices are supplied in 5-pin straight lead TO220 packages and offer a high-efficiency replacement for popular three-terminal linear regulators. One of the main features of these devices is that they are very efficient and therefore most applications need no form of heatsink, as dissipated power is very low. The 2575 series consists of a 5V, 12V, 15V and adjustable version (between  $\approx 1.23V$  and 37V from a 40V supply). The 2576 series is essentially identical to the 2575 series except that it can deliver a higher output current of 3A. These devices also have a TTL active low control line so that the regulators may be switched between a low current 'Standby' mode and the 'On' state. If remote control is not required the appropriate pin needs to be tied to ground. Only four other components are necessary in order to produce a working design, using widely available values of inductor.



2574/75/76

### Parts list for a typical 5V regulated PSU using the 1A LM2575T-5 device

- C<sub>IN</sub>: 100µF Elect 63V (FF12N or JL49D)
- C<sub>OUT</sub>: 330µF Elect 50V/25V (JL24B or FB68Y)
- L<sub>1</sub>: 330µH Inductor (AH23A or BU57M)
- D<sub>1</sub>: 1N5822 Schottky (GX30H)

### Specification

- Supply voltage: LM2575T-5 & LM2576T-5: 8V to 40V; LM2575T-12 & LM2576T-12: 15V to 40V; LM2575T-15: 18V to 40V; LM2575T-ADJ & LM2576T-ADJ: 1.2V to 37V (typ from 40V supply)
- Maximum output current: LM2575 series: 1.0A; LM2576 series: 3.0A
- ON/OFF pin input voltage (NB. operates active low): V<sub>IL</sub> < 0.8V, V<sub>IH</sub> > 2.4V
- Efficiency: LM2575T-5 & LM2576T-5: 77%; LM2575T-12, LM2576T-12, LM2575T-15: 88%

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 5300	Price each exc. VAT	inc. VAT each
AD83E	Reg LM2575T-5	£3.680 10+ £2.940 25+ £2.760 100+	£4.130 1+
AD84F	Reg LM2575T-12	£3.680 10+ £2.940 25+ £2.760 100+	£4.130 1+
AD85G	Reg LM2575T-15	£3.680 10+ £2.940 25+ £2.760 100+	£4.130 1+
AD86T	Reg LM2575T-ADJ	£4.180 10+ £3.340 25+ £3.130 100+	£7.480 1+
AD87U	Reg LM2576T-5	£5.380 10+ £4.300 25+ £4.030 100+	£8.780 1+
AD88V	Reg LM2576T-12	£4.810 10+ £3.840 25+ £3.600 100+	£8.780 1+
AD89W	Reg LM2576T-ADJ	£5.680 10+ £4.540 25+ £4.260 100+	£9.330 1+

## LM2577 Step-Up Voltage Regulator

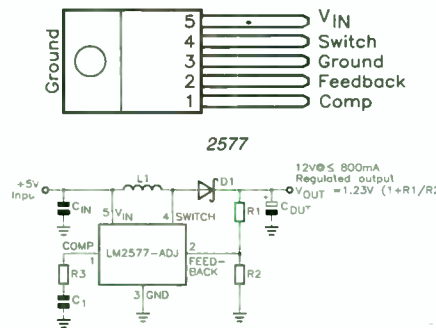
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### National Semiconductor

The 2577T is a step-up regulator device finding many applications in flyback and forward converter switching regulation. A typical arrangement requires only a few external components to realise a working design. Using existing value inductors and flyback transformers simplifies circuit design. Output currents up to 3A are possible with this device, from a wide range of input voltages (3.5V to 40V). Output voltages up to  $\approx 60V$  can be developed, depending on the output current required. Step-up is achieved using the internal 52kHz fixed frequency oscillator and developing a voltage across an inductor or transformer. The current from the device charges the output capacitor and feedback maintains it at a constant voltage. A load can then be connected to the output, which is regulated to the desired voltage. Other features of the device are a soft start mode, internal protection against overcurrent limit, thermal limiting and undervoltage lock-out. Applications include simple boost regulators, flyback and forward regulators, and multiple output regulators.



### Parts list

- C<sub>IN</sub>: 0.1µF Ceramic (BX03D or RA49D)
- C<sub>OUT</sub>: 470µF Elect (FF15R or FF16S)
- C<sub>1</sub>: 0.47µF Monores (RA52G)
- R<sub>1</sub>: 17.4k (15k+2k4) (E15K & E2K4)
- R<sub>2</sub>: Min Res 2k (E2K or M2K)
- R<sub>3</sub>: Min Res 2k2 (E2K2 or M2K2)
- L<sub>1</sub>: 100µH Inductor (BU55K or AH32K at I<sub>OUT</sub> < 0.5A)
- D<sub>1</sub>: 1N5820 Schottky (GX29G or GX30H)

### Specification

- Supply voltage: 3.5V to 40V
- Output switch voltage: 0V to 60V
- Output switch current:  $\geq 3A$
- Efficiency: 80%

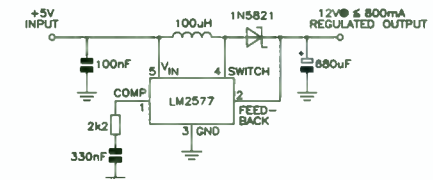
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5301	Price each exc. VAT	inc. VAT each
AD90X	Reg LM2577T-ADJ	£4.980 25+ £4.350 100+	£7.990 1+

## LM2577T-12 Step-Up Voltage Regulator

### National Semiconductor

The LM2577 is a monolithic IC that provides all the power and control functions for a step-up converter deriving 12V DC from a 5V DC supply in one package. It requires a minimum number of components to operate and can even form the basis of simple flyback and forward converter switching power supplies. An NPN switching transistor capable of up to 3A is provided on chip with its associated protection circuitry, comprising current and thermal limiting and under-voltage lock-out. The load inductor is directly connected to its collector at pin 4. Other features include a fixed, internal 52kHz oscillator requiring no external timing components, a soft-start mode to reduce in-rush current during start-up, and current mode control for improved rejection of input voltage and output load transients. Case style is 5-pin TO220.



### Specification

- Input voltage: 5V to 10V DC (45V max.)
- Line regulation: 20mV
- Output voltage: 12V fixed
- Load regulation: 20mV
- Efficiency: 80%
- Under-voltage lock-out level: 2.9V
- NPN switch VCE max: 65V
- NPN switch IC max: 3A
- Switch current limit: 4.5A (flyback or forward converter modes only)
- Oscillator frequency: 52kHz

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2856	Price each exc. VAT	inc. VAT each
GX47B	LM2577T-12	£5.000 10+ £4.000 25+ £3.750 100+	£8.230 1+

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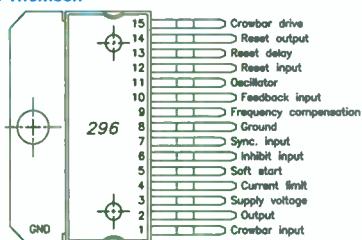
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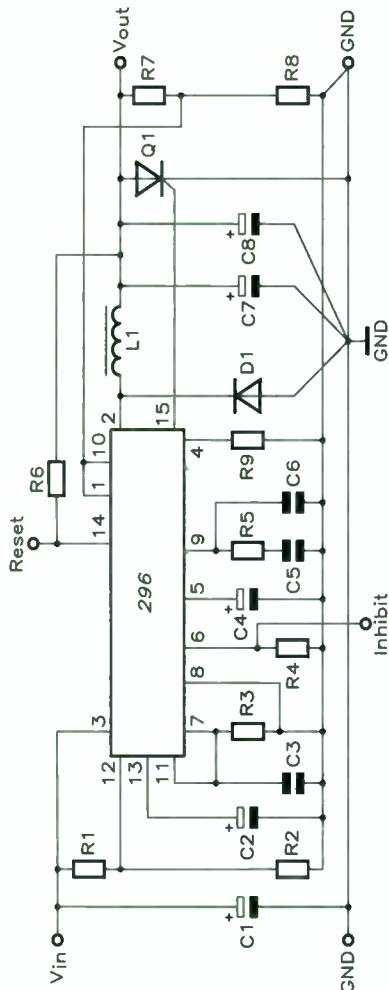
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## L296P 4A Power Switching Regulator

SGS Thomson



A switch-mode voltage regulator capable of delivering between 5.1V and 40V at 4A maximum. The device features soft start, programmable current limiting, thermal protection, remote inhibit, a reset output for microprocessors and a PWM comparator input for synchronisation in multichip configurations. Very few external components are required and because of the very high switching frequencies a reduction in the size and cost of them is achieved. The device has a close tolerance on-chip reference  $\pm 2\%$ . A voltage sense input and SCR drive output are provided for optional crowbar overvoltage protection with an external SCR. The unregulated voltage on pin 1 should be designed to fall to about 4V above the output voltage at maximum current. Under these conditions a heatsink of 4°C/W is required.



The crowbar input triggers the SCR when  $V_{out}$  exceeds nominal by 20%. Pin 4 can be left unconnected to provide normal current limiting, but this can be lowered by connecting a resistor between here and ground, and for example a 33k resistor sets the current limit to 2.5A. The sync input allows several L296's to work together. Simply link all the pin 7's together and omit the oscillator RC network on all but one device. A logic high level on pin 6 disables the L296. The open collector reset output generates an output signal when the supply voltage exceeds a threshold and goes low immediately the supply voltage falls below the

threshold generating a reset signal for microprocessors. If reset is not used, omit R6. The values of some of the components depend on the output voltage according to the table below:

$V_{out}$	R1	R6	R7
5V	82k	100 $\Omega$	Short circuit
9V	160k	180 $\Omega$	3k6
12V	220k	240 $\Omega$	6k2
15V	270k	300 $\Omega$	9k1
18V	330k	360 $\Omega$	12k
24V	470k	470 $\Omega$	18k
30V	560k	620 $\Omega$	23k (11k + 12k)

### Specification

Output voltage range: 5.1V to 40V  
 Input voltage range: 9V to 46V  
 Line regulation: 15mV  
 Load regulation: 15mV  
 Internal reference voltage: 5.1V $\pm 0.1$ V  
 Dropout voltage: 2V  
 Maximum current: 4A  
 Current limit threshold: <math>-8A</math>  
 Switching frequency: 100kHz  
 Pin 1 threshold voltage: 6V  
 Pin 15 source current: 100mA

For remote on-off a TTL level is needed on pin 6. A high on pin 6 disables the chip, but if not required, R4 can be omitted and pin 6 connected directly to ground. If the output voltage is set to 5V, then C6 can be omitted, but it is necessary for all other output voltages.

### Parts List

R1	Min Res - see table	
R2	Min Res 100k	(M100K)
R3	Min Res 4k3	(M4K3)
R4	Min Res 10k	(M10K)
R5	Min Res 15k	(M15K)
R6	Min Res - see table	
R7	Min Res - see table	
R8	Min Res 4k7	(M4K7)
R9	Min Res - see text	
C1	PC Elect 10 $\mu$ F 63V	(JL10L)
C2,4	PC Elect 2.2 $\mu$ F 100V	(FF02C)
C3	Polystyrene 2200pF	(BX37S)
C5	Polyester 0.033 $\mu$ F	(BX73Q)
C6	Ceramic 390pF	(WX63T)
C7,8	SMPS Cap 100 $\mu$ F 50V	(JL49D)
D1	BYW80-15	(UK63T)
Q1	C116D	(WQ22Y)
L1	Toroid 300 $\mu$ H 8A	(JL73Q)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2334	Price each exc. VAT	inc. VAT each
UK62S	L296P	£4.500	£5.370

## Miniature PCB Mounting DC/DC Converters

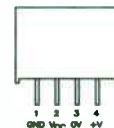
### Newport Components

A range of miniature and sub-miniature, high-efficiency DC/DC converters, the outputs of which are isolated to 1000V DC relative to the input, made possible through the use of tiny toroidal ferrite transformers. With efficiencies of up to 80% and a physical bulk down to the scale of a logic IC, these devices are ideal for eliminating complex power buses on PCBs, or special (and inconvenient) provisions for extra odd supply lines from the main PSU, by providing them anywhere where the additional or isolated power rail is required locally. Furthermore any number of them can be used together in a system. All converters are 100% 'burned-in' and triple tested. They feature a high power to density ratio equivalent to 1.4W per cm<sup>3</sup>, which is probably the highest currently available. Derating at temperatures above 70°C is required. The operating temperature range is -50°C to +125°C. In all cases a switched mode method is employed at a typical frequency of 100kHz, with a no-load power consumption of 100mW. This efficiency makes them compatible with battery powered applications.

The packages are SIP (Single Inline Pin) with full epoxy encapsulation rated to UL94-VO within a flame retardant, polyurethane case. Any converter can be soldered into place just like any other IC or SIL array, and no heatsinks are necessary for the rated performance. Input voltages are 5V or 12V DC

depending on type. Pin '1' is marked with a dot. Pins are spaced 2.54mm (0.1in.) and are 3mm long on all types.

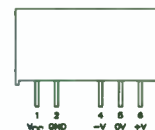
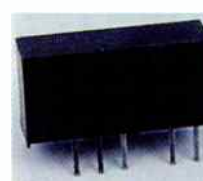
### Single Output Types



The NME range operate from a 5V or 12V DC input, and provide an isolated single positive output of 5V, 12V or 15V DC, depending on type. The delivered power is 1W total and up to 200mA is available from a 5V output, 84mA from a 12V output, and 67mA from a 15V output. Each device is contained in a 4-pin inline package measuring only 11.5 x 6 x 10mm high.

Type	Input voltage	Output voltage	Output current mA	Load regulation
NME0505S5V (7 max.)	5V	5V	200	10%
NME0512S5V (7 max.)	12V	5V	84	10%
NME1205S12V (15 max.)	5V	12V	200	10%
NME1215S12V (15 max.)	12V	12V	84	10%
NME1215S12V (15 max.)	15V	12V	67	10%
NME0515 5V (7 max.)	15V	5V	67	10%

### Dual Output Types



Each of the NMA range provides dual  $\pm 5V$ ,  $\pm 12V$  or  $\pm 15V$  DC supply rails with centre-tapped 0V from a single 5V or 12V DC input, depending on type, with a total power throughput of 750mW. Up to 100mA is available from the 5V output type, 42mA from each of the 12V outputs and 25mA from each of the 15V. The device is contained in a 6-pin inline package (pin 3 is excluded, not used) measuring only 19.5 x 7 x 10mm high.

Type	Input voltage	Output voltage	Output current mA	Load Regulation
NMA0512S	5V(7 max)	$\pm 12V$	42	10%
NMA0515S	5V(7 max)	$\pm 15V$	34	10%
NMA1205S	12V(15 max) $\pm 5V$	100	10%	
NMA1212S	12V(15 max) $\pm 12V$	42	10%	
NMA1215S	12V(15 max) $\pm 15V$	25	10%	

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 248	Price each exc. VAT	inc. VAT each
AH18U	NME0505S	£5.990	£8.790
JV55K	NME0512S	£5.990	£8.790
AH19V	NME1205S	£5.990	£8.790
AH20W	NME1212S	£5.990	£8.790
JV57M	NME1215S	£5.990	£8.490
JV56L	NME0515S	£5.990	£8.490
AH14O	NMA0512S	£5.990	£8.790
AH15R	NMA0515S	£5.990	£8.790
AH16S	NMA1205S	£5.990	£8.790
AH17T	NMA1212S	£5.990	£8.790
JV54J	NMA1215S	£5.990	£8.790

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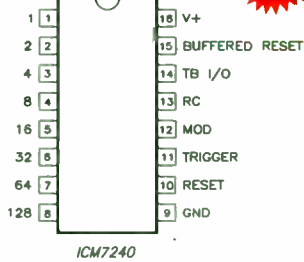
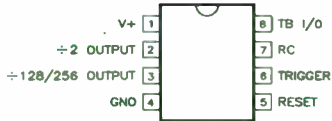
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**TIMERS / COUNTERS**

**ICM7240/2 Fixed and Programmable Counters**

Maxim



The ICM7240IPE is an 8-bit programmable counter that can generate delays from 1 to 255 RC time constants, while consuming only 120µA current. The ICM7242IPA is an 8-bit fixed counter and can generate a time delay of 1 and 128 RC time constants. The IC combines a counter with an internal oscillator whose period is controlled by an external resistor and capacitor. The oscillator can be inhibited by an external clock applied to the TB I/O pin. Programming for the ICM7240 can be achieved by hard wiring, DIP switches or standard thumbwheel switches. By cascading the devices, delays up to days in duration can be achieved. ICM7240 (NR52G) is supplied in an 16-pin DIL package. ICM7242 (NR51F) is supplied in an 8-pin DIL package.

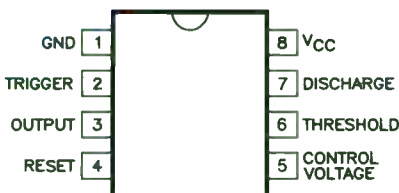
**Specification**  
Supply voltage: +2V to 16V  
Supply current  
7240: 120µA typ  
7242: 220µA typ  
Timing accuracy: 5%  
RC oscillator frequency  
temp drift: 250ppm/°C  
TB o/p voltage: 4.2V typ (5V supply)  
Trigger voltage: 2V typ  
Reset voltage: 1.6V typ  
Count toggle rate: 100kHz max (7240)  
Min timing cap: 10pF  
Timing resistor range: 22MΩ

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NRS2G	ICM7240IPE	£3.060 10+ £2.550 50+ £2.180 200+	£3.820 1+
NRS1F	ICM7242IPA	£2.520 10+ £2.100 50+ £1.800 200+	£3.150 1+

**NE555N Timer**

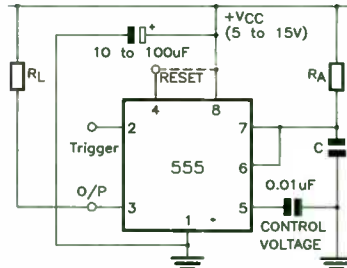
SGS-Thomson  
Phillips Components



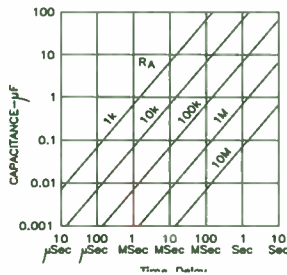
The 555 is a highly stable device for generating accurate time delays or oscillation. Additional terminals are provided for triggering or resetting if desired. In the time delay (monostable) mode of operation the time is precisely controlled by one external resistor and one capacitor. For stable operation as an oscillator, the free running frequency and the duty cycle are both accurately

controlled with two external resistors and one capacitor. The circuit may be triggered and reset on falling waveforms and the output structure can source or sink up to 200mA or drive TTL directly. This IC may also be correctly supplied marked as MC1455P1. Supply decoupling must be provided close to the IC to counter the 'crowbar' effect of the device's internal discharge switch, a suitable value is 10 to 100µF as shown in the accompanying diagrams.

**Monostable Mode**

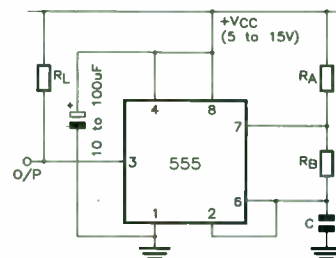
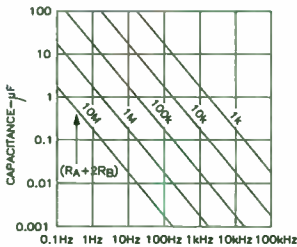


Time Delay vs RA and C



On time after triggering (i.e. applying a voltage to pin 2 less than 1/3 supply voltage) is equal to 1.1RA C. The load may be connected to VCC for normally-on operation or between pin 3 and ground for normally-off. Connecting reset to ground during on time, drives the output low until a new trigger pulse occurs. Additional trigger pulses during on time have no effect. If reset is not being used, connect it to VCC.

**Astable Mode (Oscillator)**



Free Running Frequency vs RA, RB and C

The frequency is equal to 1.44/[(RA + 2RB)C]. The charge time (output high) is given by t1 = 0.693 (RA + RB)C and the discharge time (output low) is given by t2 = 0.693(RB)C.

**Characteristics (typical)**

Supply voltage: 4.5V (min), 16V (max)  
Supply current: 3mA (VCC = 5V), 10mA (VCC = 15V)  
Threshold voltage: VCC x 0.667  
Trigger voltage: 5V (VCC = 15V), 1.67V (VCC = 5V)  
Trigger current: 0.5µA

Threshold current: 0.1µA  
Control voltage level: 10V (VCC = 15V), 3.33V (VCC = 5V)

AV71N is supplied by Phillips Components

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AV71N	Timer NE555N PC	£0.245 25+ £0.196 100+ £0.187 300+	£0.420 1+
QH66W	NE555N	£0.227 25+ £0.210 100+ £0.190 300+	£0.640 1+

**TS555/6CN Low Power Timer**

SGS Thomson

A low-power pin-for-pin replacement for the 555, but requiring only about one fiftieth of the supply current. The device has extremely low trigger, threshold and reset current, typically 20pA, and a very wide supply voltage range 2V to 18V. Supply decoupling close to the device is not required. The outputs are fully CMOS, TTL and MOS compatible. Choose high values for timing resistors to keep supply currents low and low values for capacitance which should be low leakage types, not ceramic. Also available in a dual version, AV73Q.

**Specification**

Supply voltage: 2V to 18V  
Supply current: 170µA at 5V, 360µA at 15V  
Threshold current (VDD = 5V): 10pA  
Trigger current (VDD = 5V): 10pA  
Reset current (VDD = 5V): ±10pA  
Reset voltage level: 0.7V  
Output sink current: 100mA max  
Output source current: 10mA max  
Max frequency in astable mode: 2.1MHz

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AV73Q	TS555CN	£0.550 25+ £0.440 100+ £0.390 300+	£1.290 1+
RA76H	TS555CN	£0.293 25+ £0.262 100+ £0.240 300+	£0.790 1+

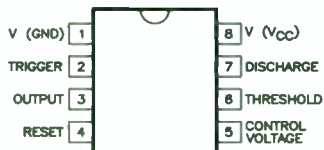
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## ICM7555IPA Low Power Timer

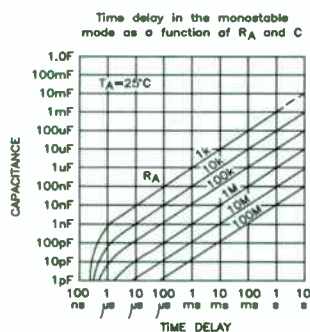
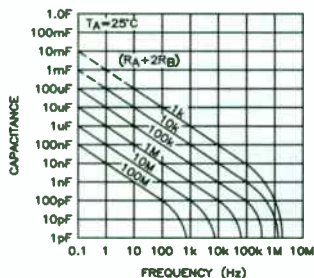
Harris

A low power timer designated 7555 is a direct pin-for-pin replacement for the 555 bipolar timer, but requires only around a hundredth of the supply current required by the 555. The CMOS device has extremely low trigger threshold and reset currents – typically 10nA; a very wide supply voltage range from 2V to 18V and the reset does not crowbar the supply during output transitions. The device can operate from microseconds up to several hours. The output can drive at least two standard TTL and CMOS and all inputs and outputs are fully protected against static discharge and no special handling is required at all. Supply decoupling is normally not required close to the IC unlike the 555, nor is the control voltage decoupling capacitor usually required as it is with the 555, thus there is a saving in external components. To keep the total power supply requirements low, choose high values for RA and RB and low values for C which should be a low leakage type and not ceramic.



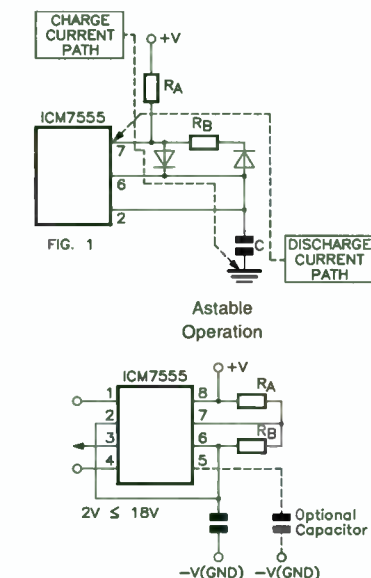
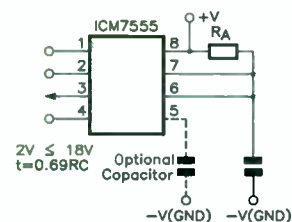
7555

Free running frequency as a function of RA, RB and C.  
Time delay in the monostable mode as a function of RA and C.  
Free running frequency as a function of RA, RB and C



### Specification

Supply voltage: Minimum 2V, maximum 18V  
Supply current: 60µA typical  
Threshold current: 10nA at V+ = 15V  
Max frequency in astable mode: At least 500kHz  
Trigger current: 10nA at V+ = 15V  
Reset current: 10nA at V+ = 15V  
Reset voltage: +0.4V to 1.0V  
Temperature stability: 50ppm/°C at 25°C  
Output sink current: 100mA max at V+ = 18V  
Monostable Operation



In astable mode the frequency of operation is given by:

$$f = 1.46 / [(R_A + 2R_B)C] \text{ Hz.}$$

Fig. 1 shows how to achieve duty cycles of 50% and less. In a monostable mode the period time is given by:

$$t = 0.69RC \text{ sec.}$$

(In both equations R is in ohms and C is in Farads.)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YH63T	ICM7555IPA	£0.462	£0.429
		£0.400	£1.130

## NE556N Dual Timer



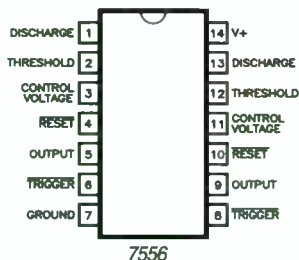
The 556 is a single 14-pin DIL package containing two 555 timers. AV72P is the Philips version. AV73Q is the SGS version.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QH67X	NE556N	£0.231	£0.214
AV73Q	Timer TS556CN SGS	£0.550	£0.440
AV72P	Timer NE556N PC	£0.840	£0.470
		£0.360	£1.490

## ICM7556IPD

Harris



A single 14-pin DIL package containing two 7555 timers. The IC is pin-for-pin compatible with 556 timers.

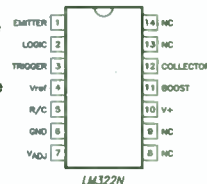
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CP96E	ICM7556IPD	£0.636	£0.583
		£0.553	£1.510

## LM322N Precision Timer

NSC

A high quality timer device providing great versatility and high accuracy. A logic reverse function allows the output pin to be reversed during the timing period, making it very easy to interface to existing systems. An internal regulator is derived for referencing purposes, and is capable of driving external loads up to 5mA. Timing periods of up to 50:1 can easily be achieved by a voltage divider method into the VADJ pin, from an external source. A boost terminal allows the user to increase the comparator operating current for periods less than 1ms, allowing the device to be used over a 3µs to multi-hour range with excellent repeatability.



- Features**
- ★ Floating transistor output with internal current limiting
  - ★ Immune to change in trigger voltage during timing period
  - ★ Immune to power supply ripple during timing period
  - ★ Input protected to ±40V
  - ★ Internal logic reversal
  - ★ Internally regulated reference
  - ★ Operates from 4.5V to 40V
  - ★ Output drive up to 50mA
  - ★ Timing period can be voltage divider controlled
  - ★ TTL compatible input and output

### Specification

Comparator current: 0.3nA (30nA with boost)  
Trigger voltage: 1.2V to 2V  
Trigger current: 25µA typical, 4.5mA max  
Supply current: 0.61 min, 0.654 max  
Timing ratio: 50:1  
Comparator input current: -2nA to 2nA  
Trigger voltage: 0.8V min, 2.5V max  
Trigger current: 200µA max  
Output leakage current: 5µA max  
Reset resistance: 150Ω typical  
Reference voltage: 3V min, 3.3V max  
Reference regulation: 20mV to 50mV max  
Collector saturation voltage: 0.25V min to 1.4V  
Emitter saturation voltage: 1.8V to 3V  
Minimum trigger width: 0.25µs  
Power dissipation: 500mW

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AV70M	Timer LM322N NSC	£1.700	£1.190
		£1.140	£2.590



24 HR ORDER SERVICE

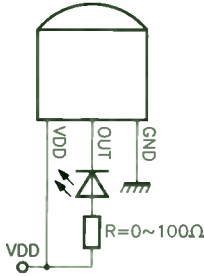
SALES: 01702 554000  
FAX: 01702 554001  
CASHTEL: 01702 552941  
KEY CALL: 01702 556751

e-mail: Sales@maplin.co.uk

## HT2014M LED Flash Driver

**Holttek**

A simple low-cost, 3-pin LED flasher with a fixed flash rate of 2Hz. It can be operated without any external components, and will drive directly a suitable LED from a small battery. The device has a large drive capability of 10mA at 3V, with a 1/8 duty cycle. Will work with a 1.2V to 4.5V DC supply with a typical stand-by current of 1µA (3V) Ideal for simple novelties, such as flashing badges etc. Supplied in a TO92 package.



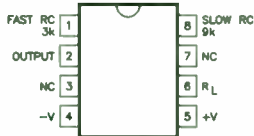
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ24B	HT2014M	£0.790	£2.290

## LM3909N LED Flasher/Oscillator

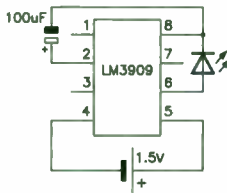
**National Semiconductor**

With the addition of a 1.5V battery and capacitor this IC will deliver pulses of over 2V to an LED to flash it brightly, with a current drain of less than 0.5mA. It has a powerful output and can directly drive an 8Ω speaker. Applications include flasher to locate torch

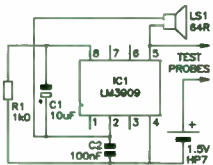


3909

or boat mooring floats at night, sales and advertising gimmicks, emergency locators for 1.4V to 200V (see data sheet).



In this circuit there is an audible difference between short circuits, coils and resistances of a few ohms etc.



### Continuity Tester Parts List

R1	Min Res 1k	(M1K)
C1	Minelect 10µF 16V	(YY34M)
C2	Minidisc 0.1µF	(YR755)
IC1	LM3909	(WQ39N)
LS1	Hi-Z L/S 64Ω	(WB04E)
1	HP7 Battery	(JY63T)
	Holder	(YR59P)
1 pair	Test Probes	(FK32K)

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WG39N	LM3909N	£1.300	£3.420

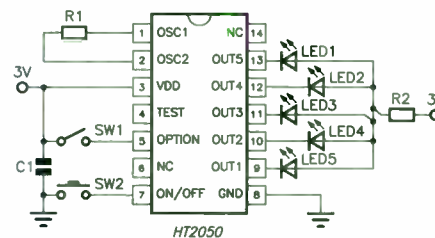
## HT2050 Five LED Flash Driver

**Holttek**

A low-cost, low power CMOS IC designed for flashing five LEDs (or suitable low current lamps). The five outputs can individually sink up to 10mA and can implement random or sequential flashing which is selected by just one switch. The device requires very few external components, and features a built-in oscillator, 1/10 duty cycle output and a low stand-by current - typically 1µA at 3V. Ideal for Christmas decorations, toys, novelties disco effects etc. The oscillator resistor can be in the range 150kΩ to 300kΩ, and will determine the flash rate.

### Suggested Parts List

R1	Min Res 220k	(M220K)
R2	Min Res 68Ω	(M68R)
C1	Met Polyester 0.1µF	(CX00A)
	LED1-55mm LED Red (WL27E)	
SW1	Square Locking	(YW41U)
SW2	Push Button Switches	(FF96E)

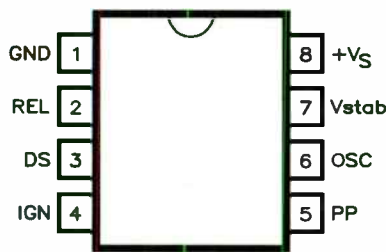


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

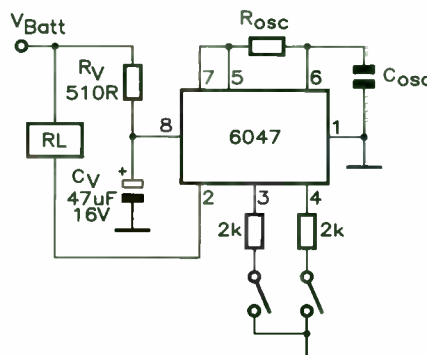
Order Code	Type	Price each exc. VAT	inc. VAT each
AZ26D	HT2050	£0.303	£2.880

## U6047B

**Temic**



6047



A timer for motor vehicles with a wide ranging adjustable delay time from 3.7 seconds to up to 20 hours. From small value capacitors this is made possible by all time sequences being determined by an RC oscillator and a frequency divider. The relay driver is integrated and, with the corresponding external circuitry, the circuit is resistant to load dump and interference voltages in accordance with

DIN40839.

To prevent interference and help protect the device the supply (pin 8) should be buffered with an RC filter, suggested values are 510Ω and 47µF. There is an internal 14V Zener diode between pins 8 and 1 (GND) as overvoltage protection, and with 510Ω in series the device can be operated over a wide supply range from 6V to 16V. It can also be supplied from a regulated 5V source, in which case the RC supply filter is not necessary.

A time function can be started or interrupted by the three inputs TOG, ON and OFF. If the time function is triggered the relay is active, the relay contact dropping out after expiry of the delay time. There are two possible applications, use of the toggle (TOG) input or of the ON or OFF inputs. When the TOG input is taken high for the first time the relay is switched on by pin 2 after a debounce period has elapsed. If triggered again the relay is switched off, and thereafter each actuation of the TOG input changes the state of the relay. If left on, it is switched off after the time delay period.

Alternatively ON and OFF controls can be realised as a rocker switch since both must not be activated simultaneously. ON leads to activation of the relay after the debounce period, while OFF immediately switches it off. If OFF is not activated, the relay is switched off after the time delay expires. In practice a common commercial application for this device is as a window demister heater control, which will 'switch itself off' after the chosen delay time (in minutes) should the driver forget.

All timing sequences are derived from an internal oscillator which uses external RC components  $R_{osc}$  and  $C_{osc}$  to set a fundamental frequency  $f_0$ . The oscillator not only produces the delay time but also the debounce time period. The delay time will be  $73728 \times 1/f_0$  while the debounce period will be  $6 \times 1/f_0$ .  $R_{osc}$  can range from 59kΩ to 650kΩ and  $C_{osc}$  from 1nF to 4.7µF, giving oscillator frequencies from 20kHz down to 1Hz (delay times of 3.7s to 1,229m). The relay driver output is an open collector Darlington transistor with integral 23V Zener diode for limitation of the inductive pulse from the relay winding at switch-off. Maximum collector current must not exceed 300mA. The remainder of the IC is protected as described above, and all inputs are protected by a series resistor, integral Zener diode and RF capacitor.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AH44X	U6047B	£0.833	£2.380

This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

**ORDER BEFORE 5PM FOR SAME DAY DESPATCH**

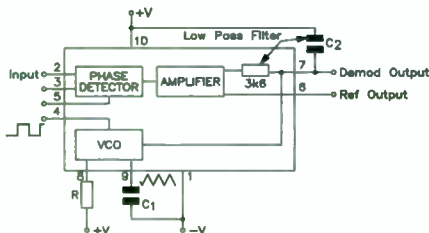
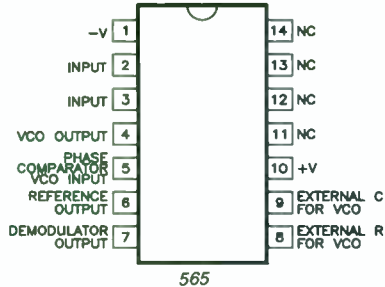
Tel: 01702 554000  
Fax: 01702 554001  
e-mail: Sales@maplin.co.uk

## PHASE LOCKED LOOP

### LM565N Phase Locked Loop

National Semiconductor

A 14-pin DIL IC containing a voltage controlled oscillator, phase detector and amplifier. The IC is very stable typically 200ppm/°C with high linearity: 0.2% and only 100ppm/% frequency drift with change of supply voltage which can be between ±5V and ±12V. Centre frequency set by resistor between pin 8 and V+ and capacitor between pin 9 and V- is  $f = 1/2.4RC$  where R is in ohms, C is in Farads and f is in Hertz. There is a TTL compatible square wave output, a very linear triangular wave output and a reference output for addition of comparator or frequency discriminator. Bandpass is adjustable from <±1% to >±60% and centre frequency is adjustable over a 10 to 1 range with the same capacitor. Applications include frequency shift keying, modems, tone decoders, wideband FM



discriminators, data synchronisers, tracking filters, signal restoration and frequency multiplication and division. The lock range will be  $\pm 8f_0/VCC$  Hz where VCC is the total supply voltage (i.e. if V+ is +6, V- is -6 then VCC = 12V).

$$\text{Capture range} = \pm \frac{1}{2\pi} \sqrt{\frac{2\pi f_L}{\tau}}$$

where  $f_L$  is the lock range and  $\tau = 3600C_2$  where  $C_2$  is the capacitor between pin 7 and V+ in Farads.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WQ56L	LM565N	25+ £1.970 100+ £1.830 300+ £1.710	1+ £3.430

### LM567CN Tone Decoder/Phase Locked Loop

National Semiconductor

#### Features

- ★ Wide frequency range (0.01Hz to 500kHz)
- ★ High stability of centre frequency
- ★ Independently controllable bandwidth (0 to 14%)
- ★ High out-band signal and noise rejection
- ★ Logic compatible output with 100mA current sinking capability
- ★ Inherent immunity to false signals
- ★ Frequency adjustment over a 20 to 1 range with an external resistor

#### Applications

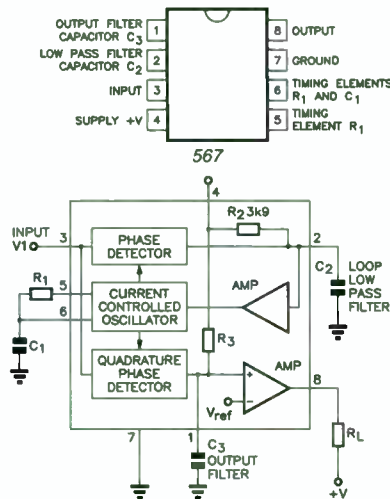
- ★ Carrier current remote controls
- ★ Ultrasonic controls (remote TV etc.)
- ★ Communications paging
- ★ Frequency monitoring and control
- ★ Wireless intercom
- ★ Precision oscillator

#### Characteristics

Max operating voltage:	10V
Positive voltage at input:	0.5V above supply
Negative voltage at input:	-10V DC
Output voltage:	15V DC
Operating current range:	7mA (12mA activated)

#### Design Formulae

$f_0 = 1.1/R_1.C_1$  where  $R_1$  is between 2kΩ and 20kΩ and  $f_0$  is the centre frequency. Bandwidth =  $1070\sqrt{V_i/f_0.C_2}$  where  $V_i$  is the input rms voltage.  $C_3 = 2(C_2)$ .

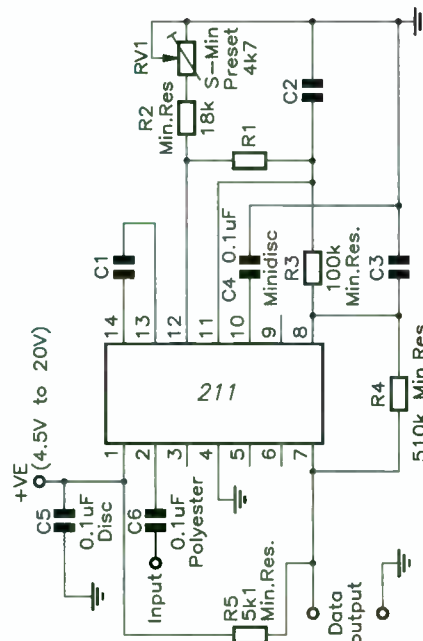


Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QH69A	LM567CN	10+ £0.950 50+ £0.760 300+ £0.633	1+ £1.230

### RC221N FSK Demodulator/Tone Decoder

Raytheon



A monolithic phase locked loop for data communications. The IC contains a basic phase locked loop for tracking an input signal within the pass band, a quadrature phase detector which provides carrier detection and an FSK voltage comparator which provides FSK demodulation. In the circuit shown, the IC is used as an FSK demodulator such as would be found in the receiver circuit of a modem. The table below shows the component values required for a modem demodulator using standard European tones on the public switched network.

#### Characteristics (typical)

Supply voltage:	4.5V min to 20V max
Supply current:	5mA

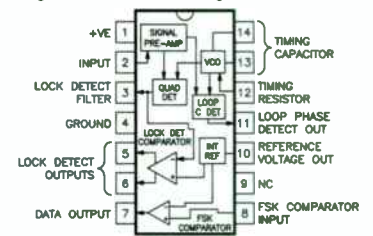
Frequency accuracy: ±1%  
Stability: ±20ppm/°C  
Upper frequency limit: 300kHz  
Lowest practical operating frequency: 0.01Hz  
Timing resistor ( $R_2 + RV_1$ ): 5kΩ min, 2MΩ max.  
recommended: 15kΩ min, 100kΩ max.  
Input impedance: 20kΩ  
Input signal voltage: 2mV rms min, 3V rms max.  
Internal reference voltage: 5.3V and 100Ω impedance.

Baud Rate	Receive Frequencies (Hz)	R1 (Ω)	C1 (μF)
300	980/1180*	100k	0.047
300	1650/1850†	180k	0.027
600	1300/1700	75k	0.033
1200	1300/2100	43k	0.027
75	390/450	150k	0.012

Baud Rate	Receive Frequencies (Hz)	C2 (μF)	C3 (μF)
300	980/1180*	0.01	0.01
300	1650/1850†	0.0068	0.01
600	1300/1700	0.0082	0.0047
1200	1300/2100	0.0068	0.0022
75	390/450	0.0033	0.047

\* Calling modem. † Answering modem.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
OY43W	RC221N	25+ £1.610 100+ £1.500 300+ £1.400	1+ £3.320

## SENSORS

### ACCELEROMETERS

#### ADXL05/50 Monolithic Accelerometer

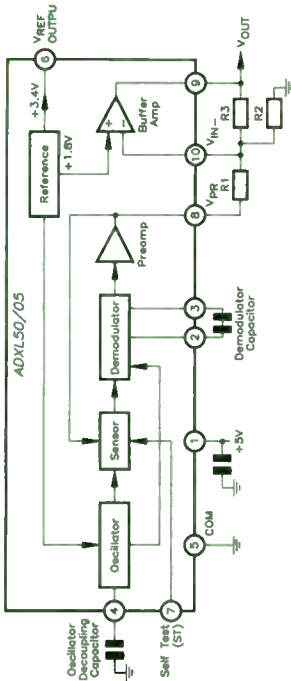
Analog Devices



These devices offer a complete accelerating measuring system on a single monolithic IC, and require just three external capacitors and a +5V supply. The ADXL05 will measure accelerations with full-scale ranges of ±5g to ±1g or less, and with a typical noise floor figure of 500μg/√Hz, allows signals below 5mg to be resolved. The ADXL50 will measure accelerations up to ±50g, and comes with a factory trimmed sensitivity of 19mV/g. This results in a full-scale output swing of ±0.95V for a ±50g applied acceleration. The zero g output level is +1.8V.

The devices include an output buffer whose sensitivity can be set by using three external resistors. Capacitors can be added to this external resistor network to provide 1- or 2-poles of filtering. No external active components are required to directly interface to most ADC or microcontrollers. Additionally, there is a TTL compatible self-test function that can electrostatically deflect the sensor beam at any time to verify that the sensor and its electronics are functioning correctly. Supplied in a 10-pin TO-100 metal can for operation over the 0°C to +70°C temperature range.

An evaluation board is available for the ADXL05 and includes a PCB, surface mount resistors and capacitors, and a datasheet. The board allows designers to set the gains and filter BW to suit individual requirements.



Specification	ADXL05	ADXL50
Power supply	5V at 8mA	5V at 8mA
Measurement range:	±5g	±50g
Nonlinearity:	0.2%	0.2%
Alignment error:	±1°	±1°
Transverse sensitivity:	±2%	±2%
Sensitivity:	200mV/g	19mV/g
Voltage noise:	500µg/√Hz	6.6mg/√Hz
Noise 10Hz band:	5mg rms	66mg rms
Noise 10Hz band:	1.6mg rms	20mg rms
3dB bandwidth**:	4kHz	10kHz
Buffer amplifier		
i/p offset voltage:	±10mV	±10mV
open loop gain:	80dB	80dB
unity gain bandwidth:	200kHz	200kHz
power supply reject:	1mV/V typ	1mV/V typ

\*\*C1 = 0.01µF for ADXL05/6800pF for ADXL50.

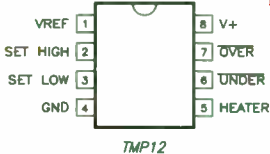
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NP51F	ADXL05JH	£21.840	£16.010
NP52G	ADXL50JH	£24.030	£17.610
NP53H	ADXL05EB	£16.430	£12.040

## TEMP / AIRFLOW SENSOR

### TMP12FP Airflow and Temperature Sensor

Analog Devices



#### Features

- ★ Temperature sensor with 100kΩ heater
- ★ Single 5V operation
- ★ Accuracy ±3% typ. from -40°C to +100°C
- ★ 20mA open-collector set point outputs

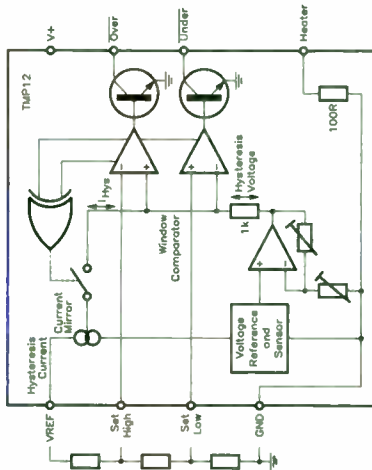
#### Applications

- ★ System airflow sensor
- ★ Equipment over-temperature sensor
- ★ Over temperature protection
- ★ Power supply thermal sensor
- ★ Low-cost fan controller

The TMP12 is a silicon-based airflow and temperature sensor designed to be placed in the same airstream as heat generating components that require cooling. An internal voltage is generated that is linearly proportional to °C, nominally

+5mV/°C. The linearised output is compared with voltages from an external resistive divider connected to the 2.5V precision reference. The divider sets up one or two reference voltages, as required by the user, providing one or two temperature set points. An on-board hysteresis generator, programmed by the external resistor chain, speeds up the temperature set point output transitions, and also reduces erratic output transitions in noisy environments.

An on-board, precision, low temperature coefficient 100Ω heater resistor can be used to raise the die temperature in the DIP package by approximately 20°C above ambient (in still air). This will emulate a power IC, such as a regulator or Pentium CPU, which as a high internal dissipation. The temperature rise produced by the resistor will be proportional to the air flow, so any interruption in the airflow will produce an additional temperature rise. When the chip temperature exceeds a user-defined setpoint limit, then a system controller can be made to take corrective action e.g. reducing clock frequency, shutting down peripherals, additional cooling fans, or even shutting down the system.



#### Specification

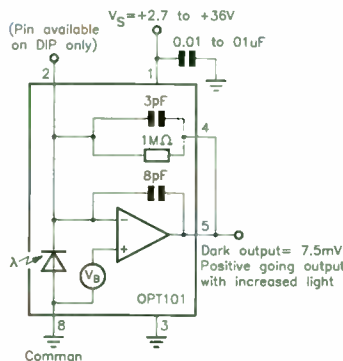
Power supply:	5V 400µA system current
Heater resistance:	100Ω 60mA typ
Temperature coeff:	100ppm/°C
Accuracy at 25°C	
high/low setpoints:	±2°C
Internal scale factor:	+5mV/°C
PSRR:	0.1°C/V
Linearity:	0.5°C
Repeatability:	0.3°C
Long term stability:	0.3°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NP54J	TMP12FP	£3.730	£2.730

### OPT101P

Burr-Brown



This device is a photodiode with on-chip transimpedance amplifier on a single chip, in a transparent 8-pin DIP package. This combination eliminates the problems commonly encountered in discrete designs such as noise pick-up, leakage

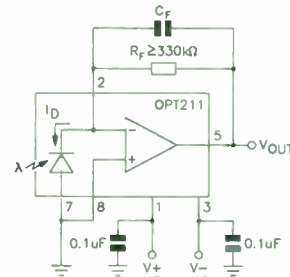
current errors and gain peaking due to stray capacitance. The photodiode is operated in the photoconductive mode for excellent linearity and low dark current. The OPT101 operates from +2.7V to +36V single rail supplies and quiescent current is only 120µA. Bandwidth is 14kHz when using the internal 1M feedback resistor. Note that the device should be stored under dry warm conditions prior to soldering.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE73Q	Light To V Converter	£3.320	£3.080

### OPT211P

Burr-Brown



Rf (Ω)	Cf (pF)	Bandwidth (kHz)
330k	5.6	86
1M	3	50
10M	1 <sup>(1)</sup>	16
100M	0.3 <sup>(1)</sup>	5

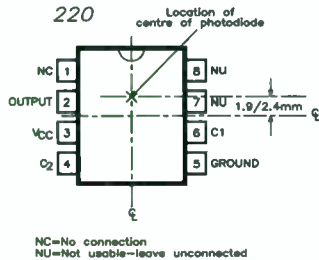
The OPT211 is a monolithic photodiode and on chip FET input op-amp combination that provides wide bandwidth at very high gain levels with stable and noise free operation. Full access to feedback points is provided to allow a variety of feedback options for maximum versatility. The large area photodiode is designed to be operated in the photoconductive mode for very linear operation. The OPT211 operates from ±2.25V to ±18V and supply current is 400µA. Bandwidth may be as high as 150kHz with a 1M feedback resistor and bootstrap buffer. Note that the device should be stored under dry warm conditions prior to soldering.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

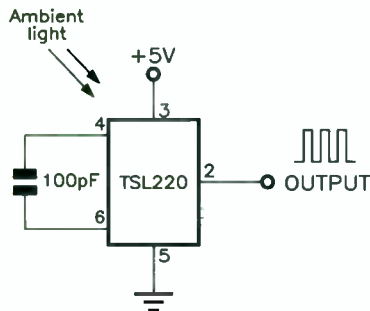
Order Code	Type	Price each exc. VAT	inc. VAT each
LE74R	OPT211P	£5.580	£5.180

## TSL220 Light to Frequency Converter

Texas Instruments  
Not For New Design



A large area (4.13mm<sup>2</sup>) photodiode and current to frequency converter combined in a clear plastic 8-pin DIL package. The output is a pulse train whose frequency is directly proportional to the light intensity. The output is CMOS compatible (use a 3k3 pull-down resistor to drive LS TTL) and the frequency can be measured by pulse counting, period timing, or integration techniques. The photodiode has a wide dynamic range, high sensitivity and high noise immunity. The output frequency range is determined by a capacitor in the range 10pF to 100µF, which permits the output frequency to fall within some suitable range for any given light intensity.



### Specification (typical at V<sub>S</sub> = 5V, 25°C)

Supply voltage: 4V to 10V  
Max output frequency: 750kHz  
Operating temperature: -25°C to +70°C  
Peak output voltage: 4V (50kΩ load)  
Supply current: 7.5mA (when dark)  
Output frequency  
125µW/cm<sup>2</sup> (880nm), C=100pF: 50kHz (min), 150kHz (typical), 250kHz (max)  
no light, C = 100pF:  
0Hz (min), 1Hz (typical), 50Hz (max)  
Output pulse duration: 1µs (C = 470pF)  
Output pulse rise time: 20ns (C = 100pF)  
Output pulse fall time: 120ns (C = 100pF)

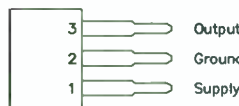
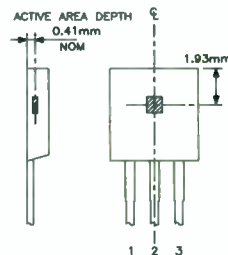
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CP93B	TSL220	£4.300	£5.880

## UGN3503U Ratiometric Linear Hall Effect Sensors

Allegro

A Hall effect sensor which accurately tracks extremely small changes in magnetic flux density, changes generally too small to operate Hall effect switches. As a motion detector, gear tooth sensor and proximity detector, it is a magnetically driven mirror of mechanical events. It can effectively measure a system's performance with negligible system loading while providing isolation from contaminated and electrically noisy environments. The device contains a Hall sensing element, linear amplifier and emitter follower output stage. Problems associated with handling tiny analogue signals are minimised by having the Hall cell and amplifier on the same chip.



### Specification

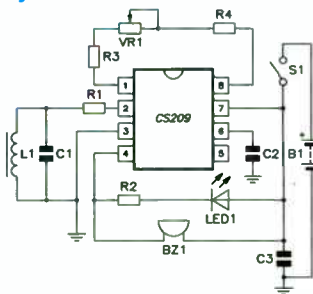
Supply voltage range: 4.5 to 6V (8V absolute max.)  
Magnetic flux density: Unlimited  
System frequency response: Flat to 23kHz  
Operating temperature range: -20°C to +85°C

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
GX09K	UGN3503U	£0.677	£1.770

## CS209A Proximity Detector

Cherry Semiconductor



An electro-magnetic proximity sensor IC which could be used to detect metal pipes, nails, conduit, etc., in walls, floors, etc. The IC contains an on-chip regulated supply, oscillator, demodulator, level detector and output stages. The oscillator with its external LC network, provides controlled oscillations where the amplitude is highly dependent on the Q of the LC network. During low Q conditions, a variable low-level feedback is applied to maintain oscillation. The peak demodulator detects the negative portion of the oscillator envelope and the demodulated waveform is then compared to an internal reference by the level detector. Two outputs are provided, one normally high (pin 4) and one normally low (pin 5) both of which can supply up to about 120mA.

In the circuit shown, if the search coil is passed over a wall surface, nails or screws under the surface change the Q of the coil and the device detects this and lights the LED and sounds the

buzzer. To set up, adjust VR1 till the LED is on when the coil is clear of any metal objects. Now back off VR1 until the LED is just extinguished. Repeat the adjustment until metal moved toward and away from the coil does not cause the LED to lock on.

### Parts List

R1	Min Res 220Ω	(M220R)
R2	Min Res 750Ω	(M750R)
R3,4	Min Res 4k7	(M4K7)
VR1	18-turn Cermet 10k	(WR49D)
C1	Monores Cap 2200pF	(RA40T)
C2	Ceramic 2200pF	(WX72P)
C3	Minidisc 0.01µF	(BX00A)
L1	Choke 100µH	(JC25C)
LED1	Red LED	(WL27E)
BZ1	PCB Buzzer	(KU58N)
S1	Push Switch	(FH59P)
B1	PP3 Battery	(ZB44X)

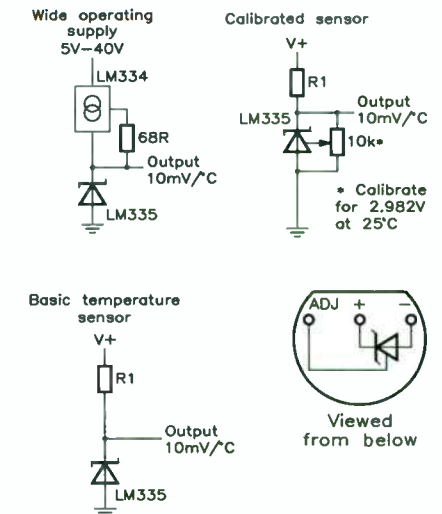
The IC requires a 4V to 24V power supply and draws about 4-5mA

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UH59P	CS209A	£1.460	£3.200

## LM335Z Precision Temperature Sensor

SGS Thomson



An easily calibrated, precision temperature sensor whose operation is similar to a zener diode. The device has a breakdown voltage directly proportional to absolute temperature and has a linear output equal to 10mV/°C. The device operates over a current range of 400µA to 5mA (1mA recommended) and even when uncalibrated has a typical temperature error of only 2°C over its operating range. When calibrated the error is 1°C.

### Characteristics

Output voltage at 25°C: 2.98V  
Dynamic impedance: 0.6Ω  
Time constant in still air: 80 secs  
T in 30.5m/min air: 10 secs  
T in stirred oil: 1 sec  
Operating range: -10°C to 100°C extending to 125°C intermittently.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YY730	LM335Z	£0.648	£2.550

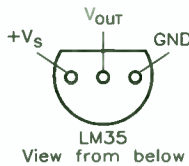
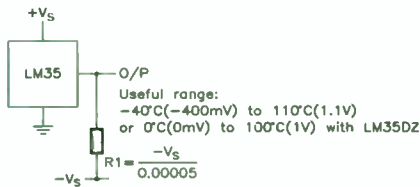
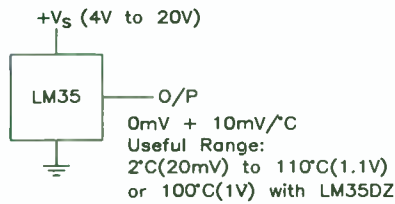
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## LM35 Precision Centigrade Temperature Sensors

National Semiconductor

Precision integrated circuits whose output voltage is linearly proportional to the Centigrade temperature. The advantage over the LM335Z is that it is not necessary to subtract a large constant voltage from the output to obtain the Centigrade scale. The chip does not require any external calibration to achieve accuracies of  $\pm 4/10^\circ\text{C}$  at room temperature and  $\pm 8/10^\circ\text{C}$  over full temperature range. The device draws only 56 $\mu\text{A}$  from voltage supplies in the range 4V to 30V so it has very low self-heating  $< 0.1^\circ\text{C}$  in still air. The LM35CZ will operate in the range  $-40^\circ\text{C}$  to  $+110^\circ\text{C}$  whilst the LM35DZ operates in the range  $0^\circ\text{C}$  to  $100^\circ\text{C}$ .



### Characteristics (typical)

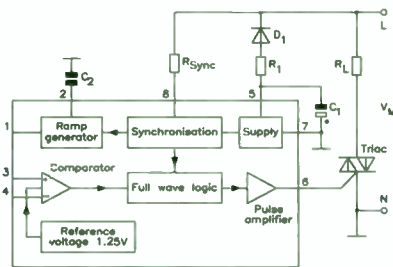
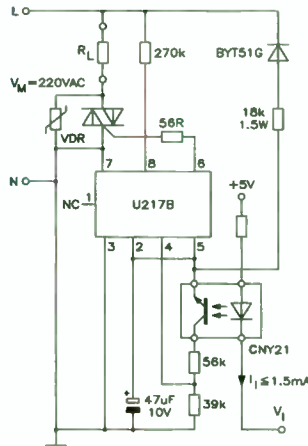
Accuracy at $+25^\circ\text{C}$	$\pm 0.4^\circ\text{C}$ (CZ), $\pm 0.6^\circ\text{C}$ (DZ)
$-40^\circ\text{C}$ to $+110^\circ\text{C}$	$\pm 0.8^\circ\text{C}$ (CZ)
$0^\circ\text{C}$ to $+100^\circ\text{C}$	$\pm 0.9^\circ\text{C}$ (DZ)
Non-linearity	$0.2^\circ\text{C}$
Sensor slope	$+10\text{mV}/^\circ\text{C}$
Load regulation	$0.4\text{mV}/\text{mA}$
Line regulation	$0.01\text{mV}/\text{mA}$
Quiescent current	$56\mu\text{A}$ at $V_S = 5\text{V}$ $56.2\mu\text{A}$ at $V_S = 30\text{V}$
Temperature co-efficient of quiescent current	$+0.39\mu\text{A}/^\circ\text{C}$
Output impedance	$0.1\mu$ with $1\text{mA}$ load

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2890	Price each exc. VAT	inc. VAT each
UF51F	LM35CZ	£4.330 25+ £4.020 100+ £3.760 300+	£6.900 1+
UF52G	LM35DZ	£2.500 25+ £2.190 100+ £1.990 300+	£4.350 1+

## U217B Temperature Controller

Temec



A triac controller for switching resistive loads directly from the mains supply using the zero crossing technique. The device is powered directly from the mains via a diode and dropper resistor, and the IC has its own regulator to limit its supply to 9.25V. To ensure that no switching occurs outside of the zero crossing point, full-wave logic is employed to guarantee that complete mains cycles only are switched to the load. A ramp generator with a freely selectable ramp duration (as determined by a timing capacitor), together with the full-wave logic block, synchronised to the AC supply at pin 8 via a dropper resistor  $R_{\text{sync}}$ . The ramp generator not only provides symmetrical trigger pulse control by itself but can have proportional offsets added to it by additional external components, for example for temperature control with monitoring thermistor. To obtain a 'flicker-free' output, the ramp duration is adjusted according to the load control required. In practice interference generation should be avoided for temperature control applications, therefore in such cases a straight on-off control is preferred to proportional control. The internal reference voltage can be used instead of the ramp generator output for simple applications. The value of  $R_{\text{sync}}$  controls the trigger pulse width to a large extent; the higher the value the greater the width. This should be chosen according to the TRIAC used.

### Specification

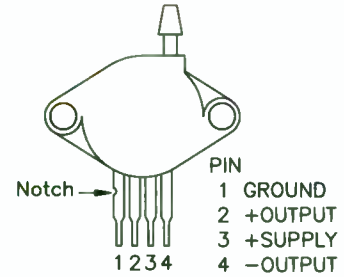
Supply voltage (pin 5):	Limited to 9.25V nominal
Supply current drawn:	500 $\mu\text{A}$
Supply current input:	30mA absolute max.
Sync current input (pin 8):	0.12mA min., 5mA absolute max.
Ramp generator output current (pin 1):	3mA max.
Ramp generator charge current (pin 2):	17 $\mu\text{A}$ nominal
Maximum power dissipation:	400mW @ $45^\circ\text{C}$

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2890	Price each exc. VAT	inc. VAT each
AH49N	U217B	£0.831 25+ £0.771 100+ £0.720 300+	£1.710 1+

## MPX100AP Pressure Sensor

Motorola



A low-cost silicon piezoresistive pressure sensor providing a very accurate and linear voltage output, directly proportional to the applied pressure. The unit has a built-in reference vacuum of approximately 0kPa. The output voltage increases with increasing pressure relative to ambient pressure (approx 100kPa) applied to the pressure side. Care should be taken to limit positive pressure to about 300kPa relative to ambient so that the total differential overpressure range of 400kPa is not exceeded. Conversely the output voltage will decrease as vacuum, relative to ambient, is drawn. Vacuum down to the 0kPa reference can be measured.

Note: 1kPa = 0.145 PSI.

### Characteristics

Supply voltage:	3V (6V max)
Supply current:	6mA
Full scale span:	60mV
Zero pressure offset:	20mV
Sensitivity:	0.6mV/kPa
Linearity:	$\pm 0.05\%$ of full scale
Range:	0 to 100kPa
Temperature hysteresis:	$\pm 0.5\%$ of full scale
Temperature coefficient of full scale span:	$-0.19\%/^\circ\text{C}$
Temperature coefficient of offset:	$\pm 15\mu\text{V}/^\circ\text{C}$
Temperature coefficient of resistance:	$0.24\%/^\circ\text{C}$
Input resistance:	400 to 550 $\Omega$
Response time:	1ms (10% to 90%)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2890	Price each exc. VAT	inc. VAT each
UH37S	MPX100AP	£11.530 10+ £10.710 25+ £10.000 100+	£20.680 1+

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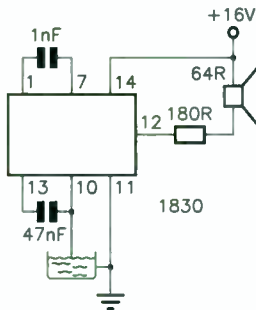
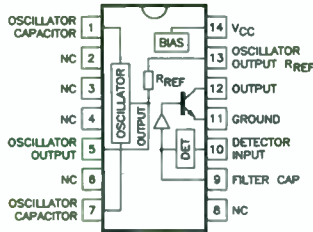
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## LM1830N Fluid Level Detector

National Semiconductor

The IC is ideal for detecting the presence, absence or level of water or other conducting liquids. A detector determines the presence or absence of fluid by comparing the resistance of the fluid with the IC's internal reference resistance. An AC signal is used to prevent plating of the probe. When the probe resistance increases the loudspeaker will emit a 500Hz tone. Alternatively an LED could be connected.



Supply voltage range: +9V to +25V  
 Supply current: 5.5mA (at 16V)  
 Output sink current: 20mA max  
 Internal ref resistor: 13kΩ

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
YY99H	LM1830N	£2.260 10+ £2.100 25+ £1.960 100+ £4.990 1+	

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
FM87U	Gas Detector Sensor	£6.000 25+ £5.570 100+ £5.200 300+ £17.230 1+	

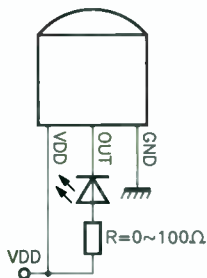
### DISPLAY DRIVER IC'S

## HT2014M LED Flash Driver

Holtek

A simple low-cost, 3-pin LED flasher with a fixed flash rate of 2Hz. It can be operated without any external components, and will drive directly a suitable LED from a small battery.

The device has a large drive capability of 10mA at 3V, with a 1/8 duty cycle. Will work with a 1.2V to 4.5V DC supply with a typical stand-by current of 1µA (3V) ideal for simple novelties, such as flashing badges etc. Supplied in a TO92 package.

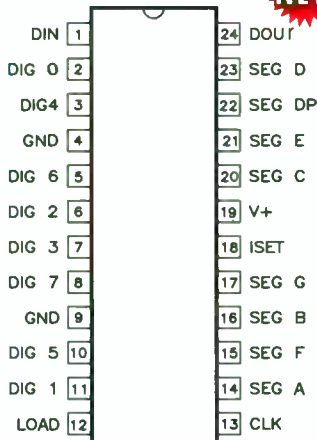


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ24B	HT2014M	£0.790 25+ £0.560 100+ £0.490 300+ £2.290 1+	

## MAX7219CNG Serial 8-Digit LED Display Driver

MAXim



MAX7219

The MAX7219 is a compact, serial input/output common-cathode driver that will interface micro-processors (µPs) to 7-segment numeric LED displays of upto 8-digits, bargraph displays or 64 individual LEDs. The device has a BCD code-B decoder, multiplex scan circuitry, segment and digit drivers, and an 8 x 8 static RAM that stores each digit. The segment current for all LEDs is set by just one external resistor.

A 10MHz 3-wire serial interface connects to all common µPs, and allows individual digits to be updated without rewriting the entire display. Code-B decoding or no-decode can be selected for each digit.

A 150µA low-power shutdown mode is included that will retain data, as well as analog and digital brightness control, a scan-limit register which allows from 1 to 8 digits to be displayed, and a test mode which forces all LEDs on. Supplied in a 24-pin narrow plastic DIP package.

### Specification

Power supply: 5V/300mA all segments and decimal point on  
 Shutdown supply current: 150µA max  
 Display scan rate: 2kHz max  
 Digit drive sink current: 320mA min  
 Clock/serial output propagation delay: 2.25ms

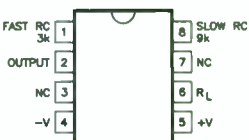
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
NR49D	MAX7219CNG	£5.960 10+ £4.960 50+ £4.250 200+ £7.450 1+	

## LM3909N LED Flasher/Oscillator

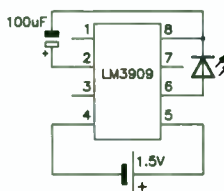
National Semiconductor

With the addition of a 1.5V battery and capacitor this IC will deliver pulses of over 2V to an LED to flash it brightly, with a current drain of less than 0.5mA. It has a powerful output and can directly drive an 8Ω speaker. Applications include flasher to locate torch

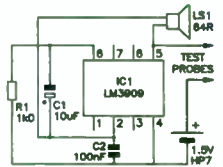


3909

or boat mooring floats at night, sales and advertising gimmicks, emergency locators for 1.4V to 200V (see data sheet).



In this circuit there is an audible difference between short circuits, coils and resistances of a few ohms etc.



### Continuity Tester Parts List

R1	Min Res 1k	(M1K)
C1	Minelect 10µF 16V	(YY34M)
C2	Minidisc 0.1µF	(YR755)
IC1	LM3909	(WQ39N)
LS1	Hi-Z L/S 64Ω	(WB04E)
1	HP7 Battery	(JY63T)
	Holder	(YR59P)
1 pair	Test Probes	(FK32K)

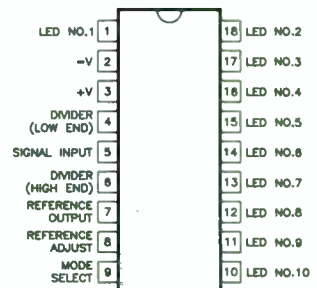
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WQ39N	LM3909N	£1.300 25+ £1.210 100+ £1.130 300+ £3.420 1+	

## LM3914/5/6N Bargraph Displays

National Semiconductor

An LED driver that will sequentially light ten LEDs when a gradually increasing voltage is applied to pin 5, (dot mode) or in bar mode all LEDs indicating voltages below input are lit. In dot mode there is a slight overlap so that at no point are all LEDs extinguished. A brightness control will set LED current between 2mA and 30mA. The drivers are stackable and displays with 100 or more LEDs are possible. Supply voltage 3V to 18V. The driver that sets the indication points can be referenced to a wide range of voltages.



Three different chips are available:

- LM3914: linear steps
- LM3915: 3dB steps (logarithmic scale)
- LM3916: VU scale (e.g. -10dB, -7dB, -5dB, -3dB, -1dB, 0dB, 1dB, 2dB, 3dB)

A pcb is available for use with these ICs and information on how to construct and set up this pcb along with circuits and applications can be found in the Maplin Best of Projects Book 6 (XC06G). See end of Projects and Modules section for details.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YQ66W	LM3914 PCB	£1.260 1+	£1.490 1+

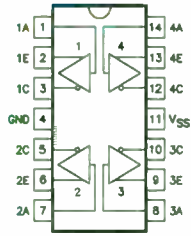
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WQ41U	LM3914N	£2.600 25+ £1.990 100+ £4.970 1+	
YY96E	LM3915N	£2.570 25+ £1.990 100+ £3.190 1+	
YY97F	LM3916N	£2.400 25+ £1.790 100+ £3.190 1+	



## DS75491N MOS to LED Driver

National Semiconductor



Four independent drivers designed to interface low current MOS outputs to LEDs. Each output has up to 50mA source or sink capability.

### Characteristics (typical)

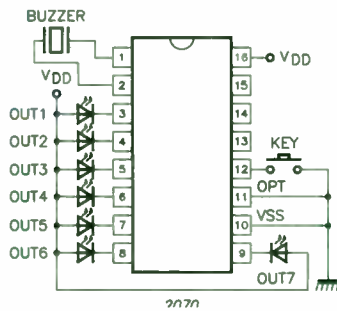
Supply voltage	10V max
Input voltage range	-5V to V <sub>SS</sub>
Input current	2.2mA
Supply current	<1mA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

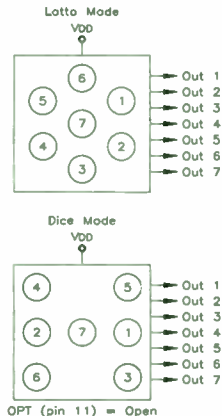
Order Code	Type 2012	Price each exc. VAT	inc. VAT each
UF53H	DS75491N	£0.626 10+ £0.582 25+ £0.543 100+	£0.950 1+

## HT2070-Lotto/Dice Chip

Hoitek



The HT2070 contains all of the circuitry necessary to simulate the action of a 'lotto' or die. In lotto mode (pin 11, OPT, to ground) the chip provides a single running sequence driving LEDs. 6 to 1 with 7 flashing to indicate state of play. In die mode (pin 11 OPT floating) the seven outputs form the dot pattern of a normal die. The device also features direct drive for a piezo sounder (order code YU87U) and is triggered by pressing one push-button (order code FH91Y) The HT2070 will auto power down after use and requires a 3V supply. Suitable LEDs are 5mm Red type (order code UK48C).



Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 1191E	Price each exc. VAT	inc. VAT each
AE16S	HT2070A	£0.670 10+ £0.490 25+ £0.290 100+	£1.360 1+

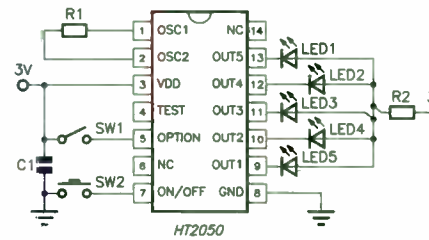
## HT2050 Five LED Flash Driver

Hoitek

A low-cost, low power CMOS IC designed for flashing five LEDs (or suitable low current lamps). The five outputs can individually sink up to 10mA and can implement random or sequential flashing which is selected by just one switch. The device requires very few external components, and features a built-in oscillator, 1/10 duty cycle output and a low stand-by current - typically 1µA at 3V. Ideal for Christmas decorations, toys, novelties disco effects etc. The oscillator resistor can be in the range 150kΩ to 300kΩ, and will determine the flash rate.

### Suggested Parts List

- R1 Min Res 220k (M220K)
- R2 Min Res 68Ω (M68R)
- C1 Met Polyester 0.1µF (CX00A)
- LED1-55mm LED Red (WL27E)
- SW1 Square Locking (YW41U)
- SW2 Push Button Switches (FY96E)

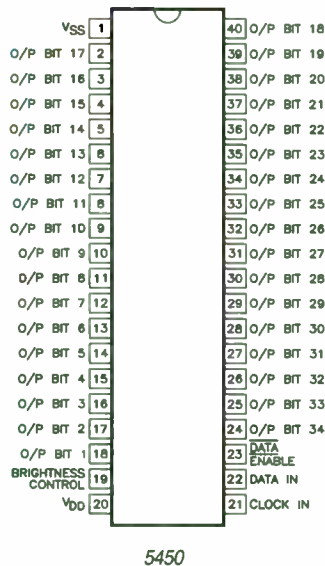


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11994	Price each exc. VAT	inc. VAT each
AZ26D	HT2050	£0.303 25+ £0.281 100+ £0.263 300+	£2.880 1+

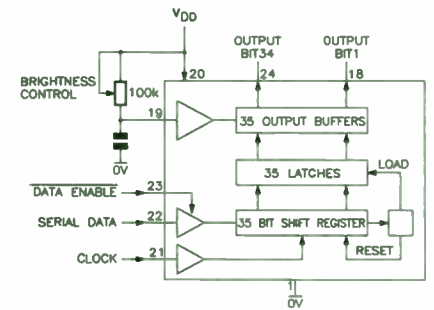
## M5450B7 LED Display Driver

SGS Thomson



An LED display driver that can drive up to 34 segments at up to 15mA without external resistors. Constant current sources in the IC control the segment current, and this can be set by adjusting the current into pin 19. Data is clocked into pin 22 (when pin 23 is low) by sending a 1 as the first bit, then the 34 data bits and ensuring that there is at least one further clock pulse. This 36th clock pulse loads the 34 bits of serial data into the segment latches, each logical 1 turning on the appropriate segment. The 36th clock pulse also generates a reset signal which clears the register ready to receive a further set of data following the next 1

detected on pin 22. Segments are directly driven and not multiplexed. Common anode displays are required with the anodes connected to VDD.



### Specification

Supply voltage	5V (4.75V to 13.2V)
Supply current	<7mA
Output sink current	15mA with 750µA in pin 19 2.7mA with 100µA in pin 19
Input clock frequency	DC to 500kHz

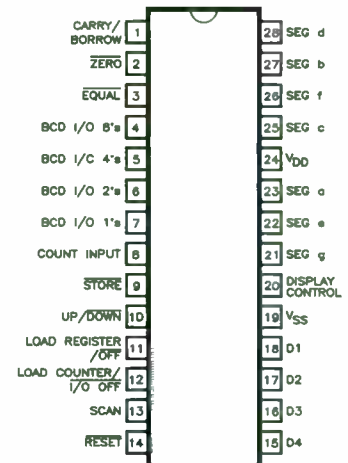
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2017	Price each exc. VAT	inc. VAT each
UJ53H	M5450B7	£2.650 10+ £2.460 25+ £2.300 100+	£6.550 1+

## ICM7217AIP1 4-Digit Programmable Counter Driver

Harris

An up/down counter containing a register that can be preset with thumbwheel switches. The register is continuously compared with the count and a signal generated when they are equal. The circuit will directly drive four common cathode 7-segment displays. The input frequency is guaranteed up to 2MHz, but will typically operate up to 5MHz. Counting and comparing will run at 750kHz maximum.



### Specification (typical at V<sub>S</sub> = 5V, 25°C)

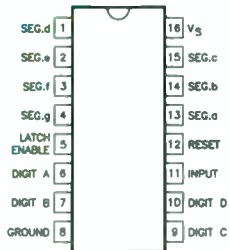
Supply voltage:	4.5V to 5.5V
Supply current:	300µA standby 100mA operating 35mA peak
Digit driver output:	-12.5mA peak
Segment driver output:	>4.4V
BCD I/O input high:	<3.2V
BCD I/O input low:	5MHz
Count input frequency:	<0.4V
Count input low:	<3.5V
Count input high:	2.5kHz
Display scan frequency:	

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2023	Price each exc. VAT	inc. VAT each
CP96D	ICM7217AIP1	£4.780 10+ £4.440 25+ £4.140 100+	£13.900 1+

## 74C925 4-Digit Counter Driver

National Semiconductor



74C925

A 4-digit counter with 7-segment multiplexed outputs capable of driving a 4-digit common cathode display. The multiplexing circuit has its own free-running oscillator and requires no external clock. The counters advance on the negative edge of the clock applied to pin 11. A high signal on pin 12 will reset the counter to zero. A low signal on pin 5 will latch the number in the counters into the internal output latches.

### Characteristics (typical at 25°C)

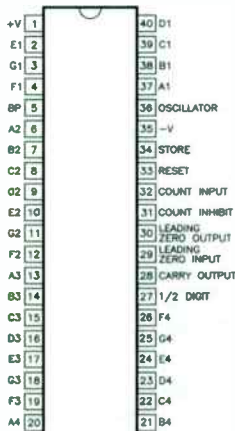
Supply voltage pin 16: 5V (3V min, 6V max)  
 Supply current: 20µA  
 Max input frequency: 4MHz  
 Multiplex frequency: 1kHz  
 Logical '1' input voltage: 3.5V min  
 Absolute max: 15V  
 Logical '0' input voltage: 1.5V max  
 Logical '1' input current: 5nA  
 Logical '0' input current: -5nA

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2919	Price each exc. VAT	inc. VAT each
QY08J	74C925	10+ £11.530 25+ £10.710 100+ £10.000	1+ £21.580

## ICM7224IPL 4 1/2-Digit Counter

Harris



7224

A 4 1/2-digit counter capable of directly driving an LCD display. Applications data can be found in the Maplin Magazine 55. The maximum count is 19,999, and the input frequency can be up to 25MHz typically. Chips can be cascaded to provide higher maximum counts.

### Specification

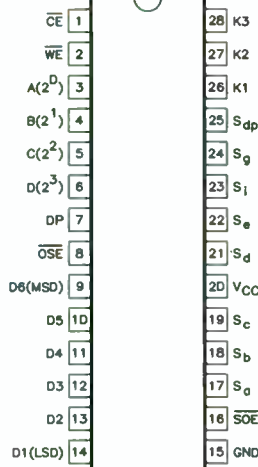
Supply voltage: 5V (3V to 6V)  
 Operating current: 10µA  
 Oscillator frequency: 16kHz  
 Backplane frequency: 125Hz  
 Count frequency: >15MHz

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2931	Price each exc. VAT	inc. VAT each
FP62S	ICM7224IPL	10+ £5.250 25+ £4.870 100+ £4.550	1+ £14.590

## 74C917 6-Digit Hex Display

National Semiconductor



74C917

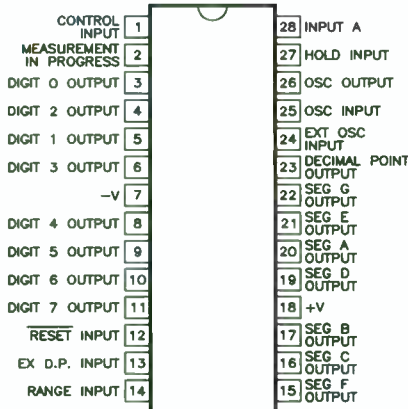
A display controller interface element with memory that will directly drive six 8-segment LED displays (i.e. 7-segment and decimal point). The controller receives data information through 5 data inputs (A, B, C, D and DP) and digit information through 3 address inputs (K1, K2, K3). The input data is written into the register selected by the address information when 'chip enable' (CE) and 'write enable' (WE) are low and is latched when either (CE) or (WE) go high again. A self-contained oscillator sequentially presents the stored data to a decoder where four data bits control the displayed character and one bit controls the decimal point. The oscillator is normally operational and tied low (OSE), but at high level this input prevents the automatic refresh of the display. Segment outputs have up to 100mA capability and digit outputs have up to 20mA capability. Use three of our 2-digit common cathode displays with seven Min Res 68Ω in series with IC pins 17 to 19 and 21 to 25 for direct drive. The digit outputs (pins 9 to 14) require a BC337 connected to each: base to IC; collector to display; and emitters commoned to ground. The drivers are active when output enable (SOE) is low, and high impedance when SOE is high. This feature enables a brightness control to be used. Normally SOE and OSE are tied to ground. All inputs are TTL compatible and nominal supply voltage is 5V at 0.5mA with output off (SOE high). The registers are addressed like ordinary RAM.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2915	Price each exc. VAT	inc. VAT each
YH30H	74C917	10+ £19.860 25+ £14.950 100+ £13.950	1+ £23.990

## ICM7216DIPI 10MHz Frequency Counter

Harris



7216DIPI

An 8-digit frequency counter IC operating from DC to 10MHz. Decimal point and leading zero blanking may be externally selected. The IC will directly drive two

4-digit multiplex common cathode displays, and requires only one +5V DC supply and a 1MHz or 10MHz crystal.

### Specification

Supply voltage: +5V at 2mA (display off)  
 Maximum frequency (pin 28): 10MHz  
 Time between measurements: 200ms  
 Digit driver output current: 75mA  
 Segment driver output current: 15mA  
 Input voltage low/high: 1V max/3.5V min

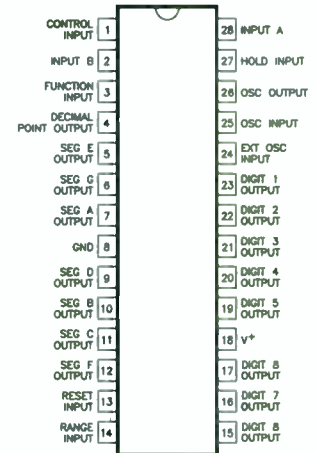
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2935	Price each exc. VAT	inc. VAT each
YY94C	ICM7216DIPI	10+ £18.230 25+ £12.180 100+ £11.370	1+ £29.990

## ICM7216AJI 10MHz Universal Counter

Harris

An 8-digit universal counter IC operating from DC to 10MHz in frequency counter mode and DC to 2MHz in unit counter modes. The IC will directly drive 8 common anode seven-segment displays. It requires only one +5V supply and 10MHz or 1MHz crystal timebase. In addition to being a frequency counter, the IC can be used as a period counter, frequency ratio counter, time interval counter or as a totalising counter.



7216AJI

### Specification (typical)

Supply voltage: +5V (4.75V to 6V)  
 Supply current: 2mA (display off)  
 Max. frequency (pin 28): 10MHz (frequency, ratio, unit)  
 2.5MHz (period, time interval)  
 Max. frequency (pin 2): 2.5MHz  
 Min. time interval: 250ns  
 Time between measurements: 200ms  
 Digit driver output current: -180mA  
 Segment driver output current: 35mA  
 Input voltage low/high: 1V max/3.5V min

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2937	Price each exc. VAT	inc. VAT each
UL64U	ICM7216AJI	10+ £19.990 25+ £16.580 100+ £14.860	1+ £39.990

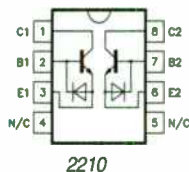
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## TRANSISTOR ARRAYS

### SSM 2210P Audio Dual Matched NPN Transistors

Analog Devices



2210

An ultra low noise, matched dual monolithic transistor for use in input stages of high quality amplifiers. The electrical characteristics approach those of an ideal transistor when operated over a collector current range of 1µA to 10mA.

**Specification (typical at 25°C, V<sub>CB</sub> = 15V, I<sub>C</sub> = 10µA)**

Collector-emitter voltage:	40V max
Collector-base voltage:	40V max
Collector-collector voltage:	40V max
Emitter-emitter voltage:	40V max
Collector current:	20mA max
Total power dissipation:	500mW
Current gain (h <sub>FE</sub> ):	550 @ 10µA
Current gain matching:	0.5%
Gain-bandwidth product (f <sub>T</sub> ):	200MHz
Offset voltage:	10µV
Bulk resistance:	0.3Ω
Noise density:	0.85nV/√Hz at 1kHz (I <sub>C</sub> = 1mA)

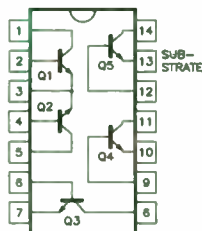
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2210P	Price each exc. VAT	inc. VAT each
UL79L	SSM2210P	£3.000	£3.690

### CA3046 Five Transistor Array

SGS Thomson

The 3046 consists of five silicon NPN transistors on a common monolithic substrate in a 14-lead dual in-line plastic package. Two transistors are internally connected to form a differential amp. The transistors of the 3046 are well suited to low noise general purposes and to a wide variety of applications in low power systems in the DC through VHF range. They may be used as discrete components in conventional circuits, in addition they provide the very significant inherent integrated circuit advantages of close electrical and thermal matching.



3046

#### Absolute Maximum Ratings

Each transistor
V <sub>CEO</sub> : 15V
V <sub>CB0</sub> : 20V
V <sub>CB1</sub> : 20V
V <sub>EBO</sub> : 5V
I <sub>C</sub> : 50mA
Total power dissipation: @ TA = 55°C: 300mW (750mW total package)
h <sub>FE</sub> : 100 @ 10mA
f <sub>T</sub> : 550MHz

\*The collector of each transistor of the CA3046 is isolated from the substrate by an integral diode. The substrate (terminal 13) must be connected to the most negative point in the external circuit to maintain isolation between transistors and to provide for normal transistor action.

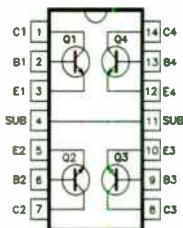
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2210P	Price each exc. VAT	inc. VAT each
UR12N	EP2015CN	£1.660	£2.010

### EN2016CN Fast Quad NPN Array

Elantec

Four monolithic NPN transistors with excellent matching and a high speed performance. The transistors are similar to 2N3904 devices. There is complete DC isolation so no substrate connection is required, but for optimum high speed performance, the substrate can be grounded.



2016

#### Specification

V <sub>CEO</sub> max:	40V
V <sub>CB0</sub> max:	40V
V <sub>EBO</sub> max:	5V
I <sub>C</sub> max:	50mA
P <sub>TOT</sub> max:	500mW each transistor 1.25W total package >75 at 10mA
h <sub>FE</sub> :	350MHz
f <sub>T</sub> :	350MHz

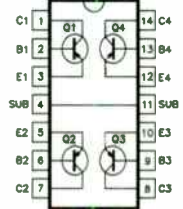
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2016	Price each exc. VAT	inc. VAT each
UR13P	EN2016CN	£1.660	£2.010

### EP2015CN Fast Quad PNP Array

Elantec

Four monolithic PNP transistors with excellent matching and a high speed performance. The transistors are similar to 2N3906 devices. There is complete DC isolation so no substrate connection is required, but for optimum high speed performance, the substrate can be grounded.



2015

#### Specification

V <sub>CEO</sub> max:	40V
V <sub>CB0</sub> max:	40V
V <sub>EBO</sub> max:	5V
I <sub>C</sub> max:	50mA
P <sub>TOT</sub> max:	500mW each transistor 1.25W total package >75 at 10mA
h <sub>FE</sub> :	350MHz
f <sub>T</sub> :	350MHz

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2015	Price each exc. VAT	inc. VAT each
QH26D	CA3046	£0.420	£0.510

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## VALVES

### Valves



A range of high quality valves primarily for use in high fidelity and other audio applications. A booklet containing comprehensive data and typical circuits is also available

### Double Triodes

All these types feature identical pin numbering and have their heaters configured for either 6.3V or 12.6V operation.

### ECC81

A miniature 9-pin (B9A), high-µ, high current RF double triode with separate cathodes. It can be used in a variety of audio amplifier, mixer, and frequency changer applications as well as for RF. For audio it is typically used in RC coupled voltage amplifier configurations.

#### Heater Series Parallel

V <sub>h</sub>	12.6V	6.3V
I <sub>h</sub>	150mA	300mA

#### Characteristics (each section)

V <sub>a</sub>	200V	250V
V <sub>g</sub>	-1.0V	-2.0V
I <sub>a</sub>	11.5mA	10mA
g <sub>m</sub>	6.7mA/V	5.5mA/V
µ	70	60

### ECC82

A miniature 9-pin (B9A), low-µ, high current double triode with separate cathodes. It is primarily intended for use as an amplifier or oscillator, and can be employed in both RC coupled voltage amplifier and cathode follower (buffer) configurations, or as a phase splitter. Useful in audio applications requiring low microphony.

#### Heater Series Parallel

V <sub>h</sub>	12.6V	6.3V
I <sub>h</sub>	150mA	300mA

#### Characteristics (each section)

V <sub>a</sub>	100V	250V
V <sub>g</sub>	0V	-8.5V
I <sub>a</sub>	11.8mA	10.5mA
g <sub>m</sub>	3.1mA/V	2.2mA/V
µ	19.5	17

### ECC83

A miniature 9-pin (B9A), high-µ, low current double triode primarily intended for RC coupled, small signal voltage amplifiers. Its low anode current and controlled low noise, hum and microphony characteristics, together with its high gain, make it ideal for high quality, small signal preamplifier applications. It is equally at home as a higher level voltage amplifier, phase splitter or cathode follower. Especially suitable for Hi-Fi applications.

#### Heater Series Parallel

V <sub>h</sub>	12.6V	6.3V
I <sub>h</sub>	150mA	300mA

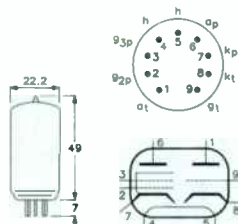
#### Characteristics (each section)

V <sub>a</sub>	100V	250V
V <sub>g</sub>	-1.0V	-2.0V
I <sub>a</sub>	0.5mA	1.2mA
g <sub>m</sub>	1.25mA/V	1.6mA/V
µ	100	100

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 248	Price each exc. VAT	inc. VAT each
CR25C	ECC81	£3.200	£3.960
CR26D	ECC82	£3.030	£3.740
CR27E	ECC83	£2.600	£3.220

## ECF82



A miniature 9-pin (B9A) triode/pentode valve used in the 'Newton' Stereo Valve Preamplifier project (LT77J), offering high gain with low noise.

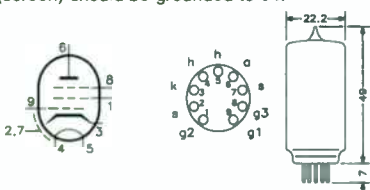
Heater		Characteristics	
$V_h$	6.3V	Triode	Pentode
$I_h$	450mA	$V_a$ 300V	$V_a$ 300V
		$V_g$ -1V	$V_{g2}$ 300V
		$R_k$ 56Ω	$R_k$ 68Ω
		$I_{g2}$ 18mA	$I_{g2}$ 3.5mA
		$g_m$ 8.5mA/V	$g_m$ 5.2mA/V
		$R_a$ 4.7kΩ	$R_a$ 400kΩ
		$P_{out}$ 2.7W	$P_{out}$ 2.8W

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT		inc. VAT each
ST30H	ECF82	10+	25+	100+
		£2.000	£1.710	£1.600
				£7.130

## Pentode EF86

A low noise, AF voltage amplifying pentode specifically for very small signal preamplifier applications. It features an all enclosing, outer screen or shield around all electrodes, special measures for extra mechanical stability against microphony, and a bifilar wound heater element to reduce hum injection to the absolute minimum. Open loop gain can exceed 40dB, with both white noise and hum down to typically 2μV at the anode (heater supply must be balanced and centre tapped to 0V near the valve, or DC). Especially suited to first stage amplification of magnetic cartridge (phono) and playback tape head inputs. Pins 2 or 7 (screen) should be grounded to 0V.



Heater		Characteristics	
$V_h$	6.3V	$V_a$	250V
$I_h$	200mA	$V_{g3}$	0V
		$V_{g2}$	140V
		$V_{g1}$	-2.0V
		$I_a$	3.0mA
		$I_{g2}$	600μA
		$g_m$	2.0mA/V
		$\mu_{g1-g2}$	38

### Mullard recommended circuits

There is basically just one recommended circuit configuration for the EF86 (shown in more detail in the data booklet). In this only two variations for resistor values are advised, as follows:

	Option 1	Option 2
Anode load resistor	100kΩ	220kΩ
Screen grid ( $g_2$ ) resistor	390kΩ	1MΩ
Cathode bias resistor	1kΩ	2k2Ω

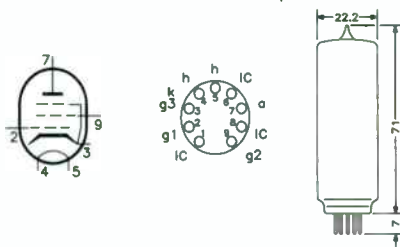
In each case the cathode bias resistor should be boot-strapped to 0V with a 47μF 50V electrolytic. The grid leak resistor ( $g_1$ ) can be 1MΩ or less (usually chosen to match the sending transducer). The suppressor grid ( $g_3$ ) normally connects directly to the cathode.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT		inc. VAT each
DMS6L	EF86	10+	25+	100+
		£7.250	£7.070	£6.600
				£9.130

## EL84

A miniature 9-pin (B9A), power output pentode designed for low to medium output audio power amplifiers. Push-pull 'ultra linear' (class AB1) can be up to 17W. Also often used for single-ended class A operation in small low power amplifiers of a few watts. Maximum rated anode dissipation is 12W.



Heater		Characteristics	
$V_h$	6.3V	$V_a$	250V
$I_h$	760mA	$V_{g2}$	250V
		$R_k$	135Ω
		$I_a$	48mA
		$I_{g2}$	5.5mA
		$g_m$	11.3mA/V
		$R_a$	4.5kΩ
		$P_{out}$	5.7W

Also available in matched pairs.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT		inc. VAT each
CR29G	EL84	10+	25+	100+
		£1.560	£1.340	£1.250
				£6.130

## EL34/6CA7

### Svetlana

This high performance EL34 is manufactured as the original Mullard valve in the Svetlana factory in Russia, and is designed to be a direct replacement for any EL34/6CA7, or equivalent. It is intended for ultra-linear audio power amplifiers in either pentode or triode connection and single or push-pull/parallel configuration. The valve has an indirectly heated oxide cathode which can be operated from a suitable DC supply for the best hum/noise performance. The anode is made from a laminated material that improves heat transfer and has superior performance under overload conditions - often found in guitar amplifiers. The quality manufacturing and processing provides enhanced reliability and superior sonic performance. The high sensitivity of a pair, or quad, Svetlana EL34's is an economical method to achieve high quality sound with a minimum of driving stage components. The valve can be operated in any position.



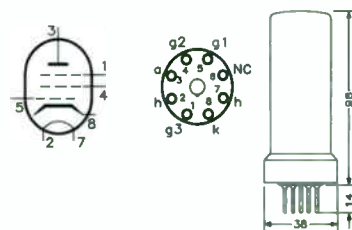
### Specification

Heater:	6.3V at 1.6A
Anode voltage:	800V max.
Anode dissipation:	25W max.
Maximum voltage grid 1:	-100V
grid 2:	500V
cathode/heater:	100V
DC cathode current:	150mA max.
Transconductance:	12.2mA/V
$R_a$ :	2kΩ

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT		inc. VAT each
DT91Y	Svetlana EL34	10+	25+	100+
		£9.990	£8.420	£7.860
				£14.990

## Power Output Pentodes EL34



EL34

A power output pentode with the international octal (8-pin) base, primarily for the output stages of audio power amplifiers. The valve was especially designed with push-pull 'ultra-linear' (distributed load) operation in mind. Given the appropriate output transformer, pure class A up to 15W and 'ultra-linear' up to 20 or 30W is possible, or class B up to 100W. The valve is able to cope with peak anode voltages of up to 800V, and connections between the glass envelope and pins on the bonded octal base are carefully arranged to prevent flash-over. Several application circuits for different output powers are shown in the booklet. Although highly rated, the EL34 is of a comparatively small physical size compared with contemporary equivalents. Maximum rated anode dissipation is 25W.

Heater		Characteristics	
$V_h$	6.3V	$V_a$	250V
$I_h$	1.5A	$V_{g2}$	250V
		$V_{g3}$	0V
		$R_k$	106Ω
		$I_a$	100mA
		$I_{g2}$	15mA
		$g_m$	11mA/V
		$R_a$	2.0kΩ
		$P_{out}$	11W

Also available in matched pairs / quads

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT		inc. VAT each
CR28F	EL34	10+	25+	100+
		£6.200	£5.310	£4.960
				£12.990

## Power Output Tetrode KT88

A power output beam tetrode, where beam forming plates are employed to overcome secondary emission problems as an alternative to the use of a suppressor grid, as in a pentode valve. The KT88 has a metal-shell wafer octal base, and was specifically designed for quality audio frequency amplifiers. Two valves operating in class AB1 can give a continuous output of up to 100W with fixed bias. At reduced power, used in 'ultra-linear' anode push-pull, maximum distortion can be limited to 2% at 70W (fixed bias), or 1% at 30W (cathode bias) output before negative feedback is applied. The device is readily adaptable to triode mode operation for best fidelity, producing 31W in push-pull with cathode bias and the screen grid connected to the anode. This type is a popular choice for Hi-Fi and stage PA usage. The valves can be mounted vertically or horizontally. If vertical, it is recommended that pins 4 and 8 of each valve are in line. If horizontal, pins 4 and 8 of each valve should be vertically aligned and one valve should not be mounted directly over the other. The base sockets must not be mounted less than 100mm apart and good free air circulation is desirable.

### Heater

$V_h$	6.3V
$I_h$	1.6A

### Characteristics

#### Tetrode connected:

$V_a$	250V
$V_{g2}$	250V
$I_a$	140mA
$I_{g2}$	3mA (approx.)
$-V_{g1}$	15V (approx.)
$g_m$	11.5mA/V
$R_a$	12kΩ

$\mu_{g1-g2}$  8  
**Triode connected:**  
 $V_{a,g2}$  250V  
 $I_{a,g2}$  143mA  
 $V_{g1}$  15V (approx.)  
 $g_m$  12mA/V  
 $r_a$  670 $\Omega$   
 $\mu$  8

(b) = biased (quiescent). (o) = operating.  $P_a$  = anode power

$D_{tot}$  = distortion total  
 It is essential to use two separate cathode bias resistors, and provide separately adjustable bias having a voltage adjustment range of  $\pm 25\%$ .

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AW79L	Audio Valve KT88	£11.450	£14.990

## Valve Booklet

Contains comprehensive data and typical circuits.

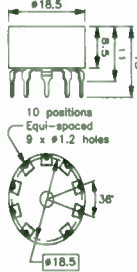
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XL52G	Valve Data Booklet	£1.250	£1.250 NV

## Valve Bases



Bases are available for the above valves. The octal type is chassis-mounting with tin-plated solder tags in a thermoplastic housing. Overall size 47 x 32mm fixing holes 38mm x M4. Two types are available for B9A base valves. Both types have silver-plated contacts, pins and tags in a ceramic base. One has pcb pins and the other is chassis-mounting with solder tags. Chassis-mounting type, overall size: 35 x 27mm, fixing holes 28mm x M3.



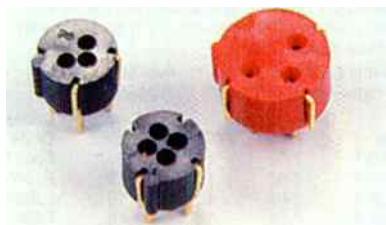
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CR30H	Base Octal	£1.250	£2.510
CR31J	Base Chassis	£1.020	£2.180
CR32K	Base PCB	£1.050	£2.180

## ACCESSORIES

## HARDWARE

## Transistor Sockets



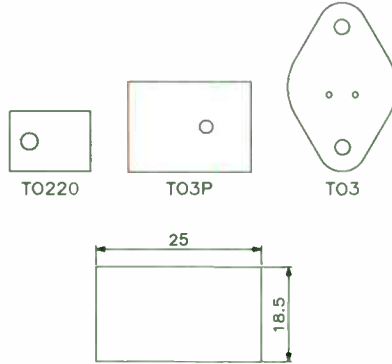
PCB mounting low-profile sockets with contacts on a 2.54mm (0.1in.) pitch. Glass filled nylon body with gold-plated phosphor-bronze contacts. Current rating: 1A per contact. Types are available

for 3-lead and 4-lead TO18 transistors and 3-lead TO5 transistors. Overall height 9.1mm. Pin length 3.5mm. Body dia: TO18 types 7.1mm, TO5 types 10.9mm.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WR29G	3L TO18	£0.240	£0.470
WR30H	4L TO18	£0.310	£0.480
WR31J	3L TO5	£0.330	£0.470

## Greaseless Semiconductor Insulators



Power semiconductor insulating washers that give excellent heat conduction without the need for silicone grease. The heat transfer capability without silicone grease is marginally better than mica or plastic with silicone grease, yet they offer similar electrical resistance (at least 1G $\Omega$ ). They are exceptionally easy and clean to use and make assembly extremely fast. Four types are available, TO3, TO3P, TO218 and TO220.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL74R	Insulator TO218	£0.160	£0.280

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
QY44X	Insulator TO3	£0.090	£0.170
UK85T	Insulator TO3P	£0.080	£0.150
QY45Y	Insulator TO220	£0.060	£0.130

## One Piece Semiconductor Insulators



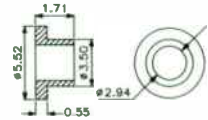
Two semiconductor insulators moulded with bushes, that provide better heat transfer than mica and plastic with silicone grease. Simple and easy to install. The insulators are available in two sizes; TO220 and TO3.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CH03D	TO220 1 Piece Mount	£0.100	£0.220
CH04E	TO3 1 Piece Mount	£0.160	£0.270

## Plastic Bush TO66 (short)

Packs of plastic bushes for use with TO66 package semiconductor devices. Supplied in packs of 20 bushes.

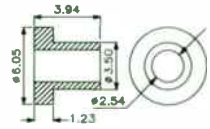


Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JR78K	Bush TO66	£0.690	£1.210

## Plastic Bush TO66 (long)

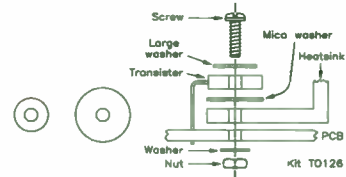
Packs of plastic bushes for use with TO66 package semiconductor devices. Supplied in packs of 20 bushes.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL69A	Bush TO66L	£1.410	£2.180

## TO126

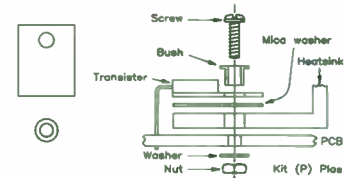


For mounting TO126 case transistors on heatsinks. Kit comprises one mica washer and one large washer to cover plastic side of transistor.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WR26D	Kit TO126	£0.090	£0.140

## Plastic TO220



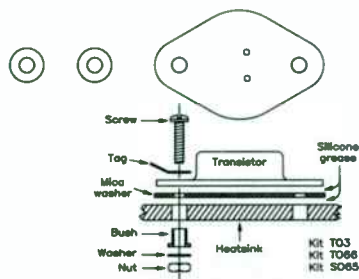
For mounting plastic TO220 case (P1, P2 and P3) semiconductor one mica washer and one insulating bush.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WR23A	Kit P Plus	£0.150	£0.260

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## TO66



For mounting TO66 case transistors on heatsinks. Kit comprises one mica washer and two insulating bushes.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WR25C	Kit TO66	25+ £0.100 100+ £0.077 1000+ £0.072	1+ £0.180

## Semiconductor Mounting Kits

TTI (Thurby-Thandar)

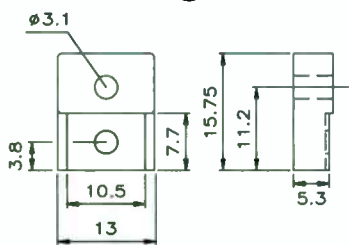


For mounting TO3 case transistors on heatsinks. Kit comprises one mica washer and two insulating bushes.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
WR24B	Kit TO3	25+ £0.160 100+ £0.089 1000+ £0.083	1+ £0.290

## TO220 Insulating Cover

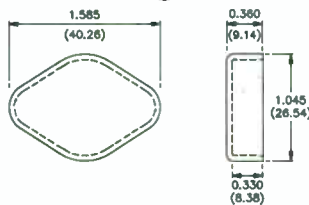


A plastic cover for TO220 packaged devices. The cover encloses the metal heatsink mounting tab of the device and includes a spigot for locating the hole in the tab, so that the device is entirely secured by the cover which is itself attached to the heatsink by one nut and screw, no other screws are necessary. This has the added advantage that there is no bolt anywhere near the tab and no risk of short circuit. For complete insulation of the tab, the addition of an insulator is required, such as UL74R, beneath which, a bolt hole is not needed. Made from white nylon 66 approved to UL94V-0. Overall size: 15.75 x 13 x 5.3mm.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
UL92A	TO220 Cover	25+ £0.060 100+ £0.040 1000+ £0.030	1+ £0.120

## TO3 Insulating Cover



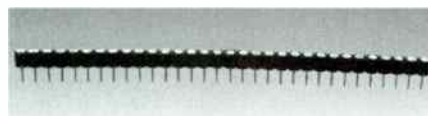
A clip-on plastic insulating cover for TO3 case transistors. Prevents short circuits and provides insulation up to 30kV.

Price each is shown. Order quantities less than 50 will be sold at the one off inc. VAT price.

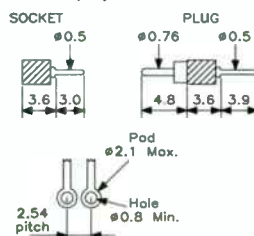
Order Code	Type	Price each exc. VAT	inc. VAT each
FL56L	TO3 Cover	50+ £0.100 100+ £0.076 1000+ £0.070	1+ £0.180

## IC SOCKETS

### Modular Connectors



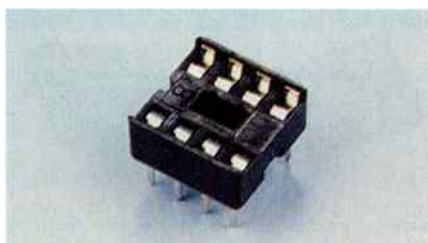
Single row modular 2.54mm pitch sockets, and matching plugs, which are intended for mother-daughter board applications. The shrouded socket is fitted with a highly reliable four leaf gold on beryllium copper contact, and is also suitable for use with ICs. The unshrouded tin/lead finished brass plugs are also suitable for cable wiring applications. The 32-way connector strip can be easily cut to size using suitable hand tools. Insulator material: glass filled polyester UL94V-0.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
DC17T	32 Socket Strip	25+ £0.490 100+ £0.470 500+ £0.400	1+ £1.060
DC18U	32 Plug Strip	25+ £1.370 100+ £1.140 500+ £0.979	1+ £2.020

## Dual-In-Line Sockets



A range of high quality low-profile dual-in-line sockets with black glass-reinforced polyester bodies and tin-plated phosphor-bronze contacts. The contact makes against the flat face of the IC leg for maximum contact area and low insertion pressure. Sockets may be mounted end to end to achieve longer continuous runs of 2.54mm (0.1in.) spaced sockets. Sockets have chamfered side walls to assist insertion. The ultra-reliable, precision-stamped dual-wipe contacts offer an anti-overstress feature to prevent contact spring damage. One end is indented for polarisation.

### Dimensions:

Pin size: 3.3 x 0.6 x 0.15mm  
PCB hole required: 0.8mm  
Overall height above pcb: 5.1mm  
Height above pcb to base of IC: 4.1mm  
Distance between sockets (lengthwise): 2.54mm (0.1in.)

The following types are available:

Type	Pin spacing (mm)	Pin spacing (in.)	Overall length (mm)	Overall length (in.)	Overall width (mm)	Overall width (in.)
6-pin	7.62	0.3	7.62	0.3	10.16	0.4
8-pin	7.62	0.3	10.16	0.4	10.16	0.4
14-pin	7.62	0.3	17.78	0.7	10.16	0.4
16-pin	7.62	0.3	20.32	0.8	10.16	0.4
18-pin	7.62	0.3	22.86	0.9	10.16	0.4
20-pin	7.62	0.3	25.4	1.0	10.16	0.4
24-pin	15.24	0.6	30.48	1.2	17.78	0.7
28-pin	15.24	0.6	35.56	1.4	17.78	0.7
40-pin	15.24	0.6	50.8	2.0	17.78	0.7

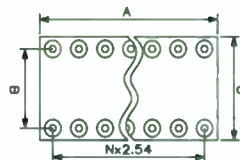
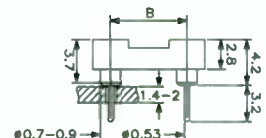
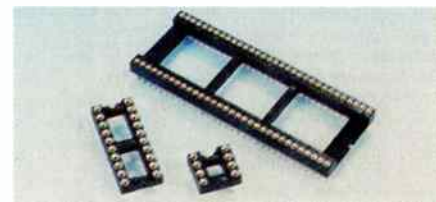
Price each is shown. Order quantities less than 50 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
CJ79L	DIL Socket 6-Pin	50+ £0.070 100+ £0.029 1000+ £0.022	1+ £0.170
HQ76H	DIL Socket 18-Pin	£0.100 £0.060 £0.050	£0.190
HQ77J	DIL Socket 20-Pin	£0.090 £0.040 £0.030	£0.230
HQ38R	DIL Socket 40-Pin	£0.120 £0.044 £0.040	£0.280

Price each is shown. Order quantities less than 50 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
BL17T	DIL Socket 8-Pin	£0.048 £0.030 £0.018	£0.110
BL18U	DIL Socket 14-Pin	£0.080 £0.050 £0.039	£0.180
BL19V	DIL Socket 16-Pin	£0.085 £0.050 £0.039	£0.180
BL20W	DIL Socket 24-Pin	£0.100 £0.060 £0.050	£0.220
BL21X	DIL Socket 28-Pin	£0.080 £0.060 £0.050	£0.240

## Open Frame Dual-In-Line Sockets



An Open Frame designed line of standard low profile IC-Sockets with turned pins. Advantages include increased space beneath the IC for improved heat dissipation, PCB cleaning and inspection.

Plating Sleeve (Pin): 5µmSn  
Plating Contact (Clip): 0.25µmAu

Dimensions	No of pins	Order Code
A 10-1	8	FJ63T
B 17-7	14	FJ64U
C 20-3	16	FJ65V
22-8	18	FJ66W
25-3	20	FD90X
27-8	22	FD91Y
30-4	24	FJ67X
36-5	28	FJ68Y



40-6	15-24	17-7	32	KW69A
50-6	15-24	17-7	40	FJ69A
<b>Order Code</b>	<b>Manufacturers Code</b>			
FJ63T	110-91-308-41-001			
FJ64U	110-91-314-41-001			
FJ65V	110-91-316-41-001			
FJ66W	110-91-318-41-001			
FD90X	110-91-320-41-001			
FD91Y	110-91-322-41-001			
FJ67X	110-91-324-41-001			
FJ68Y	110-91-628-41-001			
KW69A	110-91-632-41-001			
FJ69A	110-91-640-41-001			

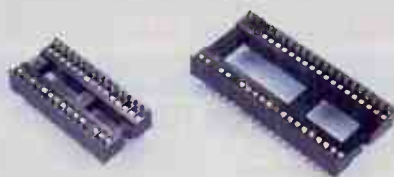
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2541	Price each exc. VAT	inc. VAT each
FJ64U	Turned Pin Skt 14-Pin	£0.220	£0.190
KW69A	Turned Pin Skt 32-Pin	£0.500	£0.380

Price each is shown. Order quantities less than 50 will be sold at the one off inc. VAT price.

Order Code	Type 2541	Price each exc. VAT	inc. VAT each
FJ63T	Turned Pin Skt 8-Pin	£0.210	£0.110
FJ65V	Turned Pin Skt 16-Pin	£0.230	£0.180
FJ66W	Turned Pin Skt 18-Pin	£0.260	£0.210
FD90X	Turned Pin Skt 20-Pin	£0.350	£0.270
FD91Y	Turned Pin Skt 22-Pin	£0.390	£0.280
FJ67X	Turned Pin Skt 24-Pin	£0.400	£0.240
FJ68Y	Turned Pin Skt 28-Pin	£0.390	£0.278
FJ69A	Turned Pin Skt 40-Pin	£0.540	£0.393

## 1.778mm High Density Shrink DIP IC Sockets



Dual Inline Pin IC sockets as used in the NICAM project, for use with ICs featuring the narrow ('shrink DIP') spacing of 1.778mm (0.07in.) between pins along each side. Two types are available, 30-pin and 42-pin; the two rows of pins are spaced 10.16mm apart in the case of the 30-pin version, and 15.24mm in the 42-pin version. Insulator material is glass filled P.B.T., and contacts are tin-plated phosphor bronze. Current rating 1A per pin max., contact resistance 20mΩ max.

Dimensions of body -  
30-pin: 26.95mm long x 12.65mm wide x 4.8mm high.  
42-pin: 37.62mm long x 17.33mm wide x 4.8mm high.

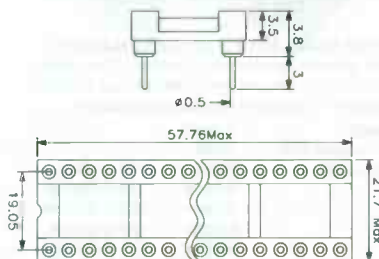
Price each is shown. Order quantities less than 50 will be sold at the one off inc. VAT price.

Order Code	Type 2544	Price each exc. VAT	inc. VAT each
JM97F	Shrink DIP Skt 30Pin	£0.650	£0.590
JM98G	Shrink DIP Skt 42Pin	£0.890	£0.790

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

## Turned Pin Dual-In-Line Sockets

Harwin



A good quality 64-way turned-pin open frame shrink dip IC socket. The contacts are 4-leaf beryllium copper contact for maximum reliability.

### Material

Contact Spacing: 1.778mm (0.070in.) in each row

Insulator: 30% glass filled polyester UL94V-0

Shell: Precision machined brass

Contact: Beryllium Copper

Number of operations: 1,000 insertions

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2543	Price each exc. VAT	inc. VAT each
FJ69H	64pin Shrink DIP Skt	£4.380	£3.860

## 28-Way Wire Wrap DIL Socket



A very high quality DIL socket with wire wrapping pins. Features include: four leaf gold-plated beryllium copper contacts, contact life 1000 insertions, low profile (4.9mm). Insulation glass reinforced polyester to UL 94 V0. Pin material turned brass. Pin Spacing 2.54mm (0.1in.) x 15.24mm (0.6in.). Frame Size 35.62 x 17.78mm.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2512	Price each exc. VAT	inc. VAT each
JF75S	WWrap 28p DIL Skt	£1.480	£1.240

## Zero Insertion Force IC Socket

Harwin



A range of DIL sockets ideally suited for programming EPROMs where different ICs must be inserted in one socket. With the lever in the unlocked position, ICs may be inserted or withdrawn with no force. When the IC has been inserted, push the lever over to the locked position and the IC will be held firmly in position with excellent contact to all leads.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2540	Price each exc. VAT	inc. VAT each
YX50E	ZIF Socket 24-Way	£5.280	£4.400
FT14Q	ZIF Socket 28-Way	£4.700	£3.920
FT15R	ZIF Socket 40-Way	£8.150	£6.790

## Universal Test Socket

Artes



A zero insertion force socket which can accept ICs of any size up to 32 pins, because its wide sockets permit 7.62mm, 10.2mm and 15.2mm (0.3in., 0.4in. and 0.6in.) wide ICs to be inserted. With the lever up, ICs can be inserted or removed with no force. Throw the lever down to lock the IC and firmly clamp the pins.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2550	Price each exc. VAT	inc. VAT each
JK75S	Universal Tst Socket	£6.990	£6.300

## IC Extraction Tool



A pair of plastic-coated, chrome-plated sprung steel tweezers with hooked ends for lifting and placing ICs without touching the pins. Overall length 102mm.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2555	Price each exc. VAT	inc. VAT each
FD54J	Extraction Tool	£0.409	£0.341

## Vertical Twisted Vane PCB Mounting

### Redpoint Thermalloy

Low profile, low cost vertical PCB mounting twisted vane design with a good thermal rating for TO220 and TO126 devices etc. A central device fixing slot of 3.8 x 9mm is provided 15.2mm from the bottom edge. The complete assembly occupies only 30 x 13mm of PCB space. Height above PCB, 30.2mm. Thermal rating = 14°C/W. Black anodised finish.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
JW29G	Vert Vaned HSk TO220	£0.340	£0.283	£0.227	£0.640

## High Power Twisted Vane

### Redpoint Thermalloy

A twisted vane radiator in matt black finish, pre-drilled to accept almost any flat plastic package device. Overall size: 38 x 28 x 22mm high. Temperature rise: 9.9°C/W.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
FG55K	Powerfin Plastic	£0.515	£0.467	£0.373	£0.860

## TO126 Style

### Redpoint Thermalloy

A miniature extruded heatsink with matt black finish for use with TO126 style packages. A 3.66mm device mounting hole is drilled in the heatsink and a slot is cut where the device leadwires are positioned. Overall size: 7.9 x 19 x 25.4mm. Temperature rise: 28°C/W.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
JR93B	Heatsink TO126	£1.100	£1.030	£0.827	£1.810

## TO202 STYLE

## TO202 Style

### Redpoint Thermalloy

A twisted vane radiator in matt black finish, pre-drilled to accept TO202 style devices e.g. C106D. Overall size: 30 x 12.7 x 45mm long plus mounting lugs. Temperature rise: 13°C/W.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
FG53H	Vaned Heatsink TO202	£0.540	£0.467	£0.373	£0.820

## TO128 STYLE

## BW5-2 Heatsink (TO218)

### Redpoint Thermalloy



A compact heatsink for use with TO218 style packages, giving high dissipation with a reduced footprint. Thermal resistance of 5.8°C/W. Constructed from black anodised aluminium. Devices may be secured with the aid of sprung clips (AX86T), eliminating the need for drilling.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AX85G	Heatsink BW50-2	£0.800	£0.700	£0.560	£1.300
AX86T	Clip 6801	£0.120	£0.067	£0.053	£0.270

## BW38-2 Heatsink (TO218)

### Redpoint Thermalloy



A compact heatsink for use with TO218 style packages, giving high dissipation with a reduced footprint. Thermal resistance of 7.2°C/W. Constructed from black anodised aluminium. Devices may be secured with the aid of sprung clips (AX86T), eliminating the need for drilling or modifying the heatsink in any way.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AX84F	Heatsink BW38-2	£0.760	£0.650	£0.520	£1.190
AX86T	Clip 6801	£0.120	£0.067	£0.053	£0.270

## TO220STYLE

## PF720 Heatsink (TO220)

### Redpoint Thermalloy

A miniature, low-cost heatsink which clips onto TO220 style packages. Pressure is applied directly above the junction, maximising thermal transfer. Designed for use without thermal interface grease. Manufactured from aluminium with a black paint finish. Thermal resistance of 28°C/W.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AZ00A	Heatsink PF720	£0.110	£0.100	£0.080	£0.200

## Clip-On TO220

### Redpoint Thermalloy

A clip-on black anodised heatsink for vertically mounted TO220 devices, with slotted side vanes. A strong, reinforced clip allows maximum heat transfer and an integral locking tab secures the device in position. Temperature rise in centre of heatsink: 25°C per watt. Dimensions: height 18mm, width 22.86mm, thickness including vanes, 9.52mm.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
KU50E	Clip On TO220	£0.220	£0.183	£0.147	£0.420

## For Plastic Package Devices -Clip On

### Redpoint Thermalloy



A low-cost clip-on heatsink for TO220 style devices. The TO220 package is inserted into the clip as far as the dimple and is then retained by the pressure applied directly above the device junction, thus providing optimum thermal transfer. Black anodised finish. Overall size: 25 x 19.05 x 8mm. Temperature rise: 23°C/W.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
FG52G	Clip On TO220	£0.310	£0.267	£0.213	£0.490

## Clip-On Vaned TO220

### Redpoint Thermalloy

Labour saving, clip-on black anodised vaned heatsink for TO220 devices. It can be mounted vertically or horizontally. A strong, reinforced clip allows maximum heat transfer and an integral locking tab secures the device in position. Temperature rise in centre of heatsink: 13.6°C per watt. Dimensions: height 29.44mm, width 25.53mm, thickness including vanes, 15.5mm.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
KU51F	Clip On Vaned TO220	£0.320	£0.267	£0.213	£0.490

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## PF750 Heatsink (TO220)

### Redpoint Thermalloy

A very low cost heatsink with integral tags for PCB fixing etc. Clips neatly over any TO220 style package to provide 20°C/W power dissipation. Note that this heatsink is not anodised, which makes it possible to solder directly to the heatsink for earthing purposes etc.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2617	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AX88V	Heatsink PF750	£0.380	£0.320	£0.250	£0.760

## PF430 Heatsink (TO220)

### Redpoint Thermalloy

A compact clip-on heatsink featuring a solderable tag for flow solder PCB assembly. Designed for operation without the need for heatsink compound or grease. Constructed from aluminium with a black anodised finish. Thermal resistance of 25°C/W.



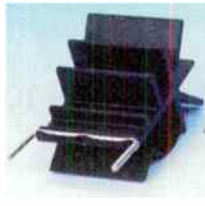
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2627	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AZ01B	Heatsink PF430	£0.560	£0.470	£0.370	£1.090

## HF20 Heatsink (TO220)

### Redpoint Thermalloy

A versatile and efficient extruded heatsink, ideal for use with TO220 style packages. Fixes easily to TO220 devices using a built-in clip. Thermal resistance of 13°C/W.



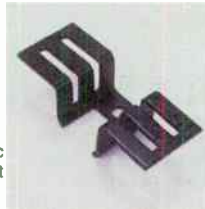
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2616	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AX87U	Heatsink HF20	£0.800	£0.670	£0.530	£1.420

## Top Mounting TO220

### Redpoint Thermalloy

Can be added to a TO220 packaged device fitted to the low profile heatsink above to provide heatsinking on the top side as well. A special cutout makes space for the plastic encapsulation leaving a flat strip which lies flat on top of the heatsink tab giving the device double-sided cooling. Shaped to mate with low profile heatsink above. Temperature rise in centre of heatsink: 15°C per watt. Dimensions: length 17.78mm, width 44.45mm, height 12.7mm. Channel 12.7mm. Cutout: width 10.67mm, depth 13.46mm.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2616	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
KU47B	Top Mount TO220	£0.220	£0.183	£0.147	£0.360

## Low Profile TO220

### Redpoint Thermalloy

Low profile, black anodised pre-drilled heatsink, large enough for up to two TO220 devices, with slotted side vanes. Designed for mounting flat onto a PCB and can be used with the top mounting part described previously. Temperature rise in centre of heatsink: 7.1°C per watt. Dimensions: length 36.83mm, width 44.45mm, height 9.52mm. Channel 17.78mm. Each mounting hole is 13.21mm from each end.

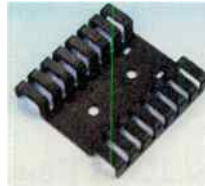
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2612	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
KU48C	Low Profile TO220	£0.380	£0.367	£0.293	£0.600

## Low Profile High Performance TO220

### Redpoint Thermalloy

A low profile, black anodised pre-drilled heatsink for up to two TO220 devices, having folded slotted side vanes. Designed for mounting flat onto a PCB. Temperature rise in centre of heatsink: 6.5°C per watt. Dimensions: length 50mm, width 50mm, height 9.52mm. Channel 24.28mm. Each mounting hole is 10.52mm from each end.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2614	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
KU53H	Hi Performance TO220	£0.380	£0.333	£0.267	£0.600

## High Performance TO220

### Redpoint-Thermalloy

Very high performance 4-sided heatsink pre-drilled for TO220 style devices in black anodised finish. Has a 45.2mm square base. Height of fins 25.4mm. Temperature rise 6°C/W.



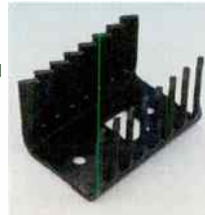
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2616	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
FG61R	Heatsink TO220 EHP	£0.560	£0.467	£0.373	£0.860

## TO220 5-Lead Style

### Redpoint Thermalloy

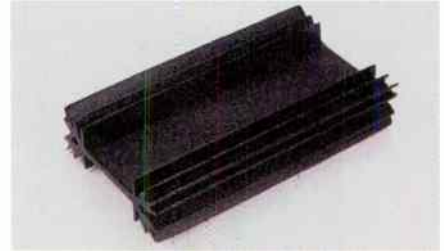
A twisted vane radiator in matt black finish, pre-drilled to accept 5-lead TO220 (Pentawatt) style devices, e.g. LM383. Overall size: 38 x 28 x 22mm high. Temperature rise: 9.9°C/W.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2602	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
FG54J	Vaned Heatsink Penta	£0.960	£0.917	£0.733	£1.480

## 8-Fin TO220 Heatsinks



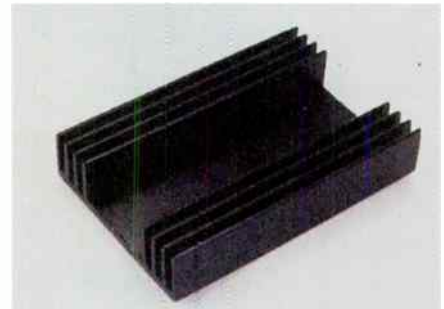
Pre-drilled for one TO220 package. Available in two versions:

Length	Overall height	Overall width	No. of packages	semi. Thermal Colour
25mm	12.3mm	35mm	1	13°C/W Matt black
40mm	12.3mm	35mm	1	9°C/W Matt black

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2621	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
KW41U	8 Fin TO220 25mm	£0.260	£0.186	£0.149	£0.600
KW42V	8 Fin TO220 40mm	£0.350	£0.249	£0.199	£0.710

## Centrally Mounting Heatsink for TO220 Semiconductor Packages



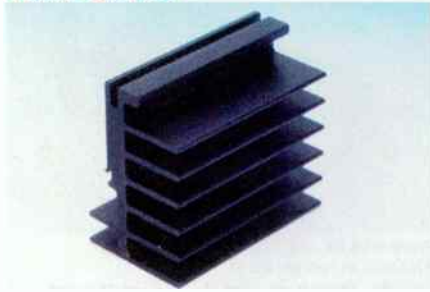
Available for a single TO220 package which mounts in the centre of the heatsink, the main areas of heat dissipation being concentrated at the ends. Overall dimensions: 50mm length x 12.5mm height x 43mm width. Manufactured from matt black anodised aluminium alloy, the thermal rating of the heatsink is 6.8°C/W. Pre-drilled for one TO220 package.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2623	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
KW43W	Central Mount TO220	£0.473	£0.394	£0.315	£1.080

## KM50-1 Heatsink (TO220)

Redpoint Thermalloy



A high dissipation heatsink which features threaded slots for board assembly and occupies the minimum of board space due to its predominantly vertical design. TO220 style packaged devices fix easily to this heatsink with the aid of sprung clips (AX93B). Thermal resistance of 5°C/W.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 5025	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AX91Y	Heatsink KM50-1	£1.600	£1.500	£1.200	£2.180
AX93B	Clip 4426	£0.080	£0.050	£0.040	£0.200

## KM100-1 Heatsink (TO220)

Redpoint Thermalloy



A high dissipation heatsink which features threaded slots for board assembly and occupies the minimum of board space due to its predominantly vertical design. TO220 style packaged devices fix easily to this heatsink with the aid of sprung clips (AX93B). Thermal resistance of 2.9°C/W.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 6021	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AX92A	Heatsink KM100-1	£1.980	£1.880	£1.500	£2.730
AX93B	Clip 4426	£0.080	£0.050	£0.040	£0.200

## 1.25GY-50 Heatsink (TO220)

Redpoint Thermalloy

A high quality heatsink designed for both horizontal and vertical mounting. Ideal for use with all TO220 style packages, giving high dissipation at low cost. Constructed from black anodised aluminium. Thermal resistance of heatsink is 6.8°C/W (horizontal) and 8.6°C/W (vertical).



Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 6013	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AX83E	Heatsink 1.25GY-50	£1.840	£1.530	£1.220	£2.730

## KL50-1 Heatsink (TO220)

Redpoint Thermalloy



A high quality, high dissipation heatsink designed for use with TO220 style packaged devices. Fixes to TO220 style devices with sprung clips (AX93B), for fast efficient and secure operation. Overhang feature maximises the radiant surface of the heatsink while minimising the actual amount of space required on PCBs. Thermal resistance of 4.4°C/W.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 6018	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AX89W	Heatsink KL50-1	£1.990	£1.800	£1.440	£2.730
AX93B	Clip 4426	£0.080	£0.050	£0.040	£0.200

## KL100-1 Heatsink (TO220)

Redpoint Thermalloy

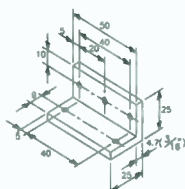


A high quality, high dissipation heatsink designed for use with TO220 style packaged devices. Fixes to TO220 style devices with sprung clips (AX93B), for fast efficient and secure operation. Overhang feature maximises the radiant surface of the heatsink while minimising the actual amount of vertical space required on PCBs. Thermal resistance of 2.6°C/W. Constructed from aluminium with a black anodised finish.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 6018	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
AX90X	Heatsink KL100-1	£2.940	£2.880	£2.300	£4.380
AX93B	Clip 4426	£0.080	£0.050	£0.040	£0.200

## 8W Hi-Fi Heatsink



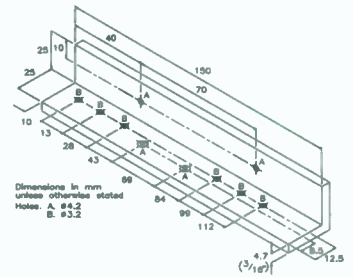
Dimensions in mm unless otherwise stated. All holes  $\phi 3.5$ .

Designed to bolt to a pcb, the power amp IC then bolts onto this heatsink and a further heatsink may be bolted to it. It is therefore an ideal method of transferring heat from an on-board plastic power device to a large finned heatsink easily. Manufactured in aluminium angle 4.76mm ( $\frac{3}{16}$ in.) thick and black anodised.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2534	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
HQ81C	8W Hi-Fi Heatsink	£0.650	£0.250	£0.200	£2.510

## 50W Hi-Fi Heatsink



As 8W Heatsink, but longer and designed for two plastic power transistors or power ICs.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2537	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
HQ89A	50W Hi-Fi Heatsink	£0.600	£0.500	£0.400	£3.500

## TO3 STYLE

### For Case Style TO3 - Basic Radiator

Redpoint Thermalloy

A basic fin radiator in matt black finish, pre-drilled to accept a standard TO3 transistor. Overall size: 44.5 x 31.5 x 14mm high. Temperature rise: 11°C/W



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2514	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
FG50E	Basic TO3 Fin	£0.460	£0.383	£0.307	£0.600

### Low Profile TO3

Redpoint Thermalloy

Space saving black anodised vaned heatsink for TO3 style devices. The design conforms to the diamond TO3 case style, using very little extra space on the board. Temperature rise in centre of heatsink: 6.9°C per watt. Overall dimensions: length 47.76mm, width 35.56mm, height 25.4mm.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2517	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
KU45Y	Low Profile TO3	£0.500	£0.417	£0.333	£0.710

### High Power Twisted Vane for TO3

Redpoint Thermalloy

A vaned radiator in matt black finish, pre-drilled to accept a standard TO3 transistor. Overall size: 47mm long, 43mm wide x 50mm high. Temperature rise: 4.2°C/W. Not suitable for use with mounting kit WR24B.



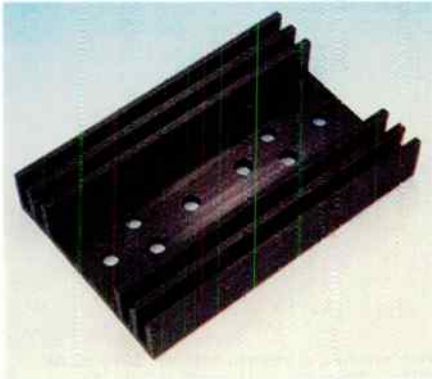
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2519	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
FG51F	Powerfin TO3	£0.800	£0.667	£0.533	£1.300

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**6-Fin TO3 Heatsinks (Type V)**



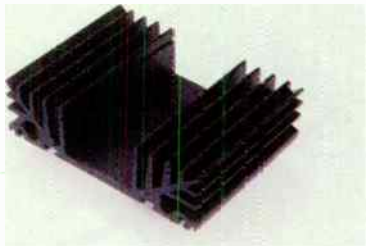
Available in two versions.  
Pre-drilled for one or two TO3 package devices.

Length	Overall height	Overall width	No. of semi. packages	Thermal rating	Colour
50mm	18.4mm	66mm	1	5.4°C/W	Black
100mm	18.4mm	66mm	2	3.4°C/W	Black

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
KW44X	50mm	£1.018 £0.848	£1.078 £2.19C
KW45Y	100mm	£1.964 £1.837	£1.310 £2.73C

**Centrally Mounting TO3 Heatsinks (Type X)**



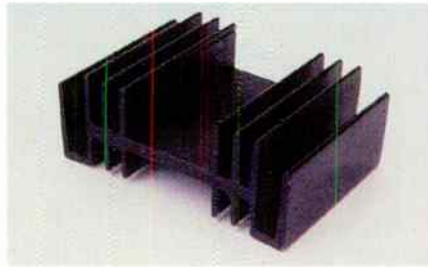
The semiconductor(s) are mounted centrally and horizontally. The base of the heatsink will fit flush against a flat surface and as a result is suitable for PCB mounting, the leads from the package being soldered on the other side. Available in three versions. Pre-drilled for one, two, or three TO3 package devices.

Length	Overall Height	Overall Width	No. of semi. packages	Thermal rating	Colour
50mm	25mm	86mm	1	2.90°C/W	Black
100mm	25mm	86mm	2	1.35°C/W	Black
150mm	25mm	86mm	3	1.30°C/W	Black

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
KW46A	50mm	£2.063 £1.715	£1.372 £2.73C
KW50E	100mm	£3.457 £2.881	£2.305 £7.14C
KW50E	150mm	£5.197 £3.351	£3.465 £8.13C

**Centrally Mounting TO3 Heatsinks (Type Y)**



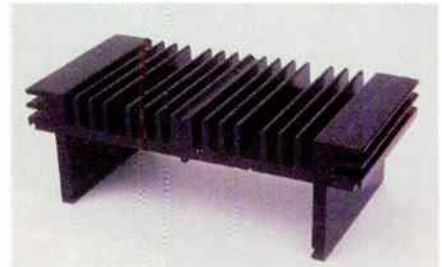
A range of heatsinks where the semiconductor(s) are mounted centrally and horizontally. From a side view the heat dissipating device is centrally mounted, sufficient clearance for its lead-outs being provided when the heatsink is chassis mounted. Available in two versions. Pre-drilled for one or two TO3 package devices.

Length	Overall Height	Overall width	No. of semi. packages	Thermal rating	Colour
50mm	36mm	91.4mm	1	2.75°C/W	Black
100mm	36mm	91.4mm	2	1.75°C/W	Black

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
KW47B	Central TO3 50mm Y	£2.440 £2.030	£1.620 £3.610
KW51F	Central TO3 100mm Y	£4.280 £3.570	£2.860 £5.480

**Heatsinks for Multiple TO3 Packages (Type W)**



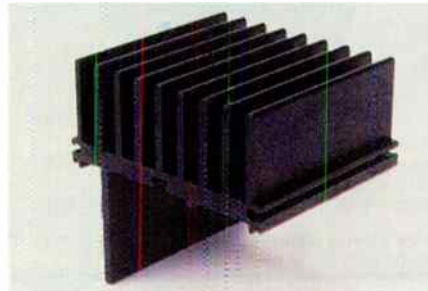
The semiconductors are mounted on the two end panels, the main area of heat dissipation being in the middle section. Available in two versions. Pre-drilled for two, or four TO3 package devices.

Length	Overall height	Overall width	No. of semi. packages	Thermal rating	Colour
50mm	44mm	130mm	2	2.1°C/W	Black
100mm	44mm	130mm	4	1.33°C/W	Black

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
KW49D	Multiple TO3 50mm	£3.180 £2.650	£2.120 £5.480
KW53H	Multiple TO3 100mm	£5.440 £5.360	£4.290 £7.680

**10-Fin TO3 Heatsink (Type Z)**



There are 10 fins on this heatsink, 9 are devoted to dissipating heat while the tenth, which is mounted at 180° to the rest, accommodates the semiconductor package(s). Three versions are available. Pre-drilled for one, two, or three TO3 package devices.

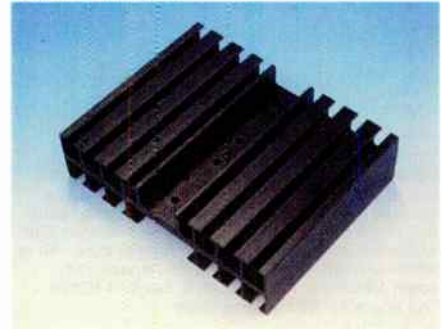
Height	Overall Length	Overall Width	No. of semi. packages	Thermal rating	Colour
50mm	75mm	69.4mm	1	2.20°C/W	Black
100mm	75mm	69.4mm	2	1.39°C/W	Black
150mm	75mm	69.4mm	3	1.00°C/W	Black

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
KW48C	10 Fin TO3 50mm	£2.330 £1.940	£1.550 £4.710
KW52G	10 Fin TO3 100mm	£3.940 £3.280	£2.620 £6.580
KW55K	10 Fin TO3 150mm	£7.220 £6.860	£5.490 £8.790

**High Power 'T' Slotted**

Redpoint Thermalloy



An efficient, general purpose symmetrically finned heatsink where the two outer pairs of fins, on both sides, feature integral 'T' slots 4.7mm wide for locating screw heads. With these the heatsink can be attached to panels, supported on pillars or carry PCBs. One side of the central device mounting section has a pair of thick longitudinal fins 22.2mm apart. Holes are provided for two TO3 devices to be mounted upon the other side. Centre of heatsink is 6.4mm thick. Width 130.2mm, length 101.6mm, depth 31.8mm. Thermal rating 1.2 C/W. Black anodised finish.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
JW31J	Slot Slotted HiSink	£5.600 £4.900	£4.370 £6.990

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## Type 9SV

Redpoint Thermalloy



A very high power heatsink in extruded aluminium. Black anodised and with holes punched to accept up to 8 TO3 packages. Dimensions 127 x 85 x 229mm long. Temperature rise in centre of heatsink: 0.45°C/W.

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 2555	Price each exc. VAT			inc. VAT each
		5+	10+	25+	1+
XJ66W 4	Heatsink Drilled	£24.250	£21.500	£19.950	£29.990

## UNDRILLED HEATSINKS

### Bonded IC Heatsink

Redpoint Thermalloy



A black anodised finned heatsink designed for 14 and 16 pin dual-in-line ICs. The heatsink may be attached using contact adhesive or similar at each end, and for best results it should be smeared with heatsink compound in between. Temperature rise in centre of heatsink: 68°C per watt. Dimensions: length 19.05mm, width 6.35mm, height 4.83mm. Fins are orientated longitudinally.

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type 2561	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
KU44X	Bonded Heatsink	£0.270	£0.240	£0.210	£0.390

### Large Bonded IC Heatsink

Redpoint Thermalloy



A black anodised finned heatsink for 24, 28, and 40 pin dual-in-line ICs. Requires no extra board space. The heatsink may be attached using contact adhesive or similar at each end, and for best results it should also be smeared with heatsink compound in between. Temperature rise in centre of heatsink: 38°C per watt. Dimensions: length 31.75mm, width 13.46mm, height 4.83mm. Fins are longitudinal.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 2563	Price each exc. VAT			inc. VAT each
		25+	100+	1000+	1+
KU49D	Lrg Bonded Heatsink	£0.390	£0.350	£0.305	£0.560

## Type 4Y

Redpoint Thermalloy



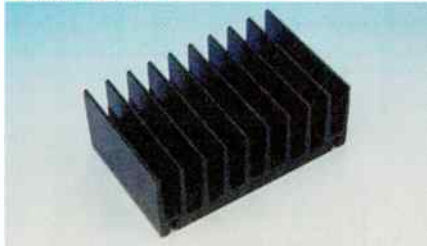
Plain undrilled aluminium heatsink. Dimensions: Width: 60mm (2.4in.); Length: 102mm (4in.); Thickness: 16mm (0.63in.); Temperature rise in centre of heatsink: 3.3°C/W.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2532	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
FL41U	Heatsink 4Y	£1.650	£1.450	£1.410	£3.480

## High Power Types – Type 2E

Redpoint Thermalloy



Plain undrilled aluminium heatsink. Dimensions: Width: 80mm (3.15in.); Length: 51mm (2in.); Thickness: 30mm (1.2in.); Temperature rise in centre of heatsink: 2.4°C/W.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2528	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
HQ70M	Heatsink 2E	£3.300	£2.600	£2.350	£4.980

## Flat Type

Redpoint Thermalloy



Plain undrilled aluminium heatsink ideal for printed circuit boards and suitable for external mounting on equipment.

Dimensions: Width: 94mm (3.7in.); Length: 152mm (6in.); Thickness: 14mm (0.6in.); Temperature rise in centre of heatsink: 1.8°C per watt.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2544	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
FL42V	Flat Heatsink	£4.300	£3.950	£3.350	£6.860

## Type 6W-1

Redpoint Thermalloy



Plain undrilled aluminium heatsink. Dimensions: Width: 130mm (5.1in.); Length: 152mm (6in.); Thickness: 32mm (1.25in.); Temperature rise in centre of heatsink: 1.1°C/W.

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

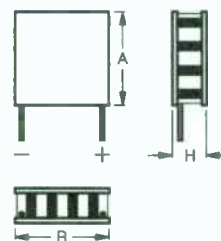
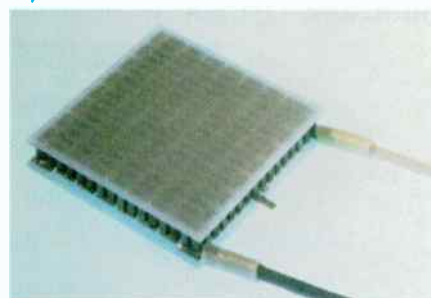
Order Code	Type 2548	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
FL77J	Heatsink 6W-1	£6.400	£5.600	£5.300	£8.490

## COOLING MODULES

### PELLIER

### Peltier Heat Pumps

Supercool AB



The thermoelectric Peltier effect is the most direct way to utilise electricity to pump heat. The material used in these pumps is made from bismuth telluride, doped to obtain P- and N-type properties. A number of these P- and N- type pairs (couples) are thermally connected in parallel, and electrically connected in series and sandwiched between ceramic plates. When connected to a suitable DC power supply, the passing current causes heat to be transferred from one side of the module to the other. A cold side and a hot side are now created. The cold side can be attached to any object or device that needs controlled cooling. By reversing the current flow through the pump you reverse the cooling effect. Typical applications can include scientific and medical instrumentation, microprocessors, charged coupled devices, spot cooling of laser etc. Efficiency is improved by connecting the hot side to a heatsink which will dissipate heat to the environment. The pumps are lightweight, completely silent, have no moving parts, and are very reliable. They generate very little, if any electrical noise and can provide precision temperature control if necessary, and additionally, be used in a vacuum or weightless environments, with liquids, air or solid surfaces and in any orientation.

Maximum temperature differential ( $\Delta T$  max)

between the cold and warm side of a Supercool single-stage module is up to 72°C at warm side temperatures of 25°C or ΔT = 81°C at a warm side temperature of 50°C. By increasing the number of stages in a cascade arrangement, then the maximum ΔT is also increased.

**Specification**

Order Code	I max (A)	U max (V)	Pc max (W)	Δt max (°C)
DT78K	3.4	3.8	7.6	71
DT79L	3.9	8.8	19.7	71
DT80B	6.1	8.8	31.3	71
DT81C	6.1	15.7	56.0	71

Pc max = Cooling effect at ΔT=0

ΔT max = Temperature difference (warm surface less cold surface) at a warm side temperature of 25°C and Pc=0.

800C is maximum warm side temperature.

**Dimensions mm**

Order Code	A	B	H	L	S (mm <sup>2</sup> )
DT78K	15	15	3.8	150	0.20
DT79L	20	20	3.6	150	0.20
DT80B	30	30	3.9	150	0.35
DT81C	40	40	3.9	300	0.35

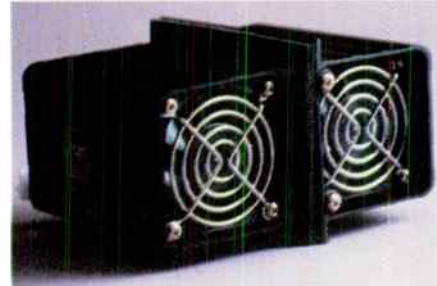
L = lead length; S = surface area

Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
DT78K	Supercool 7.6W	£17.680	£16.680
DT79L	Supercool 19.7W	£20.370	£19.180
DT80B	Supercool 31.3W	£27.240	£25.570
DT81C	Supercool 56W	£34.460	£32.210

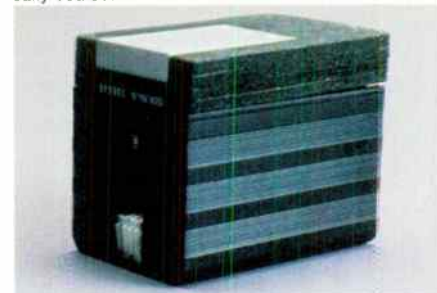
## Thermoelectric Cooling Systems

Supercool



These compact, thermoelectric cooling systems offer a convenient and environmentally friendly method of cooling small enclosures or surfaces. Both types provide 20W of 'practical' cooling, that is components, or an electronics enclosure producing 20W of heat will be maintained at ambient temperature. The systems feature brushless, high quality fans equipped with ball-bearings as standard, with an average service life in excess of 30,000 hours at 35°C

Type AA20 (DT82D) is an Air-to-Air cooler and is suitable for small electronic enclosures or similar applications, such as automotive, or portable and laboratory refrigerators up to 10 litres. The cooler is easy to install, requiring an aperture 98 x 66mm. When installed the enclosure will remain hermetically sealed.



Type DA20 (DT83E) is a Direct-to-Air cooler designed for solid surfaces such as processors, disk drives, heatsinks and small enclosures e.g CCTV, CCD etc. The cold plate is applied to the object to be cooled using screws and silicon thermal grease.

**Specification (both types)**

Voltage working:	12V DC
Current:	2.9A
Power input:	35W
Weight:	0.9kg
Dimensions	
AA20:	107 x 84 x 140mm
DA20:	97 x 65 x 83mm
AA20 aperture:	98 x 66mm
DA20 Cooling plate:	62 x 40mm

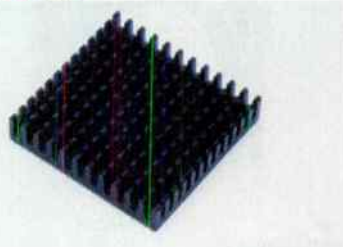
Price each is shown. Order quantities less than 5 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
DT82D	Air/Air Cooler 20W	£153.560	£149.120
DT83E	Direct Cooler 20W	£122.020	£118.640

## PC / CPU HEATSINKS

### 486 CPU Heatsinks

Repoint Thermalloy



A range of low-profile heatsink designed specifically for use as 486 CPU coolers, or for use with other devices having PGA size 17 x 17 or 18 x 18.

Type	Dimensions mm	Pin fin matrix	Convection °C/W
2321B	42 x 43 x 9	12 x 13	10.0
2333B	44.6 x 46 x 16.5	12 x 14	7.2

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
AZ02C	Heatsink 2321B	£1.270	£1.140
AZ04E	Heatsink 2333B	£2.450	£2.200

## THERMAL COMPOUND/GLUE

### Heat Transfer Compound

Electrolube



Heat transferring grease having about 31/2 times the thermal transmission of ordinary silicone grease. The material is non-irritant except to the eyes. In the case of such contamination wash freely with water until the smarting stops. Supplied in a box with syringe-type applicator for accurate and wasteless placement of the compound. Available in either 35ml, 10ml or 2ml syringes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HQ39N	Heat Trans Comp 35ml	£3.380	£3.220

Price each is shown. Order quantities less than 12 will be sold at the one off inc. VAT price.

Order Code	Type	Price each exc. VAT	inc. VAT each
FL79L	Heat Trans Comp 10ml	£1.920	£1.430
HQ00A	Heat Trans Comp Tube	£1.260	£0.940

## Output Kit

Loctite



A thermally conductive adhesive which cures rapidly at room temperature. It is designed for bonding electronic components to heat sinks or PCBs. The high thermal conductivity provides excellent heat dissipation.

**Kit contains:**

- ★ 25ml adhesive 315 in syringe
- ★ 18ml activator in brush top bottle

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YC06G	Output Kit	£26.190	£25.200

## FANS

### AXIAL

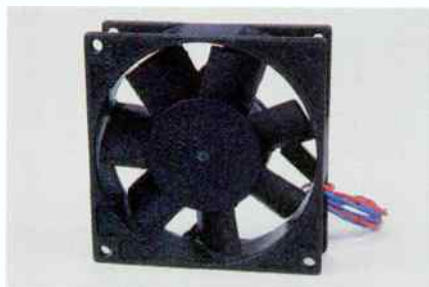
#### Brushless 12V DC Axial Fans



A range of 12V DC axial fans with plastic housings and blades to UL49V-0. These fans have brushless motors for long life. Slimline style. Connection is by 300mm flying leads, red is positive, blue is negative.

##### Specification

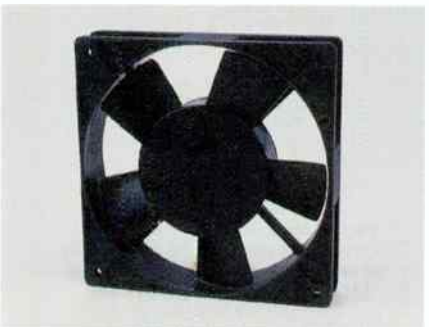
Type:	40mm
Operating Voltage:	10-2V to 13-8V
Rated Voltage:	12V
Current:	160mA
Noise Level:	35dBA
Max Airflow:	210 litres/min
Continuous Life:	20000 hrs @ 40°C
Operating Temperature:	-10°C to +70°C
Insulation Resistance:	10MΩ @ 500V DC
DC Dielectric Strength:	5mA @ 500V AC
Weight:	40g
Overall Size:	40 x 40 x 20mm



Fixing Centres: 32 x 32 x dia 3-5mm

##### Specification

Type:	60mm
Operating Voltage:	10-2V to 13-8V
Rated Voltage:	12V
Current:	200mA
Noise Level:	35dBA
Max Airflow:	420 litres/min
Continuous Life:	60000 hrs @ 40°C
Operating Temperature:	-10°C to +70°C
Insulation Resistance:	10MΩ @ 500V DC
DC Dielectric Strength:	5mA @ 500V AC
Weight:	110g



Overall Size: 60 x 60 x 25-5mm  
Fixing Centres: 50 x 50 x dia 4-2mm

##### Specification

Type:	80mm
Operating Voltage:	10-2V to 18-8V
Rated Voltage:	12V
Current:	180mA
Noise Level:	31dBA
Max Airflow:	900 litres/min
Continuous Life:	60000 hrs @ 25°C

Operating Temperature: -10°C to +70°C  
Insulation Resistance: 10MΩ @ 500V DC  
DC Dielectric Strength: 5mA @ 500V AC  
Weight: 140g  
Overall Size: 80 x 80 x 25-5mm  
Fixing Centres: 71-5 x 71-5 x dia 4-5mm

##### Specification

Type:	92mm
Operating Voltage:	10-2V to 13-8V
Rated Voltage:	12V
Current:	300mA
Noise Level:	35dBA
Max Airflow:	1200 litres/min
Continuous Life:	60000 hrs @ 25°C
Operating Temperature:	-10°C to +70°C
Insulation Resistance:	DC 10MΩ @ 500V DC
DC Dielectric Strength:	5mA @ 500V AC
Weight:	150g
Overall Size:	92 x 92 x 25-5mm
Fixing Centres:	82-5 x 82-5 x dia 4-5mm

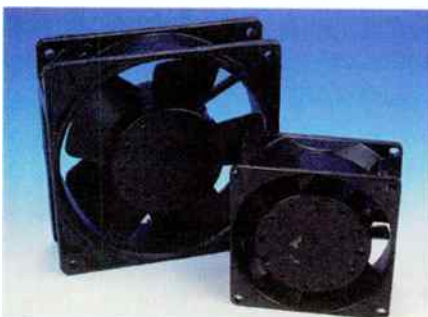


Type: 120mm  
Operating Voltage: 10-2V to 13-8V  
Rated Voltage: 12V  
Current: 380mA  
Noise Level: 42dBA  
Max Airflow: 2200 litres/min  
Continuous Life: 60000 hrs @ 25°C  
Operating Temperature: -10°C to +70°C  
Insulation Resistance: 10MΩ @ 500V  
DC Dielectric Strength: 5mA @ 500V AC  
Weight: 200g  
Overall Size: 119-5 x 119-5 x 25-5mm  
Fixing Centres: 104-8 x 104-8 x dia 4-5mm

##### Retail Unit Price each (inc. VAT).

Order Code	Type 1818	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YZ41U	40mm 12V Fan	£9.970	£7.330	£6.140	£11.720
YZ38R	60mm 12V Fan	£9.970	£7.380	£6.190	£11.720
YP40T	80mm 12V Fan	£10.400	£7.850	£6.660	£12.230
YZ39N	92mm 12V Fan	£10.840	£8.120	£6.810	£12.740
YZ40T	120mm 12V Fan	£12.140	£9.310	£7.910	£14.270

## 230V Mains



A 230V ac mains axial fan for cooling, extraction, intake, ventilation etc. Available in two standard sizes 80mm (3in.) and 120mm (4 1/2in.). The fans feature an impedance protected shaded-pole motor with a sintered iron sleeve bearing. The frame is diecast aluminium with steel impeller all finished in black epoxy paint. The 120mm unit has five blades and the 80mm has nine blades.

The 120mm fan has solder tag connections and one fixing hole is 2BA (M5) clear for earth connection. The 80mm fan has 280mm flying leads for connection inside equipment only, and a hole in the chassis is tapped M4 for earth connection.

##### Specification

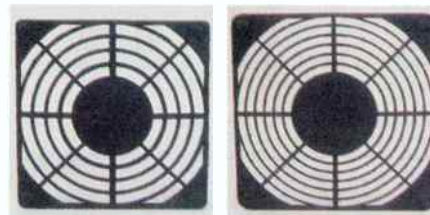
	80mm	120mm
Power consumption	13W	22W
Continuous life	20,000 to 40,000 hours	at 40°C

Motor current	85mA	140mA
Stall current	105mA	180mA
Noise level	33dBA	45dBA
Max. airflow	28CFM	80CFM
Speed	2700rpm	2650rpm
Overall size	80 x 80 x 38mm	119 x 119 x 38mm
Fixing centres	71-5 x 71-5	105 x 105
Operating temp	4-5mm clear	-10°C to +60°C

##### Retail Unit Price each (inc. VAT).

Order Code	Type 1810	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YP46A	Standard 80mm Fan	£13.440	£9.360	£7.180	£15.800
WY06J	Standard 120mm Fan	£13.880	£9.830	£8.070	£16.310

## Plastic Finger Guards

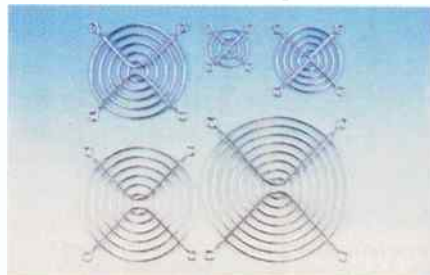


Plastic finger guards that press-fit onto the above fans. Available to suit 80 and 120mm fans.

##### Retail Unit Price each (inc. VAT).

Order Code	Type 1813	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JU26D	80mm Plastic Guard	£0.859	£0.676	£0.468	£1.010
JU27E	120mm Plastic Guard	£1.020	£0.832	£0.624	£1.210

## Chromed Steel Finger Guards



Heavily chromed steel finger guards that fit any standard fan. Available to suit 40, 60, 80, 92 and 120mm types.

##### Retail Unit Price each (inc. VAT).

Order Code	Type 1815	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JU25C	40mm Fan Guard	£0.859	£0.676	£0.520	£1.010
JU23A	60mm Fan Guard	£0.859	£0.708	£0.572	£1.010
FS19V	80mm Fan Guard	£1.120	£0.884	£0.697	£1.320
JU24B	92mm Fan Guard	£1.200	£0.988	£0.780	£1.420
FS20W	120mm Fan Guard	£1.290	£1.010	£0.749	£1.520





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## ADHESIVES

### ADHESIVES - INDUSTRIAL

#### Prism 401 Instant Adhesive

Loctite

A single part general purpose instant adhesive. Within five seconds ceramics, aluminium, leather, fabrics and paper products are fixtured. Mild steel surfaces take ten seconds. Supplied in a 20g bottle.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC15R	Prism 401 Adhesive	£13.600	£12.870	£12.490	£15.990

#### Prism 406 Instant Rubber Adhesive

Loctite

A single part instant adhesive for the rapid bonding of rubber and plastics. Even EPDM rubber takes just five seconds to fixture. Nitrile and neoprene take only one second.

Bonds polyolefins, silicone rubber and PTFE when used with primer 770.

Supplied in a 20g bottle.



Price each shown, but sold only in multiples of 0.

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC18U	Prism 406 Adhesive	£13.600	£12.870	£12.490	£15.990

#### Prism 454 Instant Adhesive Gel

Loctite



Use general-purpose Prism 454 where greater control is required or where parts are not close fitting. Applied as a clear gel, this multi-use adhesive does not drip or run - even when applied overhead - and is not absorbed by porous materials e.g. wood and cork. Supplied as a 20g tube.

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC17T	Prism 454 Adhesive	£15.650	£14.740	£14.300	£18.390

#### Prism 460 Low Odour, Low Bloom Adhesive

Loctite

Prism 460 can be used on delicate and electronic assemblies without fear of 'blooming'. It produces little or no odour or fumes which means that it can safely be used alongside optical equipment and in confined areas with poor ventilation.

Supplied in a 20g bottle



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC16S	Prism 460 Adhesive	£15.570	£14.740	£14.300	£18.300

#### Prism 480 Tough Instant Adhesive

Loctite

Prism 480 is a black rubber toughened, thermally-resistant formulation instant adhesive. It is recommended for small metal parts where the bond must endure heavy peel loads. It is the toughest of the advanced Prism 'instant' adhesives and has a high resistance to humidity. Supplied in a 20g bottle.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC14Q	Prism 480 Adhesive	£13.600	£12.870	£12.490	£15.990

#### Prism 770 Polyolefin Primer

Loctite

Bonding plastics like polypropylene, polyethylene, PTFE, silicones and many thermoplastic elastomers, require surface ionization pretreatment of the bond surfaces. Loctite 770 primer has been developed to activate these plastics for successful bonding. Best results are obtained with the combination of 770 (primer) and 406 (adhesive).

This primer also acts as an activator and speeds up the cure time to less than five seconds. Supplied in 10g bottle with applicator brush.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC19V	Polyolefin Primer 770	£9.500	£9.130	£8.900	£11.170

#### Superglue

Permabond

A fast, high viscosity cyanoacrylate adhesive that has a handling time of 8 to 20 seconds for plastics and rubber and 20 to 40 seconds for metals.

Development of strength is very rapid, 50% of the ultimate strength is achieved in one hour. The durability of joints is good, particularly where plastic and rubber components are concerned.

The adhesive is applied sparingly to one surface, usually one drop is sufficient, and the components are brought together quickly and correctly aligned. Sufficient hand pressure is applied to ensure the adhesive spreads into a thin film. The joint must not be disturbed or realigned until curing is achieved, normally in a few seconds. It is strongly recommended that polythene gloves are used when applying the adhesive. Available in 20g containers.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	30+	1+
BA08J	Superglue 20g	£14.160	£12.690	£12.120	£16.640

#### Fast Superglue

Permabond

A very fast, low viscosity cyanoacrylate adhesive designed for bonding some of the more difficult rubbers and plastics, or when exceptionally fast cure is required. Usually one drop applied to one surface is sufficient - curing times are 1 to 5 seconds for rubber and plastics, and 5 to 10 seconds for metal.

Development of strength is very rapid, 50% of the ultimate strength is achieved in one hour. It is strongly recommended that polythene gloves are used when applying the adhesive. Available in 20g containers.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	30+	1+
BA09K	Fast Superglue 20g	£14.160	£12.690	£12.120	£16.640

#### Axiom 100 SA Acrylic Adhesive

Bostik



Bostik's Axiom 100 SA reactive bonding system is solvent free and a new concept in high performance bonding. It is ideal for creating an effective, highly impact resistant bond on many plastics, metal, glass, etc. When cured it is tolerant of oily surfaces and will safely bond heat sensitive substrates. To use, simply apply adhesive to most porous surface and the activator to the other (using the brush contained within its lid) so providing an open time of up to 30 minutes if required. Working time is approximately 15 seconds of bringing the two surfaces into contact. Hyperbond builds up structural bond strength rapidly at room temperatures, reaching handling strength in minutes, full cure in 24 hours and involves no mixing or waste. Pack contains one 70g tube of adhesive, one 10ml

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bottle of Activator, a screw on plastic nozzle and a metal 'sardine tin' like key that will ensure you squeeze every last drop of adhesive from its tube.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	24+	1+
BP12N	Acrylic Adhesive	£9.540	£9.000	£8.170	£11.210

## Superfast Epoxy Resin

Devcon

A superfast epoxy resin from Devcon that sets in 5 minutes; an item can be handled in 15 minutes with full bond strength in 1 hour. The epoxy resin comes in either a twin plunger dispenser or in two separate bottles/ either 28g or 256g.

Using the plunger dispenser: pressing the plunger dispenses equal amounts of clear resin and hardener. Using the two tubes: equal amounts of clear resin and hardener must be squeezed separately from each tube. The epoxy hardens at room temperature to an opaque finish and is resistant to most chemicals.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KE80B	5m Epoxy 28g Syringe	£2.710	£2.420	£2.260	£3.190
KE79L	5Min Epoxy 28g	£2.540	£2.280	£2.130	£2.990
KE81C	5m Epoxy 256g Bottle	£10.030	£8.690	£8.000	£11.740

## ADHESIVES - GENERAL

### Super Attak Instant Glue

Loctite



Ideal for a multitude of uses around the home and office. Bonds metal, card, wood, china and most rigid plastics in seconds. Supplied as a 5g bottle with non-clogging nozzle and as the Super Attak Matic dispenser which allows accuracy and precise control of the glue.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
YC23A	Super Attak Matic	£2.200	£2.050	£1.990	£2.530
YC26D	Super Attak 5g	£2.550	£2.370	£2.300	£3.000

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PHONE BEFORE 5PM FOR SAME DAY DESPATCH

**Tel: 01702 554000**  
**Fax: 01702 554001**  
e-mail: Sales@maplin.co.uk

### Super Attak Gel

Loctite



Formulated as a thick gel for gluing vertical surfaces or where there is a possibility of running. Suitable for porous materials or where there are larger gaps. Bonds metal, card, wood, china and most rigid plastics in seconds. Supplied as 3g tube with non-clogging nozzle and as the Super Matic dispenser.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
YC25C	Super Attak Matic Gel	£2.550	£2.370	£2.300	£3.000
YC24B	Super Attak Gel	£2.120	£1.990	£1.940	£2.500

### Cyanoacrylate Adhesive



A one part adhesive which forms a very strong bond in a matter of seconds. The adhesive is suitable for virtually all materials except polyethylene, polypropylene, Teflon (PTFE) and very porous surfaces. Apply the adhesive to one surface only. Align surfaces then bring them together quickly applying light finger pressure. For very small bond areas spread glue by lightly rubbing components together once or twice, but once bond is established do not break it (adhesive cures in a few seconds depending on material, but in general do not handle for 10 minutes). Supplied in 3g tubes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
FL46A	Cyanoacrylate 3g	£0.859	£0.708	£0.562	£1.010

### Super Glue 4

Bostik

A cyanoacrylate adhesive that forms an instant and permanent bond on rubber, metal, jewellery, porcelain, most plastics and more. Super Glue is not suitable for use on polypropylene, absorbent surfaces (such as fabric or paper) or for items that contain hot liquids, food or drink. Note: extreme caution must be exercised when using this product as it will bond human skin and eyes in seconds. Pack contains one 5ml (approx) bottle with a safety cap.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BP13P	Superglue Safety	£2.450	£2.060	£1.950	£2.890

### 5-Pack Cyanoacrylate Adhesive

Permabond



A single part, solvent free, rapid curing adhesive, that sets in seconds. The adhesive is applied sparingly to one surface (usually one drop is sufficient), the components are brought together and by applying sufficient hand pressure to ensure the adhesive spreads into a thin film, curing is achieved. The durability of joints is generally good, particularly, where plastics and rubber components are concerned. Supplied in packs of 5 x 5g bottles.

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	30+	1+
BA07H	Cyanoacrylate 5Pk	£16.810	£15.560	£14.250	£19.760

### Spray Glue

Servisol

A spray glue that is able to be used on wood, metal, plastics, rubber, glass, paper, card, vinyl and felt. Before use it is advisable that the spray is tested on the substances being used as the solvents can affect some types of plastic. To assist in spraying, the orientation of the spray nozzle is adjustable. Normal safety precautions must be taken with this pressurised can and must be kept out of reach of children. Supplied in 400ml can. COSHH information is available.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
CC85G	Spray Glue	£3.080	£2.560	£2.380	£3.630

**Urgent Requirement?**

Call and collect from your local Maplin store.

## All Purpose Adhesive

Bostik



This is the original strong, clear adhesive that will stick most household materials including wood, metal, leather, most plastics, china and more. Ideal for household repairs, crafts and office use, a thin film of glue applied evenly to both surfaces (or a generous amount applied to one surface on porous materials) will form a strong bond. Not suitable for polythene, polypropylene, polystyrene, rayon or acetate and must not be used on items that contain hot liquid. Available in two sizes – Standard (approx 20ml) or Economy (approx 58ml).

Retail Unit Price each (inc. VAT).

Order Code	Type 10308	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BPO4E	All Purpose Glue Std	£1.090	£0.925	£0.870	£1.290
BPO5F	All Purp Glue Econy	£1.600	£1.360	£1.280	£1.890

## Solvent Free All Purpose Adhesive

Bostik



This new version of Bostik's famous all purpose adhesive is solvent free and gives off no addictive vapours. It's safe and easy to use and suitable for wood, paper, leather, fabric, china and much more. This adhesive must not be used to repair pottery handles or items that hold hot liquids. The adhesive is white in colour but dries clear. Pack contains one 58ml (approx) tube.

Retail Unit Price each (inc. VAT).

Order Code	Type 10305	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BPO6G	AllPurp Glue SolvFre	£1.600	£1.350	£1.280	£1.890

## Wood Adhesive Rapide

Bostik

This rapid bonding and powerful wood adhesive can be used for a wide variety of applications both inside and outside the home. It is ideal for general household repairs and DIY and will also bond windows, external doors, walls and other wooden joints. To use, just clean and dry the surfaces to be bonded, apply the adhesive to one or both surfaces, bring them together within 5 minutes and hold firmly or clamp for a further 10 minutes.

Available in two sizes – 250ml or 500ml.

Retail Unit Price each (inc. VAT).

Order Code	Type 10311	Price each exc. VAT			inc. VAT each
		1+	12+	24+	1+
BPO2C	Wood Glue 250ml	£2.940	£2.750	£2.580	£3.460
BPO3D	Wood Glue 500ml	£3.890	£3.690	£3.270	£4.580



## Hot-Melt Glue Gun

Bostik



The Hot-Melt Glue Gun, with its easy trigger action, is the fast and easy way to apply small quantities of hot glue exactly where you need it. Other features include a safety warning light, constant thermostatic control and a retractable stand that keeps the gun upright when not in use.

The gun can be used with All Purpose Glue Sticks (suitable for PVC, metal, fabric, leather, tiles and brick) or Woodworking Glue Sticks (for all woodworking applications including veneers, joints, beading, toys, mouldings and furniture).

To use, load the appropriate glue stick through the grip ring at the rear of the gun and press the trigger several times until the stick is positioned firmly in the gun. Plug in the gun and allow it to warm up for around 5 minutes. Aim the nozzle at the prepared surface and press the trigger until the glue flows from the nozzle, applying it to one surface. Press the surfaces together within 15 seconds and the glue will bond – clamps and other holding devices are not needed. Unplug the gun and trim away any surplus glue with a knife.

The pack contains the Hot-Melt Glue Gun with mains lead and 3A fused plug fitted and a clip on stand. This pack does not include any Glue Sticks, they are available separately.

Retail Unit Price each (inc. VAT).

Order Code	Type 10313	Price each exc. VAT			inc. VAT each
		1+	12+	24+	1+
BP07H	Std Glue Gun	£16.480	£15.140	£13.470	£19.370
BP08J	All Purp Glue Stick	£2.110	£1.730	£1.640	£2.490
BP09K	Woodwork Glue Stick	£2.110	£1.730	£1.640	£2.490

## Araldite Rapid



A quick setting version of the famous two part epoxy resin glue made by Araldite. Suitable for bonding almost all materials in common use; metals, wood, rubber, earthenware, glass and most plastics except polythene. Araldite sets with virtually no shrinkage and joints are resistant to chemical attack and provide a seal which is impervious to moisture, electrically insulating and a protection against electrolytic corrosion. Supplied in two 16g tubes, one containing the resin and one the hardener. The tubes are supplied in a pack with detailed instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type 4051	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FL44X	Araldite Rapid	£3.460	£3.330	£3.170	£4.070

**PHONE/FAX**  
for next day delivery **PHONE: 01702 554000**  
**by 5pm** **FAX: 01702 554001**

## Extra-Fast-Setting Adhesive

Permabond



A two part epoxy resin adhesive that sets in 3 to 5 minutes. Supplied in a 3.5g sachet simply cut off the end and squeeze out. Sachet contains exactly the correct proportional amounts of the resin and hardener to ensure a perfect mix. Stir the two parts together with stick (supplied) and apply immediately to both surfaces to be bonded then hold tightly together for a few minutes. Within one hour bond reaches a considerable strength, but is not completely cured for 24 hours. Can also be used as a filler.

Retail Unit Price each (inc. VAT).

Order Code	Type 4002	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FL45Y	Double Bubble Sachet	£0.859	£0.749	£0.510	£1.010

## Double Bead Extra Fast Epoxy Resin

Permabond



The easy way to use extra-fast setting epoxy adhesive. Two syringes, containing equal amounts of resin and hardener, are used to dispense equal amounts for mixing and give 25ml of mixed adhesive. The adhesive sets in 3 to 5 minutes and reaches a working strength in about 30 minutes. Suitable for bonding a wide variety of materials such as metals, plastics, wood, ceramics and concrete, and for filling gaps and voids.

Retail Unit Price each (inc. VAT).

Order Code	Type 4093	Price each exc. VAT			inc. VAT each
		1+	10+	30+	1+
BA11M	Twin Syringe Epoxy	£3.260	£2.870	£2.550	£3.840

## Fast Setting Epoxy Resin



A quick setting two part epoxy resin supplied in two tubes (resin and hardener). The resin is suitable for use with metal, porcelain, glass, wood, stone and concrete. Surfaces to be joined should be clean and free from dust and grease. Smooth surfaces (such as metal) should be sandpapered to provide a 'key' for the adhesive. Resin will begin to set in 5 minutes, usable bonding strength reached in 15 to 60 minutes.

Retail Unit Price each (inc. VAT).

Order Code	Type 4088	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JL92A	Epoxy Resin 15g	£1.290	£1.020	£0.936	£1.520
EM08J	Epoxy Resin 40g	£1.720	£1.520	£1.430	£2.030

**Fast Setting Clear Epoxy Resin**



A quick setting two part epoxy resin that dries clear with superior strength. The joint is stronger than many other types of adhesive and is resistant to fuel, oil and water. Ideal for bonding metal, wood, china, glass, fibreglass and rigid plastic, the adhesive begins to harden in 4 to 5 minutes. Supplied in two tubes or bottles and in combined weights of 28g, 112g, and 224g packs. A slower setting version is available that has a higher strength, the setting time being half to one hour, available only in 168g packs.

Retail Unit Price each (inc. VAT).

Order Code	Type 4200	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KC17T	Speed Epoxy 28g	£3.020	£2.230	£2.130	£3.56H
KC19V	Speed Epoxy 112g	£5.630	£4.780	£4.430	£5.62H
KC20W	Speed Epoxy 224g	£7.370	£6.090	£5.650	£8.660
KC21X	One Hour Epoxy 168g	£6.500	£5.370	£4.970	£7.640

**Magic Bond Epoxy Putty**

Devcon



Fast, easy and permanent repairs and patches for holes, gouges and scratches in metal, concrete, wood, fibreglass and ceramics. Holed your vessel by mistake? This epoxy putty will work on damp or wet surfaces – even under water. Tanks, drums, pipes and castings can also be repaired. Just cut off the length required, knead till mixed thoroughly and then apply to the required spot. The epoxy hardens after 20 to 30 minutes and after 60 minutes the repaired item can be put back into service.

Retail Unit Price each (inc. VAT).

Order Code	Type 11526	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KER2D	Magic Bond 114g Stk	£3.190	£2.860	£2.680	£3.750

**Flexible Rubber Sealant**



A ready-to-use one part paste which when cured forms a tough flexible rubber seal. Adheres to most surfaces and has excellent electrical insulating and waterproofing properties. It is ideal for making watertight, electronic equipment used outdoors. Supplied in an 78g tube with plunger.

Retail Unit Price each (inc. VAT).

Order Code	Type 4050	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YJ81Y	Flex Rubber Sealant	£3.720	£3.170	£2.970	£4.380

**ADHESIVES - THREADLOCKING**

**Threadlocking Adhesives**

Loctite

Loctite threadlockers are single-component liquid adhesives which completely fill the gaps between interfacing threads. They cure to a tough solid by anaerobic reaction (in the absence of air) and prevent any movement of the threads, sealing against corrosion and leakage. The threadlockers also act as a lubricant on the threads during assembly, enabling torques to be set with precision. A range of strengths is available:

**Screwlock 222**

A lighter strength, screwlock 222 replaces nylon patches, star washers and spring washers on screws and other threaded fittings where easy dismantling is required, e.g. with a screwdriver. Curing is moderate to fast and is good for most metal surfaces. Supplied in 10ml bottle.



**Nutlock 243**



Medium strength Nutlock 243 replaces nylon insert nuts lock nuts, deformed threads, star washers, spring washers, castellated nuts and tab washers for all general purpose threadlocking. Only ordinary spanners are needed to undo fasteners. Cures rapidly. Supplied in 10ml bottle.

**Studlock 270**

Use high strength Studlock 270 to replace nylon patches and interference studs.

It also removes the need for blind holes for studs in oil filled castings. For use on any fastener where high removal torques are required.

Rapid curing. Supplied in 10ml bottle.



Retail Unit Price each (inc. VAT).

Order Code	Type 12506	Price each exc. VAT			inc. VAT each
		1+	12+	36+	
YC10L	Screwlock 222	£4.020	£3.820	£3.700	£4.730
YC11M	Nutlock 243	£4.230	£4.020	£3.890	£4.980
YC12N	Studlock 270	£4.030	£3.830	£3.710	£4.740

**Threadlock**

Permabond

An anaerobic adhesive designed for locking and sealing threaded metal parts. Handling strength is reached after 10 to 25 minutes and full strength after 24 hours. Supplied in a 10ml bottle.



Retail Unit Price each (inc. VAT).

Order Code	Type 4051	Price each exc. VAT			inc. VAT each
		1+	10+	30+	
BA13P	Threadlock	£3.970	£3.270	£3.050	£4.670

**ADHESIVES - RETAINER**



**Oil-Tolerant Retainer 603**

Loctite

Retaining adhesives allow total surface contact thus eliminating backlash, corrosion and fretting. They demonstrate lubricant properties during assembly enabling easy slip fitting of parts. Their strength is maintained over a range of clearances, allowing worn or scored parts to be reused without machining. Retainer 603 can replace or augment interference fits, pins, splines, keys and screws. Can be used on as-received parts. Use to fit oil impregnated bushes, restores or strengthens press fits of shafts, bushes, rotors and similar cylindrical parts



Retail Unit Price each (inc. VAT).

Order Code	Type 12514	Price each exc. VAT			inc. VAT each
		1+	12+	36+	
YC13P	Oil Titrant Retn 603	£4.230	£4.020	£3.890	£4.980

**Retainer**

Permabond

An anaerobic adhesive designed for retaining metal parts, i.e. bushes, studs, bearings, etc. Applied straight from the bottle, the components are brought together (and by doing so air is excluded) and then, and only then, will the curing process commence. The components can be handled after 10 to 25 minutes and a full strength bond is reached after 24 hours. Supplied in a 10ml bottle.



Retail Unit Price each (inc. VAT).

Order Code	Type 4054	Price each exc. VAT			inc. VAT each
		1+	10+	30+	
BA12N	Retainer	£3.970	£3.270	£3.050	£4.670

**ADHESIVES - SUNDRIES**

**Dispensing Nozzles**

Loctite

Suitable for either anaerobic or cyanoacrylate type adhesives.

The blue plastic needle is for fine flow and the green plastic needle for medium flow.

These needles are a tight push-fit onto most of the Loctite adhesive bottles. Supplied in a pack of 10.



Retail Unit Price each (inc. VAT).

Order Code	Type 12603	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YC20W	Fine Flow Needle	£4.320	£3.450	£3.270	£5.080
YC21X	Medium Flow Needle	£4.420	£3.450	£3.270	£5.200

**Call and Collect**

At all our stores nationwide. See the maps at the front of the catalogue for the nearest one to you.

## Adhesive Spreader/Mixer



A useful plastic tool for spreading and mixing adhesive, suitable for use with most adhesives, such as contact adhesive and epoxy resin. Length, 70mm. Spreader width, 13mm.

Retail Unit Price each (inc. VAT).

Order Code	Type #1084	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JU49D	Glue Spreader	£0.102	£0.082	£0.057	£0.120

## ADHESIVE TAPES

### Paper Masking Tapes



A general purpose masking tape with a sticky backing, ideal for protecting areas prior to painting, spraying etc. Available in two widths 19 and 25mm, and roll lengths 25m or 50m.

Retail Unit Price each (inc. VAT).

Order Code	Type #1095	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BZ05F	19 Masking Tape 25M	£0.510	£0.416	£0.374	£0.600
DF17T	19 Masking Tape 50M	£0.859	£0.541	£0.500	£1.010
BZ06G	25 Masking Tape 25M	£0.774	£0.541	£0.500	£0.910
DF18U	25 Masking Tape 50M	£1.290	£0.926	£0.738	£1.520

### Double Sided Tape

A 4.5m long roll of 50mm wide general purpose adhesive tape with adhesive applied to both sides.



Retail Unit Price each (inc. VAT).

Order Code	Type #11937	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DF19V	Double Sided Tape	£1.120	£0.770	£0.681	£1.320

## PVC Insulation Tape



Strong, self-adhesive flame resistant PVC insulation tape. Width: 19mm. Length: all colours including black: 4.6m reel. Alternative black only: 20m reel. Breakdown voltage: 7500V. Insulation resistance:  $10^{14} \Omega/\text{cm}$ . Thickness: 0.15mm. VDE Approved. Available in Black, Blue, Green, Red, White, Yellow and Green/Yellow.

Retail Unit Price each (inc. VAT).

Order Code	Type #1096	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FM84F	20m Black PVC Tape	£0.859	£0.708	£0.624	£1.010
FT20W	4.6m Black PVC Tape	£0.391	£0.333	£0.292	£0.460
FT21X	4.6m Blue PVC Tape	£0.391	£0.333	£0.292	£0.460
FT22Y	4.6m Green PVC Tape	£0.391	£0.333	£0.292	£0.460
FT23A	4.6m Red PVC Tape	£0.391	£0.333	£0.292	£0.460
FT24B	4.6m White PVC Tape	£0.391	£0.333	£0.292	£0.460
FT25C	4.6m Yellow PVC Tape	£0.391	£0.333	£0.292	£0.460
FC94C	20M Grn/Yel PVC Tape	£0.842	£0.680	£0.600	£0.990

## Gaffer Tape

A very tough, self-adhesive, synthetic fibre tape which can be used for sealing boxes, binding cables or securing them, joining carpets, temporary repairs and the like. It is 50mm wide and is supplied on 50m long reels. Available in silver, black and white.



Retail Unit Price each (inc. VAT).

Order Code	Type #1097	Price each exc. VAT			inc. VAT each
		1+	12+	24+	1+
KW31J 1	Gaffer Tape Black	£5.200	£3.790	£3.390	£6.110
KW33L 1	Gaffer Tape Silver	£5.200	£3.790	£3.390	£6.110
KW32K 1	Gaffer Tape White	£5.200	£3.790	£3.390	£6.110

## Yellow/Black Hazard Tape

Used for marking factory floors, gangways or hazardous zones. This 50mm wide tape has an aggressive pressure sensitive adhesive, good abrasion resistance and conformability together with minimum creep-back. It is self-extinguishing if it catches fire. Comes in a 33m roll.



Retail Unit Price each (inc. VAT).

Order Code	Type #11934	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GU58N	Yell/Blk Hazard Tape	£6.930	£5.990	£5.450	£8.150

## Aluminium Tape



A self-adhesive, 30µm thick aluminium tape 25mm wide which has many applications, particularly within the field of electronics and electrics. For example, it can be used for PCB repair, screening enclosures and circuits susceptible to RFI, and when applied to windows it can be used as a very cost-effective 'broken window detector' for security systems. Supplied on a reel containing 4.6m of tape.

Retail Unit Price each (inc. VAT).

Order Code	Type #1098	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KW30H	Aluminium Tape	£1.550	£1.160	£1.070	£1.830

## Self-Amalgamating Tape

A very useful derivative of insulating tape which can be used for waterproofing connections. To use, the top protective layer is peeled off and the rubbery self-amalgamating tape underneath is wrapped tightly around the connection to be waterproofed. Eventually, the layers of this tape will merge together and create a waterproof seal. This tape is highly recommended for automotive work and also aerial installations, particularly those for satellite TV where cables enter the LNB and polariser. The tape is in black, 19mm wide and is supplied on 10m reels.



Retail Unit Price each (inc. VAT).

Order Code	Type #1099	Price each exc. VAT			inc. VAT each
		1+	10+	36+	1+
KW29G	Self Amalgamate Tape	£4.330	£3.120	£2.700	£5.090

## P.T.F.E. Thread Sealing Tape



12mm wide white P.T.F.E. screw thread sealing tape for threading pipe joints, e.g. water, etc.. Thickness of tape is 0.075mm. Not recommended for gas joints. Supplied on 12m rolls.

Retail Unit Price each (inc. VAT).

Order Code	Type #1100	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RJ45Y †	PTFE Thread Tape	£0.425	£0.333	£0.270	£0.500

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

**CLEANING**

**CLEANING - ANTISTATIC**

**Antistatic Spray**

*Electrolube*

A water based antistatic spray in a pump action container, used for nullifying static charge problems. Supplied in a 250ml bottle.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
YB79L	Antistatic Spray	£3.390	£2.950	£2.700	£3.996

**Antistatic Foam Cleanser**

*Electrolube*

In addition to its ability to remove general grease and grime this foaming cleanser has lasting antistatic properties, defeating static charges, eliminating dust attraction and preventing the advent of further static charges for long periods. Particularly suitable for all hard surfaces and crackle finish paints. If in doubt about its suitability for a particular surface, test a small area first before using. Supplied in 200ml and 400ml aerosol cans.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YB59P	Foam Cleanser 400ml	£2.220	£2.120	£2.000	£2.620
YB76H	Foam Cleanser	£1.690	£1.610	£1.400	£1.960

**Carterclene**

*Electrolube*

An extremely powerful, highly efficient anti-static foaming cleanser for surfaces prone to static dust attraction which has specially developed for use on plastics, metal, glass and synthetic surfaces. This product is free of CFC solvents and propellants. Available in 400ml aerosol.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FC93B	Carterclene	£2.650	£2.520	£2.390	£3.120

**Cleanguard**

*Electrolube*

A high performance Cleaner Polish for a wide variety of materials. It has been found to perform well on Perspex and other similar materials giving excellent cleaning characteristics without adversely affecting the plastic finish. It may also be used on glass, rubber and elastomers. It provides a smear free surface that resists future contamination. Supplied in a 250ml pump spray.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FC10L	Perspex Cleaner	£3.810	£3.630	£3.430	£4.480

**Antistatic Polish**

*Electrolube*

A high grade polish containing a blend of waxes, cleansing and antistatic agents. Cleans at the same time as it polishes. Can be used on wood, paint, glass, metal, plastic surfaces etc. Leaves a high gloss durable finish. Supplied in 300ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YB78K	Antistatic Polish	£3.180	£3.020	£2.620	£3.740

**CLEANING - AUDIO/COMPUTER**

**Tape Head Cleaner Aerosol**

*Electrolube*

Removes contaminants from all magnetic tape heads, including critical video recording heads. Ensures peak response and best quality reproduction. It is electrically inert and safe in contact with all paints, rubbers and plastics. Leaves no residue. Supplied in 100ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
DMB1C	Tape Head Cleaner	£5.090	£4.950	£4.700	£5.990

**Printasolve**

*Electrolube*

A unique blend of solvents which remove ink from a variety of surfaces; e.g. printer and typewriter rollers, ink jet printer heads, processing and printing equipment and franking machines.

Ideal for the professional engineer and maintenance personnel in offices, factories, etc.

This product is flammable so keep away from naked flame or other sources of ignition. Not suitable for use on sensitive plastics such as Polystyrene, Polycarbonate or ABS. Supplied in 400ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FC22Y	Printer Platen Clean	£6.230	£5.930	£5.150	£7.330

**Platenclene**

*Electrolube*

Platen cleaner and restorer for printers, typewriters, fax machines, etc. Cleans print rollers and restores grip. Spray onto lint-free cloth and wipe platen while turning. Then wipe off thoroughly with dry cloth.

Caution, may affect certain plastics, wipe off immediately if accidental contact occurs. Supplied as 100ml pump spray.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
JED1B	Platenclene	£3.270	£3.110	£2.700	£3.850

**Mouse Cleaning Wipes**

*Electrolube*

Supplied as a tub of 25 pre-saturated wipes measuring 18cm x 13cm each. The wipes remove ink, grease and other contaminants from mouse contacts and body. Cleans, sanitises and freshens surface.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FC21X	Mouse Wipes Tub 25	£3.340	£3.170	£2.750	£3.930

**TO SCHEDULE YOUR DELIVERIES**  
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**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

**Be sure – call the store before you travel**  
See front of catalogue for

## Mouse Kit

**Electrolube**



Consisting of a tub of 25 mouseclene impregnated cleaning wipes and a handy mouse holder to ensure that your mouse is always in top working order. Mouseclene (FC21X) is suitable for cleaning internal and external surfaces of all mouse/tracker ball systems ensuring smooth cursor movement at all times.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JED2C	Mouse Kit	£5.950	£5.650	£4.910	£7.000

## AF Spray

**Electrolube**

A fast evaporating solvent for tape drive maintenance, removal of contamination on the heads of floppy disc drives and removal of oil, grease and dirt from electromechanical equipment. Apply with Safewipes or Safebuds for cleaning magnetic read/write heads. For other applications spray directly onto parts to be cleaned. Supplied in 300ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FB88V	AF Spray	£7.400	£7.030	£6.660	£8.700

## Safeclene 2000

**Electrolube**

A fast evaporating non-flammable solvent for tape drive maintenance, removal of contamination on the heads of floppy disc drives and removal of oil, grease and dirt from electromechanical equipment. Supplied in a 200ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FC23A	Safeclene 2000	£15.200	£14.430	£12.530	£17.860

## Safecleans

**Electrolube**

An anti-static cleaner particularly for VDU and TV screens, etc. It is approved by manufacturers of anti-glare coatings. Used in conjunction with Safewipes it removes dust, dirt, finger marks and nicotine stains whilst at the same time eliminating static charges. This reduces eye-strain and errors caused by a blurred display. It would also be most useful for cleaning the glass of photocopiers, microfilm readers and lenses, and will also remove typewriter ribbon ink from the hands. Supplied in 250ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YK91Y	Safecleans	£4.580	£4.360	£4.130	£5.390

## Screen, Case and Keyboard Cleaning Kit.

**Electrolube**



Contains everything you need to keep your computer terminal free of dust, dirt and other contaminants. A clean computer is pleasant to use and reduces the risk of eye-strain and malfunctions.

**Contents:**

- 10 Screenclens anti-static wet/dry screen wipes
- 20 Microwipes non-woven cleaning cloths
- 1 Foamclene anti-static foam cleanser spray 87ml
- 20 Safebuds cotton bud sticks

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JE00A	Screen & Case Cleane	£11.150	£10.600	£9.200	£13.110

## Multi-Purpose Cleaning Kit

**Electrolube**



Contains a selection of products for exterior cleaning and static control in the automated office. Use to clean screens, cases, keyboards, etc. on

computers, word processors, telephones, printers, photocopiers, office furniture and similar. In line with equipment manufacturers, it is strongly advised that users avoid the cleaning of internal mechanisms in fax machines, photocopiers and laser printers.

**Contents:**

- 1 Foamclene anti-static foam cleanser spray 300ml
- 1 Safecleans anti-static screen cleaner pump spray 250ml
- 50 Safecloths non-woven cleaning cloths
- 100 Safebuds cotton bud sticks
- 20 Phoneclens telephone hygiene wipes

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JE03D	Multi-Purpose Cleane	£27.710	£26.320	£22.860	£32.560

## Laser Printer and Fax Cleaning Kit

**Electrolube**

Contains all of the products required to keep Laser printers and fax machines clean and printouts free from streaks and other toner marks.

**Includes:**

- 1 Instruction leaflet
- 10 Printclene Laser printer and fax cleaning sheets for internal cleaning
- 5 Tonerclene impregnated cloths to clean up spills of toner
- 1 Foamclene anti-static foam cleanser spray (87ml) for removing ingrained dirt from plastic casings
- 20 Microwipes non-woven cleaning cloths

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JED4E	Laser Fax Cleane Kit	£9.470	£9.000	£7.810	£11.130

## Floppiclene Disc Drive Head Cleaning Kits

**Electrolube**



Research has shown that 85% of read/write malfunctions are caused by contaminated heads. This system overcomes this problem efficiently and economically. Disposable cleaning discs eliminate the problems of cross-contamination and re-contamination. The wet/dry cleaning action safely removes deposits from all double sided diskette drives. (Not suitable for single sided drives). Use once every two weeks and whenever errors occur to keep disc drive in peak condition.

**Contents:**

- 1 Instruction leaflet
  - 1 Headclene magnetic head cleaning fluid pump spray 70ml
  - 1 Clamshell cartridge to suit drive
  - 10 Cleaning discs to suit clamshell
- Kits available for 3.5" and 5.25" drives.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JE05F	Floppiclene 3.5	£21.870	£20.770	£18.040	£25.700
JE06G	Floppiclene 5.25	£20.650	£19.620	£17.030	£24.270

means fast service and best value for money



## Driveclene 8mm Drive Kit Wet/Dry

### Electrolube

Keeps tape drives performing to specification. Regular cleaning removes dust particles and tape residue. The solvent (included) is applied to the cleaning tape by means of a foam pad, thus giving a wet/dry action whilst solvent use is kept to a minimum. Best results are obtained when the tape is used with Isoclene cleaning fluid but the tape can be used without solvent if desired. Supplied tape cartridge is designed to perform 12 cleaning operations only.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JE07H	Driveclene 8mm	£11.230	£13.200

## Driveclene 4mm Drive Cleaning Tape

### Electrolube

Keeps tape drives performing to specification. Regular cleaning removes dust particles and tape residue from head and tape path. Supplied tape will perform about 75 cleaning operations depending on drive model.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JE08J	Driveclene 4mm	£7.540	£8.860

## CLEANING - GENERAL

## Aqueous Foam Cleaner

### Electrolube

An ozone friendly biodegradable foam cleanser for removing flux and heavy contamination from PCBs, and electromechanical assemblies. It is recommended that 'Saferinse 2000' KR71N be used to remove the foam cleaner. Supplied in a 400ml aerosol can. Contains no CFC.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KR70M	Saferinse 2000	£6.130	£7.210

## Rinsing Solution

### Electrolube

A non-flammable biodegradable rinsing solution for use with 'Saferwash 2000'. The solution is used to remove all foam and contaminant residue and drying may be assisted with 'Airduster' KR69A. Supplied in a 400ml aerosol can. Contains no CFC.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KR71H	Saferinse 2000	£4.630	£5.450

## PCB Cleaner

### Electrolube

An aerosol solvent especially for removing contaminants and oxidation from printed circuit board conductors, and removing flux residues that result from soldering operations. Before using on plastics, test a small area first. Supplied in 200ml and 400ml aerosol cans.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM83E	Fluxolene	£4.280	£5.030

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC98G	Fluxolene 400ml	£4.900	£5.760

## ECS+ Electronic Cleaning Solvent

### Electrolube

A 200ml can of super-fast evaporating solvent for cleaning and degreasing applications. Removes flux, grease, oil and other common contaminants, leaving a residue-free finish. It is recommended that a small area be tested beforehand if plastic surfaces are to be cleaned. Supplied with application brush. 100% ozone-friendly. Also available as standard 400ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC02C	Supriscan Solvnt	£3.850	£4.530
FC04E	Supriscan 400ml	£6.230	£7.330

## IPA Electronic Cleaning Solvent

### Electrolube

A 400ml spray can containing 99.7% pure isopropyl alcohol, designed for the cleaning of electronic equipment, PCBs and delicate instruments. Safe on most plastics, it leaves no residue. 100% ozone-friendly. Supplied with tube for directing spray at a specific point. Also available in 1ltr bulk pack.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC01B	Elec Clean Solvnt	£4.810	£5.660
FC05F	Elec Clean Solv 1Ltr	£6.690	£7.870

## Ultraclene Degreasing Solvent

### Electrolube



A special cleansing solvent of very high purity for the most critical electro-mechanical applications. It is highly recommended for cold cleaning applications in conjunction with all types of electro-mechanical equipment. This solvent has a powerful penetrating action and works faster and more thoroughly than conventional solvents. Available in 200ml and 400ml aerosol cans and a 1ltr bulk pack.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM89W	Ultracelens	£4.470	£5.260
FC27E	Ultracelens 400ml	£6.860	£8.070
FC26D	Ultracelens 1Ltr	£9.370	£11.020

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## Degreasing Solvent

**Electrolube**



A fast drying, non-toxic electronic cleaning and degreasing solvent which leaves no residue. Intended for delicate electronic and electrical components and contacts, and also precision rubbers etc. Supplied in a 200ml aerosol can, a 400ml aerosol can with brush and a 1ltr bulk pack. Contains flammable solvent so do not spray onto live electrical equipment or other sources of ignition.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DM90X	Ultraclean	£3.370	£3.210	£2.790	£3.970
FC30H	Ultraclean + Brush	£6.400	£6.080	£5.280	£7.530
FC29G	Ultraclean 1Ltr	£9.200	£8.740	£7.590	£10.810

## Glass Cleaner

**Servisol**

A CFC free aerosol spray for cleaning glass. The chemical is sprayed onto glass and wiped away with a lint-free cloth leaving no residue. It is advisable to observe the warnings on the can as this spray is inflammable. Keep out of the reach of children.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
JP37S	Glass Cleaner	£1.990	£1.740	£1.640	£2.340

## Foam Cleanser

**Servisol**

Remove dirt, grease and stains, with this aerosol spray containing no CFCs. The chemical is sprayed onto the surface and left for 15 to 20 seconds then wiped away leaving the surface clean and fresh. It also contains antistatic properties to prevent the accumulation of dust. As the contents are inflammable keep away from naked flames and observe the warnings printed on the side of the can. Supplied in 400ml cans.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
JP18U	Foam Cleaner	£1.990	£1.740	£1.640	£2.340

## Contact Cleaner

**Servisol**

Switch and contact cleaning aerosol spray. When applied the chemical quickly removes tarnish, dirt, grease, dust, oil and other deposits. It also prevents arcing between dry contacts. Before applying ensure that the power is always removed from switches etc. This product is inflammable. Inaccessible areas are accessed by the extension nozzle supplied with the can. Due attention must be given to the warnings printed on the side of the can. Sold in 176ml cans.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
JP17T	Switch Cleaner	£1.990	£1.880	£1.660	£2.340

## CLEANING - SUNDRIES

### Airduster

**Electrolube**

Pure compressed inert gas for removal of dust and airborne contamination from very delicate or inaccessible areas of electrical and electronic equipment. Supplied in a 400ml standard aerosol can and a 200ml invertible aerosol can. Contains no CFC.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BP35Q	Airduster	£12.260	£11.640	£10.110	£14.410
FC05F	Elec Clean Solv 1Ltr	£6.690	£6.350	£5.520	£7.870

### Sprayduster

**Electrolube**

Simply contains a microscopically clean, inert gas which is non-toxic, non-flammable and non-corrosive, for use as a pressurised gas jet for clearing accumulated debris, dust and fluff from otherwise inaccessible nooks and crannies of radio and TV chassis, variable capacitor assemblies and similarly difficult and sensitive areas where any alternative attempt at cleaning may cause damage. Supplied in 125ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BP36P	Sprayduster	£5.080	£4.830	£4.190	£5.980

## Label Remover (with Brush)

**Electrolube**

Quickly and efficiently removes paper based pressure sensitive adhesive labels from a variety of surfaces. Simply spray or wipe on, leave in contact for 5 minutes and then peel off the label. Harmless to most plastics, rubbers, elastomers and surface coatings when used as directed. Test sensitive plastics on a small area first and do not use on polystyrene. Product is flammable so keep away from sources of ignition. Contains no CFC. Supplied in a 200ml aerosol can with application brush.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FC20W	Label Remove + Brush	£3.290	£3.120	£2.710	£3.670

## Label Remover

**Servisol**

A non-CFC spray from Servisol for removing adhesive labels, although it is not suitable for some types of plastic labels. The chemical is sprayed onto the label and allowed to soak in for approximately 5 minutes - then simply peel away. Before use test the surrounding material as the product may affect some plastics and other delicate materials. This product is flammable so keep away from sources of ignition. Note the warnings printed on the side of the can. Supplied in 200ml cans. COSHH information is available.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AP98G	Label Remover Spray	£3.080	£2.700	£2.550	£3.630

## Safebuds



Small cotton buds on sticks to be used with Safecleaners for awkward or fiddly cleaning jobs. 150mm in length. Supplied in packs of ten.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YK98G	Data Buds Pk of 10	£0.229	£0.220	£0.210	£0.270

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## Safewipe

### Electrolube

Lint free cotton squares 230 x 230mm, which are used with Safeclean for cleaning VDU screens etc. Due to their lint free nature they can be safely used for very delicate cleaning operations on component parts of computer hardware. Supplied individually.



Retail Unit Price each (inc. VAT).

Order Code	Type #191	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YK99H	Data Wipes	£0.255	£0.208	£0.188	£0.300

## Cleaning Pads

### Electrolube

Solvent impregnated pads for cleaning the edge connectors of printed circuit boards and other delicate items. Contains isopropanol and demineralised water. Supplied as two sachets with one pad in each sachet.



Retail Unit Price each (inc. VAT).

Order Code	Type #178	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FM81C	Safe Pads Sachet	£0.493	£0.466	£0.404	£0.583

## CLEANING - HAND CLEANSING

## Fast Orange Hand Cleaner

### Loctite

A range of hand cleaners that are completely biodegradable as well as being kind to the skin. All harmful petroleum pollutants have been replaced by a combination of citrus oil, jojoba oil, lanolin and aloe to moisturise the skin and keep hands free from irritation. Fast Orange can be safely used with or without water, and leaves hands smelling fresh and natural. Removes dirt, grease, grime, resin, inks, paints, cement and tar. Available in sizes 400ml and 3ltr with pumice granules and 200ml as a smooth lotion.



Retail Unit Price each (inc. VAT).

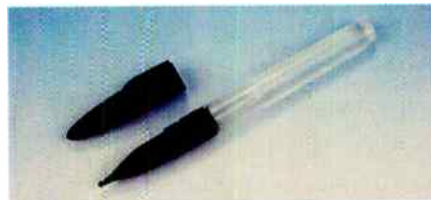
Order Code	Type 12481	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
YC27E	Fast Orange S200ml	£2.550	£2.370	£2.300	£3.400
YC28F	Fast Orange P400ml	£3.820	£3.540	£3.440	£4.190
YC29G	Fast Orange P3ltr	£13.360	£12.260	£11.850	£15.700

## LUBRICATION

### LUBRICATION - CONTACTS

## Contact Cleaner Lubricant Pen

### Electrolube



Identical with the aerosol electro-mechanical lubricant below, but in the form of a pen containing 5ml.

Retail Unit Price each (inc. VAT).

Order Code	Type #182	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FM77J	Switch Cleaner Pen	£1.600	£1.510	£1.310	£1.880

## Contact Cleaner Lubricant

### Electrolube

An electro-mechanical lubricant in aerosol form. It consists of a solvent suspended oil for use where a thin film of contact lubricant is required having good penetrating and cleaning properties. It is safe to use on all metals and most plastics and rubbers. Uses pentane propellant. Available in 200ml and 400ml aerosol cans.



Retail Unit Price each (inc. VAT).

Order Code	Type #163	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DM85G	Switch Cleaner	£3.840	£3.650	£3.170	£4.520
FC19V	Switch Clear 400ml	£6.230	£5.920	£5.140	£7.330

## Contact Lubricant

### Electrolube

An extra high quality contact treatment oil for preserving long term reliability and performance. It is antistatic, and safe to use on most plastics, paints and rubbers. Supplied in 200ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type #164	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DM86T	Contact Lubricant	£8.030	£7.630	£6.630	£9.440

## Contact Treatment Grease

### Electrolube

A grease version of the contact treatment oil DM86T. A high quality, non-melting, tenacious grease giving better protection for vertical surfaces, sliding contacts and connections than DM86T. It is antistatic and is safe on most plastics, paints and rubbers. Supplied in 200ml aerosol can and 35ml syringe for precise application.



Retail Unit Price each (inc. VAT).

Order Code	Type #165	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DM87J	Contact Grease	£4.460	£4.240	£3.680	£5.250
FC24B	Contact Grease 35ml	£2.840	£2.690	£2.340	£3.340

## High-Performance Dry Lubricant

### Electrolube

A long term, high performance dry lubricant for precision mechanical assemblies in regular use. It may be used lubricating sprocket wheels, ball races, gears and axles on items such as printers and photocopiers. It has antistatic properties and hence aids the prevention of accumulated dust build up. It may also be used for cleaning and lubricating gold contacts on edge connectors and for cleaning and protecting relays, particularly from silicone contamination. Highly flammable so use away from sources of ignition. Supplied in 200ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type 12010	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FC28F	High Perf Lub 200ml	£6.240	£5.930	£5.150	£7.33

## Plastics Grease

### Electrolube

A long lasting non-corrosive grease ideal for use with plastics and polymer based materials. Inert composition ensures the minimum wear on moving parts with no alteration to the chemical composition of the plastic. Ideal for use with clocks, gearboxes and motor assemblies. Supplied in a 35ml syringe with applicator nozzle suitable for most tasks.



Retail Unit Price each (inc. VAT).

Order Code	Type 3948	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FC00A	Plastics Grease	£3.770	£3.580	£3.110	£4.420

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## Cleaning Strips

### Electrolube

A unique cleaning, lubrication and protection treatment for relay and other non-wiping switch contacts, edge connectors etc, and other contacts requiring only a thin film of protective lubricant. For very dirty contacts use a solvent first. For heavy duty contacts especially where arcing occurs the treatment should be followed up with an aerosol contact lubricant. Supplied in packets containing 20 strips.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FM79L	Cleaning Strips	1+ 5+ 10+ £1.140 £1.090 £0.948	1+ £1.360

## LUBRICATION - GENERAL

### General Purpose Oil

#### Electrolube

A high quality, low viscosity oil for general purpose use. Excellent lubrication and penetration characteristics. Supplied in 250ml can with dispensing spout.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JL76H	General Purpose Oil	1+ 5+ 10+ £2.930 £2.790 £2.640	1+ £3.450

### Clear Mechanical Oil

#### Electrolube

A multi-purpose, light machine oil of very high quality and performance. Ideal for delicate mechanisms, yet is designed to meet high temperature and extreme pressure conditions. Contains non-staining Molybdenum Disulphide additives for long life, tenacity and exceptional anti-wear protection. Supplied in 200ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM92A	Aerosol Mech Oil	1+ 5+ 10+ £3.110 £2.950 £2.560	1+ £3.660

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

### Dry Film Lubricant

#### Electrolube

A special colourless dry lubricant (PTFE) with excellent anti-stick and mould release characteristics. Non-oily, extremely pure, chemically inert even at high temperatures. Does not affect plastics. Supplied in 200ml aerosol can. Uses pentane propellant.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM93B	Dry Film Lubricant	1+ 5+ 10+ £5.620 £5.340 £4.640	1+ £6.610

### Silicone Grease

#### Electrolube

A high quality, tenacious, electrically insulating compound which is resistant to water and extremes of temperature. It has the property of preventing high voltage tracking, arcing or corona discharge. It makes an excellent releasing agent whilst casting resin in a mould, for example. Will not harden with age. Supplied in 200ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM91Y	Silicone Compound	1+ 5+ 10+ £4.010 £3.810 £3.310	1+ £4.720

### Multi-Purpose Grease

#### Electrolube

A general purpose grease for use in many mechanical and electro-mechanical applications. It has a wide temperature range and good lubrication and thermal properties. Supplied in a tube of 50ml.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FM80B	Tube of Grease	1+ 5+ 10+ £1.140 £1.080 £0.939	1+ £1.340

### Anti-Seize Paste

#### Electrolube

A corrosion inhibitor which, when applied, will help prevent the seizing of mechanical components due to progressive rusting or oxidation. The threads of



screws, nuts and bolts are the most obvious candidates for such treatment. Supplied in a 2g syringe.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FM82D	Syringe Anti-Seize	1+ 5+ 10+ £1.320 £1.260 £1.090	1+ £1.560

### Precision Oiler



This hypodermic oil is the answer to those difficult lubrication problems. The amount of oil dispensed is controlled by squeezing the plastic dispenser. The oil can be easily refilled and the dispensing tip is protected by cover and pen top style lid. The dispenser contains a high quality lightweight oil.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GU95D	Precision Oiler	1+ 10+ 25+ £2.590 £2.300 £2.150	1+ £3.050

### Super Lube Pen

#### Loctite



Super Lube is a patented, multi-purpose, synthetic lubricant containing Teflon particles held in suspension. The lubricant features:

- ★ Excellent thermal and oxidation stability.
- ★ Contains no wax or silicone.
- ★ Contains anti-oxidants and rust inhibitors, protects against moisture and corrosion.
- ★ Odourless, clean and non-staining - food grade U.S.D.A. rated H1.

Supplied in a handy 7g pen dispenser complete with pocket clip.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YC22Y	Super Lube Pen	1+ 12+ 36+ £2.790 £2.670 £2.600	1+ £3.280

### Silicone Grease

A tube of good quality silicone grease for gear boxes and other moving parts of all types of racing models. All models should be kept well greased at all times.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JG00A	Silicone Grease	1+ 25+ 100+ £1.370 £1.070 £0.968	1+ £1.620

**LUBRICATION - MOISTURE DISPERSANTS**

**Permagard 40**

**Electrolube**

Similar to the popular 'WD40' type general purpose lubricant. As such Permagard lubricates, penetrates, disperses and replaces water, frees tight components, and forms a protective film over metal surfaces to protect them from the effects of oxidation. It is electrically insulating and ideal for automotive applications (for example, driving damp out of HT leads, preventing tracking between battery terminals due to condensation, cleaning and recovering electrical connections) and other electrical appliances which find themselves most used or stored out of doors. It is instrumental in recovering the reliability and smooth action of all types of switches. Supplied in 250g aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type #153	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YJ47B	Permagard 40	£2.380	£2.270	£2.150	£2.800

**Max Oil 3**

This is a high performance spray lubricating oil with PTFE. The oil also acts as an inert barrier to water and dirt including salt water. The oil can be used safely on all metals, painted or chromed surfaces and GRP. There are no White Spirit or any other Aromatic Hydrocarbon solvents contained in the product.



Retail Unit Price each (inc. VAT).

Order Code	Type 11926	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BP01B	Max Oil 3	£3.390	£3.100	£2.950	£3.990

**WD-40 All-Purpose Lubricant**

The legendary WD-40 all-purpose light oil and solvent, which lubricates, penetrates, disperses and replaces water, frees tight components and forms a protective film over metal surfaces to protect them from oxidation. Electrically insulating, and resists tracking up to 12kV. Ideal for all automotive servicing applications; will drive damp out of HT leads and immediately restore normal engine running; protects battery terminals, cleans and recovers all types of electrical connections and switches.



As a penetrating lubricant it frees any type of sticky mechanism. Use it to recover the smooth action of locks, padlocks, door catches; the joints of pliers, secateurs, shears, and switches of any type. Eliminates annoying squeaks in door, gate and car door hinges. Squirt WD-40 into your car locks to make them ice-proof in the winter. WD-40 is also a powerful cleaning agent, dissolving crayon, grease, tar, gum, adhesive and hard water deposits. It can be used to clean machine parts prior to maintenance or repair, and will even clean your hands afterwards! Supplied in aerosol cans in the following sizes: 100ml, 200ml and 400ml. Contains no CFCs. Warning: contains 78% petroleum, extremely

flammable. Flash point 43°C. Under no circumstances apply to hot surfaces or expose to a naked flame.

Retail Unit Price each (inc. VAT).

Order Code	Type #182	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
ZF08J	100ml WD-40	£1.170	£1.070	£1.020	£1.380
ZF09K	200ml WD-40	£1.490	£1.400	£1.300	£1.760
ZF10L	400ml WD-40	£2.510	£2.310	£2.190	£2.960

**PCB CONSUMABLES**

**PCB - ADHESIVES**

**Thermal Bonding Compound**

**Electrolube**



A metal-oxide loaded two part epoxy bonding system having excellent thermal conductivity while being electrically insulating. Ideal for bonding to heatsinks etc. Supplied in two syringes and applied in the ratio 3 parts of Part A (colour blue) to 1 part of Part B (colour cream). Contains 20ml total.

Retail Unit Price each (inc. VAT).

Order Code	Type #087	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FA81C	Thermalbond Compound	£7.140	£6.780	£6.430	£8.390

**Output Kit**

**Loctite**



A thermally conductive adhesive which cures rapidly at room temperature. It is designed for bonding electronic components to heat sinks or PCBs. The high thermal conductivity provides excellent heat dissipation.

- Kit contains:**
- ★ 25ml adhesive 315 in syringe
  - ★ 18ml activator in brush top bottle

Retail Unit Price each (inc. VAT).

Order Code	Type 12285	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC06G 1	Output Kit	£26.190	£25.200	£24.600	£30.780

**Tak Pak Kit**

**Loctite**

An instant adhesive for wire tacking and component mounting. Tak Pak Kit gives excellent performance on substrates used in PCB assemblies. Tak Pak high viscosity instant adhesive with activator cures in seconds at room temperature. Withstands high temperature and thermal cycling. Use for wire tacking and anchoring and component



mounting.

- Kit contains:**
- ★ 20g adhesive 382
  - ★ 25ml spray activator 7455
  - ★ 2 dispensing needles

Retail Unit Price each (inc. VAT).

Order Code	Type 12286	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC07H	Tak Pak Kit	£19.260	£19.170	£18.430	£22.640

**Black Tak Kit**

**Loctite**

A tough instant adhesive for strain relief and mounting larger components to PCBs. Black Tak adhesive with activator cures fast at room temperature and provides tough joints resistant to high temperature. Withstands impact shocks, cleavage loads and stresses caused by thermal shock. Uses include mounting large components to PCB, strain relief large components, elimination of lead stress on high profile components, strain relief on cable connections and reinforcement of terminal wires.



- Kit contains:**
- ★ 20g adhesive 4105
  - ★ 25ml spray activator 7455
  - ★ 2 dispensing needles

Retail Unit Price each (inc. VAT).

Order Code	Type 12288	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC08J	Black Tak Kit	£20.720	£19.170	£18.430	£24.350

**Tempflex Kit**

**Loctite**



A completely non-corrosive sealant adhesive paste for use on corrosion sensitive substrates. The single component translucent paste cures at room temperature to form a high strength flexible rubber. Adhesion to metals, plastics, ceramics and glass is excellent. Tempflex meets MIL A 46146B, Group II, Type 1. The flexible material properties remain constant from -55°C to +300°C and withstand long term exposure at 250°C. Especially designed for critical applications on military, industrial and automotive electronics under harsh environments. Uses include stress relief, bonding PCBs to housings, sealing and gasketing electrical devices, protecting and encapsulating corrosion sensitive parts and repairing silicone rubber gaskets.

- Kit contains:**
- ★ 40ml adhesive sealant 5145 in tube
  - ★ 2 dispensing needles

Retail Unit Price each (inc. VAT).

Order Code	Type 12291	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC09K	Tempflex	£6.540	£6.080	£5.850	£7.690

**All Customers**  
No additional freight charges for heavy items

## PCB - COATINGS

### Clear Protective Lacquer

#### Electrolube

A general purpose convenient coating designed to protect PCB's from environmental attack. Also ideal for protecting ferrous metals from corrosion. Gives a high quality glossy finish, good resistance to humidity, good surface resistivity and circuits can be resoldered through the lacquer. 100% Ozone Friendly. Supplied in 200ml aerosol.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YB75S	PCB Lacquer	1+ £3.180 5+ £3.020 10+ £2.620	1+ £3.740

### Acrylic Conformal Coating

#### Electrolube

A flexible transparent acrylic Conformal coating which can be used to protect printed circuit boards and sensitive electronic circuitry from the effects of humidity and corrosion. Ideal for sealing EHT and high voltage conductors, and can be used for additionally insulating automotive HT circuits against the weather, for example. Does not crack or discolour, conforms to international specifications. Disappears quickly and easily on the application of a soldering iron, hence the circuit is not difficult to service or modify afterwards. Supplied in a 400ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM82D	Acrylic Conf Coating	1+ £6.400 12+ £4.690 36+ £3.670	1+ £7.530

### High Performance Acrylic Conformal Coating

#### Electrolube

A flexible transparent acrylic coating specially formulated for the protection of electronic circuitry to meet the highest defence and aerospace industry requirements. Possesses excellent adhesion under all climatic conditions. It is resistant to mould growth and has a temperature range of -60 to +130°C. It has excellent dielectric properties and is fluorescent under ultra-violet light as an aid to inspection. Can be soldered through without fear of highly toxic gases being produced e.g. isocyanates. It is non-corrosive to cadmium and zinc plate (contains no phenols). It can be totally removed with 1,1,1 trichloroethane. Supplied in 200ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YT50E	HPA Conformal Coat	1+ £6.700 12+ £5.340 36+ £4.030	1+ £7.880

### Very High Temperature Conformal Coating

#### Electrolube

A flexible, transparent modified silicone resin conformal coating specially formulated for the protection of electronic circuitry to meet the highest defence and aerospace industry requirements. Possesses excellent adhesion under all climatic conditions and is resistant to a wide range of solvents. Excellent resistance to mould growth and ultra-violet light. Wide temperature range from -70 to +200°C.



The coating produces a high gloss finish, exceptionally low oxygen permeability and high surface resistivity. It has good dielectric properties at all frequencies, and is fluorescent under ultraviolet light as an aid to subsequent inspection. Can be soldered through without fear of highly toxic gases being produced, e.g. isocyanates. Non-corrosive to cadmium and zinc plate (contains no phenol). Supplied in 200ml aerosol can.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YP74R	-70+200 Conformal	1+ £7.390 12+ £5.390 36+ £4.460	1+ £8.690

### Silicone Removable Coating

#### Electrolube

A silicone conformal coating designed to protect printed circuit boards exposed to high humidity environments. Excellent resistance to mould growth, tropical conditions and UV light. A UV trace is included within the coating to allow easy and reliable post-coating inspection. The stronger the reflected light, the thicker the coating layer.



The coating is specially formulated to be easily removed with most common solvents. **Electrolube Ultrasolve (ULS)** is ideal. Supplied in a 400ml aerosol can.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC25C	Silicone PCB Coat	1+ £12.500 5+ £11.870 10+ £10.310	1+ £14.690

### Peelable Coating Mask

#### Electrolube

A flexible, solvent resistant latex for masking components, connectors and other items prior to applying a conformal coating, to ensure that sensitive items, and areas requiring further processing are not coated. The mask can be applied to adjustable pots, IC sockets etc. to prevent ingress of coating. The high film strength of the mask means that it can be peeled away by hand without breaking or leaving residues. Note that this product contains ammonia and therefore must be allowed to dry in a well-ventilated area. Supplied in 250ml bottles.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YT48C	Peelable Coat 250ml	1+ £5.420 12+ £3.990 36+ £3.550	1+ £6.370

### Bloc'Lube

#### Electrolube

A one part, air drying, tamper evident seal for screws, nuts, tuneable items and other "factory fixed" components where evidence of unauthorised access is required. It is also ideal for application onto rotary controls to ensure that settings do not move under vibration loads etc. Available as 15ml bottle with integral brush in colours red or green.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC36P	BlocLube Red	1+ £2.050 5+ £1.960 10+ £1.860	1+ £2.420
FC37S	BlocLube Green	1+ £2.050 5+ £1.960 10+ £1.860	1+ £2.420

## PCB - ETCHING

### Press-n-Peel PCB Transfer System



Create high precision professional PCB layouts quickly and easily. These 8 1/2" x 11" ("letter" setting on printers) sheets are designed for use with Laser printers or photocopiers. Print directly from a graphics program or photocopy (after reversing the image as necessary) onto the sheet. Then simply iron onto a copper-clad board using your domestic iron (steam setting not recommended). Leave to cool for a few minutes then peel the sheet from the board leaving the layout ready to be etched as normal. Supplied in a pack of 5 sheets.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AB15R	Press-N-Peel PCB	1+ £12.750 3+ £12.120 5+ £11.800	1+ £14.990



Sales: 01702 554000

Fax: 01702 554001

Technical: 01702 556001

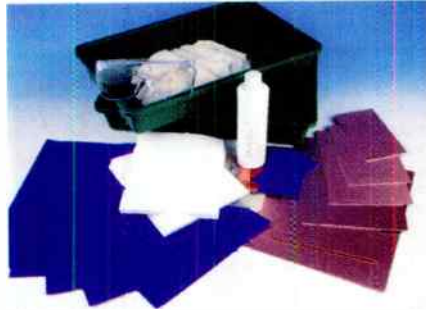
Customer Services : 01702 554002

Account Enquiries : 01702 554187

e-mail: Sales@maplin.co.uk

**PCB Starter Kit**

Press-n-Peel



A comprehensive kit of parts to produce professional looking PCBs easy and quickly. The kit includes the 'Press-n-Peel' transfer system for marking out the boards prior to etching. Full instructions included.

**Kit contents**

- 1 pack assorted single-side copper boards (10 x 8, 9 x 6, 8 x 6, 7 x 5, 6 x 4, 5 x 3)
- 1 off tray for etching boards
- 1 off tray for rinsing boards
- 1 off 500g SP etchant
- 1 off permanent etch resist pen
- 5 off sheets of Press-n-Peel
- 1 off 100ml approx. of Press-n-Peel stripper
- 1 pack 10 paper wipes
- 1 pair safety glasses
- 2 pairs latex gloves
- 1 pack data sheets inc. Health and Safety

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MC50E1	Starter Kit	£55.310 3+ £52.500 5+ £51.000	1+ £54.990

**Positive Photoresist Aerosol Spray**

Electrolube

An aerosol can of positive photoresist for coating copper-clad board. To use, first use a fine grade emery cloth or polishing block to remove dust, dirt, grease, fingermarks and oxide from the copper surface. Rinse well and dry thoroughly. The coating must be applied in subdued light. Shake the can, place the board horizontally in a dust-free area, then holding the can at a 30° to 45° angle, from a distance of 20 to 30cm spray with smooth strokes in a zig-zag pattern. Leave in low light for 5 minutes until touch-dry. Move to a dark well-ventilated area and leave for 24 hours (or heat to 80°C for 15 minutes, but do NOT use an open flame or incandescent element). The board may now be used in the normal way, with our UV Light Box. Available in 150g/200ml cans.



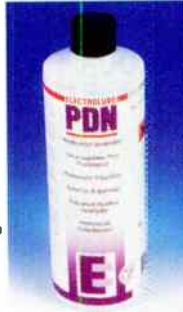
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YM62S	Pos Photores 150g	1+ £8.500 12+ £5.890 36+ £5.080	1+ £9.990

**Photoresist Developer**

Electrolube

For use with positive photoresist PCBs, the developer must be diluted 4:1 with water before use. Place the prepared board in the solution for 30 to 90 seconds at 20°C. Development is complete when the shiny copper shows through on the non-image areas. Rinse the board thoroughly with water to halt the development process. When the board is dry it is ready for etching. Supplied in 250ml bottle.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YJ38R	Photoresist Developr	1+ £4.240 12+ £3.090 36+ £2.170	1+ £4.990

**Printed Circuit Board Etch Resist Marker Pen**



A nylon tipped pen for fast fabrication of perfect printed circuit boards. The ink adheres perfectly to copper and is completely resistant to ferric chloride and other usual etchant solutions. Draw the planned circuit onto a thoroughly cleaned copper laminated board and allow to dry. Then immerse the board in etching fluid until the copper is dissolved. The ink can then be removed with Degreasing Solvent or PCB Cleaner, and the circuit board is then ready to be drilled and assembled. This pen is capable of producing thin, delicate lines allowing for quite a condensed track layout if required. It can also be used as an indelible marker felt tip pen for an enormous range of materials especially metals.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HK02C	PCB Pen	1+ £1.940 25+ £1.490 100+ £0.990	1+ £2.290

**Dalo Etch Resist Marker Pen**



An etch-resist marker pen similar to the one above, but having better adhesion to the board if it is not perfectly clean of grease and oxides.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FP40T	Dalo Pen	1+ £3.390 12+ £1.990 120+ £1.890	1+ £3.990

**PCB Etch Powder**

Press-n-Peel



- ★ Safer, and excellent value compared to ferric chloride
- ★ Excellent stability
- ★ Etching time is 5 to 10 minutes at 45°C
- ★ 1kg makes 5l of etch solution

This sodium persulphate based etch powder has been specifically developed for etching copper laminate used in the electronics industry. The product exhibits excellent stability in use leaving surfaces clean, even and free of staining.

1kg will make 5l of etch solution, or 200g per litre. 4.5l of water is heated to between 40 to 50°C and the powder is slow stirred into the water. When dissolved, top up to 5l with water. The solution should last between 4 to 8 weeks, but is dependent upon the volume of copper in solution.

N.B To prevent premature breakdown of the solution, do not operate in excess of 50°C. Supplied in 1kg tubs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MC49D	Etchant 1kg	1+ £11.050 3+ £10.500 5+ £9.950	1+ £12.990

**Ferric Chloride Crystals**

Electrolube



A pack of Ferric Chloride (FeCl3) crystals for etching copper clad boards. Packet contains sufficient crystals to make one pint of solution. Dissolve in 250ml of warm water. Store and etch in plastic or glass vessels. With regular stirring, etching will take about 20 minutes or longer depending on how many times solution has been used before. One pint will etch about: 2260sq.cm. (350sq.in.).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XX12N	Etch Crystals	1+ £6.110 10+ £3.990 50+ £3.550	1+ £7.180

**Etching Fluid**

A plastic bottle containing 250ml of high concentration ferric chloride etching fluid. The fluid can be used as supplied, but should be diluted with 250ml of water before use (i.e. one part etchant, one part water). Childproof container.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WF10L	Etcher Fluid	1+ £6.900 12+ £4.890 36+ £4.190	1+ £8.110

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## Universal PCB Developer

A sodium-hydroxide free PCB developer that is supplied in free flowing odourless granules and is ready for dilution with water. Suitable for single or double sided PCBs, and all applications such as prototype work is 10g of granules with 100ml of water, or the full 250g would make up to 2.5l of developer.

The ideal temperature for dilution and developing is room temperature, i.e. approximately 20°C.

Development time will depend on the complexity of the board design, dilution ratio of the solution and the temperature.

After development, the board should be rinsed thoroughly and dried either in air or an oven. Always wear protective gloves and goggles and avoid contact with the eyes and skin, but in case of contact, flush liberally with water.

Ensure all containers and utensils used with this product are made from strong chemical resistant plastics or glass.

Do not use any equipment made from metal.



Retail Unit Price each (inc. VAT).

Order Code	Type 2085	Price each exc. VAT			inc. VAT each
		1+	12+	36+	
AP01B	PCB Developer	£6.800	£4.290	£3.780	£7.990

## HEAT TRANSFER PASTE

### Heat Transfer Compound

Electrolube



Heat transferring grease having about 31/2 times the thermal transmission of ordinary silicone grease. The material is non-irritant except to the eyes. In the case of such contamination wash freely with water until the smarting stops. Supplied in a box with syringe-type applicator for accurate and wasteless placement of the compound. Available in either 35ml, 10ml or 2ml syringes.

Retail Unit Price each (inc. VAT).

Order Code	Type 2058	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
HQ39N	Heat Trans Comp 35ml	£3.380	£3.220	£3.050	£3.980

31 Price each is shown. Order quantities less than 12 will be sold at the one off inc. VAT price.

Order Code	Type 2058	Price each exc. VAT			inc. VAT each
		12+	36+	144+	
FL79L	Heat Trans Comp 10ml	£1.920	£1.430	£1.400	£3.110
HQ00A	Heat Trans Comp Tube	£1.260	£0.940	£0.890	£2.240

## POTTING COMPOUND

### Potting Compound PX700K

Robnorganic



Encapsulate your circuits to make them damage and moisture proof. Our potting compound packs are available in five different sizes to minimise wastage. Final mix is black. All resins get hot as they are curing, but where delicate electronic components are concerned, it can be a considerable advantage if the cure temperature is low and our compound does exhibit a comparatively low exothermicity. This resin has a lower viscosity, a better thermal conductivity and remains flexible in comparison to our previous potting compound. The compound remains workable for about 120 minutes, and is completely cured in 24 hours at 25°C. May be stored for at least 12 months without detriment. Has very high electrical resistance.

Full instructions are supplied with the pack. Available in five sizes: 50g size makes 28.7cc, 100g size makes 57.5cc, 250g size makes 143.7cc, 500g size makes 287.4cc 1000g size makes 574.8cc. This product supersedes our previous potting compound

Retail Unit Price each (inc. VAT).

Order Code	Type 4057	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AZ88V	PX700K Epoxy 50g	£2.960	£2.610	£2.450	£3.510
AZ89W	PX700K Epoxy 100g	£3.440	£2.940	£2.740	£4.050
AZ90X	PX700K Epoxy 250g	£3.880	£3.790	£3.500	£4.560
AZ91Y	PX700K Epoxy 500g	£6.370	£5.350	£4.850	£7.490
AZ92A	PX700K Epoxy 1kg	£9.880	£8.050	£7.200	£11.620

### Potting Compound EL171C

Robnorganic

A flexible potting resin with good electrical strength and flame retardant properties. Ideal for use in the manufacture of transformers. Available in three sizes: 270g, 566g and 1131g.



Retail Unit Price each (inc. VAT).

Order Code	Type 12087	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AZ93B	EL171/BK Poly 270g	£3.770	£3.400	£3.250	£4.440
AZ94C	EL171C/BK Poly 566g	£5.010	£4.500	£4.300	£5.890
AZ95D	EL171C/BK Poly 1131g	£6.850	£6.100	£5.850	£8.050

## Clear Varnish MP400C.

Robnorganic

A solvent based transparent acrylic varnish with excellent resistance to Fungus attack. Touch dry in approximately 10 minutes at 21°C.

Contains an ultraviolet flourescing tracer to enable checking of coverage.

Working temperature range -60°C to +130°C

Recommended for application by dipping with a viscosity of 240-280 cps at 25°C. Will require thinning for application by dipping or spraying.



Retail Unit Price each (inc. VAT).

Order Code	Type 12083	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AZ96E	MP400C/NC Vrnsh 450g	£8.410	£6.700	£6.050	£9.890

## Jaxa Mould Release

Robnorganic

A non-silicone release agent for moulds constructed of metal, epoxy resin, or glass re-inforced polyester (but not silicone elastomer).

Air drying within 30 seconds to 1 minute depending on air flow.

Supplied in a 1ltr screw top tin with an average coverage of 13 sq mtr/ltr.



Highly flammable: Flash point below 22°C. Under no circumstances apply to hot surfaces or expose to a naked flame.

Full COSHH data available on request.

Retail Unit Price each (inc. VAT).

Order Code	Type 12087	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AZ97F	Mould Release	£10.670	£9.500	£9.050	£12.540

## GENERAL SERVICE

### ABRASIVES

#### Abrasive Fibreglass Pencil



A fibreglass abrasive stick housed in a propelling pencil type case. Designed for removing protective lacquer coatings on PCB board, prior to repair, and generally cleaning copper track for soldering. Refills are also available.

Warning: A certain amount of fibreglass dust is produced which should be removed with great care. Avoid touching with exposed skin as the particles can easily penetrate flesh and be extremely uncomfortable. Avoid contact with eyes.

Retail Unit Price each (inc. VAT).

Order Code	Type 3032	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KR61R	Fibreglass Pencil	£3.290	£3.070	£2.600	£3.870
KR62S	Pencil Refill	£0.774	£0.604	£0.552	£0.910

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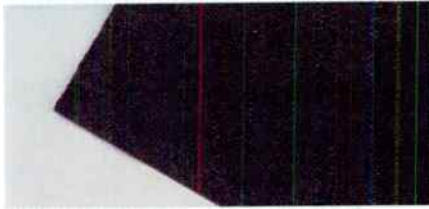
RS12750  
BS EN ISO 9002  
Stockholding and Supply

Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

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## Wet and Dry Paper

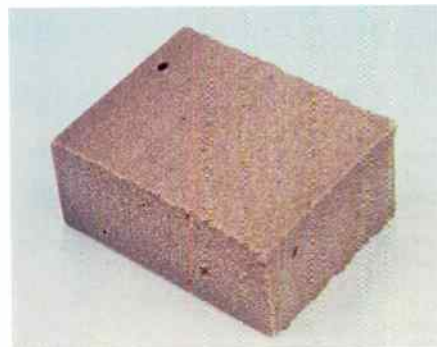


A 280 x 224mm sheet of wet and dry abrasive paper. Available in three grades:  
Fine: (Approx. 600 grade)  
Medium: (Approx. 320 grade)  
Coarse: (Approx. 80 grade)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FY55K	Wet & Dry Fine	£0.417	£0.315	£0.290	£0.490
FY56L	Wet & Dry Med	£0.417	£0.315	£0.290	£0.490
FY57M	Wet & Dry Coarse	£0.417	£0.315	£0.290	£0.490

## Polishing Block



Block is ultrafine non-metallic polishing compound bonded in an elastic material which wears evenly. It cleans, degreases and polishes in one clean simple procedure, totally eliminating the need for abrasive pastes, water washes and solvent washes. It has been designed primarily for cleaning copper-clad boards prior to application of resist inks, or finished circuits prior to tin/silver/gold plating. It is equally useful for cleaning contacts, switch gears, potentiometers, connectors, adjustable transformers etc. Supplied individually.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	120+	1+
HX04E	Polish Block	£2.370	£1.790	£1.310	£2.790

## Abrasive Cord



Flexible cords to debur, grind and polish hard-to-reach areas which are inaccessible to most standard tools. Ideal for narrow slots, grooves, small holes and curved surfaces they can be used on metal, plastic and wood. Impregnated with aluminium oxide, silicon carbide and crocus, the aluminium oxide and silicon carbide cords are used to debur. Crocus cords are used to polish metal after deburring.

Diameter dimensions are approximate

Maplin Code	Size (mm)	Use
Crocus		
YC49D	0.76	Very fine polishing
Silicon Carbide		
YC50E	0.76	Multipurpose

## Aluminium Oxide

YC51F 1.78 Deburring  
YC52G 0.76

Supplied in reels of approximately 50' (15 metres).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YC49D	Abrasive Cord No54-C	£10.350	£9.900	£9.650	£12.170
YC50E	Abrasive Cord No54-S	£14.100	£13.450	£13.150	£16.570
YC51F	Abrasive Cord No50	£11.850	£11.300	£11.100	£13.930
YC52G	Abrasive Cord No54	£8.150	£7.800	£7.450	£9.580

## GENERAL SUNDRIES

### Freezer Spray

Electrolube

A non-corrosive refrigerant aerosol for the rapid cooling of electronic components as an aid in tracking down and detecting thermally related faults. Can also find invaluable uses such as cooling semiconductors during soldering to prevent damage, and/or shrinking mechanical components having an interference fit with one another and thereby making fitting easier. The freezer spray can lower temperature to as much as -56°C (70°C below ambient) Suitable for static sensitive devices. Available in 200ml and 400ml aerosol cans.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DM88V	Freezer	£5.200	£4.940	£4.290	£6.110
FC99H	Freeze Spray 400ml	£12.130	£11.530	£10.930	£14.260

### Electrically Conductive Silver Paint

Electrolube

An air drying electrically conductive paint containing pure silver. The paint should be applied to dry, grease- and oil-free surfaces with a soft bristled brush to obtain as thin a coating as possible to ensure minimum resistance. After approx. 15 minutes the paint will be dry, but is not completely cured for 12 hours. The resistance will be about 0.01Ω per cm. However, by applying heat (e.g. from a hair dryer) to speed the drying time immediately after application the resistance can be reduced to less than 0.5mΩ per cm. Before use always shake the tube well. Applications include: repairing broken tracks on PCBs; repairing demisters on car rear windows; bonding wires together; rf shielding; prototype PCB manufacturing; conductive ink and many more. Supplied in a phial containing 3g. Note: Shake well before use.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FY72P	Conductive Paint	£5.230	£5.320	£5.610	£7.330

### Nickel Screening Spray

Electrolube

An electro-conductive coating based on nickel for EMI and RFI screening (electro-magnetic and radio frequency interference). Adheres to a wide variety of materials and ideal for spraying the insides of plastic boxes to provide a screen. Has a surface resistivity of 0.7Ω per sq.cm. with 50 microns thickness. The can must be shaken for at least 2 minutes before use. Supplied in a 400ml aerosol can.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DM10L	Screening Spray	£16.970	£16.130	£15.260	£19.950

### Funnel

A general purpose high density polyethylene funnel. Diameter, 120mm. Spout requires minimum 20mm diameter entry hole.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JU50E	Funnel 120mm	£0.859	£0.604	£0.530	£1.010

## CONSTRUCTION CONSUMABLES

### Fire Retardant Sealant (Pyropol)

Siroflex

Pyropol is a one part moisture curing silicone sealant conforming to BS476 part 20, preventing the passage of smoke and fumes. Achieves primerless adhesion to most surfaces (low modulus). When used for remedial work an Epoxy primer is recommended. Apply to clean, dry surfaces free from dust and grease. Cut nozzle for required width (6 to 40mm), and apply directly to joint. Smooth within 10 minutes of application. Cure rate of 3mm per 24 hours at 20°C/50% RH. Uses include perimeter pointing and sealing of fire rated structures, vapour seals in fire rated cladding, sealing between curtain walling and main structure and other applications where up to 50% movement capability is required. Each tube contains 310ml.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AS82D	Fire Retardant Sealant	£4.160	£3.420	£3.140	£4.890

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## Bond-Flex

**Bostik**

Bond-Flex is a high modulus silicone sealant which provides a waterproof, durable seal for a wide variety of applications – including general joint sealing, glazing and metal constructions, cladding panels, air conditioning systems and kitchen and bathroom surfaces.

Bond-Flex is safe for food contact and is ideal for use in hygiene critical areas. Bond-Flex forms a fast curing, colourfast and UV resistant seal and conforms to BS5889 (B).

It provides excellent adhesion to most building materials and is suitable for both interior and exterior use. BP10 is white. BP11 is clear. Supplied in a 310ml pack that's suitable for use with all sealant guns.



Retail Unit Price each (inc. VAT).

Order Code	Type 10102	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP10L	Silicone Seal Acetoxly	£2.800	£2.350	£2.200	£3.290
BP11M	Silicone Seal Neutral	£3.140	£2.520	£2.320	£3.690

## Polyfoam

**Bostik**

Bostik Polyfoam is a single part, foaming polyurethane compound supplied in a pressurised aerosol pack. It requires no mixing or measuring, simply aim the supplied nozzle and spray. The foam will expand vigorously after dispensing to form a semi-rigid foam which bonds, fills, seals and insulates against heat and noise. It will automatically expand to seal all hidden spaces and cavities. Polyfoam is ideal for filling large gaps or cavities or for use as a packing material for valuable items and can be built up to fill large volumes or injected to seal and fill enclosed cavities such as glands or service entries. Polyfoam is suitable for use, without priming, on a wide variety of materials including metal, wood, brick, stone and most plastics and rubbers (excluding PTFE, PE and PP) and once set can be trimmed or cut and overpainted with gloss or emulsion paints. The aerosol contains 500ml of Polyfoam which will expand to approx 15-20 litres.



Retail Unit Price each (inc. VAT).

Order Code	Type 10352	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP15R	Polyfoam	£5.940	£4.650	£4.250	£5.990



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## MODEL FINISHING

### ADHESIVES

## 'Hyloglue' Rapid Bonding Adhesive

**MFA**



Rapid bonding, high strength adhesive available in four viscosity grades as follows:

Red – metals, plastics, rubber.

Yellow – porous surfaces.

Blue – metals.

Green – wood.

Use cyanoacrylate as the active constituent.

Supplied in 20g bottles.

Retail Unit Price each (inc. VAT).

Order Code	Type 0135	Price each exc. VAT		inc. VAT each
		1+	1+	
WE97F	Metal Cyano Glue	£2.540		£2.990
WE98G	MelPlesRub CyanoGlue	£2.540		£2.990
WE99H	Porous Cyano Glue	£2.540		£2.990
DX17T	Wood Cyano Glue	£2.540		£2.990

## BRUSH ON PAINT

### Brush-on Paint

**Pactra**



A range of top quality lead free brush paints, intended for model making, but also suitable for a wide range of other uses. Available in a selection of vivid and highly individual colours that'll make the most of your customised paint job. These paints must be used with caution – they are extremely flammable and the vapour is harmful if inhaled. Only use in well ventilated conditions. Supplied in 19.7ml glass jars.

Retail Unit Price each (inc. VAT).

Order Code	Type 1256	Price each exc. VAT		inc. VAT each
		1+	1+	
GQ11M	Br Sprint White	£1.990		£2.340
GQ12N	Br Blue Streak	£1.990		£2.340
GQ13P	Br Blue-Dust	£1.990		£2.340
GQ14Q	Br Racing Red	£1.990		£2.340
GQ15R	Br Le Mans Pink	£1.990		£2.340
GQ16S	Br Competition Orang	£1.990		£2.340
GQ17T	Br Daytrna Yellow	£1.990		£2.340
GQ18U	Br Rally Green	£1.990		£2.340
GQ19V	Br Pearl Purple	£1.990		£2.340
GQ20W	Br Indy Silver	£1.990		£2.340
GQ21X	Br Grand Prix Gold	£1.990		£2.340
GQ22Y	Br Metallic Red	£1.990		£2.340
GQ23A	Br Metallic Blue	£1.990		£2.340
GQ24B	Br Metallic Burgundy	£1.990		£2.340
GQ26P	Br Metallic Black	£1.990		£2.340
GQ26D	Br Metallake Silver	£1.990		£2.340
GQ27E	Br Metallake Gold	£1.990		£2.340
GQ28F	Br Candy Red	£1.990		£2.340
GQ29G	Br Candy Blue	£1.990		£2.340
GQ30H	Br Candy Purple	£1.990		£2.340
GQ32K	Br Pearl White	£1.990		£2.340
GQ33L	Br Firscent Neon Red	£1.990		£2.340
GQ34M	Br Firscent Orange	£1.990		£2.340
GQ35Q	Br Firscent Yellow	£1.990		£2.340
GQ10L	Br Outlaw Black	£1.990		£2.340
LJ82S †	Br Pearl Copper	£1.990		£2.340

## SPRAY PAINT

### Spray-on Paint

**Pactra**



A range of top quality lead free spray paints, intended for model making, but also suitable for a wide range of other uses. Available in a selection of vivid and highly individual colours that'll make the most of your customised paint job. These paints must be used with caution – the propellant is extremely flammable and the spray is harmful if inhaled. Only use in well ventilated conditions. Supplied in 85g aerosol cans.

Retail Unit Price each (inc. VAT).

Order Code	Type 11257	Price each exc. VAT		inc. VAT each
		1+	1+	
GQ38R	Sp Outlaw Black	£2.850		£3.360
GQ39N	Sp Sprint White	£2.850		£3.360
GQ40T	Sp Blue Streak	£2.850		£3.360
GQ41U	Sp Blue Dust	£2.850		£3.360
GQ42V	Sp Racing Red	£2.850		£3.360
GQ43W	Sp Le Mans Pink	£2.850		£3.360
GQ44X	Sp Comp Orange	£2.850		£3.360
GQ45Y	Sp Daytrna Yellow	£2.850		£3.360
GQ46A	Sp Rally Green	£2.850		£3.360
GQ47B	Sp Pearl Purple	£2.850		£3.360
GQ48C	Sp Indy Silver	£2.850		£3.360
GQ49D	Sp Grand Prix Gold	£2.850		£3.360
GQ50E	Sp Metallic Red	£2.850		£3.360
GQ51F	Sp Metallic Blue	£2.850		£3.360
GQ52G	Sp Metallic Green	£2.850		£3.360
GQ53H	Sp Metallic Burgundy	£2.850		£3.360
GQ54I	Sp Metallic Black	£2.850		£3.360
GQ54J	Sp Candy Red	£2.850		£3.360
GQ55K	Sp Candy Blue	£2.850		£3.360
GQ56L	Sp Candy Purple	£2.850		£3.360
GQ57M	Sp Pearl White	£2.850		£3.360
GQ58N	Sp Firscent Neon Red	£2.850		£3.360
GQ59P	Sp Firscent Orange	£2.850		£3.360
GQ60Q	Sp Firscent Yellow	£2.850		£3.360
GQ62S	Sp Firscent Green	£2.850		£3.360
GQ63T	Sp Firscent Blue	£2.850		£3.360
GQ64U	Sp Opaque WhiteCover	£2.850		£3.360



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Stockholding and Supply

Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

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**PAINT THINNERS**

**Racing Finish Thinner**

Pactra



A specialist lead-free thinner designed for use with the range of Racing Finish paints – other types of thinner may be incompatible and are not recommended. Can also be used to clean brushes and equipment. This thinner must be used with caution – it is extremely flammable and harmful if inhaled. Only use in well ventilated conditions. Supplied in three sizes, small (20ml), medium (100ml) and large (237ml).

Retail Unit Price each (inc. VAT).

Order Code	Type 11736	Price each exc. VAT	inc. VAT each
		1+	1+
GQ25C	Thinners Small	£1.990	£2.340
GQ31J	Thinners Medium	£3.020	£3.560
GQ37S	Thinners Large	£4.590	£5.400

**MASKING TAPE**

**Masking Tape**

Pactra



Adhesive-backed masking tape, available in a range of widths. Ideal for masking areas prior to paint spraying or other surface treatment. Supplied in reels of approximately 6.1m/20ft. Pack size: 1 reel

Retail Unit Price each (inc. VAT).

Order Code	Type 11484	Price each exc. VAT	inc. VAT each
		1+	1+
GQ65V	Masking Tape 12.7mm	£3.890	£4.580
GQ66W	Masking Tape 6.35mm	£3.020	£3.560
GQ67X	Masking Tape 3.18mm	£2.420	£2.850
GQ68Y	Masking Tape 1.59mm	£1.720	£2.030

**CUTTER**

**Smart Cut**

Top Flite



This totally unique trimming tool is the perfect way to cut and trim model film (such as the Solarfilm and Solartrim ranges shown in this catalogue) and fabrics. It allows smooth, straight cuts and consistent overlaps in traditionally difficult areas – such as the inside corners where fuselage and tailfin meet, fuselage sides and wing leading and trailing edges – and can quickly and evenly trim edges, curves and inside corners. A detachable spacer plate easily produces a uniform 32mm or 16mm overlap for perfect seams. Uses two standard, replaceable number 11 hobby knife blades (included).

**Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.**

Retail Unit Price each (inc. VAT).

Order Code	Type 11745	Price each exc. VAT	inc. VAT each
		1+	1+
GZ62S	Smart Cut	£6.930	£8.150

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## SOLDERING IRONS

### MAINS VOLTAGE

#### Beginners Soldering Iron



A robust mains-powered 25W general-purpose soldering iron. The handle is yellow and ribbed for extra grip, and a removable clip is supplied to enable the iron to be safely hung up whilst not being used. If the iron is remaining idle while still hot then the iron **MUST** be placed in a stand, or hung by its clip, for safety reasons. The bit has a 5mm chisel tip and is held in place by one of the grub screws on the barrel. A replacement bit is available separately. The element cannot be changed.

Retail Unit Price each (inc. VAT).

Order Code	Type 4046	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KW70M	Econ Bit	£0.859	£0.708	£0.593	£1.010

Retail Unit Price each (inc. VAT).

Order Code	Type 4046	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
ZF32K	Econ Solder Iron	£5.520	£4.700	£3.870	£6.490

#### 12W Miniature Soldering Iron Type M

Antex



A 12W miniature 240V AC soldering iron which has a heating element contained in a stainless steel shaft, such that the heat is transferred to the bit with maximum efficiency. The soldering bit (No. 10 fitted) can be easily removed from the shaft for replacement. Ideal for SMD rework and other applications where not too much heat is required. Fitted with 1.8m of mains cable.

A replacement element is available (JR55K).

#### Specification

Power consumption:	12W
Breakdown voltage:	1250V
Leakage current:	<5µA
Max. bit temperature:	370°C
Length:	147mm
Weight:	21g

Retail Unit Price each (inc. VAT).

Order Code	Type 4046	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
YU90X	Iron M	£11.900	£11.310	£10.710	£13.990
JR55K	Element M 230V/12W	£5.190	£4.930	£4.670	£6.100

#### 15W Miniature Soldering Iron Type C

Antex



A 15W miniature 230V AC soldering iron which has a heating element contained in a stainless steel shaft, such that the heat is transferred to the bit with maximum efficiency. The soldering bit (No. 820 fitted) can be easily removed from the stainless steel shaft for replacement. Ideal for light duty and PCB soldering jobs where not too much heat is required. Fitted with 1.4m of mains cable. The item is fully compatible with European EMC and CE regulations and sports the CE mark.

#### Specification

Power consumption:	15W
Breakdown voltage:	1,250V
Current leakage:	<5µA
Max. bit temperature:	370°C
Length:	147mm
Weight:	21g

Retail Unit Price each (inc. VAT).

Order Code	Type 4052	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
FJ44X	Iron Type C	£11.040	£10.490	£9.940	£12.980

#### Type C & CN Replacement Element

A 240V replacement element for irons type C and CN.

Retail Unit Price each (inc. VAT).

Order Code	Type 4053	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
FR01B	Element Type CN	£5.320	£5.060	£4.790	£6.260

#### Type CN Replacement Handle

A replacement handle for the iron type CN240.

Retail Unit Price each (inc. VAT).

Order Code	Type 4055	Price each exc. VAT		inc. VAT each
		1+	5+	
FR02C	Handle Type CN	£1.150	£1.090	£1.360

#### 18W Miniature Soldering Iron Type CS

Antex



An 18W precision miniature soldering iron featuring a double shaft. An inner shaft of ceramic provides a very low leakage current of <2µA, and has an outer stainless steel sleeve for strength. It is intended for use with modern miniature components. The iron comes fitted with a Bit No. 1100, but many alternative bits are available. 230V AC mains

operated. Fitted with 1.4m of mains lead. The iron is fully compatible with European EMC and CE regulations and sports the CE mark.

A replacement element is available (FY95D).

#### Specification

Power consumption:	18W
Breakdown voltage:	>2,500V
Leakage current:	<2µA
Max bit temperature:	390°C
Length:	183mm
Weight:	26g

Retail Unit Price each (inc. VAT).

Order Code	Type 4056	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
FY62S	Iron CS18	£12.750	£12.120	£11.480	£14.990
FY95D	Element CS 230V	£4.730	£4.490	£4.260	£5.560

#### Soldering Iron Kit SK5

Antex



An attractive presentation kit that makes the perfect present for the beginner. A superb CS soldering iron and a Stand ST6 neatly packaged with full instructions on how to use the iron as well as some general hints on soldering.

Retail Unit Price each (inc. VAT).

Order Code	Type 4061	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
FY68Y	CS Kit SK5	£15.730	£14.950	£14.160	£18.490

#### 25W Soldering Iron Type XS

Antex



A strongly recommended 25W 230V mains soldering iron ideal for soldering transistors and integrated circuits since the leakage current is <2µA. It has a shatterproof handle and detachable hook. The iron is designed to use the same bits as the X25 model which it replaced. The iron comes fitted with a Bit No. 51. 230V AC mains operated, with 1.4m of mains lead attached. The iron is fully compatible with European EMC and CE regulations and sports the CE mark.

A replacement element is available (FY96E).

#### Specification

Power consumption:	25W
Breakdown voltage:	>2,500V
Leakage current:	<1µA
Max bit temperature:	420°C
Length:	193mm
Weight:	42g

Retail Unit Price each (inc. VAT).

Order Code	Type 4063	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
FR12N	Iron XS	£10.200	£9.690	£9.180	£11.990
FY96E	Element XS 230V	£4.900	£4.650	£4.410	£5.760

## Soldering Kit SK-6

Antex



An attractive presentation kit that makes the perfect present for the beginner. A superb XS soldering iron and the new stand ST-6, neatly packaged with full instructions on how to use the iron as well as some general hints on soldering. The soldering iron meets fully the requirements of EMC regulations and carries the CE mark. A small length of solder is also provided.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
FY6BA	XS Kit SK6	£16.160	£15.350	£14.540	£18.190

See Tools Section  
for our full range of  
Cutters and Pliers

## 12 VOLT SOLDERING IRONS

### 12v Soldering Iron with Cigar Lighter Plug



- ★ Fast soldering
- ★ Extra long life
- ★ High performance
- ★ 12V 40W specification

A low voltage soldering iron that operates from 12V DC and is ideal for use in a car or caravan where mains power may be unavailable. Suitable for most soldering tasks, with chisel point tip included. Supplied with a cigar lighter socket for quick and easy connection.

A replacement bit is available. Please note this bit is unique to this iron and is not compatible with any of the Antex range. A suitable stand is available separately - see order code BP57M

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BP55K	SiIron 12V	£5.940	£3.650	£3.150	£6.990
BP56L	12V SiIron Bit	£0.842	£0.520	£0.450	£1.990
BP57M	SiIron Stand	£2.970	£2.200	£2.050	£4.490

## Low Voltage Soldering Iron MLXS25

Antex



A low voltage 25W soldering iron designed to work from a 12V car battery. The iron has the same specifications as the XS mains iron. The bits are interchangeable with the XS iron. The MLXS is supplied with a 3mm bit (bit no. 51), two large crocodile clips for connection to battery terminals, and 4.5m of 2-core lead (already fitted).

The iron comes with a small quantity of solder and an instruction leaflet "How to Solder".

The iron is compatible with the European EMC and CE regulations.

A replacement 12V element is available (FY97F).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
FR13P	12V Iron MLXS	£16.240	£15.430	£14.620	£19.090
FY97F	Element MLXS 12V	£6.100	£5.790	£5.480	£7.170

## Replacement Hook for XS and MLXS Irons

A replacement hook/finger guard to fit the XS and MLXS type irons.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
FT06K	Finger Hook XS/MLXS	£0.365	£0.346	£0.328	£0.430

## SOLDERING IRON STANDS

### Soldering Iron Stand



A neat and functional soldering iron stand that is ideal for use with all soldering irons (except some fume extraction types). Double spiral spring construction makes it virtually impossible to accidentally touch the iron when inserted into the stand.

Fast and easy construction means you'll be using it within minutes. A sponge and recessed area provide a convenient method of cleaning the soldering iron tip. Ideal for the hobbyist and professional user alike.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BP57M	SiIron Stand	£2.970	£2.200	£2.050	£3.490

## Soldering Stand ST6

Antex



An attractive soldering stand designed primarily as a general stand for any Antex-type soldering iron and which is just as suitable as a replacement for the SK-5, SK-6, 650PS, 660TC and 690SD soldering kits

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
HN99H	Solder Stand ST6	£4.240	£3.930	£3.720	£4.990

## Soldering Iron Stand

Antex



A stand designed for use with our smaller Antex soldering irons. Manufactured from a high grade insulation material with a chromium plated strong steel spring. The sponge serves (when dampened) to keep the soldering bits clean. Spare bits can be accommodated on the stand.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
FR20W	Stand ST4	£3.860	£3.660	£3.470	£4.540

## Replacement Sponge for Stands ST4, ST5 & ST6

Antex

A spare sponge is available as a replacement for use with the stand ST4 ST5, ST6 and is also used with the temperature controlled soldering iron system TCSU-1.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
RK33L	Sponge ST4	£0.544	£0.519	£0.491	£0.640

## Replacement Sponge for Stand ST3

Spare sponges for the discontinued Stand ST3 are still available.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
FR11M	Sponge ST3	£0.408	£0.390	£0.369	£0.480

## TEMPERATURE CONTROLLED IRONS & STATIONS

### 50W Temperature Controlled Iron Type TCS 220/240V

Antex



A 50W 230V AC mains operated Temperature Controlled Soldering Iron with the temperature controller built into the handle of the iron. A thermocouple near the tip of the heating element provides feedback for temperature control within the range 200 to 450°C, with an accuracy of  $\pm 1\%$ . The temperature may be selected by using a screwdriver inserted into an adjuster in the body of the iron. The iron comes fitted with a Bit No. 1100, but many alternative bits are available. Fitted with 1.2m of mains lead. Bits for the CS iron will fit this iron. The iron is compatible with the European EMC and CE regulations.

A replacement element is available (JR39N).

#### Specification

Power consumption: 50W  
Voltage to element: 230V AC  
Warm up time: 60 seconds to 450°C  
Control: Analogue proportional  
Temperature range: 200 - 450°C  
Control accuracy:  $\pm 1\%$  typical  
Length: 222mm  
Weight: 50g

Retail Unit Price each (inc. VAT).

Order Code	Type 4085	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
XJ45Y	50W Iron	£35.730	£33.940	£32.150	£41.990
JR39N	TCS Element	£16.920	£16.080	£15.230	£19.890

### Soldering Iron Kit TCK-50

Antex



A quality soldering kit that is ideal for the serious hobbyist and offering excellent value for money. The kit includes a temperature controlled TCS240 soldering iron complete with a moulded mains plug fitted with a 3A fuse, a ST6 stand, a desolder pump and 2m of fluxed solder wire.

Retail Unit Price each (inc. VAT).

Order Code	Type 4103	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
BA14Q	TCS Solder Kit	£42.000	£39.890	£37.790	£49.350

**All Customers**  
No additional freight charges for heavy items

### Temperature Controlled Iron

Weller



A low-cost, portable, general-purpose soldering iron with automatic control of output and temperature. This well-balanced soldering iron has a lightweight thermoplastic handle, is fully earthed, and comes with a long-life tip. Fitted with 1.3m of PVC mains lead (conforms to BS6500), and supplied with tip CT5CC7 as standard. Rated at 240V AC 60W.

Spare tips are available separately and are rated at 370°C. A spare heating element is available.

Tip Code	Description	MPS Code
CT5AA7	1.6mm screwdriver	DF48C
CT5BB7	2.4mm screwdriver	DF49D
CT5CC7	3.2mm screwdriver	DF50E

Manufacturer's Code W60D

Retail Unit Price each (inc. VAT).

Order Code	Type 4083	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DF47B	Iron W60D	£41.000	£38.950	£37.920	£48.180
DF48C	Tip 1.6mm	£2.740	£2.610	£2.540	£3.230
DF49D	Tip 2.4mm	£2.740	£2.610	£2.540	£3.230
DF50E	Tip 3.2mm	£2.740	£2.610	£2.540	£3.230
BN01B	Element W60D S/iron	£21.690			£25.490

### Iron Holder

Weller



A holder for the temperature controlled soldering iron DF47B. The cast-iron base has a reinforced spring safety holder that prevents the soldering iron flex from entangling in the spring. Supplied with a tip cleaning sponge.

Retail Unit Price each (inc. VAT).

Order Code	Type 4101	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DF55K	Holder for Iron W60D	£8.500	£8.070	£7.860	£9.990

### Thermally Balanced Soldering Iron

Weller



This general-purpose iron operates at a temperature of approximately 400°C, and is fitted with a nickel-plated copper tip (MT-45) as standard. The soldering iron is not intended for constant

production line work. Supplied with 1.2m of PVC mains lead. Spare tips are available separately.

Tip Code	Description	Plating	Maplin Code
MT-45	4.7mm 45° sloped	nickel	DF52G
MT-AA	1.6mm screwdriver	iron	DF53H

Manufacturer's Code T400

Retail Unit Price each (inc. VAT).

Order Code	Type 4102	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DF51F	Iron T400	£14.740	£14.010	£13.640	£17.330
DF52G	Tip Sloped	£0.953	£0.903	£0.879	£1.120
DF53H	Tip 1.6mm	£2.950	£2.800	£2.720	£3.470

### 17W 24V CS Iron for PSU

Antex



A 17W precision miniature soldering iron intended for use with 24V soldering stations. The double shaft element ensures minimal leakage current whilst retaining good mechanical strength. This iron is designed for use with modern miniature components. Supplied with Bit No. 1100. Note: this iron must not under any circumstances be directly connected to 240Vac mains. Fitted with 1.8m of cable and a Bulgin plug for connection to soldering stations HN96E or DQ06G. This iron is also available with a 'burn proof' silicon rubber cable; BA22Y.

A replacement element is available; JR42V.

#### Specification

Operating voltage: 24V  
Power consumption: 17W  
Breakdown voltage: >2,500V  
Leakage current: <2µA  
Max. bit temperature: 390°C  
Length: 183mm  
Weight: 26g

Retail Unit Price each (inc. VAT).

Order Code	Type 4036	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
YZ15R	24V 17W CS Iron	£13.140	£12.490	£11.830	£15.450
BA22Y	17W Iron Silicon Lead	£16.240	£15.430	£14.820	£19.090
JR42V	24V 17W CS Element	£5.310	£5.050	£4.780	£6.250

### 25W 24V XS Iron for PSU

Antex



A 25W precision miniature soldering iron intended for use with 24V soldering stations. The double shaft element ensures minimal leakage current whilst retaining good mechanical strength. This iron is designed for use with modern miniature components. Supplied with Bit No. 51. Note: this iron must not under any circumstances be directly connected to 240V AC mains. Fitted with 1.8m of cable, and Bulgin plug for connection to soldering stations HN96E or DQ06G.

A replacement element is available; JR43W.

#### Specification

Operating voltage: 24V  
Power consumption: 25W



Breakdown voltage: >2,500V  
Leakage current: <1µA  
Max. bit temperature: 420°C  
Length: 193mm  
Weight: 42g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YZ16S	24V 25W XS Iron	£12.930	£15.290
JR43W	24V 25W XS Element	£5.240	£6.160

## Plug-in Power Supply Unit

Antex

A plug-in power supply unit which offers a lower cost solution to providing 24 volts for soldering. Plugging directly into a standard mains socket, it frees up valuable bench space and does away with trailing leads from the socket to a transformer. The output socket to the 24 volt iron is underneath the unit avoiding the likelihood of ingress of foreign matter.



The unit is fitted with a male 3 pin Bulgin Socket and has a maximum power rating of 25 watts. This makes it suitable for use with our 17w CS (YZ15R) and 25w XS (YZ16S) irons.

### Specification

Maximum power output: 25W  
Input voltage: 230V AC  
Output voltage: 24V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DO06G	Plug-in PSU 24V 25W	£24.340	£28.610

## Temperature Controlled Soldering Station



- ★ Adjustable temperature range
- ★ Grounded tip for soldering static sensitive devices
- ★ LED power, heat and temperature indicators
- ★ Overheat protection with temperature control
- ★ Auxiliary ground terminal

A high quality soldering station developed to meet the needs of electronics professionals. Constructed using sophisticated electronic circuitry enabling the user to change the tip temperature from 300°F (150°C) to 790°F (420°C) without the need to change the tip or heating element. The temperature is maintained within ±10°F of its preset temperature. This is made possible by a unique temperature sensor that is located near the tip of the soldering iron. The result is rapid response to temperature changes and little variation when soldering large items. Completely electronic

switching protects voltage and current sensitive components against transient spikes, etc. An LED readout accurately indicates the temperature of the tip. Supplied with full operating instructions, a sponge, stand and one spike point tip. Replacement tip available (BP54J).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BP53H	Temp Cntrl Solder Str	£59.560	£69.990
BP54J	Silicon Bit	£1.690	£1.990

## Temperature Controlled Soldering Station 660-TC

Antex



This very robust soldering unit comes with the TC50 24V 50W iron and the ST-6 bench stand. The unit is able to control the temperature of the irons between 65 to 450°C, and is controlled by a thumbwheel on the front of the unit. The iron is connected to the unit by a 5 pin DIN plug and socket. The unit is mains operated, via an 'ON/OFF' switch at the rear, providing a 24V output for the iron. Two LEDs, one 'RED' the other 'GREEN', give iron 'ON' and 'POWER-ON' indication. The unit meets fully the requirements of EMC regulations and carries the CE mark. The accompanying iron will take any of the Antex 1100 soldering bits or DST range of SMT desoldering bits. A 25W iron TC25 can be used as an option where finer soldering and low wattage is required and is available separately

### Specification

Maximum power output: 50W  
Input voltage: 230V  
Output voltage: 24V  
Weight: 1.34kg  
Mains cable length: 1.5m  
Dimensions: 115 x 118 x 112mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HN97F	Solder Station 660TC	£91.110	£107.060
DQ00A	24V 25W TC25 Iron	£22.510	£26.450
DQ01B	24V 50W TC50 Iron	£22.510	£26.450
DQ03D	24V 25W TC25 Element	£18.540	£21.790
DQ04E	24V 50W TC50 Element	£18.540	£21.790



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## Soldering Station

Unger



An advanced soldering station that has been designed for most soldering tasks. The fully grounded tip together with 'zero crossover closed loop' control of the ceramic heating element makes the iron suitable for use on sensitive components. ESD safety is further ensured by the static dissipative handle and case. The unit has an external fuse and has convenient access for calibration, making maintenance very easy. The temperature is continuously variable between 288°C and 454°C. A replacement 24V iron is also available separately.

### Specification

Power: 230V AC 50Hz  
Iron operating voltage: 24V  
Iron handle wattage: 60W full load, 20W idle  
Temperature range: 288°C to 454°C  
Temperature stability at idle: ±5.5°C  
Tip to GND resistance: <2Ω  
Tip leakage: <2mV  
Dimensions: 84 x 95 x 175mm  
Net weight: 1.4kg approx.

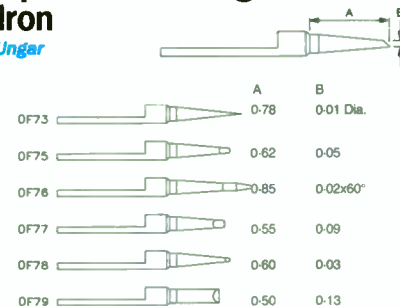
Manufacturer's Code 921ZX - DF71N  
Replacement Iron for 921ZX - MG41U

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DF71N	Solder Station 921ZX	£97.490	£114.560
MG41U	Repl Iron for 921ZX	£53.780	£63.200
DF72P	Repl Iron for 2110K	£38.500	£45.240

## Tips for Soldering Station Iron

Unger



A range of iron-clad, chrome immunised and pre-tinned tips for use with the soldering station 24V iron. Note, CW52G adaptor may be required when fitting a replacement tip.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DF73Q	Tip 9010	£5.750	£6.760
DF75S	Tip 9012	£4.500	£5.290
DF76H	Tip 9014	£4.500	£5.290
DF77J	Tip 9016	£4.500	£5.290
DF78K	Tip 9017	£4.500	£5.290
DF79L	Tip 9051	£4.500	£5.290
CW52G	Retaining Clip	£9.940	£11.690

**See Service Aids Section**  
for our full range of  
**Cleaning Products**

## Power Station Unit and ST6 Bench Stand 650PS

Antex



An attractively styled soldering station. The unit is powered from 230V AC mains and provides a 24V AC output to power 24V TC25 (25W) and 24V TC50 (50W) irons. An LED shows power on.

This unit provides isolation between the mains supply and soldering iron output, thus providing low voltage safety and very low leakage currents.

The 650-PS can be bench or wall mounted to suit the user. The unit meets fully the requirements of EMC regulations and carries the CE mark.

Note: soldering irons must be purchased separately and fitted with the appropriate Bulgin 50V Socket P631. Included with the unit is ST6 bench stand.

### Specification

Maximum power output:	50W
Input voltage:	230V AC
Output voltage:	24V
Weight:	1.31kg
Mains cable length:	1.5m
Dimensions:	115 x 118 x 112mm

Retail Unit Price each (inc. VAT).

Order Code	Type	15555	Price each exc. VAT	inc. VAT each
HN96E	1	Power Supply 650PS	£40.440	£47.520
			1+ 3+ 5+	1+ 1+
			£38.420	£36.390

## Digital Read-out Station Unit + ST6 Bench Stand 690-SD

Antex



An attractively styled programmed, digital read-out, static dissipative temperature controlled soldering station. The unit is powered from 230V AC mains and provides a 24V AC output to power SD50 (50W) irons. The station is built to meet the US MIL Std 2000A and EN 100015-1. The temperature range is 65 to 450°C with an accuracy of 2°C.

The three buttons on the front face are used to select the in-built programmes. Multi-lingual instructions are included in the kit. The station is programmed with the following functions:

- 2 memory settings
- °C or °F read-out
- Dial-in bit selection for accurate offset
- Lockable with PIN security
- Basic self-diagnostics

Included with the unit is ST6 bench stand.

### Specification

Maximum power output:	50W
Input voltage:	230V AC
Output voltage:	24V
Soldering iron:	SD50
Temperature range:	65 to 450°C
Read-out:	4 x LED
Setting means:	Push-button
Accuracy:	±5°C

Repeatability:	±2°C
Programme change:	Push-button
On/Off switch:	Yes
Iron ON:	Red LED
Lock setting:	P.I.N.
Mains cable length:	1.5m

Retail Unit Price each (inc. VAT).

Order Code	Type	11896	Price each exc. VAT	inc. VAT each
HN98G	1	Solder Station 690SD	£138.200	£162.390
DO02C		24V 50W SD50 Iron	£32.760	£38.500
DO05F		24V 50W SD50 Element	£19.880	£23.370
			1+ 3+ 5+	1+ 1+
			£131.290	£124.380

## PORTABLE SOLDERING

### Portable Battery Powered Soldering Iron



A novel soldering iron which is powered by either 4 alkaline C cells or two Ni-Cd C cells. The combined low voltage element/bit retracts when not in use which serves both as a safety feature and also protects the element/bit from damage.

A conveniently placed push-to-heat button operates the iron, working temperature is reached in approximately 10 seconds. A charging socket is provided so that Ni-Cd cells may be charged in situ from an AC or DC adaptor (suitable type XX09K). Charging time is 12 to 16 hours. Important: Under no circumstances must any attempt be made to recharge non-rechargeable cells.

Supplied with one element/bit and solder. Batteries not included. Spare element/bits are available separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	3882	Price each exc. VAT	inc. VAT each
YZ22V	1	Portable Iron	£5.200	£6.110
JU28F		Spare Tip	£2.160	£2.540
			1+ 10+ 25+	1+ 1+
			£4.210	£3.850

### Gas Torch Combination Kit



A combination kit which incorporates a gas torch and includes the following accessories: pencil flame head, hot blower head, flat flame head, soldering head, four bits, hot knife, soldering iron sponge, reel of solder and storage box. This kit is ideal for engineers and hobbyists alike. The gas torch is butane gas (lighter fuel) powered and is therefore extremely portable. Ideal for field service engineers where power points may not always be close to hand. The soldering head contains a platinum catalyst which heats the bit without a flame! (gas will burn when first ignited, but flame will extinguish when catalyst is up to temperature). The torch head may be used for engineering, jewellery and model making work. The flame is adjustable and reaches a

temperature of 1300°C (2370°F). Note: gas torch is supplied unfilled. Refilling is achieved using standard gas lighter fuel available from newsagents and tobacconists. Overall dimensions of gas torch (accessories not fitted): 168mm x 19mm dia. Accessories and spare soldering iron bits are available, see below.

**WARNING:** extreme care must be exercised when using this gas torch due to the very high temperature of the gas flame.

Retail Unit Price each (inc. VAT).

Order Code	Type	3887	Price each exc. VAT	inc. VAT each
YT73Q	1	Gas Torch Kit	£23.390	£27.490
			1+ 5+ 10+	1+ 1+
			£18.520	£16.390

### Gas Soldering Iron



An extremely useful soldering iron and gas torch for engineers and hobbyists alike, this gas torch is butane gas (lighter fuel) powered and is therefore extremely portable. Ideal for field service engineers where power points may not always be close to hand. The soldering head contains a platinum catalyst which heats the bit without a flame! (Gas will burn when first ignited, but flame will extinguish when catalyst is up to temperature). The torch head may be used for engineering, jewellery and model making work. The flame is adjustable and reaches a temperature of 1300°C (2370°F). Refilling is achieved using standard gas lighter fuel available from newsagents and tobacconists.

Overall dimensions: 230mm x 19mm dia. (soldering head fitted).

Note: gas torch is supplied unfilled. Spare soldering iron bits and catalytic converters are available, see below.

**WARNING:** extreme care must be exercised when using this gas torch due to the very high temperature of the gas flame.

Retail Unit Price each (inc. VAT).

Order Code	Type	3885	Price each exc. VAT	inc. VAT each
YT72P	1	Gas Soldering Iron	£11.270	£13.250
			1+ 10+ 25+	1+ 1+
			£9.630	£8.270

### Glue Gun Attachment



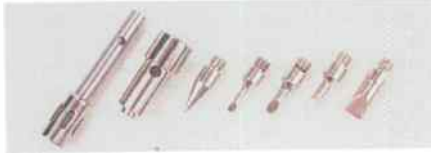
A hot glue attachment (complete with sticks) and replacement glue sticks supplied in packs of 18 which fit YT72P/YT73Q.

Retail Unit Price each (inc. VAT).

Order Code	Type	3889	Price each exc. VAT	inc. VAT each
JU33L	1	Glue Gun + Glue Stks	£5.200	£6.110
JU34M		18 Glue Sticks	£1.720	£2.030
			1+ 5+ 10+	1+ 1+
			£5.000	£4.530

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## Replacement Parts for Gas Soldering Iron and Combination Gas Torch Kit



Soldering iron bit, pointed tip.  
Soldering iron bit, chisel tip 3.5mm.  
Soldering iron bit, chisel tip 7mm.  
Soldering iron bit, diagonal tip 2.5mm.  
Soldering iron bit, diagonal tip 3.5mm.  
Catalytic soldering head.  
Catalytic hot blower head.

Manufacturer's Part No.	Description	MPS Code
XGS S120	Pointed Tip	RD52G
XGS S220	Fine Chisel Tip	RD53H
XGS S320	Med. Chisel Tip	RD54J
XGS S420	Broad Chisel Tip	RD55K
XGS S520	Knife Tip	RD56L
XGS S620	Flame Tip	RD57M
XGS S720	Hotair Tip	RD58N
XGS S820	Shield	RD59P

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 3+ 5+	1+
RD52G	Point Tip	£4.950 £4.700	£4.450 £5.820
RD53H	Fin Ch Tip	£5.030 £4.780	£4.450 £5.920
RD54J	Med Ch Tip	£5.030 £4.780	£4.450 £5.920
RD55K	Brd Ch Tip	£5.030 £4.780	£4.450 £5.920
RD56L	Knife Tip	£5.030 £4.780	£4.450 £5.920
RD57M	Flame Tip	£5.030 £4.780	£4.450 £5.920
RD58N	Hotair Tip	£5.030 £4.780	£4.450 £5.920
RD59P	Shield	£6.050 £5.750	£5.440 £7.110

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
JP05F	Bit Point Tip	£1.290 £0.889	£0.812 £1.520
JP06G	Bit Chisel Tip 3.5	£1.290 £0.889	£0.812 £1.520
JP07H	Bit Chisel Tip 7	£1.290 £0.889	£0.812 £1.520
JP08J	Bit Diagonal Tip 2.5	£1.290 £0.889	£0.812 £1.520
JP09K	Bit Diagonal Tip 3.5	£1.290 £0.889	£0.812 £1.520
JP10L	Catalytic Sold Head	£4.330 £3.640	£3.270 £5.390
JP11M	Catalytic Blow Head	£3.890 £3.330	£3.070 £4.580

## Gas Soldering Iron

Antex



A compact, pocket sized, butane gas (lighter fuel) soldering iron for use in those areas of soldering where mains power is unavailable or trailing leads are a hindrance. The strong nylon casing will hold sufficient liquid butane for one hour's continuous use. An adjustable fuel regulator controls the tip temperature up to a maximum of 400°C. The iron is supplied with a 1mm soldering tip fitted as standard and a protective cap, which has an integral flint lighter and a pocket clip. Supplied with instructions. A range of spare tips are available separately.

### Specification

Max. tip temperature:	400°C
Max. torch temperature:	1300°C
Max. operating time:	1 hour
Flint life:	900 cycles
Length:	188mm
Weight:	52g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 3+ 5+	1+
RD51F	Compact Gas Iron	£20.410 £19.390	£18.370 £23.990

## Gas Soldering Iron Tips

Antex



A range of tips to suit the gas soldering iron RD51F and the kit AJ97F. The range includes 4 solder tips, a hot knife tip, a gas flame tip, a hot air tip and heat shield.

## Gas Soldering Iron Kit

Antex



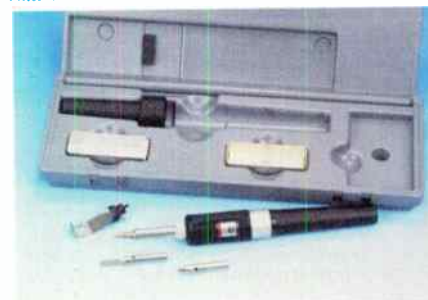
A compact, handy, pocket sized kit, containing our butane gas (lighter fuel) soldering iron (RD51F) with the 1mm tip, a tube of 1mm diameter 60/40 resin cored solder, a cleaning pad, a hot flame tip, a hot knife tip, a hot air tip, and spring clip that fits into two holes as an iron rest when the iron is being used. The kit is supplied in a plastic case 205 x 103 x 38mm in size and includes instructions. A range of spare tips are available separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 3+ 5+	1+
AJ97F	Gas Iron Kit	£33.180 £31.520	£29.860 £36.990

## Self-Igniting Soldering Kit

Nimrod



- ★ Fully functional soldering iron
- ★ Safety cap
- ★ Stand supplied
- ★ Cleaning sponge
- ★ Hot air blower

A stylish soldering iron kit powered by butane gas – ideal for the hobbyist and professional on-the-move! The kit comprises a high quality soldering iron with protective cap, sponge and tray, stand and changeable soldering tips. Simply charge from a standard butane gas refill for between 140 and 240 minutes of soldering time (dependent on temperature required). With the hot air blower

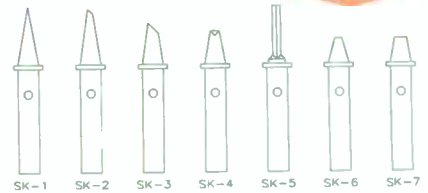
attached temperatures up to 1300°C can be realised. Supplied with full operating instructions, sponge, stand, hot air blower tip, chisel tip, wedge tip and rugged storage box. This iron is also sold separately (order as BN88V).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 5+ 10+	1+
BN88W	Auto Ignit Sold Kit	£53.600 £46.500	£44.000 £62.990
BN88V	Auto Ignit Sold Tool	£32.330 £28.500	£27.000 £37.990

## Tips for Self-Igniting Soldering Iron

Nimrod



A range of soldering tips designed specifically for the Nimrod T-200 self-igniting iron (BN88V / BN89W).

### SK Tip Range

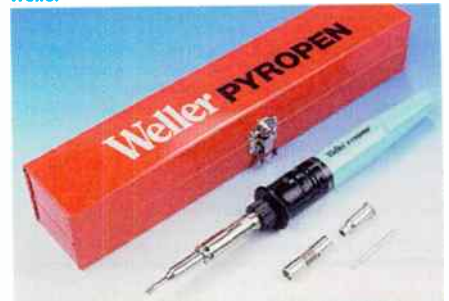
Type	Description
SK-1	Fine Point
SK-2	1.5mm Angle
SK-3	2.4mm Angle
SK-4	2.4mm Chisel
SK-5	Hot Knife
SK-6	3.5mm Hot Air Blower
SK-7	5.0mm Hot Air Blower

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 10+ 25+	1+
DQ94C	Nimrod Kit Tip SK1	£8.100 £7.700	£7.490 £9.520
DQ95D	Nimrod Kit Tip SK2	£8.100 £7.700	£7.490 £9.520
DQ96E	Nimrod Kit Tip SK3	£8.100 £7.700	£7.490 £9.520
DQ97F	Nimrod Kit Tip SK4	£8.100 £7.700	£7.490 £9.520
DQ98G	Nimrod Kit Tip SK5	£8.100 £7.700	£7.490 £9.520
DQ99H	Nimrod Kit Tip SK6	£8.100 £7.700	£7.490 £9.520
GR01B	Nimrod Kit Tip SK7	£8.100 £7.700	£7.490 £9.520

## Butane Gas Soldering Iron Kit

Weller



The kit consists of the butane gas soldering iron (DF56L) with a 3.0mm long-life soldering tip, a 5.7mm hot blow-tip, torch ejector, spanner, iron support clip, cleaning sponge and operating instructions. Supplied with a metal storage/carrying box.

Manufacturer's Code: WSTA-3

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
		1+ 3+ 5+	1+
DF58N	B/Gas Iron Kit WSTA3	£80.500 £76.470	£74.460 £94.590

**Urgent Requirement?**

Call and collect from your local Maplin store.

## Butane Gas Soldering Iron

Weller



A gas operated soldering iron for field and service applications, where a suitable mains supply may not be easily available. The reservoir in the handle holds sufficient butane gas for approximately 3 hours continuous use. The heating of the tip is achieved without a burning flame, but by a heated catalyst in the tip which generates infra-red and ultra infra-red when a stream of butane gas hits it at high-speed.

By regulating the gas flow the temperature can be adjusted between 200°C and 500°C for soldering. By exchanging the long-life soldering tip with the hot-blow nozzle, inactive hot-air is generated, which is ideal for shrink tubing and rework of SMDs. Fitted with a 3-0mm (DF61R) soldering tip as standard,

the iron is ready to solder in 30 seconds.

A hot-blow nozzle and heat deflector is also supplied with the soldering iron.

Manufacturer's Code: WSTA-1

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
DF56L 1	Butane Gas Iron WSTA1	£58.740	£55.810	£54.340	£69.030

## Self-Igniting Butane Gas Soldering Iron

Weller



An adjustable temperature butane gas powered soldering iron and hot-air tool that has push-button, self-ignition for single-handed operation.

The soldering iron is supplied with a 3-0mm long-life tip, hot-blow nozzle, heat deflector, spanner, protective cap and operating instructions.

The reservoir holds sufficient butane gas for approximately 3 hours' continuous operation.

Manufacturer's Code: WSTA-4

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
DF59P 1	Self Ign Gas Iron WSTA4	£68.500	£65.070	£63.360	£80.490

## Junior Gas Soldering Iron

Weller



A handy self-igniting soldering iron offering the ultimate in portability. This unit runs solely on butane gas and features a piezo ignition circuit, eliminating the need for replacement flints and trailing cords. Simply fill the body of the iron from a butane gas container and you're ready to start soldering. Adjustable tip temperature allows soldering of delicate and large components irrespective of their heat capacity. Ideal for the hobbyist, electrician, repair person and DIY expert. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
FC09K 1	Auto Ign Sldr Iron	£40.500	£38.470	£37.460	£47.590

## Junior Butane Gas Soldering Iron

Weller



A butane gas powered mini-soldering and hot-air tool that is housed in a lightweight aluminium body. The temperature is adjusted by varying the butane gas flow. The soldering iron is ready to solder in 30 seconds. The gas reservoir holds sufficient butane gas for approximately 45 minutes, continuous use. The soldering iron is supplied with a 0.5mm tapered long-life soldering tip, a 4.5mm hot-blow nozzle, a protective cap with pocket clip and operating instructions.

Manufacturer's Code WSTA-2

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
DF57M	Jnr Gas Iron WSTA2	£58.740	£55.810	£54.340	£69.030

## Tips for Butane Gas Soldering Irons

Weller

A range of soldering iron tips for the Weller range of butane powered soldering irons.

Manufacturer's Code	Description	To fit	MPS Code
WPT-1	Tapered needle	WSTA-1, 3, 4	DF60Q
WPT-2	3-0mm chisel	WSTA-1, 3, 4	DF61R
WPT-3	2-0mm spade	WSTA-1, 3, 4	DF62S
WPT-4	3-0mm spade	WSTA-1, 3, 4	DF63T
WPT-15	Tapered needle	WSTA-2	DF64U
WPT-16	2-6mm screwdriver	WSTA-2	DF65V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DF60Q	Tapered Needle Tip	£10.500	£9.970	£9.710	£12.340
DF61R	3mm Chisel Tip	£10.500	£9.970	£9.710	£12.340
DF62S	2mm Spade Tip	£10.500	£9.970	£9.710	£12.340
DF63T	3mm Spade Tip	£10.500	£9.970	£9.710	£12.340
DF64U	Jnr Tap Needle Tip	£10.500	£9.970	£9.710	£12.340
DF65V	Jnr 2.6mm Tip	£10.500	£9.970	£9.710	£12.340

## Hot-Blow Nozzle

Weller

A range of hot-blow nozzles for the Weller range of butane powered soldering irons.

Manufacturer's Code	Inside diameter	To fit	MPS Code
WHC-50	2.5mm	WSTA-1, 3, 4	DF66W
WHC-52	5-7mm	WSTA-1, 3, 4	DF67X
WHC-54	1.5mm	WSTA-2	DF68Y
WHC-55	4.9mm	WSTA-2	DF69A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DF66W	Hot-Blow Nozzle 2.5	£15.490	£14.720	£14.330	£18.210
DF67X	Hot-Blow Nozzle 5.7	£13.000	£12.350	£12.020	£15.280
DF68Y	Jnr H/B Nozzle 1.5	£15.000	£14.250	£13.870	£17.630
DF69A	Jnr H/B Nozzle 4.9	£13.000	£12.350	£12.020	£15.280

## Butane Gas Refill

Weller

A butane gas refill for the Weller range of butane gas powered soldering irons. Contains 75ml.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DF70M	Gas Refill	£4.240	£4.030	£3.930	£4.990

## Multi-Spark Gas Igniter



This robust piezoelectric multi-spark Gas Igniter is ideal for the kitchen as the kitchen, as it needs no batteries or mains power. It's damp-proof too.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
WD06J	Gas Igniter	£4.330			£5.090

## Microjet Gas Soldering Iron

Nimrod



A powerful instant 1300°C gas soldering iron featuring piezo ignition in a pocket sized package. Powered by a standard cigarette lighter, so refilling

means fast  
service and best  
value for money

couldn't be easier – just insert a new lighter for instant soldering. With so many outlets selling disposable lighters you can pick up refills virtually around the clock! Ideal for soldering, emergency plumbing, etc. Other features include a lock to keep the unit in either the on or off positions, an average running time of 20 minutes and a weight of only 60g. Supplied with full operating instruction and one disposable lighter.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BN87U	Micro Jet Soid Torch	£12.750	£10.750	£10.150	£14.990

**See Tools Section**  
for our full range of  
**Screwdrivers**

## Micro Gas Torch



An extremely compact, butane (gas lighter fuel) powered gas flame torch. Ideal for engineering, jewellery and model making work. The flame is adjustable and reaches a temperature of 1300°C (2370°F). A full charge of gas will last 40 minutes. Refilling is achieved using standard gas lighter fuel available from newsagents and tobacconists. Overall dimensions: 184mm x 15mm dia.

Note: Gas torch is supplied unfilled.

**WARNING:** extreme care must be exercised when using this gas torch due to the very high temperature of the gas flame.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JL37F	Micro Gas Torch	£5.630	£4.950	£4.310	£6.420

## Pipemaster

Antex



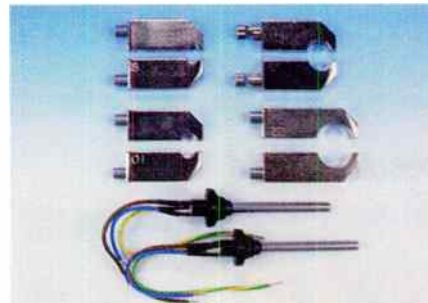
A unique new product from Antex which makes central heating fitting quick and easy. Allows Yorkshire-type capillary fittings and end feed capillary fittings to be soldered without the use of a blow-torch. This is particularly useful when working in roof spaces, underfloor, or close to decorated surfaces, carpets etc. Simply slide the copper tube into the fitting, place Pipemaster jaws around edge of fitting and squeeze handles. Joint is complete in 10 to 40 seconds. The tool requires about 5 minutes to reach working temperature and care should be taken as the heads reach a temperature of 520°C. For integral solder ring fittings, joint is complete when molten solder appears at outer edge of fitting. For end feed fittings, close heads around pipe beside fitting and apply solder. When solder flows it will be drawn into the fitting and the joint is made. The tool is supplied with heads suitable for 15mm pipe. Heads for 22mm pipe are also available. Complete with approx. 1.8m of mains lead. A safety stand is also included. Manufactured in rugged yellow polycarbonate. Overall length 285mm. Supplied with full instructions for use.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
YP01B	Pipemaster 240V	£32.180	£30.570	£28.960	£37.820

## Replacement Parts for Pipemaster

Antex



Replacement heads in 8mm, 10mm, 15mm and 22mm, and replacement elements for the Pipemaster are available. They are supplied in pairs (each tool has a pair of elements and a pair of heads).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
JG16S	Pipemast 8mm Heads	£7.540	£7.170	£6.790	£8.870
JG17T	Pipemast 10mm Heads	£7.540	£7.170	£6.790	£8.870
FP36P	Pipemast 15mm Heads	£7.140	£6.780	£6.430	£8.400
FP37S	Pipemast 22mm Heads	£7.140	£6.780	£6.430	£8.400
FP38R	Pipemstr 240V Element	£17.540	£16.670	£15.790	£20.620

**SOLDERING ACCESSORIES & CONSUMABLES**

## REPLACEMENT BITS

### Replacement Antex Bits

Antex

A range of replacement bits for the indicated soldering irons. These bits are all iron clad to give long life and they must therefore not be filed or they will quickly disintegrate. They should only be

cleaned by wiping with a damp sponge when they are hot. The following types are available:

Type No.	Tip Size	For Iron	
102	2.3mm	C, CSTC, M, TC25	
103	4mm	C, CSTC, M, TC25	
104	4.7mm	C, CSTC, M, TC25	
106	1mm	C, CSTC, M, TC25	
820	2.3mm	C, M, TC25	
821	3mm	C, M, TC25	
822	4.7mm	C, M, TC25	
202	2.3mm*	C, CSTC, M, TC25	
302	2.3mm	C, CSTC, M, TC25	
10	0.5mm	C, CSTC, M, TC25	
1100	2.3mm	CS, CX, TCS, XSD, XSTC, A, TC50, SD50	
1101	3mm	CS, CX, TCS, XSD, XSTC, A, TC50, SD50	
1102	4.7mm	CS, CX, TCS, XSD, XSTC, A, TC50, SD50	
1103	6mm	CS, CX, TCS, XSD, XSTC, A, TC50, SD50	
1105	0.5mm	CS, CX, TCS, XSD, XSTC, A, TC50, SD50	
1106	1mm	CS, CX, TCS, XSD, XSTC, A, TC50, SD50	
1108	3mm	CS, CX, TCS, XSD, XSTC, A, TC50, SD50	
1109	5mm	CS, CX, TCS, XSD, XSTC, A, TC50, SD50	
50	2.3mm	MLXS, XS, X25	
51	3mm	MLXS, XS, X25	
52	4.7mm	MLXS, XS, X25	
53	2.3mm*	MLXS, XS, X25	
54	3mm*	MLXS, XS, X25	
55	0.5mm	MLXS, XS, X25	
14A	19mm†	MLXS, XS, X25	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
FR03D	Bit 102	£1.940	£1.850	£1.750	£2.290
FT00A	Bit 103	£1.940	£1.850	£1.750	£2.290
FR04E	Bit 104	£1.940	£1.850	£1.750	£2.290
FR05F	Bit 106	£1.940	£1.850	£1.750	£2.290
FR06G	Bit 820	£1.940	£1.850	£1.750	£2.290
FR07H	Bit 821	£1.940	£1.850	£1.750	£2.290
FR08J	Bit 822	£1.940	£1.850	£1.750	£2.290
FT01B	Bit 202	£1.940	£1.850	£1.750	£2.290
FT02C	Bit 302	£1.940	£1.850	£1.750	£2.290
FT03D	Bit 10	£1.940	£1.850	£1.750	£2.290
FY64U	Bit 1100	£1.940	£1.850	£1.750	£2.290
FY65V	Bit 1101	£1.940	£1.850	£1.750	£2.290
FY66W	Bit 1102	£1.940	£1.850	£1.750	£2.290
FY67X	Bit 1103	£1.940	£1.850	£1.750	£2.290
JP15R	Bit 1105	£1.940	£1.850	£1.750	£2.290
FR30H	Bit 1106	£1.940	£1.850	£1.750	£2.290
JU68Y	Bit 1108	£1.940	£1.850	£1.750	£2.290
JU69A	Bit 1109	£1.940	£1.850	£1.750	£2.290
FR16S	Bit 50	£1.940	£1.850	£1.750	£2.290
FR17T	Bit 51	£1.940	£1.850	£1.750	£2.290
FR18U	Bit 52	£1.940	£1.850	£1.750	£2.290
FT04E	Bit 53	£1.940	£1.850	£1.750	£2.290
FT05F	Bit 54	£1.940	£1.850	£1.750	£2.290
JP14Q	Bit 55	£1.940	£1.850	£1.750	£2.290
FT06G	Bit 14A	£7.790	£7.400	£7.010	£9.160

Account Enquiries: 01702 554187

## DESOLDERING TOOLS

### Surface Mount Technology Desoldering Bit Set

Antex



A range of special SMT desoldering bits designed for use with A series irons but can also be used with GS, TCS, XSTC and XSD series irons. The set comprises of 12 bits with profiles engineered to fit the majority of SMT components. Desoldering of SMT components requires sufficient localised heat to melt the solder, whilst not overheating adjacent components and tracks. It is strongly advised that a temperature controlled iron is used so that the lowest possible temperature consistent with efficient desoldering is used, thus minimising the possibility of damage to components or PCB. A spade bit is included which can be dressed (filed) to suit any component that is not catered for in the standard range. By using either of the miniature 0.1mm or 0.5mm bits, SMT components can be resoldered after a replacement device has been positioned. The 12 bits are stored in a neat tray, which is supplied with the set.

Retail Unit Price each (inc. VAT).

Order Code	Type 3803	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
YZ28D	SMT Desolder Set	£41.950	£39.850	£37.760	£49.300

### Economy Desoldering Pump

Powerful desoldering tool quickly removes molten solder from joint. Spring loaded piston is closed while solder is being melted, then released by a simple push button. The cylinder is made of aluminium for increased resistance to wear. The nozzle is easily removed for cleaning or replacement. Plunger has a plastic shroud so that the knob cannot spring up into the operator's face or eye.



Retail Unit Price each (inc. VAT).

Order Code	Type 3804	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FR26D	Desolder Tool	£4.330	£2.550	£2.230	£5.090

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### Nozzles

Replacement nozzles for the desolder tool above. The tool is supplied fitted with teflon nozzle type T1. An antistatic version T2 is also available.

Retail Unit Price each (inc. VAT).

Order Code	Type 3806	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
UJ00A	Tip T1	£0.695	£0.416	£0.359	£0.700
UJ01B	Tip T2	£0.689	£0.495	£0.426	£0.810

FOR TECHNICAL ADVICE  
ON ALL PRODUCTS

01702 556001

e-mail: Technical@maplin.co.uk

### Desoldering Pumps

Antex



A range of three desoldering pumps in various sizes and construction. To operate, the plunger is pushed down until it locks. The pump tip is then placed over the molten solder and the button pressed to release the plunger, the molten solder is now sucked up into the body of the pump.

The 'Mini' has a glass filled nylon body with a white Teflon tip and the 'Pro-Desold' has the same construction but with a larger capacity and a black conductive Teflon tip. The 'Conductive' version has a nickel-plated aluminium body with a black conductive Teflon tip. This results in a low 'top-to-tip' resistance. Replacement tips are available for each version.

	Mini	Pro-Desold	Conductive
Overall length:	198mm	210mm	195mm
External diameter:	22mm	26mm	20mm
Suction volume:	9-0cc	14-0cc	7-7cc
'Top-to-tip' resistance:	Infinite	Infinite	10Ω
Spare tip:	BA16S	BA18U	BA20W

Retail Unit Price each (inc. VAT).

Order Code	Type 3807	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
BA15R	Mini Pump	£5.670	£5.390	£5.100	£5.670
BA16S	Mini Tip	£1.070	£1.010	£0.962	£1.260
BA17T	Pro-Desold Pump	£9.650	£9.170	£8.680	£11.340
BA18U	Pro-Desold Tip	£1.350	£1.280	£1.210	£1.590
BA19V	Conductive Pump	£8.500	£7.990	£7.590	£9.990
BA20W	Conductive Tip	£1.690	£1.330	£1.260	£1.990

### Desolder Braid

Sprig



A flux-impregnated, copper braid which speedily removes unwanted solder from a joint. Place the cold braid end on the solder that is to be removed. Place the hot soldering iron tip on top of the braid. Remove the braid and the hot iron at the same time. Cut off the end that contains the unwanted solder. The temperature of the soldering iron bit must be sufficient to liquify the cold solder efficiently. The braids come in 1.5m lengths of four different widths.

Retail Unit Price each (inc. VAT).

Order Code	Type 3808	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
GUB2D	Desolder Braid 0.8mm	£0.859	£0.614	£0.520	£1.010
GUB3E	Desolder Braid 1.5mm	£0.859	£0.614	£0.520	£1.010
FR29G	Solder-Mop	£0.842	£0.500	£0.500	£0.990
GUB4F	Desolder Braid 2.7mm	£0.944	£0.666	£0.582	£1.110

## FUME EXTRACTION

### Solder Fumes Extractor



How often have you found a tricky soldering job made even more difficult by fumes and smoke? This handy unit is the perfect answer. Designed as a low cost bench-top fumes extraction system it is primarily intended for use adjacent to hand soldering operations, where it will remove much of the smoke and fumes generated by the soldering process away from the operator. Its secret is a filter element comprising charcoal filled reticulated foam that will absorb particles down to about 5µ. The unit is mains powered and supplied with a 3A fused plug, a stand designed to hold the unit at the correct angle for optimum smoke collection and optional stick-on rubber feet.

Replacement filters (5 to a pack) are available

#### Dimensions

Free-standing: 170 x 140 x 55mm  
On stand: 270 x 140 x 190mm

Retail Unit Price each (inc. VAT).

Order Code	Type 10041	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BN90X	Fume Displacer	£51.050	£42.150	£39.250	£59.990
BN91Y	Filter Pad	£8.500	£7.500	£7.150	£9.990

### Fume Extraction Kit

Antex



A fume extraction upgrade kit for connecting a suitable fume extractor to the Antex series 'A' industrial soldering irons CS, XS, CSTC, XSTC, XSD, TC25, TC50 and SD50 soldering irons. The kit includes: a stainless steel tube, 2m silicone rubber tubing, a cleaning brush and 5 ties (to tie tubing to cable). Modifies a single iron.

Retail Unit Price each (inc. VAT).

Order Code	Type 3801	Price each exc. VAT		inc. VAT each	
		3+	5+	1+	
DK73Q	Single Fume Ext Kit	£7.700	£7.320	£5.930	£9.050

† = While  
Stocks Last

## TOOLS

### Soldering Aid Set



A set of three useful soldering aids ideal for printed circuit board work. Each tool has two different ends, and the six available in this set are a reamer, a hook, a knife, a scraper, a brush, and a fork.

Retail Unit Price each (inc. VAT).

Order Code	Type 3028	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FG08J	Soldering Aid Set	£6.930	£5.620	£5.200	£8.150

### Heat Shunt



A pair of locking metal tweezers which when clipped to a transistor lead for example, will prevent the heat of soldering reaching the device.

Retail Unit Price each (inc. VAT).

Order Code	Type 3030	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
FR10L	Heat Sink Tweezers	£0.902	£0.858	£0.813	£1.060

### Abrasive Fibreglass Pencil



A fibreglass abrasive stick housed in a propelling pencil type case. Designed for removing protective lacquer coatings on PCB board, prior to repair, and generally cleaning copper track for soldering. Refills are also available.

**Warning:** A certain amount of fibreglass dust is produced which should be removed with great care. Avoid touching with exposed skin as the particles can easily penetrate flesh and be extremely uncomfortable. Avoid contact with eyes.

Retail Unit Price each (inc. VAT).

Order Code	Type 3032	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KR61R	Fibreglass Pencil	£3.290	£3.070	£2.600	£3.870
KR62S	Pencil Refill	£0.774	£0.604	£0.552	£0.910

## SOLDER

### Standard Solder

**Adepto**



A 60% tin, 40% lead alloy solder containing a non-corrosive flux. We recommend this solder for use with the iron-clad and nickel-clad bits supplied with our soldering irons and for use with all the electronic components shown in this catalogue. Melting temperature 188°C. Solder is available in 18swg (1.22mm) and 22swg (0.71mm). 18swg is sold in packs of 5m and on 1/2kg reels (approx 61m). 22swg is sold in packs of 10m and on 1/2kg reels (approx 178m).

Retail Unit Price each (inc. VAT).

Order Code	Type 3040	Price each exc. VAT			inc. VAT each
		1+	10+	20+	
FV53H	5 Mtr Pk 18swg Solder	£0.944	£0.541	£0.396	£1.110
YJ92A	18 Swg Solder Reel	£7.800	£4.950	£4.210	£9.170
FR21X	Solder 22swg 10m Pk	£0.944	£0.541	£0.396	£1.110
FY70M	22 Swg Solder Reel	£8.670	£5.670	£4.680	£10.190

### 60/40 Solder

**Multicore**

A tin/lead solder alloy wire containing a halide activated rosin based flux, that is suitable for soldering electronic components. The solder has a melting point of 188°C and solidifies at 183°C. Sold on 500g reels and available in 18swg, 22swg and 24swg.



Retail Unit Price each (inc. VAT).

Order Code	Type 3041	Price each exc. VAT			inc. VAT each
		1+	10+	20+	
DF10L	18swg Solder Reel	£13.270	£12.330	£11.710	£15.600
DF11M	22swg Solder Reel	£15.180	£14.050	£13.370	£17.840
DF12N	24swg Solder Reel	£30.370	£27.880	£26.530	£35.690

### Low-Melt Point Solder

**Multicore**

A tin/lead/silver alloy wire containing a halide activated rosin based flux, that is intended for soldering silver-plated surfaces. The solder has a melting point of 179°C. Sold on 500g reels and available in 18swg and 22swg.

Retail Unit Price each (inc. VAT).

Order Code	Type 3043	Price each exc. VAT			inc. VAT each
		1+	10+	20+	
DF13P	18swg LMP Solder	£25.160	£23.410	£22.110	£29.570
DF14Q	22swg LMP Solder	£23.860	£22.110	£20.860	£28.040

### High-Melt Point Solder

**Multicore**

A high-melt point (301°C) solder that is particularly suitable for soldering electric motors, high temperature lamps, and other products which are likely to operate at, or be near, high temperatures during their working life. Also, the solder has improved strength compared to other solders and is recommended for service in extremely cold conditions.

Sold on 500g reels in 22swg only.

Retail Unit Price each (inc. VAT).

Order Code	Type 3044	Price each exc. VAT			inc. VAT each
		1+	10+	20+	
DF15R	22swg HMP Solder	£19.950	£18.160	£16.600	£23.450

### Silver Solder

A specially designed solder containing 10% silver that will join copper, brass, nickel more cleanly and with a lower resistance than standard solder, to give an improved joint for higher quality hi-fi equipment. The melting point of this solder is 420°C to 450°C, therefore a high temperature soldering iron will be required, to obtain satisfactory results. Solder is 18swg, sold in 50cm lengths and 250g reels. Flux sold in one litre cans. This is a very hazardous substance and is not available by mail order.



Retail Unit Price each (inc. VAT).

Order Code	Type 3045	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GW45Y	Silver Solder	£0.927			£1.090A
AP17T	Silver Solder Reel	£19.080	£16.180	£15.030	£22.430
J98G	Liquid Flux	£11.270	£10.350	£9.110	£13.250

### Fluxed Silver Solder

A pre-fluxed solder containing 5.5% silver that will provide the benefits of a lower resistance than normal with the added benefit of a lower melting point (220 - 230°C).

This gives an improved joint for higher quality hi-fi equipment. Solder is 18swg, sold in 50cm lengths and 250g reels.



Retail Unit Price each (inc. VAT).

Order Code	Type 10009	Price each exc. VAT			inc. VAT each
		1+			
DP52G	Silver Solder +Flux	£0.927			£1.090
DP51F	Silv Sold Reel +Flux	£15.760			£18.520

### Aluminium Solder

**Multicore**

A specially designed solder that will joint aluminium, brass, copper, nickel, stainless steel and tin-plate more easily than standard solder.

This solder is 18% tin, 80% lead and 2% silver alloy. A higher temperature is required to melt this solder than ordinary solder so it is unlikely that a miniature iron will be satisfactory unless the volume of the parts to be jointed is very small.

The solder contains four cores of non-corrosive flux. Melting temperature 270°C. Solder is 16swg (1.63mm). Sold only in packs of 1m.

Retail Unit Price each (inc. VAT).

Order Code	Type 3052	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FY71N	Aluminium Solder	£1.370	£1.010	£0.879	£1.620

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Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## 'Hardcore' Solder Wire.

Warton



A range of solder wire with various percentage levels of 'hardcore' flux, which offers a greater flexibility when balancing the solder flow speed and solder residue. The high grade (63% tin/37% lead) solder alloy has a melting point of 185°C and a solidify temperature of 183°C. Available in 22swg and 1/2kg reels.

Manufacturers Part Number	Flux %	Speed of Flow
AQ32	2% Residue	Excellent
AQ86	1%	-
AQ85	0.85%	-
AQ56	0.4% Low residue	Good

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JZ59P	1 Fast Flow Solder	£8.670 £7.550 £5.560	£10.190
KC07H	1 Low Residue Solder	£8.670 £7.550 £6.560	£10.190
KP56K	1 Fine Line Solder	£8.670 £7.550 £6.560	£10.190
JZ60Q	1 Fine Line 0.4Solder	£8.670 £7.550 £6.560	£10.190

## High Purity Pellets and Bar Solder

Warton

Two types of non-fluxed solder, 60/40 and 63/37, available in pellet and/or bar form. Can be used with the Solder Pots KR27E and KR28F. Pellets are supplied per kilo and the bars are supplied in nominal kilo bars.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KP57M	2 Pellet Solder 63/37	£8.670 £7.550 £6.560	£10.190
AY10L	2 Bar Solder 63/37	£8.670 £7.550 £6.560	£10.190
KP56L	2 Pellet Solder 60/40	£8.670 £7.550 £6.560	£10.190
KP63T	2 Bar Solder 60/40	£8.670 £7.550 £6.560	£10.190

## Solder Dispensers

Multicore



Two very handy solder dispensers for your tool box. The standard dispenser contains 11g of 1.2mm dia, 5-Core Solder with a tin-lead composition of 60/40. It is ideal for electronic and electrical repairs. The other dispenser contains extra thin solder that is fast and non-corrosive for use on micro-electronics such as printed circuits and fine wires. The dispenser contains 9g of 0.7mm dia, 5-Core Solder with a tin-lead composition of 60/40. The minimum temperature of the solder bit is 250°C.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GU97F	1 Solder Dispenser Std	£1.460 £1.390 £1.340	£1.720
GU98G	1 Solder Dispenser Fine	£1.460 £1.390 £1.340	£1.720

## Lead-Free Multicore Solder

Ersin



A high quality 1.2mm multicore solder ideal for use with electronic and electrical joints, silver jewellery, stainless steel, nickel, zinc, copper and most aluminium. Simply apply Ersin multicore solder simultaneously with the iron or other source of heat to the clean components to be soldered. No additional flux or joint cleaning is necessary. Minimum bit temperature required is 300°C. Available in 10g and 30g packs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DP46A	1 Lead Free Solder 10g	£1.460 £1.320 £1.280	£1.720
DP47B	1 Lead Free Solder 30g	£3.720 £3.320 £3.200	£4.380

## Tip Tinner/Cleaner TTC 1

Multicore

The TTC 1 is a small block of electronics-grade solder powder and chemicals compacted into the shape of a thick disc. It is packaged in a metal container complete with lid and self adhesive pad on the underside so that it can be fixed to any convenient surface. A single wipe of the iron across the TTC 1 block at once cleans, wets and tins the tip.

The composition will remove the stubborn tin/iron intermetallic layer that forms on iron plated tips and resists resin based fluxes. The Tip/Tinner Cleaner does all the work of sponges or wipes and acid-cored solder wire which, although often used for tinning, does not really belong in an electronics assembly environment.

Net Weight: 15g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JG06G	1 Tip Tinner Cleaner	£2.850 £2.550 £2.350	£3.360

## General Purpose Silver Brazing Alloy Silver-Flo 55

A general purpose, low temperature, silver brazing alloy that is free from cadmium (cadmium content not greater than 0.025%). Applications include model making, model railways, precision engineering, fluid carrying vessels and pipes, and joining of metal objects where higher strength and operation temperature is required than can be achieved with conventional soft soldering. The alloy consists of 55% silver, 21% copper, 22% zinc and 2% tin. Melting temperature range is 620 to 600°C and is therefore suitable for use with our range of high temperature gas torches. Full instructions and details of safety precautions supplied. Supplied in 600mm x 1.5mm diameter rods. This brazing alloy requires the use of a special flux (JX39N).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZA19V	1 Brazing Rod	£4.760 £3.590 £3.120	£5.600

## Surface Mount Solder Paste

Electrolube



A long tack time, screen printable solder cream that may also be used through 'dot' dispensing equipment. This specialised solder is mixed with a premium flux which minimises drying out and results in a product that exhibits a 24 hour tack time, does not require cleaning, has excellent moisture retention characteristics and dispenses and prints with superior reproductibility. It has excellent reflow characteristics with no solder balling. Composition is a standard 63% tin, 35% lead and 2% silver with a melting point of 183°C. Supplied in a 10ml syringe with 'Luer Lock' type adapter head for use with dispensing equipment and a hand plunger for manual use.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DQ27E	1 Solder Paste 10ml	£7.670 £7.300 £7.100	£9.020

## SOLDERING AIDS

### Solder Pots

Antex



Two sizes of solder pots are available, the 'Major' and 'Minor'. Both models operate at a stabilised temperature of 310°C (typically the melting point of solders used in electronics is around 185°C). It is recommended that 60/40 solder pellets are used, (solder containing flux MUST NOT be used), and it will normally take up to 30 minutes for the solder to melt and the temperature to stabilise. The solder pots are of sturdy construction with a wide base giving excellent stability on the work bench, although holes are provided in the base for those installations where permanent fixing is required. The 'Major' has a removable dross tray which retains excess dross when cleaning the solder surface. The 'Minor' has a smaller capacity and lower power consumption and no dross tray. The pots are supplied with 1.5m of mains lead.

#### Specification

	Major	Minor
Input voltage:	220/240V AC	
Power consumption:	60W	45W
Nominal stabilised running temperature:	310°C	
Full solder capacity:	17cm <sup>3</sup>	9.5cm <sup>3</sup>
Normal solder depth:	17mm	14mm
Weight without solder:	960g	770g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KR27E	2 Major Solder Pot	£67.010 £63.650 £60.300	£78.740
KR28F	2 Minor Solder Pot	£58.080 £55.170 £52.270	£68.250

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.



## Surface Mount Rework Flux

### Electrolube

A quick drying, mildly activated (RMA type) no-clean flux in aerosol form for use when removing and replacing surface mount components. The aerosol is fitted with a wide angle actuator to give a protective film and an extension tube actuator for pinpoint application. Particularly recommended for precision products e.g. tele-communications or computers where a high degree of reliability is required. For use with hot air, hot gas or conventional soldering techniques.



#### Typical applications include:

- ★ Apply to aid reflow when removing components
- ★ After removing components excess solder should be removed from solder pads using desolder braid aided by a squirt of spray flux.
- ★ Apply to solder pads for placement of new components when using solder paste with hot air or hot gas, or using conventional solder and soldering iron.
- ★ Can also be used as an anti-tarnish, protective film on bare copper or tinned tracks providing excellent solderability for up to 6 months. Supplied in 200ml (100% Ozone Friendly) aerosol.

Retail Unit Price each (inc. VAT).

Order Code	Type 13711	Price each exc. VAT			inc. VAT each
		1+	12+	36+	
DQ26D	Rework Flux 200ml	£6.270	£5.960	£5.800	£7.370

## Silver Brazing Alloy 'Easy-Flo' Flux

A special flux powder for use with Silver-Flow 55 and other silver brazing alloys. Suitable for use at temperatures up to 800°C. The flux powder should be mixed with water to a creamy consistency and applied to the metals to be joined. Metals should be clean and degreased before applying flux. Mix only sufficient flux for the joint(s) to be undertaken. Replace lid to keep contents dry and in good condition. The flux powder is harmful if swallowed and irritating to eyes and skin, therefore wear suitable gloves and goggles. Avoid inhalation of dust. Keep out of reach of children. Full instructions and details of safety precautions supplied. Flux powder is supplied in 25g tubs.

Retail Unit Price each (inc. VAT).

Order Code	Type 3954	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JX39N	Brazing Flux	£1.020	£0.853	£0.718	£1.210

## Refillable Flux-Coating Pen

### Bonkote



A refillable pen sized tool with a fibre brush tip for precise application of liquids. Ideal for applying flux to PCBs but is suitable for use with many different liquids

Retail Unit Price each (inc. VAT).

Order Code	Type 13474	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DX07H	Flux-Cote Pen	£9.600	£9.120	£8.880	£11.280

## REACTANCE OF INDUCTORS AT SPOT FREQUENCIES

Values above 100MΩ and below 0.1Ω not shown. Values in ohms.

	50Hz	100Hz	1kHz	10kHz	100kHz	1MHz	10MHz	100MHz
1μH	-	-	-	-	0.63	6.3	63	630
5μH	-	-	-	0.31	3.1	31	310	3.1k
10μH	-	-	-	0.63	6.3	63	630	6.3k
50μH	-	-	0.31	3.1	31	310	3.1k	31k
100μH	-	-	0.63	6.3	63	630	6.3k	63k
250μH	-	0.16	1.6	16	160	1.6k	16k	160k
1mH	0.31	0.63	6.3	63	630	6.3k	63k	630k
2.5mH	0.8	1.6	16	160	1.6k	16k	160k	1.6M
10mH	3.1	6.3	63	630	6.3k	63k	630k	6.3M
25mH	8	16	160	1.6k	16k	160k	1.6M	16M
100mH	31	63	630	6.3k	63k	630k	6.3M	63M
1H	310	630	6.3k	63k	630k	6.3M	63M	-
5H	1.5k	3.1k	31k	310k	3.1M	31M	-	-
10H	3.1k	6.3k	63k	630k	6.3M	-	-	-
100H	31k	63k	630k	6.3M	63M	-	-	-

## REACTANCE OF CAPACITORS AT SPOT FREQUENCIES

Values above 100MΩ and below 0.1Ω not shown. Values in ohms.

	50Hz	100Hz	1kHz	10kHz	100kHz	1MHz	10MHz	100MHz
1pF	-	-	-	15.9M	1.6M	160k	16k	1.6k
10pF	-	-	15.9M	1.6M	160k	16k	1.6k	160k
50pF	63.7M	31.8M	3.2M	320k	32k	3.2k	320	32
250pF	12.7M	6.4M	640k	64k	6.4k	640	64	6.4
1nF	3.2M	1.6M	160k	16k	1.6k	160	16	1.6
2nF	1.6M	800k	80kΩ	8k	800	80	8	0.8
0.01μF	320k	160k	16k	1.6k	160	16	1.6	0.16
0.05μF	64k	32k	3.2k	320	32	3.2	0.32	-
0.1μF	32k	16k	1.6k	160	16	1.6	0.16	-
1μF	3.2k	1.6k	160	16	1.6	0.16	-	-
2.5μF	1.3k	640	64	6.4	0.64	-	-	-
5μF	640	320	32	3.2	0.32	-	-	-
10μF	320	160	16	1.6	0.16	-	-	-
30μF	107	53	5.3	0.53	-	-	-	-
100μF	32	16	1.6	0.16	-	-	-	-
1,000μF	3.2	1.6	0.16	-	-	-	-	-



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## STAGE AND DISCO EQUIPMENT

### LIGHTING EFFECTS

#### Multi-Colour Moving Display



- ★ Large display
- ★ High brightness output
- ★ 8000 character memory
- ★ Infra-red remote control programmable

A versatile and attractive way of getting your ideas across – a Colour Moving Display! Up to 64 different colours are possible, and with an integrated 8000 character memory, you can program virtually any type of information. Packed with effects like Rainbow, Dazzle and Marquee. Its many features include: 55mm high characters; a 5 minute message with animated graphics, high brightness output; simple programming via remote control; capability to link and program via your personal computer. Overall dimensions 720 x 130 x 35mm. Also available separately is a pack to operate the display via software (GV32K) and a pack including an instruction manual, source code, demos and control codes to act as a tutorial and get the most out of your display!

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GV29K	Multi-Colour Moving Display	£256.310	£314.000
GV32K	Multi-Colour Moving Display Software	£42.540	£52.000
GV33	Multi-Colour Moving Display Software	£42.540	£52.000

#### PIN SPOT PAR 36



A pin spot supplied with an adjustable mounting bracket and containing a safety isolating transformer and fuse holder. Lamps supplied separately.

Power: 230V AC 50Hz.  
Weight: 1.25Kg.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BE29F	Pin Spot	£12.750	£15.700

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

#### PAR 36 BULB



A parabolic focused narrow beam bulbs, ideal for use in the products within the disco lighting effects range.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BE27E	PAR 36 Bulb	£6.800	£8.360

#### PAR36 Filter Gels



These moulded plastic, coloured filter gels are produced in deep, rich colours to make sure that your light display never looks washed out – they will not fade or wilt under the heat of your lamps. They're easy to fit and come in 8 sensational colours.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU60Q	Red Filter	£0.842	£1.030
DU61R	Rose Filter	£0.842	£1.030
DU62S	Purple Filter	£0.842	£1.030
DU63T	Blue Filter	£0.842	£1.030
DU64J	Dark Green Filter	£0.842	£1.030
DU65V	Light Green Filter	£0.842	£1.030
DU66W	Orange Filter	£0.842	£1.030
DU67X	Yellow Filter	£0.842	£1.030

#### Mini Strobe



This quality strobe unit is ideal for smaller mobile discos, but nevertheless manages a very high light intensity for its size. The tube's maximum output power is 15W at a strobe rate of 10 flashes per second. Strobe rate is adjustable up to 10 flashes per second. The grey steel case is equipped with a mounting bracket for flexibility.

Dimensions: 125 x 85 x 55mm  
Weight: 0.52kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU14Q	Mini Strobe	£17.010	£20.960

#### High Quality Strobe Unit



This strobe unit is ideal for use at discos, parties and theatre productions, etc. The unit can be programmed to pulse between a pulse every few seconds to a maximum of 10 pulses per second. Slimline design allows this unit to be installed almost anywhere. Overall dimensions 120 x 90 x 50mm (excluding bracket).

#### Specification

Supply voltage: 230V AC 50 Hz  
Power consumption: 20W (at 10 flashes/s)  
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS93E	Mini Strobe	£25.520	£31.400

#### Light Sequencer



This self-contained 4-light sequencer is contained in a sturdy grey metal case. A built-in sound detection circuit controls the speed of the sequence and makes the light display react to the beat of the music. Can be used as a free-standing unit or wall/ceiling mounted.

Supplied complete with amber, green, red and blue lamps.

#### Specification

Power: 230V AC 100W  
Dimensions: 368 x 225 x 105mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BE24B	4 Light Sequencer	£42.540	£52.000

#### Flower projectors



Professionally finished projectors from Geni, made with extruded aluminium cases and capable of operating in three different formats: Sound operated, rotating or static. Top quality optics produce well defined bright beams. All types will accept a colour filter and are supplied complete with lamp.

**Specification:**  
Lamp Type: A1220.  
Dimensions: 170 x 125mm Dia.  
Weight: 2.5Kg  
Power requirements: 300Watts @230V  
Spare Bulb Available - Order Code VR89W

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA06G	Flower Projector	£51.050	£59.990

**Blaze Lighting Effect.**



This dazzling dichroic flower effect from Geni Electronics emits a multitudinous display of coloured beams that sway to the beat of music. Excellent sound processing, using the latest analogue algorithms, ensures a dynamic sound response. It has a strong extruded aluminium body and is finished to the same high standard of effects twice its price. This effect is supplied complete with a 250 Watt halogen lamp.

**Specification:**  
Lamp type: M33 250 Watt 24 Volt (HLX64655)  
Dimensions: 310 x 230 x 160mm  
Weight: 5.5Kg.  
Power Requirements: 300Watts @ 230V  
Spare Bulb Available - Order Code GT86T

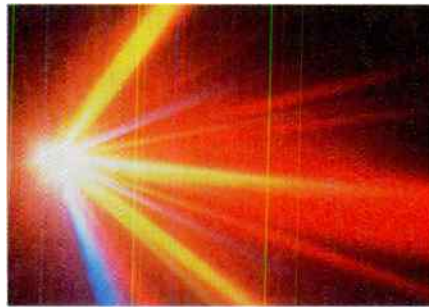
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC98G	Blaze Disco Lgth	£102.110	£119.990
GT86T	250W 24V Halogen Bulb	£2.540	£2.990

**NJD Blitzer Effect**



The Blitzer, from leading disco equipment manufacturers NJD, is a sound-activated dichroic 'flower-effect' lighting unit which utilises a focusable 100W halogen bulb to produce a shower of brilliant multi-coloured light beams.



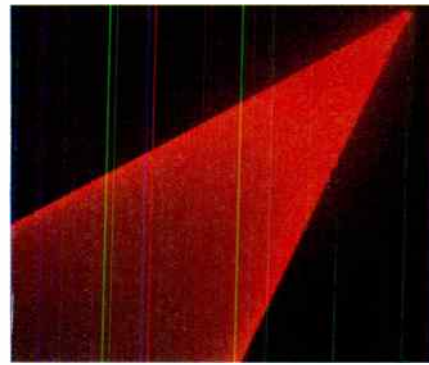
Requiring no more than a mains supply, the Blitzer will twist its beams back and forth accurately in time with the music, at the touch of a switch. Manufactured in black-coated steel, the Blitzer is supplied with halogen bulb and adjustable hanging bracket. The Blitzer provides a startling lighting effect that will fit even the most modest lighting budget. A replacement bulb is available- See FU88.

**Specification**  
Audio input: Built in microphone, automatic level control.  
Dichroic colours: 5 x 4 colours (20 beams)  
Lamp type: A1/215  
Power requirements: 220/240V AC 50/60Hz, 100W  
Dimensions: 192mm x 167mm x 115mm (excluding bracket)  
Weight: 3.8kg.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW56L1	Blitzer Effect	£102.110	£119.990
FU88V	Blitzer Spare Bulb	£2.540	£2.990

**Laser Crab**



Superb red beam laser with a high intensity 5mW output. A sophisticated mirror system - controlled by microprocessor driven servo motors, controls the beam. This high-tech driven circuitry gives a series of different stunning patterns and effects. A good all round effect used singly or in multiples. The most dramatic and cost effective effect of this type we have seen. Dimensions: 170x135x80mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS21X1	CRAB laser	£102.110	£119.990

See Stock Code Index For More Price Breaks

**Wild Blaze**



The Wild Blaze is a scanning head flower incorporating superior optics and dichroic filters. The automatic sound activation to the filters and the reflective head produce a magnificent display of light. The internal coloured moonflower is deflected by the action of the sound activated mirror. This truly professional product from Geni has an extruded aluminium case, fan cooling and long life, high torque motors. This product is supplied with a lamp.

**Specification:**  
Lamp type: M33250 W 24V (HLX64655)  
Dimensions: 530 x 230 x 160mm.  
Weight: 6.5Kg  
Power requirements: 300W @230V  
Spare bulb available - Order Code GT86T

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC99H	Wild Blaze Lighting	£127.650	£149.990

**XTC Lighting Effect**



One of Geni's original and most popular effects; the XTC incorporates a new dichroic lens design, plus a unique-shaped reflective head. These combine to create a awe-inspiring effect, sending out a vast number of continuously changing colour beams in all directions. Fitted with superior optics, cooling fan, automatic audio sensitivity and constructed in an extruded aluminium case. This product is supplied with a 250 watt lamp.

**Specification:**  
Lamp type: M33 250 W 24 V (HLZ64655)  
Dimensions: 530 x 230 x 160mm.  
Weight: 6.5Kg.  
Power requirement: 300W @23V  
Spare Bulb available - order code GT86T

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA05F	XTC Lighting Effect	£144.670	£169.990

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## Evolution Lighting Effect



**RECENTLY INTRODUCED**

The Geni evolution has a dichroic lighting head that sends out a flat fan of rotating, changing gobos that change colour to the beat of the music, creating an astounding display of light. Supplied with four standard, (circles, stars, triangles), replacement gobos. This lighting effect has a quality aluminium case with superior optics and long life motors.

### Specification:

Lamp Type: ELC  
 Dimensions: 530 x 230 x 160mm  
 Weight: 3.5Kg  
 Power requirements: 300Watts @ 230V  
 Spare bulb available - Order Code GT86T

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VA07H	Evolution	£246.800	£289.990

## Microbeam 100 Intelligent Scanner

**NJD**



**RECENTLY INTRODUCED**

"The smallest, most portable, scanner possible, with the facilities and reliability of the larger and more expensive models".

Facilities include:

- ★ DMX 512 control
- ★ 0-10 volt control
- ★ Stand alone operation with internal microphone.
- ★ Stepper motors.
- ★ 7 Dichroic colours + white.
- ★ 5 Gobos fixed to colours.
- ★ 100W Halogen lamp
- ★ Fan cooled
- ★ Built in programmes
- ★ Large bright images.
- ★ External Focusing.
- ★ Blackout facility (strobe effect)
- ★ Compatible with all industry standard DMX and 0 - 10V controllers.

Lamp A1/231 12V 100W  
 Power req 230V - 50/60Hz 100VA  
 Dimensions 370mm x 140mm x 165mm  
 Weight 5.4kg  
 Spare Bulb available order code - FU89W

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD97F	Microbeam 100	£297.860	£349.990

## Datamoon Intelligent Flower Effect

**NJD**



**RECENTLY INTRODUCED**

This "high brightness" effect is a fan cooled 250 Watt Halogen flower effect fitted with high reliability, long life, STEPPER MOTORS, 7 dichroic colours +white, 5 gobos, strobe effect, variable rotation speed, forward and reverse, sound activation and a lamp life economy switch. The DATAMOON will independently run through a comprehensive series of pre-programmed patterns and effects activated by its own built in microphone and will synchronise with and number of DATAMOONS by simply linking them with a DMX lead. Any industrial standard lighting controller with DMX or 0 - 10V facilities can be used with this equipment. Up to 32 DATAMOONS may be addressed independently.

### Specification:

Dichroic colours 7+White (20 beams)  
 Gobos 5  
 Lamp A1/259 24V 250W supplied  
 Power req 230V AC 50/60 Hz 300VA  
 Dimensions 275mm x 305mm x 160mm  
 Weight 8kg  
 Spare bulb available - order code GT28F

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD98G	Datamoon Flower	£297.860	£349.990

## SWORD Lighting Effect

**NJD**



**RECENTLY INTRODUCED**

This machine utilises two independently motorised dichroic mirrors which, depending on their position, can produce up to six random coloured beams of dichroic colour. These mirrors can be adjusted to allow beams to sweep in parallel or diagonally and the whole SWORD can be mounted either vertically or horizontally to provide the user with a generous choice of effect presentations. The light source is provided by two inexpensive 100W 12V dichroic lamps, each individually fan cooled and focussable. Sound activation is totally automatic and requires no connection to a sound system. Simply connect the SWORD to the power and its internal electronics will sense the sound level and activate the mirrors accurately in time with the bass beat of any music.

### Specification:

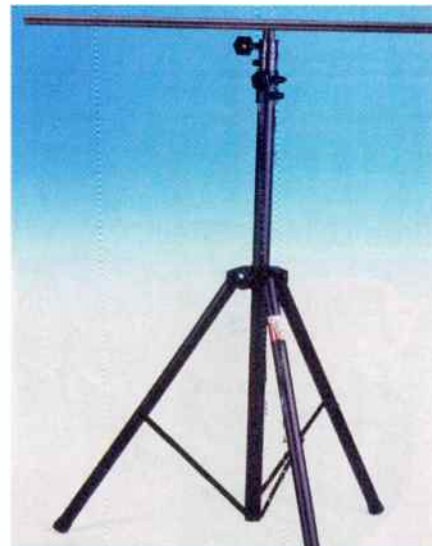
Dichroic colours: 4(producing 6)  
 Sound response: Internal microphone, auto level.  
 Lamps: 2 x A1/231, 100W 12V  
 Power requirements: 230V AC 50/60Hz 240VA  
 Dimensions 625mm x 210mm x 110mm  
 Weight: 9.2kg  
 Spare bulb available - order code FU89W

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD99H	Sword Cross Cross	£329.350	£386.990

## LIGHTING STANDS

### Lighting Stand with T-Bar



Heavy duty lighting stand with pre-drilled T-Bar for 4 lights.

Height 149cm/max.330cm. T-Bar length 106cm. Weight: 6.5Kg.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD78K	Lighting Stand	£51.050	£59.990

### Medium G Clamp



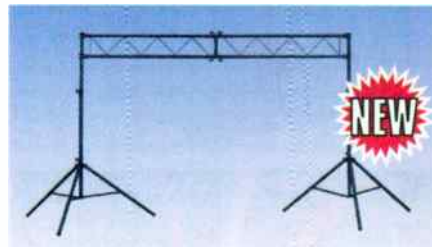
Medium G clamp to fit PD78K, and any pole up to 30mm diameter. Weight:234g

**NEW**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX47B	G clamp to fit PD78	£4.240	£4.990

### Goal Post Lighting Stand



**NEW**

This light weight stand has been designed specifically for mobile use. The dual cross-bar provides extra rigidity and offers maximum flexibility when securing lights etc on the frame. The whole stand folds neatly down to a convenient transportable size, and can be re-assembled quickly and easily.  
 Maximum height: 3.2 Meters  
 Crossbar width: 3 Meters (2x1.5 meter pieces)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GT62S	Lighting Goal Post	£170.200	£199.990

**Safety Chain and Safety wire**

GT59 - Safety Chain



Welded link safety chain for hanging or adding extra security to fittings.



GT58 - Safety wire



Quick fit safety wire for double security when fitting heavy items to rigs etc.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GT58N	Safety Cable	£9.350	£10.990
GT59P	Safety chain	£5.090	£5.990

**PATTERN CHASERS**

**Euro 4E Computer Chaser**



A high-quality rack-mounting light controller. By combining computer-aided design with the latest microprocessor technology, the Euro 4E packs an astounding range of facilities into a 1U high package. 24 pre-programmed chase patterns, 3 auto-run programs, sound chase or sound-to-light, manual over-ride on all channels and 3 or 4 channel operating modes are just some of the features on this superb controller. Finished in its distinctive 'Euro Blue' livery, the Euro 4E typifies the modern trend towards more and more compact lighting control.

**Specification:**

Audio input sensitivity: 2V to 40V rms  
Audio input impedance: 680Ω  
Audio input connector: 6.3mm jack

Maximum load per channel: 4A 1kVA (1kW resistive, 600W inductive)

Maximum total load: 15A 3.6kW (reduce to 13A is connected via standard BS1363 mains plug and socket)

Output connectors: 8-pin Bulgin P552 socket  
Output voltage: 220/240V AC (as input)

Power requirements: 220/240V AC  
Dimensions: 483mm x 44mm (1U) x 110mm

Weight: 1.25kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW62S	Computer Chaser	£136.160	£159.990

**NJD PC4000S Pattern Chaser**



NJD's PC4000S has been designed to provide a selection of simple chase patterns at the most affordable price possible, without sacrificing quality. A push-button switch selects between single channel chase (with auto-reverse) or the full 6-channel pattern 'run' program. Switchable to either 3 or 4-channel operating modes.

**Specification:**

Audio input sensitivity: 2V to 40V rms  
Audio input impedance: 1kΩ minimum  
Audio input connector: 6.3mm jack

Maximum load per channel: 4A 1kVA (1kW resistive, 600W inductive)

Maximum total load: 15A 3.6kW (reduce to 13A is connected via standard BS1363 mains plug and socket)

Output connectors: 8-pin Bulgin P552 socket  
Output voltage: 220/240V AC (as input)

Power requirements: 220/240V AC 50/60Hz, 10VA

Dimensions: 205mm x 55mm x 160mm

Weight: 1kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW61R	Pattern Chaser	£85.090	£99.990

**NJD CC4000S Computer Chaser**



Making use of NJD's specially-produced lighting control microprocessor, the CC4000S provides many of the facilities normally associated with the larger rack-mounted controllers, but in a compact package ideal for the budget installation or mobile disco. Features include switchable 3 or 4 channel lighting mode, 24 selectable chase patterns and 3 auto-run programs, together with sound chase or audio interpretation. The CC4000S is one of the most popular lighting controllers on the market today.

**Specification:**

Audio input sensitivity: 1.5V to 35V rms  
Audio input impedance: 680Ω  
Audio input connector: 6.3mm jack

Maximum load per channel: 5A 1.2kVA (1.2kW resistive, 800W inductive)

Maximum total load: 15A 3.6kW (reduce to 13A is connected via standard BS1363 mains plug and socket)

Output connectors: 8-pin Bulgin P552 socket  
Output voltage: 220/240V AC (as input)

Power requirements: 220/240V AC 50/60Hz, 3VA

Dimensions: 245mm x 70mm x 165mm

Weight: 1kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW60C	Computer Chaser	£119.140	£139.990

**MIRROR BALLS**

**Mirror Balls**



A range of different sizes up to 400mm in diameter, to create a whole roomful of sparkle when used with high power spotlights such as our PAR 36 pin spot.

Code	Diameter	Weight
DU72P	130mm	0.32kg
DU73Q	200mm	0.85kg
DU74R	300mm	1.79kg
DU75S	400mm	3.5kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU72P	130mm MBall	£12.750	£14.990
DU73Q	200mm MBall	£17.010	£19.990
DU74R	300mm MBall	£29.770	£34.990
DU75S	400mm MBall	£55.310	£64.990

**Mirror Ball Motor**



This ceiling-mounting steel box contains a motor that will rotate your mirror ball at a stately 3 rpm.

**Specification:**

Power: 230V AC 50Hz  
Dimensions: 115 x 110 x 45mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU76H	Mirror Ball Motor	£12.750	£14.990

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## SMOKE MACHINES

### "Smokey Joe" Fog Machine



A smoke machine which utilises an industrial pump to provide an impressive smoke screen when activated by the remote control handset on its 7 meter cable. For complete safety, the heater is controlled by a laser trimmed platinum film sensor, protected by a thermal trip.

Heat-up time	5 minutes
Smoke output	42.5m <sup>3</sup> /minute
Max fluid consumption	1.75 liter/hour
Smoke particle size	0.5-60 microns
Heater	500W
Power Supply	220/240Vac
Power Consumption	3A
Dims	375(H) x 185(Dia) mm
Weight	5.4kg



The smoke generating fluid is completely non-toxic as a medium persistence and is supplied in 5 litre bottles.

To enhance the atmosphere even more, add one of the exciting flavours to the Smoke Machine fluid. Non-toxic and available in Mint, English Rose, Tropical and Banana flavours.

<b>Specification:</b>	
Heat up time:	5 minutes
Smoke output:	42.5m <sup>3</sup> /min
Max fluid consumption:	1.75ltr/hour
Smoke particle size:	0.5-60 microns
Heater:	500W
Power supply:	230V AC 50Hz
Dimensions:	375 (H) x 185mm (Dia)
Weight:	5.4kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BE40T	Smoke Machine	£170.200	£199.990
BE41U	Smoke Machine Fluid	£17.010	£19.990
BE42V	Smoke M/C Banana Fl.	£2.110	£2.490
DU69A	Tropical Flavour	£2.110	£2.490
DU70M	Rose Flavour	£2.110	£2.490
DU71N	Mint Flavour	£2.110	£2.490

## Fog Machine



This superb fog machine made by Antari offers the most cost effective way of achieving professional stage misting effects. The machine is thermostatically controlled and is easy to set up and use. Suitable for small to medium sized venues or parties. Many types of fog fluid can be used with this machine. Supplied with a remote control (cable length 5M)

<b>Specification:</b>	
Heater	700Watts
Output flow:	1500CU Feet/Min.
Tank capacity:	0.5 litre.
Dimensions:	310 x 220 x 145mm.
Weight	4.2Kg
Power requirements:	700 W@230V

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YA08J	Fog Machine	£68.070	£79.990

## CD PLAYERS

### Single CD Player

A versatile 19in. rack mount CD player with special features for the DJ.

- ★ 3 beam laser pickup servo system
- ★ 16 bit 8 times oversampling
- ★ 19in. rack mounting, 2U high
- ★ 20 track random programmable
- ★ Variable pitch ±8% slider and bend controls
- ★ Cue/sample and pause facility
- ★ FF/Reverse
- ★ Time elapsed/remain digital display
- ★ Repeat one/all facility.

<b>SPECIFICATIONS</b>	
System	Compact disc digital audio
Channel separation	>80dB
Pick up	3-beam laser
Sampling Frequency	100kHz
Harmonic Distortion	<0.09%
Frequency Response	20Hz-20kHz±3dB
S/N ratio	>80dB
Output Voltage	2Vrms (1kHz±0.2V)
Load impedance	10kΩ
Power	220/240Vac 50Hz
Dims	482 x 250 x 85mm
Weight	4.18kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KSS1F	Single CD player	£212.750	£249.990

### Dual CD Player



A double CD player unit for DJ use with these useful features:

- ★ 3-beam laser system
- ★ 16-bits, 8 times oversampling A/D convertor
- ★ 19in. rack mounting, 2U high
- ★ 16 track random programmable
- ★ Variable pitch
- ★ ± 8% slider and bend control

- ★ Cue/sample and pause facility
- ★ FF/Reverse facility
- ★ Time elapsed/remain digital display
- ★ Repeat one/all facility

<b>SPECIFICATIONS</b>	
System	Compact disc digital audio
Channel separation	>80dB
Pick up	3-beam laser
Sampling Frequency	400kHz
Harmonic Distortion	<0.09%
Frequency Response	20Hz-20kHz
S/N ratio	>80dB
Output Voltage	2Vrms
Load impedance	10kΩ
Output terminals	RCA phono socket
Terminal ports	Mini 8-pin DIN (leads supplied)
Power	220/240Vac 50Hz
Dims	Main unit 482 x 249 x 88mm
Control unit	482 x 64 x 88mm
Weight	main unit 5.3kg
Control unit	1.62kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KSS2G	Double CD player	£382.970	£449.990

## Professional CD Player



A dual CD player incorporating all the latest features required by the professional DJ.

- ★ Dual mechanism CD player
- ★ 3-beam laser system
- ★ 19in. 2U high
- ★ ±8% variable pitch slider and joystick controls
- ★ FF/Rev Scanning (shuttle)
- ★ Fast search (JOG) dials
- ★ Cue/sample and pause facility
- ★ Time elapsed/remain digital display
- ★ Quick que/memory joystick feature
- ★ Track skip
- ★ Repeat one/all facility.

<b>SPECIFICATIONS</b>	
System	Compact disc digital audio
Channel separation	>80dB
Pick up	3-beam laser
Sampling Frequency	400kHz
Harmonic Distortion	<0.09%
Frequency Response	20Hz-20kHz
S/N ratio	>80dB
Output Voltage	2Vrms
Load impedance	10kΩ
Output terminals	RCA phono socket
Terminal ports	Mini 8-pin DIN (leads supplied)

Power	220/240Vac 50Hz
Dims	Main unit 482 x 249 x 88mm
Control unit	482 x 64 x 88mm
Weight	main unit 5.3kg
Control unit	1.80kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FU86T	Prof. Dual CD Player	£425.520	£499.990

**All Customers**  
No additional freight charges for heavy items



See Section 3, Audio  
for our full range of Multi Disc CD Players

**TURNTABLES**

**Belt Drive Turntable**

Sound Lab



This belt drive turntable is fully manual in operation and features a quality anti-skate turntable with strobe to help maintain electronically controlled speeds of 33<sup>1</sup>/<sub>3</sub> and 45 rpm. Other features include a fast start/stop and remote start/stop and forward/reverse controls, a high quality tone arm, cue light and pitch control with central green LED indicator. The turntable is mounted in a quality plinth with sprung feet and a clear perspex hinged cover. A replacement styli is available

**Specification:**  
Wow and flutter: Less than 0.15% wrms  
Turntable platter: 305mm dia aluminium  
Speeds: 33<sup>1</sup>/<sub>3</sub> and 45 rpm  
Tone arm: Statically balanced  
Power: 220/240V AC 50/60Hz  
Power consumption: 5W  
Drive motor: 12V DC servo motor  
Dimensions: 450 x 350 x 152mm  
Weight: 10kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW30H	Belt Drive Turntable	£119.140	£139.990
LN52G	Styli for DW30	£5.940	£6.990

**Belt Drive Professional Turntable**



This professional quality belt drive and fully manual turntable is supplied in its own light-weight plinth with sprung feet and a clear perspex hinged lid. The brushless dc motor drives the turntable at an electronically controlled speed of 33<sup>1</sup>/<sub>3</sub> or 45 rpm with the aid of a built-in strobe. Other features include remote stop/start and forward/reverse controls, an 'S' shape tone arm, separate pitch control, a detachable PU head fitted with a magnetic cartridge and an XLR socket for a cue light.

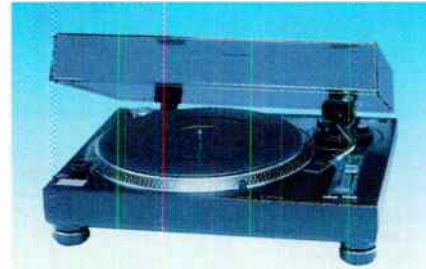
**Specification:**  
Wow and flutter: 0.20% wrms  
Turntable platter: 300mm dia aluminium  
Speeds: 33<sup>1</sup>/<sub>3</sub> and 45 rpm  
Power: 220/240V AC 50/60Hz  
Drive motor: 12V dc servo motor  
Dimensions: 420 x 350 x 122mm  
Weight: 4.5kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BE57M 1	Belt T/Table T2	£81.090	£99.950

**Direct Drive Turntable**

Soundlab



This sophisticated quartz controlled direct drive and fully manual turntable is mounted in its own plinth with sprung feet and a clear perspex hinged lid. The anti-skate turntable is held at an electronically controlled constant speed of 33/45 rpm with the help of the built in strobe and features include remote start/stop high quality tone arm, pitch control with green LED indicator and a cue light.

**Specification**  
Wow and flutter: Less than 0.15% wrms  
Turntable platter: 305mm dia aluminium  
Speeds: 33<sup>1</sup>/<sub>3</sub> and 45 rpm  
Tone arm: Statically balanced  
Power: 230V ac 50/60Hz  
Dimensions: 450 x 352 x 152mm  
Weight: 10kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BE59F 1	Direct Drive T/Table	£178.710	£209.990

**Slip Mat**

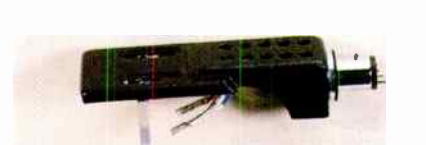


Cut down on the likelihood that problems with static and slipping records will spoil your presentation of the latest dance tracks and those old 45's with this anti-static slip mat. It's ideal for use with any of the turntables shown in this section.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW34M	Slip Mat	£2.110	£2.490

**Headshell**



A universal headshell, ideal for use as a replacement for the headshell supplied with any of the turntables featured in this section.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW35Q	Headshell	£4.240	£4.990

**Turntable Drive Belt**

A replacement drive belt for the Belt Drive Turntable shown previously (DW30H)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW36P	Drive Belt	£2.540	£2.990

**Coloured Deck Covers**

Sound Lab






An easy and inexpensive way to brighten up your record decks. Available in Red(PD62S), Blue(PD63T), Green(PD64U), or Gun Metal(PD65V) effect. For use with Sound lab record decks.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
PD62S	Red Deck Cover	£14.450	£16.990
PD63T	Blue Deck Cover	£14.450	£16.990
PD64U	Green Deck Cover	£14.450	£16.990
PD65V	Gun Metal Deck Cover	£15.310	£17.990



  
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## MIXERS

### Battery Operated Stereo Mixer



A high quality low-cost battery powered stereo mixer incorporating sophisticated solid-state circuitry to ensure low-noise performance. The unit is enclosed in an attractive black case designed to eliminate hum while allowing the switch-control panel to be operated with ease. This mixer's range of facilities includes an input for a microphone (600Ω), a headphone socket, two phono inputs (RIAA compensated for magnetic pick-ups), and one auxiliary input for tuner/tape etc. Slide type gain controls on the front panel enable fingertip control for complete mixing and fading. All the input/output phono sockets are at the rear of the unit with the exception of the 6.35mm (1/4in.) mono jack socket for the microphone and the 6.35mm (1/4in.) jack socket for the headphones, which are positioned on the front panel. A PP3 9V battery (JY49D) provides the power to run this unit or alternatively a 9V DC battery eliminator, such as our XX09K may be used. The battery is fitted inside the mixer case and access is via a removable cover in the base. The battery eliminator connection is a 2.1mm power socket on the rear panel.

#### Specification:

Frequency response: 20Hz to 20kHz ±1dB  
 Distortion: <0.5%  
 Signal to noise ratio: >55dB  
 Output: 220mV (max 2V) at 50kΩ  
 Mic input: 0.3mV at 600Ω  
 Phono inputs: 3mV at 50kΩ  
 Aux input: 120mV at 50kΩ  
 Current consumption: 12mA  
 Overall dimensions: 228 x 178 x 80mm  
 Weight: 1176g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XJ140	3 Sound Mixer	1+ 5+ 10+ £25.520 £21.500 £18.000	1+ £29.990

### DSM1 Scratch Mixer

Soundlab



- ★ 5 input
- ★ 3 Channel design.
- ★ Mic talkover.
- ★ Cue mixing.
- ★ Twin 5 segment bargraphs.

A compact mixer with crossfader and cue mixing, ideal for the beginner.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC78K	DSM1 Scratch Mixer	1+ £55.310	1+ £64.990

### DSM5 Scratch Mixer

Soundlab



- ★ 8 input.
  - ★ 5 channel design.
  - ★ Mic talkover.
  - ★ Mic equaliser.
  - ★ Twin 5 segment bargraphs.
- An economical, yet fully featured scratch mixer, ideal for the first time buyer.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC79L	DSM5 Scratch Mixer	1+ £63.820	1+ £74.990

### DSM15 Scratch Mixer

Soundlab



- ★ 5 input, 3 channel design.
- ★ Mic talkover.
- ★ Mic equaliser / transform buttons.
- ★ Cue mixing.
- ★ Replaceable crossfader.
- ★ Output level control.

A compact design that features transform buttons and cue mixing.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC80B	DSM15 Scratch Mixer	1+ £85.090	1+ £99.990

### DSM20 Dub Mixer with Channel Equaliser

Soundlab



- ★ 5 input, 3 channel design.
- ★ Mic talkover.
- ★ Mic Equaliser 3
- ★ Channel gain control.
- ★ 3 band channel equaliser.
- ★ Transform buttons.
- ★ Replaceable crossfader.

This is an ideal mixer for the intermediate / advanced DJ. 3 band channel equaliser gives added versatility when dubbing whilst input gain controls allow for a wide variation of input sources.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC81C	DSM20 Dub Mixer + Eq	1+ £119.140	1+ £139.990

### DSM30 Dub Mixer with Multimode Transform

Soundlab



- ★ 5 input, 3 channel design.
  - ★ Mic equaliser.
  - ★ Channel equaliser.
  - ★ 3 Band "kill" switches.
  - ★ Multimode Transform.
  - ★ Cue mixing.
  - ★ 8U vertical format.
- Advanced vertical format dub deck for the serious re-mixer. Kill switches combine with 3 band channel eq. to give precise control over each mix track. Multimode punch buttons, with dual colour indicators, allow drop in, drop out, and substitution transforms - the ultimate in ease of use and creative expression.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC82D	DSM30 Mixer+transform	1+ £136.160	1+ £159.990

### DSM55 Sampling Mixer With Graphic Equaliser

Soundlab



- ★ 10 Input, 6 channel design.
  - ★ 3 phono inputs.
  - ★ 4 x 6 second sampler.
  - ★ Sample pitch control.
  - ★ Two mic inputs 7-band.
  - ★ Graphic equaliser.
  - ★ 19" rack mount format..
- Advanced mixer for mobile/club use. 24 second sampler offers single or repeat play with genuinely seamless loop. Banks may be recorded and played in any combination, allowing up to 4 separate samples to be stored at any one time. Dual seven band graphics allow tailoring of the sound to personal taste or control of difficult acoustics.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VC83E	DSM55 Sampling Mixer	1+ £195.730	1+ £229.990

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### Crossfader

A replacement crossfader for the DSM range of mixers



**NEW**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KSS3H	Cross fader-DSM mxr	£8.500	£9.990

### Stereo Mixer



A quality stereo mixer incorporating sophisticated solid-state circuitry to ensure low-noise performance. The unit is enclosed in an attractive modern case with wooden end cheeks which is designed to eliminate hum while allowing the switch-control panel to be operated with ease. The mixer's large range of facilities includes two inputs for microphones (each independently selectable for 600Ω or 50kΩ), four phono inputs (two for magnetic - RIAA compensated and two for ceramic), one for tuner and one for tape. Slide type gain controls on the front panel enable finger tip control for complete mixing and fading. Two slide controls are for the microphone inputs, two for the phono inputs (each switchable to magnetic or ceramic input), and one switchable for tape or tuner input. As well as the ability to monitor the mixed output on stereo headphones, cue switches are provided for monitoring individual channels. All the fade controls, switches and the left and right VU meters are presented on the front panel while the signal input/output sockets are provided at the rear of the unit. The microphone input sockets are standard 6.35mm (1/4in.) jacks, phono 1 & 2, tape & tuner and output sockets are phono. A 5-pin DIN socket is also fitted for tape recorder.

#### Specification:

Frequency response: 20Hz to 20kHz  
Signal to noise ratio: Better than 50dB  
Mic input: 1mV at 600Ω or 2mV at 50kΩ  
Phono input magnetic: 3mV at 50kΩ  
ceramic: 150mV at 100kΩ  
Tape/Tuner input: 150mV at 100kΩ  
Output: 500mV at 50kΩ  
Tape recorder output: 150mV at 10kΩ  
Headphone output: 35mV at 8Ω  
Overall size 305mm wide x 205mm deep x 85mm high, with a sloping front panel. The unit operates from a 9V PP3 battery (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XJ177 4	Mono/Stereo Mixer	£68.070 £57.650 £51.950	£79.990

### Multi-function Stereo Disco Mixer



A flexible 5-channel stereo mixer which will accept signals from two phono turntables, two line outputs, two microphones, one tape deck and a tuner. Channel pairs 1 and 2 (mic) and 3 and 4 (phono/line) each have their own volume and cross-fade controls. Channel 5 is switchable between tape and tuner. The master control sets the total mixed output volume.

A flexible monitoring section allows any single channel to be heard individually through stereo headphones, so one turntable or tape deck can be 'cued up' while another is playing through the main output or the final mix may be heard. A double VU meter allows the monitoring of the left and right output channel signal levels. A 'talk' switch is provided which when pressed lowers the volume from all inputs except microphone.

A 6-band stereo graphic equaliser provides much more precise control than conventional tone controls. Each slide control can provide up to 12dB of cut or boost and has central click effect in the slide. The equaliser will affect all inputs and can be switched in or out with the front panel EQ/BYPASS switch.

With the exception of the microphone input and headphone output sockets which are 6-35mm (1/4in.) jacks, all connections are made on the rear panel by means of phono sockets. Headphone connection is a standard 6-35mm stereo jack situated on the front panel with an independent volume control. A 5-pin DIN socket is provided to connect a tape recorder. An earth terminal post is also provided but take care not to introduce earth loops if using this.

The unit is housed in a matt-black case with a black anodised control panel and is designed for rack or console mounting. A heavy duty handle is provided at each end of the front panel.

#### Specification:

Input:  
Mic 1 and 2: 1mV at 600Ω  
Phono 1 and 2: 3mV at 50kΩ  
Line 1 and 2: 150mV at 100kΩ  
Tape/Tuner: 150mV at 100kΩ  
Equaliser:  
6 Frequency bands: 55Hz, 170Hz, 530Hz, 1-6kHz, 5kHz, 15-5kHz  
Boost/cut range: ±12dB at centre frequency  
Output voltage: Switchable 1-5V or 0-5V at 600Ω  
Distortion: 0-5% at 1kHz, 1-5V output  
1% at 1kHz, 8-5V output  
Frequency response: 20Hz to 20kHz ±0.5dB  
S/N ratio: Tape, Tuner, Line 60dB  
Phono 55dB  
Mic 50dB  
Phones output: Max 20mW at 8Ω  
Power: 240V 50Hz  
Dimensions: 430 x 260 x 115mm  
Weight: 4kg  
Supplied with operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XJ13P 8	Stereo Mixer + Equil	£110.620 £95.250 £86.950	£129.990

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At all our stores nationwide.  
See the maps at the front of the catalogue for the nearest one to you.

### Stereo Disco Mixer



A boldly coloured (red and black) stereo mixer primarily intended for use in disco applications. The mixer has six main input channels, each with preset level and slide fader controls. Channels one and two are microphone inputs, with switches to select low or high level inputs. Channels three and four are turntable/line level inputs (switch selectable). A special feature on these channels is the provision of auto (turntable) start outputs. Two switch outputs are provided to control low voltage turntable motors, the switches close when the channel faders are moved from the zero position. Channels five and six are CD/line level inputs (switch selectable). Additional to the six main input channels is a DJ microphone input with tone, level and automatic talk-over controls. Adjacent to the channel faders is the master level control and low/high output level switch. A headphone monitor output with level control is provided and a rotary switch allows selection of the input channel to be monitored, alternatively the master output may be monitored. Two seven band (left and right) equalisers are provided, which enable the master output to be equalised to suit room acoustics, if required the equaliser may be bypassed by operating the EQ/bypass switch. Output levels are displayed on two calibrated VU meters. The mixer also has a BBD echo circuit that can produce effects ranging from rapid 'slapbacks' to reverberation and discrete echoes. All input and output connections, with the exception of microphone inputs and start outputs, are made via phono sockets. Microphone and headphone connections are 1/4in. jack sockets.

#### Specification:

Input Sensitivity  
DJ mic: 1mV/10kΩ  
Mic: 1mV/600Ω or 2.5mV/10kΩ  
Phono: 3mV/50kΩ (RIAA equalised)  
Line: 150mV/100kΩ  
CD: 150mV/100kΩ  
Output Level (Master)(Rated): 0-775V/600Ω or 1-5V/600Ω  
(Max): 8V  
Output Level (Record) (Rated): 0-775V/600Ω  
(Max): 8V  
Harmonic Distortion: 0-002% at rated output  
Frequency Response: 20Hz to 20kHz ±0.5dB  
S/N Ratio  
DJ mic: 60dB  
Mic: 60dB  
Phono: 70dB  
Line: 80dB  
CD: 80dB  
Monitor Output: 1W/8Ω  
Equaliser  
Boost/cut: ±12dB  
Centre Frequencies: 60Hz, 150Hz, 400Hz, 1kHz, 2k4Hz, 6kHz, 15kHz.  
Turntable Start Output: 2 outputs rated at 24V DC/500mA  
Echo: BBD; delay time 300mS maximum  
Auto talk Over: Reduces main inputs by 12dB  
DJ Mic Tone Control: 10kHz to 12dB  
Dimensions: 482 x 240 x 120mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XM38R 9	St 6 Ch Disco Mixer	£161.690 £149.000 £137.000	£189.990

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## Professional 8-Channel Mixer



A superb 8-channel mixer that offers a wide range of inputs and facilities, and provides three independently controlled stereo outputs; master, monitor and sub. Separate stereo record and a mono 'effect send' outputs are also provided. Mono channels 1 to 6 inputs are switchable between line or unbalanced microphone (if balanced microphones are used, a matching transformer must be used). Channels 7 and 8 each feature a built-in stereo RIAA-equalised phono preamplifier, for turntables with magnetic cartridges. This circuit can be switched out and replaced by a mono microphone input. Each of the eight channels has controls for input signal gain, treble, mid, bass and effect. High quality faders control the signal level that is fed to the main outputs. Additionally, channels 1 to 6 have a pan pot which adjusts the relative amplitude in the left and right channels of the output and allows the channel to emanate from the left or right, or somewhere in between. Channels 7 and 8, being stereo, have balance controls in place of pan pots. The effect control alters the level of the mix-down being fed to the effect send output. This effects output can feed an echo unit, or similar, the return feed can then be added to the stereo bus, via a level control pot. A stereo auxiliary input facility is available that can be added to the stereo bus via bass and treble controls only. Each channel can be added to the (PFL) bus, which can then be monitored through headphones or the monitor loudspeakers, if used. When depressed, an LED lights and indicates that the channel has been selected to the bus, then by adjusting the gain control the desired level can be set on the VU meters. Alternatively, the master or sub outputs can be monitored. All microphone input sockets and the headphone monitoring socket are 6.35mm (1/4in.) mono jacks, all other sockets are phono. The free-standing mixer is of sturdy metal construction with black finished wooden end cheeks and is mains powered.

Dimensions 400 x 325 x 115mm approx.

### Specification:

input sensitivity	
Mic:	1mV into 1kΩ
Phono:	3mV into 50kΩ (RIAA)
Aux & line:	150mV into 100kΩ
Effect return:	0.775mV into 100kΩ
Output level	
Master, sub, mon:	1.5V rated, 8V max.
Record:	0.775V rated, 8V max.
Effect send:	0.775V rated, 8V max.
Output impedance:	600Ω
Harmonic distortion:	0.01% (rated o/p)
Frequency response:	20Hz to 20kHz ± 1dB (RIAA ± 2dB)
S/N ratio	
Mic:	75dB
Phono:	70dB
Line:	80dB
Aux:	80dB
Effect:	80dB
Tone controls	
Frequency:	100Hz, 1kHz, 10kHz
Boost/cut:	±12dB
Power requirements:	240V AC 50Hz

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BZ65V	14 8-Channel Mixer	£255.310	£244.500	£227.850	£299.990

## 9-Channel Stereo Disco Mixer



A very smart high quality audio mixer primarily intended for disco/audio visual applications. The control panel is finished in semi-matt silver/grey with white and red legend. The nine input channels have individual gain controls and slide faders. Channels one to three are for use with microphones and have additional high/low equalisation controls on each channel. Channels 4 and 5 are turntable inputs and are RIAA equalised accordingly. Channels 6 and 7 are tape/CD inputs. Channels 8 and 9 are auxiliary/video (soundtrack) inputs. Channels 4 to 7 are equipped with auto start outputs for controlling low voltage motors on turntable or cassette decks. An overall master fader controls the output signal level, a balance control is also provided. Output levels are displayed on twin 11 LED VU bargraph displays. To compensate for room acoustics a stereo 10 band equaliser allows fine adjustment of the output signal. If required the equaliser can be bypassed by operating the EQ/bypass switch. A stereo/mono switch is also provided. The monitoring section allows monitoring of any of the individual input channels or the master output. A 6.35mm (1/4in.) stereo headphone socket is provided on the front panel for the monitor output, the level of which can be adjusted by an adjacent control. With the exception of the microphone input and start outputs, all connections are via phono connectors.

### Specification:

Input Sensitivity	
Mic:	3mV/20kΩ
Phono:	3mV/50kΩ (RIAA equalised)
Video:	150mV/100kΩ
Tape:	150mV/100kΩ
Aux:	150mV/100kΩ
CD:	150mV/100kΩ
Output Level (Master) (Rated):	2.2V/600Ω
(Max):	8V
Output Level (Record) (Rated):	1.5V/600Ω
(Max):	8V
Harmonic Distortion:	0.002% at rated output
Frequency Response:	20Hz-20kHz ±0.5dB
S/N Ratio	
Mic:	70dB
Phono:	70dB
Video:	80dB
Tape:	80dB
Aux:	80dB
CD:	80dB
Tone Control (Mic inputs)	
Frequency:	100Hz & 10kHz
Boost/cut:	±12dB
Monitor Output:	1W/8Ω
Equaliser	
Boost/cut:	±12dB
Centre Frequencies:	31Hz, 62Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz, 16kHz
Start Output:	4 outputs rated at 24V DC/500mA
Dimensions:	482 x 290 x 125mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
XM39N	13 St 9 Ch Disco Mixer	£178.710	£154.000	£142.000	£209.990

## Professional Stereo Sound Mixer



- ★ 7 separate inputs
- ★ Low total harmonic distortion levels
- ★ High signal to noise ratio
- ★ Headphone output

A high quality, professional stereo sound mixer featuring high quality sliders and two clear, easy to read VU meters. Each input has its own dedicated slider to control input signal level, and a master level control alters the signal amplitude of all the combined inputs. Provision for a BNC lamp holder is provided allowing the mixing desk to be used easily in partial or total blackness. Due to the design of these mixing desks all the controls are easily accessible and arranged in a logical way. Ideal for discos, night-clubs, parties and home recording studios.

### Specification:

Input sensitivity,	DJ Mic:	1mV/10kΩ
	Mic 1, 2:	3mV/50kΩ
	Phono:	150mV/100kΩ
	CD:	150mV/100kΩ
	Aux:	150mV/100kΩ
	Cam Audio:	150mV/100kΩ
Output levels,	Master:	1.5V (8V max.)
	Record:	0.775V (8V max.)
Harmonic distortion:		0.002%
Frequency response:		20Hz to 20kHz (±0.5dB)
S/N ratio,	DJ Mic:	60dB
	Mic 1, 2:	60dB
	Phono:	75dB
	CD:	75dB
	Cam Audio:	75dB
Dimensions:		343 x 270 x 71mm (L x W x H)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
BM98G	1 4 Chan Mixer With FX	£110.620	£104.000	£96.500	£129.990

## POWER AMPLIFIERS

### Power Amplifiers

Lyonforge  
MX79L - 200Watt Amplifier

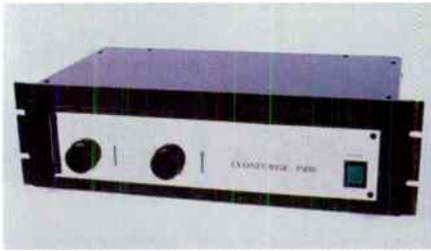


Lyonforge slave power amplifier with VU meters and individual level controls. It has full open and short circuit protection and will work on 8-16ohms loads. This is a compact, high power design with reliable mosfet circuitry. Also has the added feature of visual level monitoring. 2U 19" rack mounting front panel.

### Specification

Output power:	115+115 Watts to 8Ω
Load impedance	8-16Ω
Response	20-20,000 Hz ±2dB
Input	500mV/22kΩ
Distortion	0.07%
Dimensions	88x483x220mm
Weight	7Kg

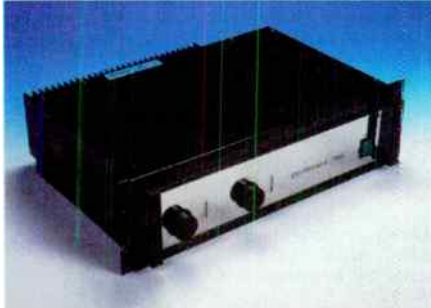
**MX80B - 400 Watt Amplifier**



Lyonforge slave power amplifier with VU meters and individual level controls. Designed using mosfet circuit technology, it has full open short circuit protection and will work on 4-16ohm loads. Smooth power handling and a clean crisp sound characterises this amplifier. Fan assisted cooling. 3U x 19" rack mounting front panel.

**Specification**  
Output power: 204+204 Watts to 4Ω  
Load impedance: 8-16Ω  
Response: 20-20,000 Hz±2dB  
Input: 500mV22kΩ  
Distortion: 0.06%  
Dimensions: 133x483x365mm  
Weight: 9.3Kg

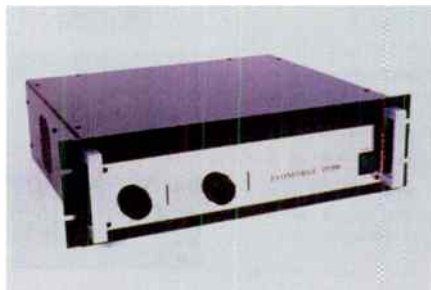
**MX81C - 800Watt amplifier**



Lyonforge slave power amplifier with individual level controls and full open and short circuit protection. The output stage uses mosfet transistors for increased reliability and frequency response. Generously rated circuitry increase the dynamic capability of the P800 and enables it to drive difficult loudspeaker loads effectively. This fan cooled amplifier has level meters and peak indicator and comes with a good reliability record. Input connections are made via XLR plugs, outputs are through speakon connectors. 3U 19" Rack mounting front panel.

**Specification**  
Output power: 410+410 Watts to 4Ω  
Load impedance: 8-16Ω  
Response: 20-20,000 Hz±2dB  
Input: 500mV22kΩ  
Distortion: 0.05%  
Dimensions: 133x483x450mm  
Weight: 16Kg

**MX82D - 1200 Watt Amplifier**



The largest Lyonforge power amplifiers, giving a total power of more than 1100 Watts. Individual level controls and output meters are provided for accurately setting power levels. Mosfet transistors are used in the output stage for increased reliability and frequency response. The amplifier has full open circuit, short circuit and D.C. protection and will work with 4-16ohm loads. Cooling is assisted with two fans. This amplifier is suitable for driving high power P.A.s or stack systems and must be used with suitable loudspeaker cabinets. Input connections are made via XLR plugs, outputs are through speakon connectors. 4U 19" Rack mounting front panel.

**Specification**

Output power: 590+590 Watts to 4Ω  
Load impedance: 8-16Ω  
Response: 20-20,000 Hz±2dB  
Input: 500mV22kΩ  
Distortion: 0.06%  
Dimensions: 175x483x455mm  
Weight: 22Kg

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
MX79L 1	Power Amp 200W	£161.690	£188.990
MX80B 1	Power Ampli 400W	£229.770	£269.990
MX81C 1	Power Ampli 800W	£323.390	£379.990
MX82D 1	Power Amp 1200W	£595.730	£699.990

**See Section 11, Enclosures and Accessories**  
for our full range of 19in. rack enclosures

**19" RACK ACCESSORIES**

**Echo Chamber**

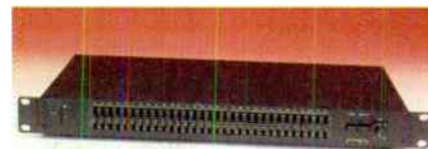


A good quality solid state echo unit housed in a matt black case. The front panel accommodates all the controls and input/output jacks. The unit provides two standard 6-35mm (1/4in.) input sockets, a low impedance (50dB 10kΩ) socket for the microphone and a (-20dB 330kΩ) socket for instruments and line outputs of hi-fi, organ, synthesisers, etc. There is a footswitch jack on the front panel for a remote control switch. The delay time control is variable between 30 and 200ms and there are three selectable output levels of (0, -20dB and -40dB) to allow connection to any amplifier. There is also a peak level indicator to show when the input level is too high and likely to cause distortion. The balance control adjusts the equilibrium of direct/ echo sound and may be set to minimum to allow direct (no echo), or through to maximum (total echo). The repeat control sets the echo sound repetition rate and the dial is rotated clockwise to increase the speed. Case size: 245 x 150 x 61mm.

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
YP67X 3	Echo Chamber	£59.560	£69.990

**Professional 31-Band Graphic Equaliser**



A high-quality mono graphic equaliser designed for mounting into a standard 48cm (19in.) rack (with 1U of available height). With 31 bands available, each of which can be boosted or cut by 12dB, the overall sound can be tailored precisely to the venue. The

unit is also equipped with bypass, level and low-frequency filter controls, and a four-LED bargraph output level meter.

**Specification:**

Input level: 5-5V max into 1-2 kΩ  
Output level: 5-5V max into 20 kΩ  
S/N ratio: 90dB  
Distortion: 0-03%  
Control frequencies: 20Hz, 25Hz, 31-5Hz, 40Hz, 50Hz, 63Hz, 80Hz, 100Hz, 125Hz, 160Hz, 200Hz, 250Hz, 315Hz, 400Hz, 500Hz, 630Hz, 800Hz, 1kHz, 1-2kHz, 1-6kHz, 2kHz, 2-5kHz, 3-1kHz, 4kHz, 5kHz, 6-3kHz, 8kHz, 10kHz, 12-5kHz, 16kHz, 20kHz  
Power: 230V AC, 50Hz  
Dimensions: 483 x 44 (1U) x 270mm

**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
DU83E 1	Graphic EQ	£136.160	£159.990

**Professional 15 Band Stereo Graphic Equaliser**



A 48cm (19in) rack mounting (1U high) stereo graphic equaliser with independent tone control of left and right channels. Each frequency band can be boosted or cut by 12dB. The unit also features bypass, low cut and output level controls for each channel. Each channel has a 4-LED output level meter.

**Specification:**

Input level: 5-5V max into 1-2 kΩ  
Output level: 5-5V max into 20 kΩ  
S/N ratio: 90dB  
Distortion: 0-03%  
Control frequencies: 31-5Hz, 40Hz, 63Hz, 100Hz, 160Hz, 250Hz, 400Hz, 500Hz, 630Hz, 800Hz, 1kHz, 2kHz, 4kHz, 8kHz, 16kHz.  
Power: 230V AC, 50Hz  
Dimensions: 483 x 44 (1U) x 270mm.

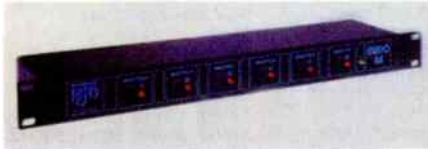
**Retail Unit Price each (inc. VAT).**

Order Code	Type	Price each exc. VAT	inc. VAT each
DU84F 1	Stereo Graphic EQ	£153.180	£179.990

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**Fax: 01702 554001**  
**e-mail: Sales@maplin.co.uk**

## NJD Euro 6S Rack-Mounting Switch Panel



A simple six-channel switch panel designed for mounting into a 19in. rack (1U high), the Euro 6S provides six 'zero-switched' mains outlets, each individually fused with its own indicator. For ease of connection, six separate IEC output sockets are provided. Housed in a compact case and finished in its distinctive blue livery, the Euro 6S is the ideal switch panel.

### Specification:

Maximum load per channel: 5A 1-2kW resistive  
 Maximum total load: 15A 3-6kW (reduce to 13A if connected via a standard BS1363 mains plug and socket)  
 Output connectors: 6 x IEC 320 (BS4491) Euro-type sockets  
 Power requirements: 220/240V AC 50/60Hz  
 Dimensions: 483mm x 44mm (1U) x 130mm  
 Weight: 1.65kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW59P 1	Euro6S Switch Panel	£110.620	£129.990

## Euro 4E Computer Chaser



A high-quality rack-mounting light controller. By combining computer-aided design with the latest microprocessor technology, the Euro 4E packs an astounding range of facilities into a 1U high package. 24 pre-programmed chase patterns, 3 auto-run programs, sound chase or sound-to-light, manual over-ride on all channels and 3 or 4 channel operating modes are just some of the features on this superb controller. Finished in its distinctive 'Euro Blue' livery, the Euro 4E typifies the modern trend towards more and more compact lighting control.

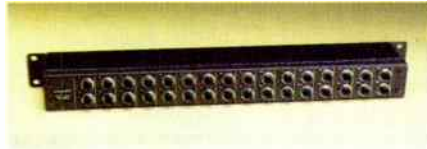
### Specification:

Audio input sensitivity: 2V to 40V rms  
 Audio input impedance: 680Ω  
 Audio input connector: 6.3mm jack  
 Maximum load per channel: 4A 1kVA (1kW resistive, 600W inductive)  
 Maximum total load: 15A 3-6kW (reduce to 13A is connected via standard BS1363 mains plug and socket)  
 Output connectors: 8-pin Bulgin P552 socket  
 Output voltage: 220/240V AC (as input)  
 Power requirements: 220/240V AC  
 Dimensions: 483mm x 44mm (1U) x 110mm  
 Weight: 1.25kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW62S 1	Computer Chaser	£136.160	£158.990

## Patch Box



This tough and reliable 16 x 2 channel patch box is constructed in heavy black steel in the 48cm (19in) rack mounting format. It's ideal for patching between amps, mixers, instruments, mics, etc.  
 Dimensions: 484 x 44 (1U) x 80mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
EL02C 1	Patch Box	£51.050	£59.990

## 19" Rack for Non Standard Equipment.



19" Rack Clamp for mounting of non standard equipment. With strong steel clamping bars. 1.2mm steel, black powder coated. Depth 250mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX74R 1	Adjustable 19in rack	£29.770	£34.990

## 19" Rack Casing

Build your own 19" rack casing without all of the hassle of drilling out awkward shaped holes. These panels come ready cut to fit.

MX48C - 19" 2U universal frame 1.5mm steel, black powder coated.



MX49D - 19" 2U Rear cover, 65mm deep



MX50E - Cable Gland for rear cover.



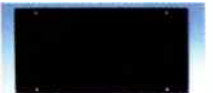
MX51F - Blank panel, height 2 U, width 1/10



MX52G - Blank Panel, height 2U, width 2/10



MX53H - Blank Panel height 2 U, Width 4/10



MX54J - Ventilation panel Height 2 U, width 2/10



MX55K - Punched for 2 x jack sockets, height 2 U width 1/10



MX56L - Punched for 4 x jack socket, Height 2 U, width 2/10



MX57M - Punched for 6 x jack socket, Height 2 U, width 2/10



MX58N - Punched for 2 x XLR universal or 2 x Speakon 4 pole. Height 2 U, Width 1/10



MX59P - Punched for 4 x XLR universal or 4 x Speakon 4 pole. Height 2 U, Width 2/10



MX60Q - Punched for 1 x speakon 8 pole, 1 x Alcatel EP/AP. Height 2 U, Width 2/10.



MX61R - Punched for IECC 240V 6A female. Height 2 U, Width 2/10



MX62S - Punched for IECC 240V 6A male. Height 2 U, Width 1/10



MX63T - Punched for IECC 240V 6A female. Height 2 U, Width 1/10



MX64U - Punched for 220V Schuko socket with blue cover. Height 2U, Width 2/10



MX65V - Punched for CEE 380/415V 16A and CEE 380/415V 32A. Height 2 U, Width 2/10



MX66W - Punched for Harting 64 pin. Height 2 U, Width 4/10



MX67X - Punched for Harting 102 pin. Height 2U, width 4/10

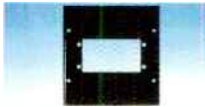


MX68Y - Punched for EDAC 56 pin. Height 2 U, Width 2/10

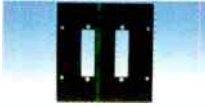


**Business Account Holders**  
**No Delivery Charges for any order**

**MX69A** - Punched for EDAC 90 pin. Height 2U, Width 2/10



**MX70M** - Punched for 2 x Siemens 30 pin. Height 2 U. Width 2/10



**MX71N** - Punched for 2 x D sub 25 pole. Height 2 U, Width 2/10



**MX72P** - Punched for 2 x D Sub 37 pole



**MX73Q** - Punched for SOCAPEX 337 or Bulgin 8 pole



Retail Unit Price each (inc. VAT).

Order Code	Type 18142	Price each exc. VAT			inc. VAT each
		1+	5+	25+	
MX48C	19 2 U Univel frame	£22.110	£21.010	£19.920	£25.990
MX49D	19 2 U Rear cover	£25.520	£24.240	£22.970	£29.990
MX50E	Cabl gland rear cov	£2.970	£2.820	£2.670	£3.490
MX51F	Blank panel1/10 2U	£3.820	£3.630	£3.430	£4.490
MX52G	Blank panel 2/10 2U	£5.090	£4.840	£4.580	£5.990
MX53H	Blank panel 4/10 2U	£6.370	£6.050	£5.730	£7.490
MX54J	Vent pnl 2x1/10 2U	£5.940	£5.650	£5.360	£6.990
MX55K	2xjck skt1/10 2U	£4.670	£4.420	£4.200	£5.490
MX56L	4xjck skt2/10 2U	£5.940	£5.650	£5.360	£6.990
MX57M	6xjck skt 2/10 2U	£6.800	£6.480	£6.120	£7.990
MX58N	2xXLR univ 1/10 2U	£4.670	£4.420	£4.200	£5.490
MX59P	4xXLR univ2/10 2U	£5.940	£5.650	£5.360	£6.990
MX60Q	1spkon 8 ple 2U 2/10	£5.940	£5.650	£5.360	£6.990
MX61R	IECC 240v 6a FEMALE	£5.940	£5.650	£5.360	£6.990
MX62S	IECC 240v 6a MALE	£5.940	£5.650	£5.360	£6.990
MX63T	IECC 240v 6a FEMALE	£5.940	£5.650	£5.360	£6.990
MX64U	220v schuko socket	£5.940	£5.650	£5.360	£6.990
MX65V	CEE380415V16A+32A	£5.940	£5.650	£5.360	£6.990
MX66W	Harting 64 pin	£6.370	£6.050	£5.730	£7.490
MX67X	Harting 102 pin	£6.370	£6.050	£5.730	£7.490
MX68Y	EDAC 56 pin	£5.940	£5.650	£5.360	£6.990
MX69A	EDAC 90 pin	£5.940	£5.650	£5.360	£6.990
MX70M	2 x Siemens 30 pin	£5.940	£5.650	£5.360	£6.990
MX71N	2 x D sub 25 pole	£5.940	£5.650	£5.360	£6.990
MX72P	2 x D sub 37 pole	£5.940	£5.650	£5.360	£6.990
MX73Q	SOCAPEX 337	£5.940	£5.650	£5.360	£6.990

## Isolating Screws for 19" Racks



Isolate your sensitive 19" equipment from direct "body contact" with each other and the rack, thereby eliminating ground loops which are the most common cause of hum and noise. A practical side effect is that scarring and scratching of the front panel by the mounting screws is also eliminated.

One bag will isolate one device and contains:

- ★ 4 plastic folding washers
- ★ 4 specially isolated screws
- ★ Instructions

Retail Unit Price each (inc. VAT).

Order Code	Type 18151	Price each exc. VAT			inc. VAT each
		1+	5+	25+	
MX77J	Isolating end screws	£8.500	£8.070	£7.650	£9.990

## POWER AMPLIFIERS Neon Extension Leads



A range of very flexible quality extension leads in a bright fluorescent neon coloured cable. The ends are terminated in standard 1/4in. jack plugs that are protected and strain relieved by black heat-shrink sleeving. Choice of three colours: green, pink, orange. Length 6m.

Retail Unit Price each (inc. VAT).

Order Code	Type 4730	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
CC36P	Neon Lead Green	£5.940	£5.600	£5.300	£6.990
CC37S	Neon Lead Pink	£5.940	£5.600	£5.300	£6.990
CC38R	Neon Lead Orange	£5.940	£5.600	£5.300	£6.990

See Section 10, Connectors for our full range of Connectors

## Coiled Right-Angled Mono 6.35mm (1/4in.) Jack Lead



A coiled extension lead terminated with a right-angled mono 6.35mm (1/4in.) jack plug and a straight 6.35mm (1/4in.) jack plug. Coiled length 1.2m. Extended length 3.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type 1281	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RW34M	Coiled Mono Jack Ld	£2.540	£1.690	£1.470	£2.990

## Straight Mono 6.35mm (1/4in.) Jack Lead



A straight extension lead terminated with a metal bodied 6.35mm (1/4in.) jack plug at each end. The plug bodies have knurled finger grips and coiled spring strain relief sleeves. Length 4.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type 1282	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YZ29G	Straight 1/4 Jack Lead	£3.390	£2.220	£2.040	£3.990

## Double Screened Straight Mono 6.35mm (1/4in.) Jack Lead



A straight extension lead terminated with a metal bodied 6.35mm (1/4in.) jack plug at each end. The plug bodies are sleeved with chunky moulded plastic finger grips. The cable features a conductive polythene screen over a polythene insulator for the central conductor which is in overall contact with an outer copper braided screen for minimum noise pick-up. Length 4.5m.

Retail Unit Price each (inc. VAT).

Order Code	Type 1283	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YZ30H	DS Strght 1/4 Jk Ld	£4.240	£3.150	£2.850	£4.990

## Double Screened Coiled Mono 6.35mm (1/4in.) Jack Lead



A coiled extension lead terminated with a metal bodied 6.35mm (1/4in.) jack plug at each end. The plug bodies are sleeved with chunky moulded plastic finger grips. The cable features a conductive polythene screen over a polythene insulator for the central conductor which is in overall contact with an outer copper braided screen for minimum noise pick-up. Coiled length 1m. Extended length 3.2m.

Retail Unit Price each (inc. VAT).

Order Code	Type 971	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YZ31J	DS Coiled 1/4 Jk Ld	£4.240	£3.450	£3.050	£4.990

## Long Double Screened Coiled Mono 6.35mm (1/4in.) Jack Lead



A coiled extension lead terminated with plastic bodied 6.35mm (1/4in.) jack plugs at each end, with chunky moulded finger grips. The cable has a conductive polythene screen over a polythene insulator for the central conductor, in contact with an outer copper braided screen for minimum noise pick-up. Coiled length: 1.3m. Extended length: 5.4m. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type 972	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JX84F	LD Coiled 1/4 Jk Ld	£5.090	£4.450	£3.800	£5.990

## High Quality Straight Mono 6.35mm (1/4in.) Jack Lead with OFC Conductors



A straight extension lead terminated with a black, metal bodied, 6.35mm (1/4in.) jack plug at each end. The plug bodies have knurled finger grips and coiled strain relief sleeves. Untinned OFC (oxygen free copper) conductors are used for unparalleled sound purity. Length 6m. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type 973	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JX85G	OFC 1/4 Jack Lead	£12.750	£10.500	£8.650	£14.990

## Patch Leads

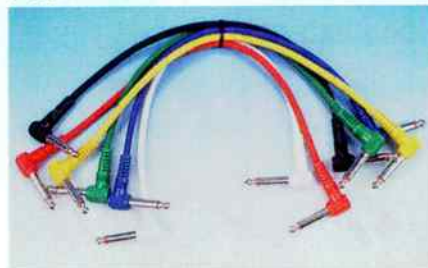


These short professional quality leads are ideal for patching between amps, mixers, effects boxes, etc. The tough, highly flexible 6mm noiseless leads are double screened and terminate in nickel plated 6.35mm straight jack plugs.

Retail Unit Price each (inc. VAT).

Order Code	Type 997	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DW12N	2m Patch Lead	£4.670	£3.250	£2.950	£5.490
DW13P	1m Patch Lead	£4.240	£2.950	£2.600	£4.990

## Patch Lead Set



Six short colour coded screened leads terminated with right-angled 6.35mm (1/4in.) mono jack plugs for chaining several items of audio or stage equipment together. Supplied as a set. Length 300mm each. Colours: Black, Blue, Green, Yellow, Red, White.

Retail Unit Price each (inc. VAT).

Order Code	Type 1175	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YZ23K	300mm Patch Lead Set	£5.090	£3.750	£3.240	£5.990

## 6.35mm Plug to 6.35mm Mono Plug Patch Leads



Take your choice of a set of 10 black or 6 coloured patch leads terminating in moulded-on right angle plugs. DW10 is a set of 10 black 300mm leads, DW11 is a set of 6 coloured 600mm leads.

Retail Unit Price each (inc. VAT).

Order Code	Type 1000	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DW10L	10x Black Patch Lead	£8.500	£7.300	£6.570	£9.990
DW11M	600mm Patch Lead Set	£5.090	£4.850	£4.500	£5.990

## 5-Pin DIN MIDI Connection Lead



5-pin 180° 'A' DIN plug to 5-pin 180° 'A' plug non-reversed (pin 1 connects to pin 1, 2 to 2 etc.). Available in lengths of 1m and 6.5m approx.

Retail Unit Price each (inc. VAT).

Order Code	Type 1096	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YZ26D	MIDI Cable 1m	£2.540	£1.550	£1.330	£2.990
YZ27E	MIDI Cable 6.5m	£4.240	£3.140	£2.650	£4.990

## Microphone Cable

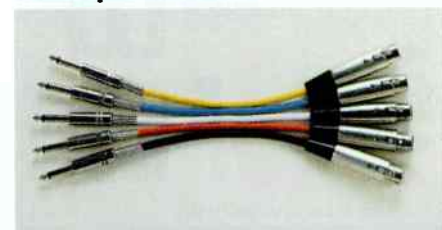
Shure

A high quality microphone cable that is 4.57m (15ft.) long, with a 3-pin female XLR microphone connector and a 6.35mm (1/4in.) jack plug at the equipment end. Ideal for use with the Shure range of microphones.

Retail Unit Price each (inc. VAT).

Order Code	Type 3561	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CY83E	Cable + Connectors	£7.650	£7.100	£6.600	£8.990

## XLR Female to 6.35mm Jack Microphone Lead

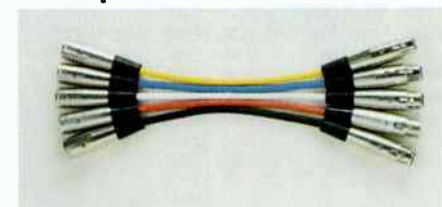


A selection of top quality coloured microphone leads. The single screened 6mm diameter cable terminates at one end in an XLR female plug and at the other, a 6.35mm mono metal jack plug. Individually packed in a plastic wallet, each lead is 6m long.

Retail Unit Price each (inc. VAT).

Order Code	Type 1002	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DW00A	XLR Fem/6.35Jack Blk	£7.650	£5.950	£4.950	£8.990
DW01B	XLR Fem/6.35Jack Red	£8.500	£5.950	£4.950	£9.990
DW02C	XLR Fem/6.35Jack Whit	£7.650	£5.950	£4.950	£8.990
DW03D	XLR Fem/6.35Jack Blu	£7.650	£5.950	£4.950	£8.990
DW04E	XLR Fem/6.35Jack Yel	£7.650	£5.950	£4.950	£8.990

## XLR Male to XLR Female Microphone Extension Leads



These top quality coloured microphone extension leads are two core screened 6mm diameter cable terminating at one end in an XLR male socket and at the other, an XLR female plug. Individually packed in a plastic wallet, each lead is 6m long.

Retail Unit Price each (inc. VAT).

Order Code	Type 1005	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DW05F	XLR F/Pig-M/Skt Blk	£7.650	£5.990	£4.990	£8.990
DW06G	XLR F/Pig-M/Skt Red	£7.650	£5.990	£4.990	£8.990
DW07H	XLR F/Pig-M/Skt Whit	£7.650	£5.990	£4.990	£8.990
DW08J	XLR F/Pig-M/Skt Blu	£7.650	£5.990	£4.990	£8.990
DW09K	XLR F/Pig-M/Skt Yel	£7.650	£5.990	£4.990	£8.990

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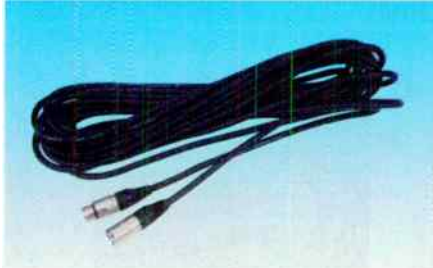
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### MK58N Balanced Microphone Lead



A 10m lead with a male XLR latching connector at one end, and a female XLR latching connector at the other. Manufactured from high quality microphone cable with a black heavy-duty outer covering.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MK58N 1	Bal Mic Lead	£16.160	£12.750	£11.500	£18.990

### Plug to Plug

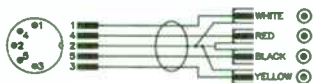
3.5mm jack plug to 3.5mm jack plug. Length 1.5m.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RW28F	3.5mm Plg-Plg Lead	£0.842	£0.590	£0.495	£0.990

### 5-Pin A DIN Plug to Four Phono Plugs



5-pin A (180°) DIN plug to four phono plugs. Length 1.2m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RW17T	5pin Din-Phono Plgs	£2.330	£1.560	£1.380	£2.740

## LEAD ACCESSORIES

### Reusable Cable Ties



Velcro cable ties, black with neon yellow tongue. Two sizes available.  
MX75S 20cm x 2cm  
MX76H 30cm x 2.5cm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	25+	1+
MX75S	Cable tie reusable	£3.650	£3.460	£3.280	£4.290
MX76H	Cable tie reusable	£4.240	£4.030	£3.820	£4.990

### Lead Tester



Here's a must for every gig. This compact and rugged audio lead tester in a rugged, all steel case, will test the continuity of the majority of audio leads used at live venues. It has phono, 6.35mm and XLR connections and includes a built-in battery self test.

#### Specification:

Dimensions: 120 x 110 x 35mm  
Power: 9V DC battery (not supplied)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DU94C	Lead Tester	£14.880			£17.490
JY49D	Duracell PP3	£2.800	£2.500	£2.200	£3.290

### Multiple Cable Test System



The Adam Hall multi cable tester is a compact and comprehensive testing device for a wide range of audio cables. It is simple to use, with well laid out high quality sockets and a clear LED read-out. It will test cables fitted with any combination of speakon, phono, BNC, 6.5 jack, 5-pin DIN, and XLR male and female connectors. A rotary control selects pins 1-5 showing a yellow LED for the right connector and a green LED for the left, thereby not only showing if the connection is being made, but whether it is in phase. A further red LED shows if any pin has connected to ground. Power is from a single 9V battery.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
MX78K 1	Multi cable tester	£89.350			£104.990

**Business Account Holders**  
No Delivery Charges for any order

See Section 19, Microphones for our full range of Microphones and Accessories

## Accessories

### Mic Matching Transformer



This mic matching transformer is a must if you want to match the low impedance of your expensive microphone to the high impedance of most amplifiers. The transformer is used at the amplifier end to minimise noise and losses due to the mic lead. Mu-metal screened transformer.

#### Specification:

Input: 500Ω 6.35mm jack socket  
Output: 50kΩ 6.35 jack plug  
Dimensions: 22.5 (dia) x 100mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
BE80B	Mic Transformer	£7.650			£9.990

### Mic Matching Transformer/ XLR Female Plug



Another professional mic matching transformer but this time built into an XLR female plug and with a short lead to an all metal 6.35mm jack plug. For even greater versatility the transformer has an impedance selector switch for high/low input. Mu-metal screened transformer.

#### Specification:

Input: 600Ω or 50kΩ XLR female connector  
Output: 50kΩ 6.35mm jack plug  
Total length: 270mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+			1+
EL04E	Tx/XLR Fem Plug	£8.500			£9.990

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**See Section 3, Audio**  
for our full range of Loudspeakers

## Dual Mic Matching Transformer



This dual mic matching transformer allows two mics to be used on a single amplifier or mixed input. Inputs are via 6.35mm sockets, output is via a 5m approx screened lead with a 6.35mm mono jack plug.

**Specification:**

Input impedance: 600Ω  
Output impedance: 600Ω  
Dimensions: 105 x 45 x 38mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BE79L	Mic Transformer Dual	£12.750	£14.990

## STAGE SPEAKERS

### Transportable Group Music/Disco Speaker



A black rexine-covered bass-reflex cabinet with a 300mm (12in.) bass unit and piezo bullet tweeter. A heavy-duty strap handle is provided for easy of transportation.

Impedance: 8Ω  
Nominal power handling: 100W rms  
Frequency response: 60Hz to 20kHz  
Dimensions: 500 x 380 x 300mm  
Weight: 22kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW79L 1	12in 2 Spkr Sys	£85.090 £76.000	£99.000 £99.990

**All Customers**  
No additional freight charges for heavy items

### Transportable High-Power Group Music/Disco Speaker



A high-power compact bass-reflex cabinet containing a 380mm (15in.) bass driver, a 100 x 250mm (4in. x 10in.) dynamic midrange horn and a piezo tweeter for full, even frequency coverage. Finished in black rexine, with corner protection and recessed carrying handles.

Impedance: 8Ω  
Nominal power handling: 200W rms  
Frequency response: 60Hz to 20kHz  
Dimensions: 610 x 470 x 400mm  
Weight: 22kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW80B 1	15in 3 Spkr Sys	£127.650 £119.000	£12.000 £149.990

### Group Music/Disco Speaker with 250mm (10in.) Bass Driver



Professional high-quality bass-reflex cabinet containing a 250mm (10in.) bass/mid driver and a dynamic high-frequency horn. The trapezoidal cabinet offers excellent dispersion when used in multiples. Finished in heavy-duty fibre-bonded carpet. The crossover network is a passive 12dB/octave design.

Impedance: 8Ω  
Nominal power handling: 125W rms  
Frequency response: 60Hz to 20kHz  
Dimensions: 500 x 360 x 310mm  
Weight: 13kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW81C 1	10in 2-W Spkr System	£144.670 £129.000	£115.000 £169.990

### Group Music/Disco Speaker with 300mm (12in.) Bass Driver



A similar speaker to DW81C above, but with a 300mm (12in.) woofer and a larger cabinet.

Impedance: 8Ω  
Nominal power handling: 150W rms  
Frequency response: 55Hz to 20kHz  
Dimensions: 600 x 420 x 300mm  
Weight: 17kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW82D 1	12in 2-W Spkr System	£157.430 £138.000	£126.000 £184.990

### Speaker Tripod

Speaker tripod stand with no mounting plate. Aluminium construction, black anodised. Diameter - 35mm. Height: min 110cm/max 200cm. Weight 3.300kg



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX45Y 1	Speaker stand	£51.050 £48.500	£45.950 £59.990

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**KARAOKE**

**Karaoke Drum Machine**

Goodmans



- ★ 20W PMPO
- ★ Twin cassette with auto stop
- ★ 3-Band graphic equaliser
- ★ Sockets for 2 microphones
- ★ Public address facility
- ★ Detachable drum pad
- ★ Full range 5in. (130mm) speaker
- ★ Bass boost

The Karaoke drum machine features a graphic equaliser, twin cassette decks, bass boost circuitry, 5 drum and 10 scratch rhythms, high speed dubbing, sequential play and tape multiplex facility (auto vocal fader). Video software compatibility also allows this unit to be connected to a video recorder, giving on screen graphics. Tempo, slide treble and bass controls allow you to continually adjust the output to suit the environment and mood! With the 5 drum and 10 scratch rhythms you can even join in - adding your own beat and style to your performance. Supplied with full operating instructions, a video and audio tape, audio/video lead and drumsticks.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW74R1	Karaoke Drum MC	£110.620	£129.990

**Boogie Box XBIII**

Goodmans



- ★ 20W total output
- ★ MW/FM waveband tuner
- ★ Echo facility

- ★ Twin stereo cassette decks with high speed dubbing and relay play
- ★ Master volume control
- ★ Tone control
- ★ Bass boost switch
- ★ Auto vocal cut
- ★ 2 X mic volume controls

A high quality Karaoke machine capable of receiving MW and FM broadcasts, this unit is also ideal for providing background music. The twin cassette decks allow continuous play and dubbing to be performed, while the whole system is 'Video Ready' enabling on screen graphics to be shown when used in conjunction with a suitable video recorder. Supplied with a microphone and backing tape. Features include bass boost, echo facility, tone and master volume control and two mic sockets. Supplied with full operating instructions, a microphone and a backing tape.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW75S1	Boogie Box	£68.070	£79.990

**Magic Mic**

An electronic voice effects mic with a host of impressive features including a digital voice changer, 4 drum pads, 4 preset voices, laughter and applause functions. Ideal for use with Karaoke machines, music systems with mic mixing and audio dubbing on camcorders. Bypass switch allows normal microphone use, and an LED indicates when the voice functions are enabled. Requires 4 x 'AAA' cells (JY51F, not supplied) and connects to systems with a 6.5mm jack and a 3.5mm jack with the supplied adaptor. Ideal for professional and home use.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW73Q	Magic Mic	£25.520	£29.990

See Section 19, Microphones for our full range of Microphones

**MUSICAL INSTRUMENTS**

**KEYBOARDS**

**Keyboard - SA2**

Casio



A selection of quality tones and exciting rhythms in a compact mini keyboard that's specially designed for ease of use.

- ★ 32 micro mini size keys
- ★ 16 tones
- ★ 19 rhythm patterns
- ★ 13 accompaniment rhythms
- ★ 1 demonstration tune

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS64J	SA2 Casio Keyboard	£12.750	£14.990

**Keyboard with LCD - SA-65**



**NEW**

- ★ 37 Mini-size keys
- ★ 100 Tones, 4-note polyphonic
- ★ 30 patterns
- ★ 10 Demo Songs, Melody ON/OFF
- ★ LCD display
- ★ 2x8.0cm diameter speakers
- ★ DC 7.5V in

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS65V	Casio Keyboard+LCD	£34.030	£39.990

**Full Sized Keyboard - CTK-80**

Casio



**NEW**

- ★ 49 Full sized keys
  - ★ 100 Tones, 8-Note Polyphonic
  - ★ 100 Rhythm, Fill in
  - ★ Auto accompaniment - Casio Chord/Fingered
  - ★ 1 Demo song
  - ★ 1 x 10cm diameter
- Power source: Batteries: 6 x AA-size  
DC Adaptor available

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS66W	Full size keyboard	£59.560	£69.990

**Full Sized Song Bank keyboard - CTK480**

Casio



**NEW**

This keyboard plays a selection of popular song bank tunes that you can enjoy listening to or playing along with. Featuring Casio's new sound processor chip the CTK-480 reproduces 100 truly realistic tones output through a pair of built in speakers.

- ★ 61 full sized keys
- ★ 100 tones and 50 rhythms
- ★ 20 song bank tunes (melody ON/OFF)
- ★ Stereo speakers
- ★ Transpose and tuning
- ★ Automatic power off (APO)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS67X	Cas 61key	£110.620	£129.990

## Keyboard with LCD Screen, MIDI and Sustain Jack - CTK501

Casio



**Number of keys** 61 Full Sized Keys  
**Number of tones** 100 Tones, 12-Note General MIDI mode (tone, velocity, bend)  
**Polyphonic.**  
**Number of rhythms** 100 rhythms  
**Auto accompaniment** Syncro/fill-in, Accompaniment volume, *Accompaniment Mode:* normal, casio cord, fingered.  
**Song Bank Display** 100 Demo Songs LCD "Music Dictionary" Panel, *Fingering:* Finger icons, part. keyboard: 5-octave notes.  
**Others** *Transpose:* F# - C - F *Tuning:* variable  
**Speakers** 2 x 12 cm diameter, stereo  
**Terminals** Sustain Jack, Phones/output (stereo Standard jack), DC 9.0V In, MIDI In/Out (5 channel Multi)  
**Power source** Battery: 6xD-size, Appropriate mains adaptor

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS68Y	Casio Midi keybd+LCD	£127.650	£149.990

## MIDI Keyboard with LCD Screen and Multi-Track Memory

Casio



**Number of keys** 61 Full size keys, touch response, 24-note polyphonic, Reverb: room, stage, hall  
**Number of tones** 128 GM tones + 32 Synthesiser Tones + 32 User tones + 8 Drum sets, layer/split  
**Auto accompaniment** 100 accompaniments, variation/variation Fill in. *Mode:* normal, casio chord, fingered, full-range chord.  
**Free Session Mixer Synthesiser** 100 Free sessions 16 Channels PCM Set, Amp Envelope Set, Attack Rate, Release Rate, Pitch envelope, 32-Tone user area.  
**Memory** 2-song, 6-Track Real-time, step-time input (editable)

**Demo** 2 Songs  
**On-board pitch** 6 Drum Pads x 1 set  
**Pitch Bend** Pitch Bend Pads.  
 Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS68A	Casio key+6 trk sqcr	£170.200	£198.990

## Yamaha PSR-520



The top model in Yamaha's PSR range, the General MIDI-equipped PSR-520 bridges the gap between home keyboard and professional synthesiser. The unit employs Yamaha's new high-resolution AWM chip with digital filtering for sounds of accuracy and realism never before experienced on a home keyboard. The standard 128 General MIDI sounds are available, and are accompanied by a dual-voice function and a series of high-quality DSP effects, including digital reverb and 43 chorus types. The timbre, as well as the volume, of these effects can be controlled for realism. For example, brass instruments can be made to sound 'sharper' if the key is struck harder. The PSR-520 can be expanded by the use of Yamaha's 'interactive' cartridges, which are not dissimilar to the General MIDI disk/songbook combinations available for other, more expensive, keyboards. Such a cartridge is supplied with the PSR-520, and a range of others are available from Maplin. Other features include a large backlit LCD multi-function screen, registration memory, 4-track sequencer, MIDI connectivity, 100-strong rhythm section, auto-accompaniment and 400 one-touch settings. The keyboard is a 61-note type, with switchable touch response and a pitch-bend wheel. Four programmable 'multi-pads' hold short sequences that can be accessed whenever required. A total of 8W per channel is available from the built-in stereo amplifiers. Powered by 6 D cells (alkaline JY46A recommended, not included).  
 Dimensions: 940 x 350 x 100mm.  
 Weight: 5kg.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW69A1	Keyboard PSR520	£451.050	£529.990

## Fully Featured Keyboard

Yamaha



With its AWM chip containing realistic recordings of instruments, the MIDI equipped PSR-320 is capable of sounds normally in the realm of more expensive

keyboards. A large and comprehensive LCD screen displays operational status, including tempo, style, backing, voice selection and more. It is easy to understand and makes the keyboard even easier to use, especially for the more advanced functions like digital effects. At the touch of a button you can select one of the 128 built in voices, one of the 8 percussion kits or one of the 100 built in styles with instant feedback provided by the LCD.

### FEATURES

- ★ 61 note key pad
- ★ Large LCD with graphic interface
- ★ General MIDI compatible
- ★ Guide lamps for easy learning (indicates interactively when and which key should be pressed)
- ★ Music Cartridge slot (allows you to expand the built in song range)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW68Y 1	Keyboard PSR420	£255.310	£299.990

## KEYBOARD ACCESSORIES

### Adjustable Keyboard Stand



A good quality, strong, fully adjustable stand for portable keyboards. The keyboard stands on soft rubber pads with the base of the keyboard 740mm from the ground. The keyboard is held lightly in position and the stand suits keyboards with the following dimensions: minimum width 420mm, minimum depth (front to back) 185mm. Maximum width of stand 720mm though longer keyboards could overhang. Maximum depth of keyboard 310mm. The stand can be assembled and disassembled very quickly for easy transportation.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XMD6J 6	Keyboard Stand Mt	£17.010	£19.990



24<sup>HR</sup>  
ORDER SERVICE

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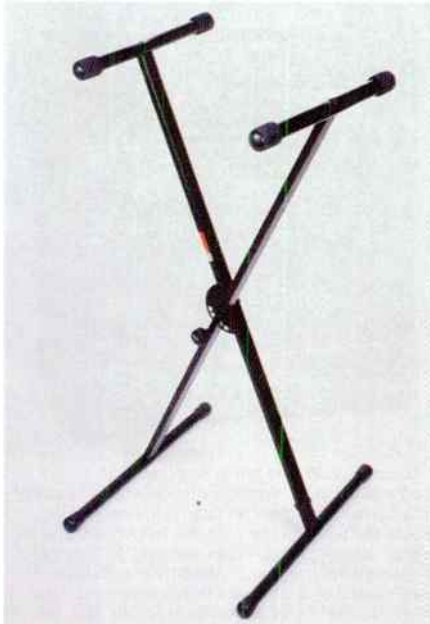
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e-mail: Sales@maplin.co.uk

## Folding Keyboard Stand



An adjustable, folding, tubular keyboard stand in metallic grey for most portable keyboards. The keyboard rests on rubber pads. At a minimum height of 580mm, maximum support width is 790mm. At a maximum height of 890mm, minimum support width is 314mm. Width of feet: 502mm. Width of rests: 590mm. Dimensions folded: 502 x 1030mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MK66W7	Keyboard Stand	£21.260	£24.990

## Keyboard Stand



Keyboard stand, new style. Double keyboard stand with height and tilt adjustable arms for keyboards. Black powder coated steel. Height 117cm. Weight: 2.16Kg.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MX46A 1	Keyboard Stand	£63.820 £60.630 £57.430	£74.990

## Keyclean Antistatic Wipes

A handy container with 150 specially prepared wipes for musicians. Cleans and freshens all instruments and hygienically cleans microphones. These all-in-one anti-static and bactericidal wipes are suitable for cleaning and refreshing hands as well as deodorising instruments after use.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW64U	Wipe Cleaner	£5.940	£6.990

## Keyclean Foam Spray

A quick and easy way to clean and restore keyboards – just spray on and finger marks, dirt and grime are effectively removed. This specially formulated spray is safe on all plastics and produces a bright and clean finish. Contains no CFCs.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DW63T	Foaming Cleaner	£4.240	£4.940

## Metronome

An accurate, quartz controlled metronome with six beat selections, tempo selections from 40 to 208 beats per minute and internal tone generation for tuning. Beat indication is by strong and weak tones plus LEDs or by LEDs alone. A 3.5mm socket is provided for earphone monitoring. Requires PP3 battery (JY49D).

Dimensions: 125 x 62 x 27mm



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU66E	Metronome	£25.520 £21.450 £19.080	£26.990

## Contact Springs



Silver-plated sprung-steel springs for use as contacts on organ keyboards. One end is beveled slightly to facilitate soldering. Overall length: 48mm (can be cut to any length). Diameter: 1.4mm. Diameter of bell: 2.3mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
QY07H	Contact Springs	£0.297 £0.260 £0.200	£0.350

## MIDI

### MIDI Switch

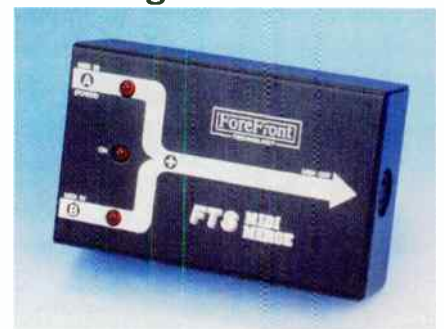


This handy device can be used to route MIDI data from a single IN to either of two OUT's or two IN's to a single OUT, depending on the way you connect the MIDI leads. This is particularly useful when one part of your rig needs to be isolated or when a single device is played from two separate rigs. Simply connect the leads and you can change the data flow at the flick of a switch without needing to pull out cables – saving you time and inconvenience and reducing wear on tear on your sockets. Requires no power supply.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS79L	MIDI Switch	£13.600	£15.990

### MIDI Merge



The MIDI Merge logically combines the MIDI messages from two MIDI sources (from a computer and a keyboard, for example) to form a single MIDI OUT datastream. The use of MASTERSHIP states means that either input can be used to control MIDI TIME CODE (MTC).

Once connected, its operation is transparent to the user and the unit needs no manual intervention to carry out its task. However, to allow monitoring, each MIDI IN has an associated lamp that flashes when data is received, with the intensity of the flash indicating the type of MIDI data involved.

The use of low power technology means that this unit needs no batteries or power supply connections, it draws its power from one of the MIDI inputs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS76H 1	MIDI Merge Box	£68.070	£79.990

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## MIDI Thru Box (1 Midi in, 3 Midi Thru)

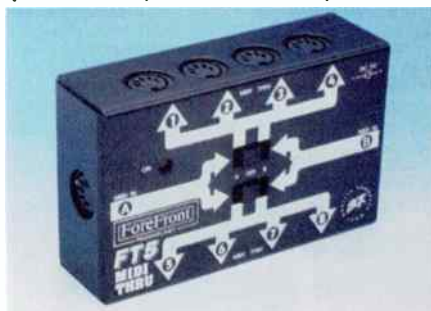


This MIDI THRU Box is a smaller version of BS78K and is an ideal alternative to 'daisy chaining' MIDI leads in a smaller, less complex setup. This unit makes it possible, for example, to connect a keyboard to a sequencer or computer and two MIDI expanders without creating a loop and without risking loss of data. It also makes it easy to include equipment with no THRU connection in your MIDI setup. Powered by a single PP3 battery (JY49D, not supplied) – an automatic switch ensures long battery life.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS77J	MIDI 1>3	£14.450	£16.990

## MIDI Thru Box (2 Midi in, 8 Midi Thru)



This solidly built black metal box has been designed to allow you to expand the number of MIDI OUT's (THRU's) available on your MIDI setup and control a number of possible configurations at the flick of a switch.

While 'daisy chaining' (i.e. MIDI OUT to IN, then THRU to IN, etc.) is fine for smaller rigs, it can soon become unwieldy and fraught with technical difficulties as your MIDI collection grows. This unit overcomes this problem and offers two inputs that can be shared between two banks of four THRU's, allowing an easily controlled set of MIDI combinations without the need to continually unplug cables for each setup. The unit can also be used to connect a single IN to 8 THRU's. Requires a 9V AC adaptor (not supplied – see our 'Batteries and Power Supplies' Section for a suitable adaptor).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS78K	MIDI 2>8	£31.480	£36.990

## Patch Commander Foot Pedal

The Patch Commander becomes even more versatile when you add this Foot Pedal to the setup. It has two switches which can be programmed to carry out a number of increment/decrement or on/off functions – including step through stored patch changes or program number, start/stop MIDI clock and modulation on/off – to provide simple 'hands free' operation during your performance.



Dimensions: 120 x 85 x 40mm  
Supplied with connecting cable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BS80B	Patch Com Pedal DF1	£17.010	£19.990

## GUITAR AMPLIFIERS

### 10W Guitar Amp



A very compact and sturdily built 10W guitar amplifier. This amplifier is primarily intended for use as a practice amp, but if 'miked-up' could be used in other applications. Front panel controls are on/off, master volume, treble, mid and bass. An 'on' LED and 6.35mm (1/4in.) input socket are also fitted on the front panel.

**Specification:**  
Power output: 10W rms 8Ω  
Input impedance: 220kΩ  
Maximum input signal level: 10V pk-pk

**Equalisation:**  
Bass: 8dB boost (100Hz)  
Mid: 12dB boost (500Hz)  
Treble: 20dB boost (10kHz)  
Power requirements: 240V AC 50Hz mains  
Fuse rating: 1A fast blow  
Dimensions: 245 x 265 x 165mm (excluding feet & handle)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XM34M9	10W Guitar Amp	£42.540	£49.990

### 15W Guitar Amplifier



A powerful 15W rms guitar amplifier and loudspeaker in an extremely tough wooden cabinet with corner protectors and carrying handle. Two inputs are provided, one for low output and one for higher output guitars. When switched to Channel 2, the output volume is controlled by the Channel 2 level control and the Overdrive is bypassed. The three channel Equaliser controls Treble, Mid and Bass. The Treble control adds crispness to the sound, the Mid control can thin-out or fatten-up the tone when turned down or up respectively, and the Bass control adds warmth to the sound. The Overdrive circuit is brought into operation by switching to Channel 1. The circuit uses multiple feedback loops to create an effect similar to that heard when a valve amplifier is overdriven. Turning the Pre-gain control clockwise increases the level with the distortion occurring in the last quarter-turn. The Post-gain control cuts or boosts the level of the signal from the Overdrive circuit. It will enable the correct balance to be reached between the unchanged and overdriven signal, and works together with the Pre-gain control to set the total harmonic content, gain and operating level. When switched to Channel 1, the Channel 2 level control will still have some effect on the output volume, and the Treble control, now adds bite or edge to the overall sound. Three standard 6.35mm (1/4in.) jack sockets are provided on the back of the amplifier. The Phones output allows a stereo headphone to be plugged in and doing this cuts off the internal speaker for private listening (the output is mono). The Line output allows an external power amp, PA system, or tape recorder to be driven from the amplifier. Finally, the Footswitch socket allows a footswitch to be connected and duplicates the Channel 1/Channel 2 switch so that the Overdrive circuit can be switched in and out during a performance.

**Specification:**  
Power output: 15W rms at 1kHz (THD = 10%)  
Loudspeaker: 200mm dia. 4Ω  
Bass boost: >8dB at 100Hz  
Mid boost: >10dB at 500Hz  
Treble boost: >20dB at 10kHz  
Frequency response: 120Hz to 20kHz (all tone controls at 10)  
Input sensitivity: 28mV at 220kΩ (high)  
56mV at 20kΩ (low)  
Signal to noise ratio: Better than 50dB  
Power source: 240V AC 50Hz  
Fuse type: 1A 250V AC fast acting  
Size: 335 x 345 x 182mm  
Net weight: 6kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XM11M13	15W Guitar Amplifier	£59.580	£69.990

## Call and Collect

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See Stock Code Index For More Price Breaks

## 75W Guitar Amp



A powerful 75W amplifier that has two 6.35mm (1/4in.) input jack sockets (high and low). Controls are provided for 'overdrive'; pre-gain, post-gain and waveform (adjusts the harmonic content). The overdrive may be switched in or out, either from the front panel or via a foot switch (not supplied). Controls are also provided for reverb, bass, low mid, high mid, treble and master volume. An additional switch 'bright' gives the signal more presence. The rear panel has a mains on/off switch and three jack sockets; external speaker (8Ω), pre-amp out and power amp in.

### Specification:

Power output: 75W rms 8Ω  
 Bass: ±15dB (50Hz)  
 Low middle: ±15dB (300Hz)  
 High middle: ±15dB (2kHz)  
 Treble: ±15dB (10kHz)  
 Bright: +8dB (3kHz)  
 Overdrive gain: 80dB (1kHz)  
 S/N ratio: >60dB

### Input impedance:

Low: 36kΩ  
 High: 1MΩ

### Maximum input signal level:

Low: 20V pk-pk  
 High: 10V pk-pk  
 Pre-amp out: 1V rms (10kΩ)  
 Power amp in: 1V rms (28kΩ)  
 Power requirements: 240V AC 50Hz mains  
 Fuse rating: 3A fast blow  
 Dimensions: 440 x 460 x 260mm (excluding feet & handle)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XM55Q 34	75W Guitar Amp	£153.180	£179.990

## 40W Bass Amp



A powerful 40W bass guitar amplifier with built-in limiter, sturdily built and ideal for on-stage use. This amplifier provides two 6.35mm (1/4in.) input jack sockets (high and low), controls are provided for

volume, bass, mid and treble. A limiter circuit is included which prevents the amplifier from being overdriven. The limiter may be switched in or out from a front panel switch, operation is indicated by an LED. Sockets are provided for line out and headphones. The on/off switch is on the rear panel and an LED on the front panel indicates power on.

### Specification:

Power output: 40W rms 8Ω  
 Bass: ±12dB (50Hz)  
 Middle: ±12dB (500Hz)  
 Treble: ±12dB (5kHz)  
 Limiter range: 23dB  
 S/N ratio: >50dB

### Input impedance:

Low: 36kΩ  
 High: 220kΩ

### Maximum input signal level:

Low: 20V pk-pk  
 High: 10V pk-pk  
 Headphones output: 250mV 8Ω  
 Line output: 2V pk-pk (10kΩ)  
 Power requirements: 240V AC 50Hz mains  
 Fuse rating: 2A fast blow  
 Dimensions: 440 x 490 x 290mm (excluding feet & handle)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XM36P 37	40W Bass Amp	£127.650	£149.990

## 75W Bass Amplifier



A robust, high quality, bass amplifier, designed for the professional bass player, and capable of delivering 75W rms. The amplifier is equipped with high and low level impedance inputs to match the instrument used. Each input has a gain control. A limiter circuit with LED indication is incorporated that will attenuate high level peaks to avoid distortion. This feature is very useful for those bass players who 'slap', 'snap' or 'hammer' the strings. The green LED indicates when the limiter is switched on. The active equaliser circuit includes four individual boost and cut controls (treble, hi-mid, lo-mid and bass) to match room or hall acoustics. Larger rooms and halls will tend to reinforce bass output, while people will attenuate the treble. Treble and bass boost will be more noticeable when the 'mid' controls are reduced.

The front panel includes a standard 1/4in. headphone jack. Plugging in headphones will remove the amplifiers output to the speaker. The back panel has an input jack to allow the main amplifier to be used with an external preamp. A line-level output allows the internal preamp to feed an external amplifier, PA system or tape recorder. 'Effect Loop Send' and 'Return' jacks are included in the line level signal path to include external effects units. The substantial cabinet is covered in a hard wearing material to cope with the rigours of professional use.

### Specification:

Speaker diameter: 15in.  
 Power output (8Ω load): 75W rms  
 Treble control (8kHz): ±10dB  
 Hi/mid range control (2kHz): ±10dB  
 Lo/mid range control (500Hz): ±10dB  
 Bass control (125Hz): ±10dB  
 Limiter range: 23dB  
 S/N ratio: >50dB  
 Input impedance high: 470k  
 low: 47k  
 Dimensions: 448 x 326 x 636mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AG88V 34	75W Bass Amplifier	£170.200	£199.990

## EFFECTS PEDALS

### Voice Processor with Sound Effects



Wind up your friends over the phone! This compact voice processor is designed to increase or decrease the pitch of an input signal at the touch of a button, disguising your voice. The processor can take its signal from a microphone or line-level input, a slide switch selecting that used. Also included is a range of 8 sound effects which are activated at the touch of a button. The pitch of these can also be varied. The unit is powered by a PP3 battery (alkaline recommended, JY49D) not included.

### Specification:

Input sensitivity (line): 150mV  
 Input sensitivity (mic): 1.5mV  
 Output level: 250mV  
 Signal-to-noise ratio: Greater than 65dB  
 Power supply: 9V DC from PP3 battery (not included)  
 Dimensions: 190 x 140 x 34mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BE90Q 1	Voice Processor	£40.840	£47.990

### Tube Driver

This device is for those who wish to reproduce the 'classic' sound of valve amplifiers, as used by groups in the 60s and 70s. This tube driver features 'level', 'distortion' and 'hi' and 'low' equalisation controls to alter the effect. The rotary control knobs are colour-coded white.

### Specification:

Input impedance: 470k  
 Output impedance: 220Ω  
 Gain: 60dB  
 Equalisation range: ±15dB  
 Signal-to-noise ratio: 75dB  
 Frequency response: 70Hz to 7kHz

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
B231J 11	Tube Driver	£29.770	£34.990

## Compressor

A useful device when increased sustain is desired without adding unwanted distortion. 'Attack' and separate 'sustain' controls provide a variable adjustment of the actual compression range to be developed. A 'level' control is also provided which regulates the effect's level. Suitable for all amplified instruments especially electric guitar and bass. The rotary control knobs are colour-coded lemon yellow.



### Specification:

Input impedance: >300kΩ  
 Output impedance: 200Ω  
 Compression range: 40dB min.  
 Attack time: 1ms max.  
 Signal-to-noise ratio: 80dB min.  
 Frequency response: 70Hz to 5kHz

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YB88V	11 Compressor	£28.070	£32.990

## Ultra Metal

One of the very best examples of this kind of effect available today, it is ideal for the 'heavy metallist' who needs more overdrive. The ultra-metal features a finely tuned voicing and extended range and has four controls: 'hi', 'lo', 'distortion' and 'level'. The unit can provide sounds ranging from a fairly gentle blues sustain to a blistering heavy-metal overdrive. The rotary control knobs are colour-coded light-grey.



### Specification:

Input impedance: >300kΩ  
 Output impedance: 200Ω  
 Gain: 60dB max.  
 Signal-to-noise ratio: 70dB min.  
 Frequency response: 70Hz to 5kHz  
 Eq range: ±18dB

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YN22Y	11 Ultra Metal	£34.030	£39.990

## Stereo Chorus

This chorus unit has stereo outputs and has separate 'depth', 'rate' and 'intensity' controls. The 'rate' control varies the speed of the effect, whilst the 'depth' and 'intensity' controls regulate the short-time delay and chorus effects. The rotary control knobs are colour-coded electric-blue.



### Specification:

Input impedance: >300kΩ  
 Output impedance: 200Ω  
 Gain: 0dB  
 Rate: 0.2Hz to 10Hz  
 Delay time: 2.5ms to 12.8ms  
 Signal-to-noise ratio: 75dB min.  
 Frequency response: 70Hz to 5kHz

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YN20W	11 Chorus	£34.030	£39.990

## Phaser

One of the most useful effects in contemporary music. The 'depth' and 'feedback' controls give variations in the sound from a clean phase effect to a deep 'rolling' effect. Effect width is adjusted automatically in accordance with the speed selected on the 'rate' control. The rotary control knobs are colour-coded salmon-pink.



### Specification:

Input impedance: >300kΩ  
 Output impedance: 200Ω  
 Max input level: 0dBm  
 Gain: 0dB  
 Signal-to-noise ratio: 70dB min.  
 Frequency response: 70Hz to 5kHz  
 Sweep rate: 0.1Hz to 10Hz  
 Phase shift: 720°

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YN23A	11 Phaser	£34.030	£39.990

## Fuzz Pedal

A fuzz distortion unit which can create a wide range of sound colouration from wild hard distortion to fine soft distortion. Level and fuzz controls.



### Specification:

Input impedance: 300kΩ  
 Output impedance: 200Ω  
 Gain: 50dB  
 S/N ratio: 90dB  
 Frequency response: 100 to 10kHz  
 Dimensions: 125 x 75 x 55mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU87U	11 Fuzz Pedal	£34.030	£39.990

## Stereo Analogue Echo



This stereo echo unit uses solid-state bucket-brigade devices (BBDs) instead of electromechanical springlines for high reliability and audio performance. Inputs from a pair of low impedance microphones and speaker outputs from personal stereos, etc., can be mixed together prior to echo processing. Level adjustment relies on the source. The stereo output is available via a pair of phono sockets. There are also output bass and treble controls, and an echo level adjuster. A moving-coil VU meter allows the output level to be monitored. Powered from PP3 battery (alkaline recommended, JY49D not included) for portability, or from an external 9V DC power unit (not included).

Input sensitivity (mic): -73dB into 600Ω  
 Delay time: Fixed at 200ms  
 Power: 9V DC (PP3 battery)  
 Dimensions: 240 x 45 x 105mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BE61R	1 Stereo Analog Echo	£28.070	£32.990

## GUITAR ACCESSORIES

### Guitar Stand

An adjustable, fold away, chromed tubular guitar stand. Suitable for use with most electric and acoustic guitars.

Height: 80cm  
 Neck Width (max): 75mm  
 Foot Print: 42 ¥ 42 ¥ 56cm



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XM23A	3 Guitar Stand	£13.600	£15.990

### Guitar/Bass Tuner

Yamaha



The Yamaha YT-1100 Guitar/bass tuner with built in microphone features a battery checker and pitch selection.. The unit is appropriate for use with acoustic, and electric guitars.

### Specification:

Indicators: VU Meter  
 Tuning Notes: 6E(4E), 5A(3A), 4D(2D), 3G(1G), 2B, 1E.

VU Meter Precision: ± 1cent  
 Standard Pitch: A4 = 440Hz  
 Added Function: Battery check  
 Jacks: Input, Output  
 Power Source: 9V dry cell battery (006P or 6F22)

Battery Life: Approx. 80 hours  
 Dimensions: 146 x 48.5 x 32.5 mm  
 (WxHxD): (5-3/4" x 1-15/16" x 1-1/4")  
 Weight: 155g (5.5oz) with battery  
 Accessory: 9V dry cell battery (6F22) x 1

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FU90X	Guitar Tuner	£21.260	£24.990

### Acoustic Guitar Transducer



A high level output transducer with low distortion, wide frequency response and good overload capability. The device measures just 21mm in diameter and is supplied with 1m of lead terminated in a standard mono jack. Height 8mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM97F	Guitar Transducer	£5.090	£5.990



## Ashley Acoustic Guitar Transducers



A range of small easily fixed transducers, for use with acoustic guitars. The units offer wide frequency responses comparable with the best microphones. The onset of acoustic feedback compared to a microphone is considerably delayed, and they have a very high output. They are very convenient to use; simply attach to the bridge close to one end of the saddle using the self-adhesive material supplied. The material allows lifting and repositioning of the transducer without damage to the guitar. The unit may be fixed to its bevelled face to give an alternative bass response. Size: 28 x 10 x 8mm. Two types are available. Model AJ21 is the top of the range, and has an exceedingly smooth frequency response. Model AJ51 has a slightly emphasised treble response and is recommended for acoustic guitars in loud electric groups. Supplied with short lead terminated in a standard mono jack line socket.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YL08J	1+ Pickup Transl.AJ21	£29.770	£34.990
YL09K	1+ Pickup Transl.AJ51	£21.260	£24.990

## Guitar Lead

A straight extension lead of the highest quality with a brass bodied, 1/4in. jack plug at each end. The jack plug bodies have knurled finger grips and moulded strain relief sleeves. This lead is manufactured with untinned OFC (oxygen free copper) conductors to preserve sound purity. Length 6m. Colour black.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CC39N	1+ 10+ 25+ Guitar Lead	£8.500 £6.650 £5.950	£9.990

## Guitar Pickup



A good quality magnetic guitar pick-up for six-string acoustic guitars. The pick-up clips into the circular hole in the sound board. Tone and volume controls are provided and a 3.5mm mono jack socket. A lead is provided to connect to this socket and has a 6.35mm (1/4in.) mono jack plug at the other end. Lead length 2m.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YT39N	1+ Mag Guitar Pick-Up	£9.770	£11.490

## Direct Injection Box



Is your bass guitarist unbalanced? This pre-amplified direct injection box will soon straighten him out - it's specifically designed to provide a 600Ω balanced output to the mixer from an unbalanced musical input.

Encased in a tough all steel case, the box is provided with 0, -20, -40dB attenuation switch, Gnd/float/lift switch, low battery indicator and link output. Powered from an internal PP3 battery (not supplied) or external 9-12V DC power supply (not supplied).

**Specification:**  
Output impedance: 600Ω  
Dimensions: 118 x 82 x 30mm  
Power: 9-12V DC

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU93B	1+ DI Box	£29.770	£34.990

## MUSIC ACCESSORIES

### Footswitch with 2.5mm Jack Plug



Keep your hands free while you're using a tape recorder, etc. with this momentary action black metal footswitch. Solidly constructed and with a non-slip base this footswitch is supplied with a 1.7m lead terminating in a 2.5mm jack plug. 60V 1A. Dimensions: 88 x 86 x 25mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU97F	1+ Footswitch	£4.240	£4.990

### Footswitch with 6.35 Mono Jack Plug



Hands-free operation is a piece of cake with this black metal footswitch with a non-slip base. This footswitch is supplied with a 3m lead terminating in

a 6.35mm mono jack plug and is available in two options - push on/push off action or momentary on. 60V 1A.  
Dimensions: 87 x 65 x 28mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DU98G	1+ On/Off Footswitch	£5.090	£5.990
DU99H	1+ Moment Footswitch	£4.670	£5.490

## Footswell Control

Enclosed Type



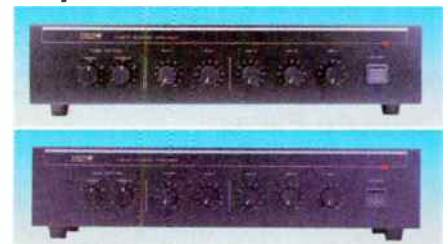
A swell pedal 243 x 100mm in high impact plastic with a metal base and fitted with a 100k log pot. Supplied with 1m of cable terminated in a standard mono screened jack plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XY28F	2 Remote Foot Control	£21.260	£24.990

## PUBLIC ADDRESS

### P648W (120W RMS) and P648U (60W RMS) Mixer Amplifiers



Quality, low-cost and high power output, make these amplifiers the ideal choice for medium and large PA systems. Five inputs are provided: one balanced microphone input with voice operated priority over all other inputs, two unbalanced microphone inputs and two auxiliary inputs for background music. Separate bass, treble and individual volume controls for all inputs are located on the front panel. 100V line or low impedance loudspeakers may be used. A booster output is provided to enable the system to be expanded using booster amplifiers. These amplifiers can be used in marine and commercial vehicle applications using the 24V DC power input.

	P648U	P648W
Power Output	60W	120W
Speaker Outputs	8Ω/70V/100V	
Frequency Response	60Hz-17kHz	
THD @ rated output	< 3%	
Mic Input sensitivity	1.5mV @ 600Ω/2kΩ	
Aux Input Sensitivity	100mV @ 47kΩ	
AC Power Supply	230V 50/60Hz	
Dimensions	88mm x 430mm x 234mm	
Weight	6.5kg	9.0kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BD78K	18 120W Mixer Amp	£272.330	£319.990
BD77J	13 60W Mixer Amp	£212.750	£249.990

See Stock Code Index For More Price Breaks

## 646U (40W RMS) and P646S (20W RMS) Mixer Amplifiers



A choice of 40W or 20W output with mains and 12V operation, make these amplifiers suitable for use in a wide variety of small and medium sized public address systems. There are two balanced microphone inputs. A jack socket is provided on the front panel for mic one. Mic two has a voice activated priority circuit to automatically mute all other inputs. There are two auxiliary inputs for background music. Either low impedance or 100V line loudspeakers can be used. Separate Mic 1, bass, treble and a dual auxiliary control are located on the front panel.

	P646S	P646U
Power Output	20Wrms	40Wrms
Speaker Outputs	8Ω/70V/100V	
Frequency Response	60Hz-15kHz	
THD @ rated output	<3%	
Mic Input Sensitivity	1.5mV @ 600Ω	
Aux Input Sensitivity	100mV @ 47kΩ	
AC Power	230V 50/60Hz	
Dimensions	88mm x 272mm x 240mm	
Weight	4.2kg	5.2kg

Retail Unit Price each (inc. VAT).

Order Code	Type 11325	Price each exc. VAT	inc. VAT each
BD76H 10	40W Mixer Amp	£153.180	£179.990
BD75S 8	20W Mixer Amp	£110.620	£129.990

## P647S Auto Reverse Single Cassette Player



A high quality tape playback unit designed to operate reliably and consistently over long periods with the minimum of maintenance. The P647S is compatible with the auxiliary inputs of all Eagle PA amplifiers and most other amplifiers. Features: Auto reverse mechanism for endless unattended play, fast forward and rewind keys, direction change key, play direction indicators. Mains or 12V DC operation.

Retail Unit Price each (inc. VAT).

Order Code	Type 11327	Price each exc. VAT	inc. VAT each
BD82D 6	Single C/Player	£119.140	£139.990

## P647U Radio Tuner



A highly reliable tuner providing a maximum of six preset stations on FM or MW bands for background music. The P647U is compatible with all Eagle PA amplifiers and can be used with the auxiliary inputs of most other amplifiers. Stations are tuned using screwdriver presets on the front panel. The tuned

frequency is displayed on the large LED on the front panel. Mains or 12V DC operation. Frequency: FM 88.3-108.9MHz, AM 530-1640kHz. S/N: >50dB. Antenna requirement: 300Ω or 75Ω (FM).

Retail Unit Price each (inc. VAT).

Order Code	Type 11328	Price each exc. VAT	inc. VAT each
BD83E 6	Radio Tuner	£119.140	£139.990

## P649S Amplifier with Cassette (30W rms)



A 30W amplifier with a built-in auto reverse cassette player. Ideal for small PA systems requiring paging as well as background music. Four inputs are provided: two auxiliary inputs (Aux. 1 is switched with the built-in cassette player) for additional music sources and two balanced microphone inputs. Mic. 1 has a jack socket and volume controls located on the front panel. Mic. 2 has voice activated priority over all other inputs and a volume control (screwdriver adjustable) located on the rear panel. On the front panel there is a dual function volume control for the built-in cassette auxiliary 1 and 2 inputs with a centre off position. Separate controls for bass and treble. Low impedance or 100V line loudspeakers may be used.

Output Power	30W
Loudspeaker Output	8Ω or 100V line
Frequency Response	60Hz-15kHz
THD @ 1kHz	≤ 2%
Mic Input Sensitivity	1.5mV @ 600Ω
Aux Input Sensitivity	100mV @ 47kΩ
AC Power	230V 50/60Hz
DC Power	12V
Dimensions	88mm x 428mm x 234mm
Weight	6 kg

Retail Unit Price each (inc. VAT).

Order Code	Type 11330	Price each exc. VAT	inc. VAT each
BD80B 12	30W Amp C/Deck	£238.280	£279.990

## YU37S Professional Unidirectional Dynamic Microphone



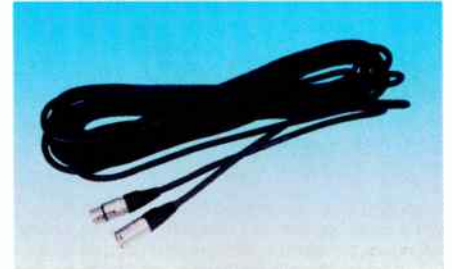
Solidly built professional low impedance unidirectional dynamic microphone, with a cardioid response pattern ideal for vocal applications. Die-cast aluminium body finished in semi-matt grey with integral on/off switch, mesh windshield and 6m detachable lead (XLR to jack).

Sensitivity	-76dB (±3dB)
Impedance	600Ω
Frequency Response	60Hz-12kHz

Retail Unit Price each (inc. VAT).

Order Code	Type 11331	Price each exc. VAT	inc. VAT each
YU37S 1	Pfntsl Cardioid Mic	£23.820	£27.990

## MK58N Balanced Microphone Lead



A 10m lead with a male XLR latching connector at one end, and a female XLR latching connector at the other. Manufactured from high quality microphone cable with a black heavy-duty outer covering.

Retail Unit Price each (inc. VAT).

Order Code	Type 11333	Price each exc. VAT	inc. VAT each
MK58N 1	Bal Mic Lead	£16.160	£18.990

## P606M Noise-Cancelling Fist 500Ω Microphone



Improved performance for noisy environments. The P606M will give speech clarity impossible with conventional microphones and can reduce background noise by over 80% (10dB). Built-in talk switch and coiled lead.

Impedance	500Ω
Frequency Response	200Hz-7kHz
Sensitivity	2mV @ 94dB SPL, 1kHz

Retail Unit Price each (inc. VAT).

Order Code	Type 11334	Price each exc. VAT	inc. VAT each
BE01B	Fist Microphone	£19.560	£22.990

## P656T Dynamic Cardioid Balanced Microphone

Balanced output to allow a long cable run to an amplifier. The P656T has a sturdy base, a flexible gooseneck, lockable "Talk" switch, "Busy" indicator lamp and extra switch contacts for priority page circuits. Complete with 2m cable, terminating in a 1/4 inch jack plug.



Impedance	600Ω
Frequency Response	200Hz-12kHz
Sensitivity	0.4mV/μB
Switch	300mA low voltage

Retail Unit Price each (inc. VAT).

Order Code	Type 11337	Price each exc. VAT	inc. VAT each
BE00A 4	Desk Mic	£46.800	£54.990

## P101 12W Vehicle Amplifier



This unit provides low-cost amplification with a microphone input with level control, Auxiliary input with level control and fog siren output. The power output of 12 Watts can be fed into a combined speaker load of between 4 and 16Ω and the unit is supplied with mounting hardware.

Power output 12W RMS into 4Ω at 1kHz  
Output impedance 4 to 16Ω  
Mic input 3.5mV @ 20-50 kΩ  
Aux input 85mV @ 10kΩ  
Power requirements nominal 12V dc  
Dimensions 40 x 150 x 140mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MM15RL1	12W Mobile PA Amp	£34.030	£23.250	£26.990	£39.990

## P668M 15W Amplifier with Intercom Facility



Despite its compact dimensions, the P668M packs 15W rms output which will power most vehicle speaker configurations. It can be used from a 12 or 24V DC supply, so it can be used in commercial vehicles and water craft. A microphone can be plugged straight into the front panel and an 'Aux' input for tape, radio, etc., is on the rear panel - both inputs have independent level controls. There are two separate speaker switches allowing selective output, and there is a special third output for intercom and fog/siren use. This allows the P668M to be used not only as an amplifier and 'foghorn' but also to communicate with another part of the vehicle or vessel: the amplifier itself has a built-in speaker to listen, while the other party uses a remote speaker as a microphone. The Siren and Fog output can be manually sounded, the 'Fog' can also be set to Auto for unattended output.

Power output: 15W rms into 4Ω at 1kHz, 13-8V DC  
Output impedance: 4, 8 or 16Ω, two speaker outputs  
Microphone input: 1.5mV, 6.4mm 3-pole jack socket (ring allows muting)  
Auxiliary input: 200mV  
Power requirements: nominal 12 or 24V DC

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+		1+
BD61C	15W Vehicle Amp	£85.091	£65.650		£99.990

## P603M Ceiling Speaker



Metal grille white ceiling speaker, 254mm (10in.) square. High quality 200mm (8in.) drive unit with 6W 100V line transformer.

Power handling 6W rms  
Tappings 6/4/2W  
SPL @ 1m dB(A) 93 max.  
Frequency response 50-20000Hz  
Speaker drivers 1 @ 200mm  
Cut-out diameter 210mm  
Dimensions (H x W x D) 254 x 254 x 95mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	8+	1+
BD92A	C/Ling Spkr Metal	£25.520	£21.720	£29.990

## P114 Ceiling Speaker



4W flush-fitting speaker for false ceiling systems. White plastic shaped diffuser grille, 100V line transformer with 4 tappings.

Power handling 4W rms  
Tappings 4/2/1/0-5W  
Max SPL @ 1m 98 dB(A)  
Frequency response 200-20000Hz  
Speaker drivers 1 @ 200mm  
Cut-out diameter 210mm  
Dimensions (H x W x D) 93 x 253 x 253mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	10+	1+
BD51Y	C/Ling Spkr P-Sic	£16.160	£11.650	£18.990

## P604 Ceiling Speaker



Round, metal grille epoxy coated white ceiling speaker, 282mm (11in.) diameter. High quality 200mm (8in.) drive unit with 4W 100V line transformer.

Power handling 4W rms  
Tappings 4/2/1/0-5W  
Sensitivity 90dB(A)/W/m  
Max. SPL @ 1m 96dB(A)  
Frequency response 85Hz-15kHz  
Drive unit 1 x 205mm

Size 282 x 95mm  
Cut-out diameter 260mm  
Colour White

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	8+	1+
BD93B	C/Ling Spkr Round	£31.480	£26.690	£23.690	£36.990

## Contract Range Round 100V Horn Speakers



High quality round horn speakers with internal 100V line transformer. High grade plastic construction with adjustable metal U-bracket. Wattage tappings are selected using the 5-pin plug and leads supplied.

P111B	P111C	P631
Power Output 10W	15W	30W
Wattage Tappings 10/5/2-5/1-25W	5/10/7-5/5W	30/15/7-5/5W
Frequency Response 200Hz-13kHz	200Hz-13kHz	250Hz-13kHz
Max SPL @ 1m 110dB(A)	113dB(A)	118dB(A)
Dimensions (dia. x depth) 154 x 192mm	210 x 285mm	210 x 285mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	1+
BD84F	10W Horn Speaker	£34.030	£25.250	£39.990
BD86G	15W Horn Speaker	£42.540	£33.950	£49.990
BD96T	30W Horn Speaker	£46.800	£36.360	£54.990

## P113 Square 8Ω Horn Speaker



With metal bracket for wall or ceiling mounting.

Power Output 25Wrms  
Frequency Response 300Hz-5kHz  
Max SPL @ 1m 113dB(A)  
Dimensions 173mm x 270mm x 255mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	8+	1+
BD87U	25W Horn Speaker	£28.070	£22.000	£32.990

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## Vehicle Roof Kit



For temporary or permanent rooftop installation of horn speakers on vehicles, this unit provides a neat solution without damaging paintwork or trim. It can be configured to accommodate one or two speakers (depending on size and fixings) and simply fixes by four rubber cups and two gully straps to the vehicle. The straps can be adjusted to fit most cars and vans.

Retail Unit Price each (inc. VAT).

Order Code	Type 11270	Price each exc. VAT	inc. VAT each
MM177	Car Spkr Carrier	1+ 5+ 10+ £25.520 £22.300 £20.750	1+ £29.990

## A180A Outdoor Music Horn



Weatherproof outdoor speaker. Suitable for music and speech. Adjustable metal fixing bracket. Rugged 165mm (6 1/2in.) heavy duty speaker unit with weatherproof cone. Fitted 100V line matching transformer with 15W/8W/4W/2W/Off and direct tapings for 8Ω selectable by rotary switch. For use on patio, by swimming pool, garden, etc.

Power rating 25W @ 8Ω

15W on 100V line

Speaker 165mm (6 1/2in.) (weatherproof)

227g magnet

Dimensions 267 x 175mm diameter

Retail Unit Price each (inc. VAT).

Order Code	Type 11345	Price each exc. VAT	inc. VAT each
BD88V 5	Outdoor Music Horn	1+ 6+ £42.540 £32.830	1+ £49.990

## P672U 4W Speaker - Teak

100V line transformer with six tapings. Teak finish. Dimensions 250 x 200 x 85mm.

## P673B 8W Speaker - Teak

100V line transformer with five tapings. Teak finish. Dimensions 345 x 255 x 85mm

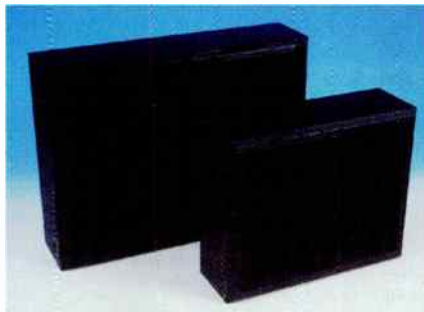


## P672V 4W Speaker - Black

100V line transformer with six tapings. Black finish. Dimensions 250 x 200 x 85mm

## P673C 8W Speaker - Black

100V line transformer with five tapings. Black finish. Dimensions 345 x 255 x 85mm



Only by choosing the right kind of speaker for a specific application can you be sure that you will reach everyone you want to hear your message or music.

There are many kinds of loudspeakers. This catalogue, however, deals mainly with speech or background music as opposed to performance music; and for these purposes there are three main types of speakers, ceiling/suspension speakers, wall speakers and horn speakers.

For discreet music with unobtrusive looks, our background speakers are ideal. Each unit is of high quality MDF construction, and incorporates a knock-out panel to allow an attenuator to be fitted if required.

Retail Unit Price each (inc. VAT).

Order Code	Type 11349	Price each exc. VAT	inc. VAT each
BD89W 5	4W Teak Wall Speaker	1+ 5+ 10+ £22.970 £16.410	1+ £26.990
BD90X 8	8W Teak Wall Speaker	£34.030 £29.150	£39.990
MM13P	Wall Spkr 4W Blk	£22.970 £18.650	£17.400 £26.990
MM12N 1	Wall Spkr 8W BLK	£34.030 £30.950	£28.500 £39.990

## P116B Megaphone



High output but very compact loud hailer for hand-held use. All in one ABS construction with volume control and wrist strap.

Output 5Wrms / 10W peak

Range 0.5-0.7km depending on conditions

Power 8 x AA batteries (not supplied)

Retail Unit Price each (inc. VAT).

Order Code	Type 11250	Price each exc. VAT	inc. VAT each
BD84C 2	Megaphone 1	1+ 6+ £29.770 £23.010	1+ £34.990

## P635M Megaphone



Basic loud hailer with siren facility and a range of up to 0.5km. Its sturdy all-plastic construction makes it an ideal lightweight aid for schools, sporting events, construction sites, boats, filming, etc. The P635M is fitted with a carrying strap, siren switch, voice trigger and volume control.

Output 5Wrms / 10W peak

Range 0.5-0.7km depending on conditions

Power 8 x AA batteries (not supplied)

Weight 1kg approximately, excluding batteries.

Retail Unit Price each (inc. VAT).

Order Code	Type 11251	Price each exc. VAT	inc. VAT each
BD95D 4	Megaphone 2	1+ 6+ £76.580 £59.590	1+ £89.990

## P636 Megaphone



Very high output, with a range of over 1km. The detachable anti-feedback microphone has a built-in volume control and switch. An external 12V DC supply can be connected to conserve batteries. Supplied complete with carrying strap. Switchable siren.

Output 15Wrms / 30W peak

(using external power source)

Range 1.0-1.2km (depending on conditions)

Power 8 x C batteries or external 12V DC, 3A power supply (not included)

Weight 1.7kg approximately, excluding batteries.

Retail Unit Price each (inc. VAT).

Order Code	Type 11252	Price each exc. VAT	inc. VAT each
BD96E 3	Megaphone 3	1+ 6+ £93.600 £72.220	1+ £109.990

More local outlets than any other catalogue distributor



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## PARTS STORAGE

### STORAGE BOXES

Raaco manufacture a wide range of quality storage products. Each item in the range shows the design, attention to detail and quality of manufacture that have made Raaco world leaders in their field. MPS now stock a comprehensive range of Raaco products, from small hobby boxes to large scale industrial rack systems.

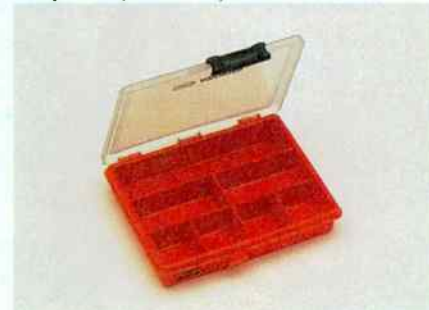
By choosing Raaco from MPS you can be sure the products you buy will offer the best in quality, reliability and value for money.

### Assorted Hobby Boxes

#### Raaco

A range of six quality storage boxes and one storage case, made from high grade polypropylene, with a hinged translucent plastic lid and slide locks. Boxes are available in three sizes; A6, A5 and A4. Each type has 2 differently constructed compartment sizes; assorted (red only) or criss-cross (green only) and are fitted with three unbreakable hinges. A groove on the inside of the lid overlocks the base of the box when closed ensuring the contents of the compartments are held in place, and not mixed when the box is carried.

#### Hobby Box 7 (Colour Red)



No. of Compartments: 7  
Size: 175 x 145 x 32mm  
Raaco Part: AB6-7  
MPS Code: KR48C

#### Hobby Box 9 (Colour Red)



No. of Compartments: 9  
Size: 240 x 195 x 42mm  
Raaco Part: AB5-9  
MPS Code: KR49D

#### Hobby Box 15 (Colour Red)



No. of Compartments: 15  
Size: 340 x 260 x 57mm  
Raaco Part: AB4-15  
MPS Code: KR50E

#### Hobby Box 12 (Colour Green)



No. of Compartments: 12  
Size: 175 x 145 x 32mm  
Raaco Part: AB6-12  
MPS Code: GX22Y

#### Hobby Box 18 (Colour Green)



No. of Compartments: 18  
Size: 240 x 195 x 42mm  
Raaco Part: AB5-18  
MPS Code: GX25C

#### Hobby Box 32 (Colour Green)



No. of Compartments: 32  
Size: 340 x 260 x 57mm  
Raaco Part: AB4-32  
MPS Code: GX26D

#### Hobby Case 27 (Green only)



No. of Compartments: 27  
Size: 340 x 260 x 57mm  
Raaco Part: ABH4-27  
MPS Code: KR51F

#### Hobby Case

Hobby Case 27 comes complete with 16 removable trays of various sizes, two are stacked and subdivided into 5 and 8 compartments respectively.

This makes a total of 27 individual compartments, which can be arranged in the box as desired. Hobby Case 27 has a convenient carrying handle.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	
KR48C	Hobby Box 7	£3.270	£2.550	£2.180	£3.850
KR49D	Hobby Box 9	£5.420	£4.310	£4.010	£6.380
KR50E	Hobby Box 15	£10.290	£8.070	£7.440	£12.100
GX22Y	Hobby Box 12	£3.270	£2.550	£2.180	£3.850
GX25C	Hobby Box 18	£5.420	£4.310	£4.010	£6.380
GX26D	Hobby Box 32	£10.290	£7.340	£6.800	£12.100
KR51F	Hobby Box 27	£13.100	£10.250	£9.360	£15.400

### Parts Box

#### Raaco



A range of parts boxes available in three sizes. Ideal for storing small components, washers, screws and other odds and ends. From small to large the boxes comprise 5, 9 and 14 compartments of varying volumes. Manufactured from tough, durable polythene material with clear see-through lids, each storage box will provide years of service. Dimensions from small to large are 180 x 130 x 40; 270 x 155 x 40 and 330 x 230 x 50. Other features include a recessed lid to allow boxes to be effectively stacked.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	
BN67X	Parts Box B6	£1.860	£1.660	£1.550	£2.190
BN68Y	Parts Box B9	£3.270	£2.870	£2.630	£3.850
BN69A	Parts Box B14	£5.080	£5.360	£4.870	£7.150

### Transbox

#### Raaco



A good quality plastic box with two layers of storage and a clear plastic lid with carrying handle and slide-lock. The box contains several dividers which fit into the base to make between 2 and 15 separate compartments. A clear plastic tray with three large compartments fits tightly on top of the base and with the lid closed contents cannot spill from one compartment to another when the box is carried. Overall size of box 275 x 215 x 80mm high.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	
XJ03D	Transbox	£10.550	£8.690	£7.180	£12.400

See Stock Code Index For More Price Breaks

**Parts Organiser Case**

Contico



Handy for storing fishing accessories or electronic components, for example, this organiser is supplied with a selection of dividers for the creation of up to 21 compartments within the 377 x 301 x 63mm case. The hinged lid, which is translucent for inspection of the contents, clips to the main body with secure clasps. A handle is moulded in the main body.

Retail Unit Price each (inc. VAT).

Order Code	Type 1030	Price each exc. VAT			inc. VAT each
		1+	8+	36+	1+
BN76H	Parts Case S/Sided	£9.720	£9.110	£7.750	£11.430

**De Luxe Parts Organiser Case**

Contico



A double-sided version of BN76H, supplied with dividers for the creation of up to 42 compartments (21 on either side). The handle is a swing-handle type for ease of carrying. Dimensions: 377 x 301 x 123mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 1034	Price each exc. VAT			inc. VAT each
		1+	8+	36+	1+
BN75S	Parts Case D/Sided	£15.040	£14.460	£13.110	£17.660

**Low-Cost Storage Boxes**

Contico



A pair of snap-shut storage trays, ideal for the storage of small items, such as electronic components and screws, these inexpensive storage trays are made from durable translucent polypropylene for contents inspection, and will not rust, dent or chip. The trays have snap-on hinged lids for easy access.

BN73Q has 4 compartments and BN74R has 18 compartments.  
Dimensions: 277 x 197 x 44mm

Retail Unit Price each (inc. VAT).

Order Code	Type 10115	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
BN73Q	Parts Box 4 Compart	£2.910	£2.700	£2.400	£3.430
BN74R	Parts Box 18Compart	£2.910	£2.700	£2.400	£3.430

**Component Storage Box**



A clear, plastic storage box for electronic/electrical components and similar small items. The supplied dividers allow up to 18 various size compartments to be configured. The snap-shut lid allows safe transport of contents.

Dimensions closed: 215 x 125 x 37mm.

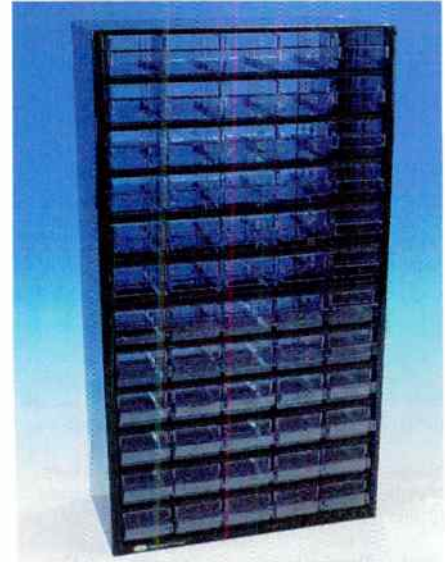
Retail Unit Price each (inc. VAT).

Order Code	Type 12642	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
ANR3E	Component Storage Box	£2.110	£1.750	£1.490	£2.490

**STORAGE CABINETS**

**Storage Cabinet System**

Raaco



A range of dark grey enameled steel cabinets with transparent plastic drawers with guides and end stops. The cabinet measures 550 x 307 x 150mm and is available with four different drawer sizes or with an assortment of sizes. Each drawer can be subdivided into smaller sections using optional dividers. The drawer front has a label holder and suitable labels are available separately.

**60-00 Drawer Cabinet**

(180 possible divided compartments)

Cabinet code	Drawer code	Number of drawers	Drawer size (H x W x D)	MPS code
108065	150-00	60	35 x 52 x 135	XG98G

Divider code	Drawer code	Divider size mm	Number in pack	MPS code
101981	150-00	35 x 52	60	DM15R

Label code	Drawer code	Label size	Number in pack	MPS code
109024	150-00	10 x 52	60	DF25C

Retail Unit Price each (inc. VAT).

Order Code	Type 0873	Price each exc. VAT			inc. VAT each
		1+	4+	8+	1+
XG98G	10 60 Drawer Cabinet	£44.970	£37.200	£34.850	£52.850
DM15R	35x52 Divider 60pk	£4.660	£3.910	£3.490	£5.500
DF25C	10x52 Label 60pk	£5.610	£4.580	£4.210	£6.600

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## 48-01 Drawer Cabinet



(144 possible compartments)

Cabinet code	Drawer code	Number of drawers	Drawer size (H x W x D)	MPS code
107341	150-01	48	35 x 64 x 135	DF46A

Divider code	Drawer code	Divider size mm	Number in pack	MPS code
101998	150-01	35 x 64	48	DM14Q

Label code	Drawer code	Label size	Number in pack	MPS code
107761	150-01	10 x 64	48	DF26D

Retail Unit Price each (inc. VAT).

Order Code	Type 3074	Price each exc. VAT			inc. VAT each 1+
		1+	4+	8+	
DF46A	48 Drawer Cabinet	£44.990	£37.200	£34.850	£52.870
DM14Q	35x64 Divider 48pk	£4.680	£3.910	£3.490	£5.500
DF26D	10x64 Label 48pk	£5.420	£4.480	£4.160	£5.380

## 24-02 Drawer Cabinet



(72 possible compartments)

Cabinet code	Drawer code	Number of drawers	Drawer size (H x W x D)	MPS code
107303	150-02	24	57 x 87 x 135	DF21X

Divider code	Drawer code	Divider size mm	Number in pack	MPS code
102032	150-02	57 x 87	24	DM16S

Label code	Drawer code	Label size	Number in pack	MPS code
107778	150-02	18 x 87	24	DF27E

Retail Unit Price each (inc. VAT).

Order Code	Type 3075	Price each exc. VAT			inc. VAT each 1+
		1+	4+	8+	
DF21X	24 Drawer Cabinet	£44.990	£37.200	£34.850	£52.870
DM16S	57x87 Divider 24pk	£4.680	£3.910	£3.490	£5.500
DF27E	18x87 Label 24pk	£4.210	£3.490	£3.170	£4.950

## 40-1, 2, 3. Drawer Cabinet



(120 possible compartments)

Cabinet code	Drawer code	Number of drawers	Drawer size (H x W x D)	MPS code
107242	150-01	36	35 x 64 x 135	DF23A
	150-02	3	57 x 87 x 135	DF23A
	150-03	1	57 x 275 x 135	DF23A

DF23A includes the three sizes of drawer.

Divider code	Drawer code	Divider size mm	Number in pack	MPS code
101998	150-01	35 x 64	48	DM14Q
102032	150-02	57 x 87	24	DM16S
102049	150-03	57 x 135	16	DM17T

Label code	Drawer code	Label size	Number in pack	MPS code
107761	150-01	10 x 64	48	DF26D
107778	150-02	18 x 87	24	DF27E
107785	150-03	18 x 275	8	DF28F

Retail Unit Price each (inc. VAT).

Order Code	Type 3076	Price each exc. VAT			inc. VAT each 1+
		1+	4+	8+	
DF23A	40 Drawer Cabinet	£44.990	£37.200	£34.850	£52.870
DM14Q	35x64 Divider 48pk	£4.680	£3.910	£3.490	£5.500
DM16S	57x87 Divider 24pk	£4.680	£3.910	£3.490	£5.500
DM17T	57x135 Divider 16pk	£4.680	£3.910	£3.490	£5.500
DF26D	10x64 Label 48pk	£5.420	£4.480	£4.160	£5.380
DF27E	18x87 Label 24pk	£4.210	£3.490	£3.170	£4.950
DF28F	18x275 Label 8pk	£4.210	£3.490	£3.170	£4.950

## 8-03 Drawer Cabinet



(24 possible compartments)

Cabinet code	Drawer code	Number of drawers	Drawer size (H x W x D)	MPS code
107297	150-03	8	57 x 275 x 135	DF22Y

Divider code	Drawer code	Divider size mm	Number in pack	MPS code
102049	150-03	57 x 135	16	DM17T

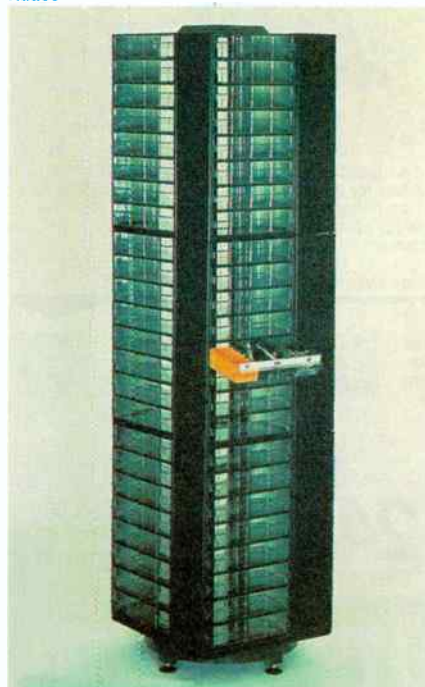
Label code	Drawer code	Label size	Number in pack	MPS code
107785	150-03	18 x 275	8	DF28F

Retail Unit Price each (inc. VAT).

Order Code	Type 3077	Price each exc. VAT			inc. VAT each 1+
		1+	4+	8+	
DF22Y	8 Drawer Cabinet	£44.990	£37.200	£34.850	£52.870
DM17T	57x135 Divider 16pk	£4.680	£3.910	£3.490	£5.500
DF28F	18x275 Label 8pk	£4.210	£3.490	£3.170	£4.950

## Turntable Unit

Raaco



A framework mounted onto a turntable with maintenance-free roller bearing, which will accept up to 12 assorted cabinets from the range of



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Storage Cabinets, available separately. The overall diameter of the turntable is 680mm (0.2m<sup>2</sup> standing area) and the height is 1760mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	8+	1+
DF24B	24 Turntable	£131.240	£110.280	£104.040	£154.210

## 20 and 36 Draw Storage Cabinets

Raaco



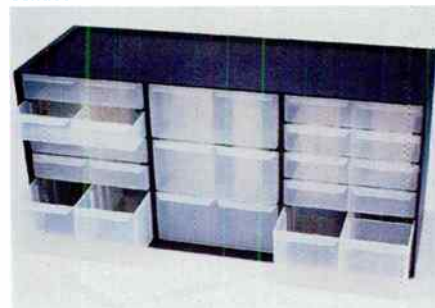
A pair of high quality polypropylene storage cabinets featuring either 20 or 36 translucent pull-out drawers. Ideal for the garage, home, office or study. Ideal for storing screws, washers, nuts, bolts, paper clips, pens - virtually limitless uses. Each draw measures 135 x 45 x 35mm for the 20 draw cabinet and 135 x 55 x 45mm for the 36 draw cabinet. The 36 draw cabinet also has screw hooks to allow it to be wall mounted.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	8+	1+
BN70M	Storage Cabint 20Dnw	£10.290	£3.160	£8.430	£12.100
BN71N	Storage Cabint 36Dnw	£18.740	£16.650	£15.350	£22.020

## Drawer Organiser

Contico



A tough, durable, black plastic cabinet made from SuperleneTM, has 5 large drawers (139 x 143 x 60 mm), two of which are divided into two compartments, and 8 small drawers (139 x 143 x 28mm) each of which are supplied with dividers. If more storage space is required then the cabinets can be stacked. Slots are provided on the back of the cabinet for wall mounting. Overall dimensions: 448 x 205 x 160mm.

Retail Unit Price each (inc. VAT).

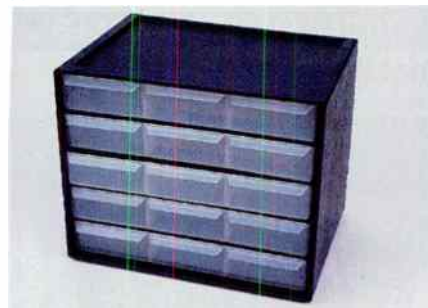
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	8+	36+	1+
BUSBE	8 Organiser	£18.220	£16.180	£14.410	£21.410

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At all our stores nationwide. See the maps at the front of the catalogue for the nearest one to you.

## Storage Cabinets

Contico



A storage cabinet made from SuperleneTM, a strong plastic that will not rust, dent, chip or peel, suitable for home, workshop or office. The five drawers are made from translucent polypropylene and are divided into 15 compartments, and with the dividers provided, the compartments may be divided into sections. The cabinet is of one piece construction, can be stacked to provide additional storage and can be wall mounted or free-standing.

Dimensions (mm):

Type	H	W	D
Type 15	183	223	160

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	6+	36+	1+
BU95D	4 Storage Cabinet 15	£12.140	£10.460	£8.840	£14.270

## GENERAL STORAGE

### Self-Seal Bags



Polythene bags with grip tops ideal for storing small components. The bags have a white panel on one side which can be written on. Bags are available in two sizes in bundles of 100.

Small bag is 57mm wide and 76mm high (2 1/4 x 3in.). Large bag is 89mm wide and 114mm high (3 1/2 x 4 1/2in.).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JK77J	Sealable Bag 2.25x3	£1.720	£1.310	£0.853	£2.030
JK78K	Sealable Bag 3.5x4.5	£2.160	£1.610	£1.040	£2.540

## Metric Storage Trays

K-Bins



A revised range of cardboard trays in which self-seal bags or components can be stacked. A large self-seal bag fits snugly across the width.

The green tray is supplied flat and is simply folded into shape. Various different metric sizes are available to suit every need.

Dimensions (mm)

Assembled size (W x D)	Height	Maplin code
75 x 150	100	DQ28F
100 x 200	100	DQ29G
100 x 300	100	DQ30H
150 x 300	100	DQ31J
250 x 300	100	DQ32K
150 x 450	100	DQ33L
250 x 450	100	DQ34M
250 x 450	200	DQ35Q

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	50+	250+	1+
DQ28F	Card Tray 150 x 75	£0.646	£0.600	£0.570	£0.760
DQ29G	Card Tray 200 x 100	£0.944	£0.870	£0.830	£1.110
DQ30H	Card Tray 300 x 100	£0.987	£0.920	£0.870	£1.160
DQ31J	Card Tray 300 x 150	£1.030	£0.960	£0.910	£1.220
DQ32K	Card Tray 300 x 250	£1.210	£1.130	£1.070	£1.430
DQ33L	Card Tray 450 x 150	£1.210	£1.130	£1.070	£1.430
DQ34M	Card Tray 450 x 250	£1.420	£1.310	£1.240	£1.670
DQ35Q	Deep Tray 450 x 250	£3.140	£2.910	£2.760	£3.700

## Bins on Rails

Raaco



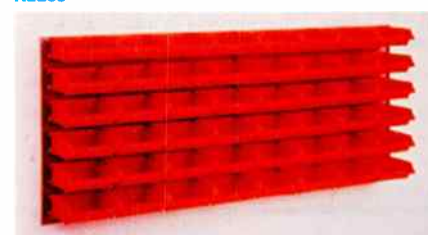
Ideally suited for the garage and the workshop. Four grey handwidth boxes (112 x 110mm internal dimensions) with sloping fronts attached to a 500mm long wall mounting rail which has 4mm fixing holes. The boxes are stackable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
GX27E	Bins On Rails	£3.740	£3.270	£2.920	£4.400

## Complete Wall Mounting Units

Raaco



These units are available using a range of Open Bins and two Wall Panels that can be fixed to provide a system measuring 1040 x 440mm or 520 x 880mm. The lightweight wall panels measure 520 x 440mm and have numerous slots to allow for a variety of arrangements of the open bins. The panels have a good load capacity and combined with the unbreakable open bins, provide an excellent storage system.

48 Bin Unit and 2 Panels

Raaco code	Bins	Dimensions in mm (H x W x D)	MPS code
105866	48	50 x 125 x 130	DF34M

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	4+	8+	1+
DF34M	12 48Bins + 2 Panels	£59.990	£50.930	£48.380	£70.490

## 32 Bin Unit and 2 Panels

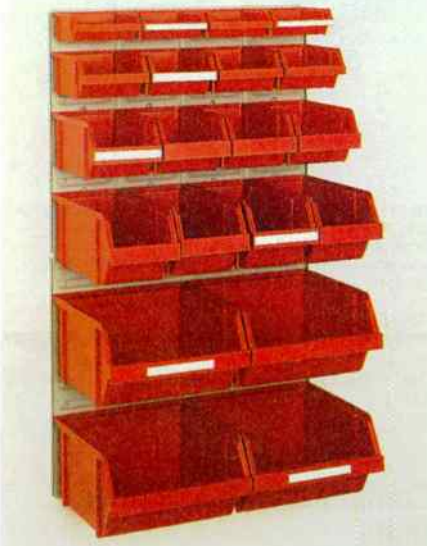


Raaco code	Bins	Dimensions in mm (H x W x D)	MPS code
	8	50 x 125 x 130	
110495	16	75 x 125 x 170	DF40T
	8	100 x 125 x 225	

Retail Unit Price each (inc. VAT).

Order Code	Type 3063	Price each exc. VAT			inc. VAT each
		1+	4+	8+	1+
DF40T	13 32Bins + 2 Panels	£59.990	£50.930	£48.380	£70.490

## 20 Bin Unit and 2 Panels



Raaco code	Bins	Dimensions in mm (H x W x D)	MPS code
	4	50 x 125 x 130	
	4	75 x 125 x 170	
112901	4	100 x 125 x 225	DF39N
	4	125 x 125 x 295	
	4	150 x 250 x 295	

Retail Unit Price each (inc. VAT).

Order Code	Type 3065	Price each exc. VAT			inc. VAT each
		1+	4+	8+	1+
DF39N	15 20Bins + 2 Panels	£65.610	£55.410	£52.690	£77.100

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## TOOL STORAGE

### TOOL WALLETS & CASES

#### Tool Wallets

##### Topper Cases



Three versatile and sturdy black reinforced and padded tool wallets with heavy duty nylon zip closure. Internally fitted with elastic and PVC loops, a pocket with velcro fastening flap for small items and PVC pockets as follows:

Maplin Code	Elastic Loops	PVC Loops	Flap Pocket	PVC Pocket	Spring Clips
YC46A	17	3	1	1	
YC47B	32	4	1	2	
YC48C	28	4	1	10	3

YC48C also includes a heat resistant tube to protect the wallet from hot soldering irons.

Overall dimensions:

YC46A	240 x 185 x 45mm
YC47B	306 x 257 x 45mm
YC48C	357 x 285 x 65mm

Retail Unit Price each (inc. VAT).

Order Code	Type 20479	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YC46A	Tool Wallet 1	£13.880	£13.100	£12.770	£16.310
YC47B	Tool Wallet 2	£18.450	£18.060	£17.810	£21.680
YC48C	Tool Wallet 3	£25.320	£24.600	£24.390	£29.780

## Service Cases

### Raaco



Two types of service cases in dark grey metal that are enclosed by a lockable black leatherette case. A handy tool tray is also included. The drawers (150 series) are the same types as used in the storage cabinet system, therefore the corresponding

dividers and labels can be used. Supplied with two keys.

Size of case: 380 x 320 x 180mm.

Manufacturer's Code	Number of drawers	MPS Code
102919	24 x type 150-01 12 x type 150-01	DF30H
102896	3 x type 150-02 1 x type 150-03	DF29G

DF29G includes the three sizes of drawer (16 drawers total).

Retail Unit Price each (inc. VAT).

Order Code	Type 20779	Price each exc. VAT			inc. VAT each
		1+	4+	10+	1+
DF30H	24 Drawer Case	£77.800	£65.030	£58.780	£91.420
DF29G	16 Drawer Case	£77.800	£65.030	£58.780	£91.420

## TOOLBOXES & TOOLCASES

### Multibox

#### Raaco



A robust plastic box with separate internal compartmentalised tray, carrying handle and revolving clasp. The box has a large open well and the tray fits into this to about half-way down so that the top of the box is level with the top of the tray. With the handle pulled up, the lid when opened out will sit horizontal supported by the handle, with the opened box and the tray can be lifted out of the box and placed in the lid.

Overall size 335 x 205 x 162mm high.

Retail Unit Price each (inc. VAT).

Order Code	Type 2700	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
XJ05F	Multibox	£11.230	£9.210	£7.910	£13.200

## Toolmate

### Raaco



A new generation of Toolboxes. Light in weight, their design offers stability in use and a large capacity in relation to their overall size.

- ★ **Do not rust**
- ★ **Remain stable**
- ★ **Weatherproof**
- ★ **Resistant to chemical attack**
- ★ **Made from durable Polypropylene**

Toolmate 1 is supplied with a removable tote tray and two drawers which can be kitted out with compartment inserts.

Toolmate 2 features the removable tote tray, which like Toolmate 1, can be kitted out with compartment inserts.

Toolmate 3 features a removable tote tray but does not use the compartment inserts. Inserts are

available as an assorted set of 16, ordered separately (Order Code KU86T), for use only in Toolmates 1 and 2.

**Toolmate 1**

Dimensions (mm)  
L W H Wt  
475 240 250 2.2kg  
Raaco Code: 117593

Retail Unit Price each (inc. VAT).

Order Code	Type 3066	Price each exc. VAT			inc. VAT each
		1+	4+	8+	1+
JP16S 4	Toolmate 1	£24.340	£20.660	£19.560	£28.600

**Toolmate 2**



Dimensions (mm)  
L W H Wt  
475 240 190 1.6kg

Raaco Code: 117607

Retail Unit Price each (inc. VAT).

Order Code	Type 3068	Price each exc. VAT			inc. VAT each
		1+	4+	8+	1+
KU84F 3	Toolmate 2	£19.100	£16.910	£15.810	£22.450

**Toolmate 3**



Dimensions (mm)  
L W H Wt  
425 215 170 1.2kg

Raaco Code: 117616

Retail Unit Price each (inc. VAT).

Order Code	Type 3069	Price each exc. VAT			inc. VAT each
		1+	4+	8+	1+
KU85G 2	Toolmate 3	£14.970	£13.530	£12.850	£17.600

**Compartment Inserts**

Raaco



The compartmental inserts provide an organised, movable and flexible storage for small parts in the tote tray and drawer of Toolmate 2. Available in sets of 16 only.

Raaco Code: 113410

Retail Unit Price each (inc. VAT).

Order Code	Type 3072	Price each exc. VAT			inc. VAT each
		1+	4+	8+	1+
KU86T	Toolmate Inserts	£7.990	£7.490	£7.030	£9.390

**Compact Tool Boxes**

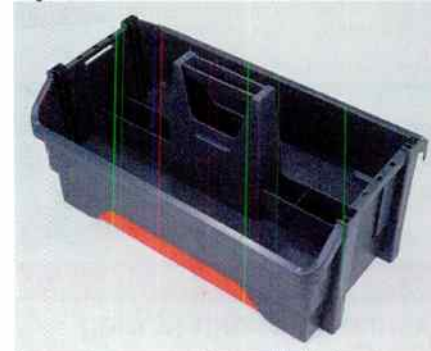
A choice of two black tool boxes that are ideal for electronics engineers, service technicians and hobbyists. The tool boxes are molded in Superlene™, a very tough plastic that will not dent, peel, chip or crack. Inside, there is a removable tool/compartment tray that sits securely in the box. A heavy duty rust resistant plated latch (two on the larger box) secures the box for transit, and provision for a padlock is also provided. The smaller box measures 405 x 194 x 220mm, and the larger box measures 480 x 230 x 260mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 3084	Price each exc. VAT			inc. VAT each
		1+	8+	36+	1+
BU90X 6	Compact Toolbox Sm	£13.880	£10.670	£8.120	£16.310
BU91Y 9	Compact Toolbox Lrg	£18.650	£14.930	£12.070	£21.920

**Open Toolbox**



An ingenious open tool box moulded in tough grey plastic with a large red drawer that has compartments for holding smaller items. Ideal for the storage of tools. Dimensions: 481 x 260 x 295mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3085	Price each exc. VAT			inc. VAT each
		1+	8+	36+	1+
BU92A 5	Open Toolbox	£13.880	£10.400	£8.840	£16.310

**2-Step Tool Storage**



A novel tool-box, which can also be used as a step to give you extra height when you need it. The reinforced top lid, which is removable to provide access to the tool compartment, holds up to 136kg weight and has a non-skid surface to prevent slippage. The tool compartment, is supplied with a removable tray for storing your most often-used tools. A recessed lockable clasp holds the top lid/step securely in position. External dimensions: 473 x 470 x 432mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 10114	Price each exc. VAT			inc. VAT each
		1+	8+	36+	1+
BN72P	Two Step Tool Store	£20.350	£16.130	£14.310	£23.920

**Aluminium Type**



A quality aluminium type flight case in which the items to be carried are packed in foam. The case is silver in colour except for the black rounded corners and the two chrome-plated locks. Two keys are supplied for the locks, which are of the clasp action catch variety. The handle is made from tough black plastic and has attractive chrome trimmings. A shoulder carrying strap is provided which hooks onto buckles mounted on either side of the case. The bottom and the back of the case have four feet fitted, which not only reduce shock being transmitted to the contents of the case when it is placed down on a hard surface, but also help to prevent the underside of the case from getting scratched.

Weight: 2.6kg; overall dimensions (including handle and feet): 350mm long x 470mm wide x 165mm deep; overall depth of foam (compressible): 55mm (lid); 80mm (lower body).

Retail Unit Price each (inc. VAT).

Order Code	Type 3091	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GL34M 6	Metal Flight Case	£34.710	£29.080	£26.530	£40.790

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## Lightweight Cases



A range of 3 elegant, black plastic, splashproof, injection-moulded carrying cases which represent superb value for money. When closed, the edge of the top half of the case interlocks with the bottom half. Not only does this provide waterproofing, but also increases rigidity for transport. The two halves of the case are locked together by 'snap' fit fasteners, and it features rigid, moulded handles. Their dimensions are:

Type	Overall External Dimensions mm	Internal Dimensions mm
A	270 x 210 x 50	260 x 180 x 45
B	350 x 259 x 75	340 x 230 x 70
C	380 x 270 x 90	370 x 265 x 85

Primarily for use as tool carrying cases, they can find many other applications, which can include transporting documents. In particular, size A can be used as a handy storage case for vehicle documents as it will fit into most glove compartments.

Retail Unit Price each (inc. VAT).

Order Code	Type 3967	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ME09K	Lightweight Case A	£4.070	£3.750	£3.480	£4.790
ME20W	Lightweight Case B	£6.450	£5.910	£5.560	£7.580
ME19V	Lightweight Case C	£8.950	£8.420	£8.000	£10.520

## Deep Lightweight Cases



A range of 2 black plastic, splashproof, injection-moulded carrying cases which represent superb value for money. When closed, the edge of the top half of the case interlocks with the bottom half. Not only does this provide waterproofing, but also increases rigidity for transport. The two halves of each case are locked together by 'snap' fit fasteners, and feature rigid, moulded handles. Their dimensions are:

Type	Overall External Dimensions mm	Internal Dimensions mm
A	320 x 290 x 114	300 x 220 x 110
B	510 x 400 x 130	500 x 310 x 125

Primarily for use as power tool carrying cases, they can find many other applications.

Retail Unit Price each (inc. VAT).

Order Code	Type 12598	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ME11M	Deep Case A	£6.750	£6.120	£5.730	£7.940
ME10L	Deep Case B	£19.150	£17.200	£16.050	£22.510

## EQUIPMENT CASES

### High Protection Watertight Cases

Pell



A range of high quality watertight and airtight cases made from a lightweight structural resin, and fitted with a neoprene 'O' ring seal. The cases are virtually indestructible and are airtight and watertight to a depth of 9m. They are fitted with a unique 'purge' valve for easy opening after air travel, locking flanges, multiple latches for absolute security and a comfortable moulded fold down handle. A panel frame kit (MG13P) is available for MG10L that allows for equipment to be directly mounted into the case.

- ★ Lifetime guarantee
  - ★ Supplied with prescored 'Pick & Pluck' foam inserts
  - ★ Nato approvals for 1500 & 1600 models
- Model 1500: 6760-01-295-3560  
Model 1600: 6760-01-258-0449

Order Code	Pell Model	External (mm)	Internal (mm)
MG10L	1300	273 x 247 x 178	240 x 185 x 165
MG11M	1500	470 x 387 x 175	435 x 290 x 155
MG12N	1600	591 x 527 x 228	555 x 430 x 200

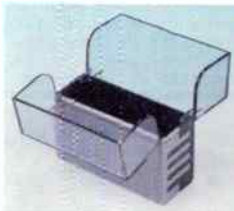
Retail Unit Price each (inc. VAT).

Order Code	Type 17764	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MG10L-1	Protector 1300	£43.640	£41.460	£39.280	£51.280
MG11M-1	Protector 1500	£90.590	£86.070	£81.540	£106.450
MG12N-1	Protector 1600	£155.240	£147.480	£138.720	£182.410
MG13P	Panel kit 1300	£14.800	£14.060	£13.320	£17.390

## COMPUTER MEDIA

### Expanding 89mm (3 1/2 in.) Disk Box

A plastic disk box capable of holding up to 10, or when expanded, 13 89mm disks. The main body of the case is pulled apart, thus increasing its capacity by up to three disks. The box is finished in grey and charcoal and has two transparent lids that overlap thus keeping the disks secure in transport. Dimensions are 105 x 105 x 40mm unexpanded and 105 x 105 x 50mm expanded.



Retail Unit Price each (inc. VAT).

Order Code	Type 5485	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DK30H	Expanding Disk Box	£1.690	£1.350	£1.230	£1.990

### 89mm (3 1/2 in.) Disk Box with Integral Flap

A clear acrylic 89mm disk box with a flip-top lid and an integral spring loaded flap that will hold the disks securely. Holds from 1 to 10 disks.



Retail Unit Price each (inc. VAT).

Order Code	Type 5485	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RU83B	3.5in Disk Box&Flap	£1.690	£1.350	£1.230	£1.990

### Lockable Storage Boxes



Storage boxes for 89mm (3 1/2 in.) and 133mm (5 1/4 in.) diskettes. The units are manufactured in an attractive light-beige anti-static plastic with hinged anti-static smoked acrylic lids. The lids can be locked and two keys are supplied. All boxes are supplied with dividers. The following sizes are available:

Max no. of disks	Disk size (mm)	Overall size (mm)		
		w	d	h
40	89	127	252	126
80	89	232	252	126
100	133	180	386	150
50+50	133	338	214	150

Price each shown, but sold only in multiples of 1.

Order Code	Type 384	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
YT30H-1	40 Disk Box 3.5	£6.800	£4.300	£3.560	£7.990
YT31J-1	80 Disk Box 3.5	£7.650	£4.950	£4.170	£8.990
YP68Y-2	100 Disk Box 5.25	£7.650	£6.450	£4.750	£8.990
YT32K-2	100 Disk Box 5.25 Dbl	£7.650	£6.450	£4.750	£8.990

### Large Disk Storage Boxes

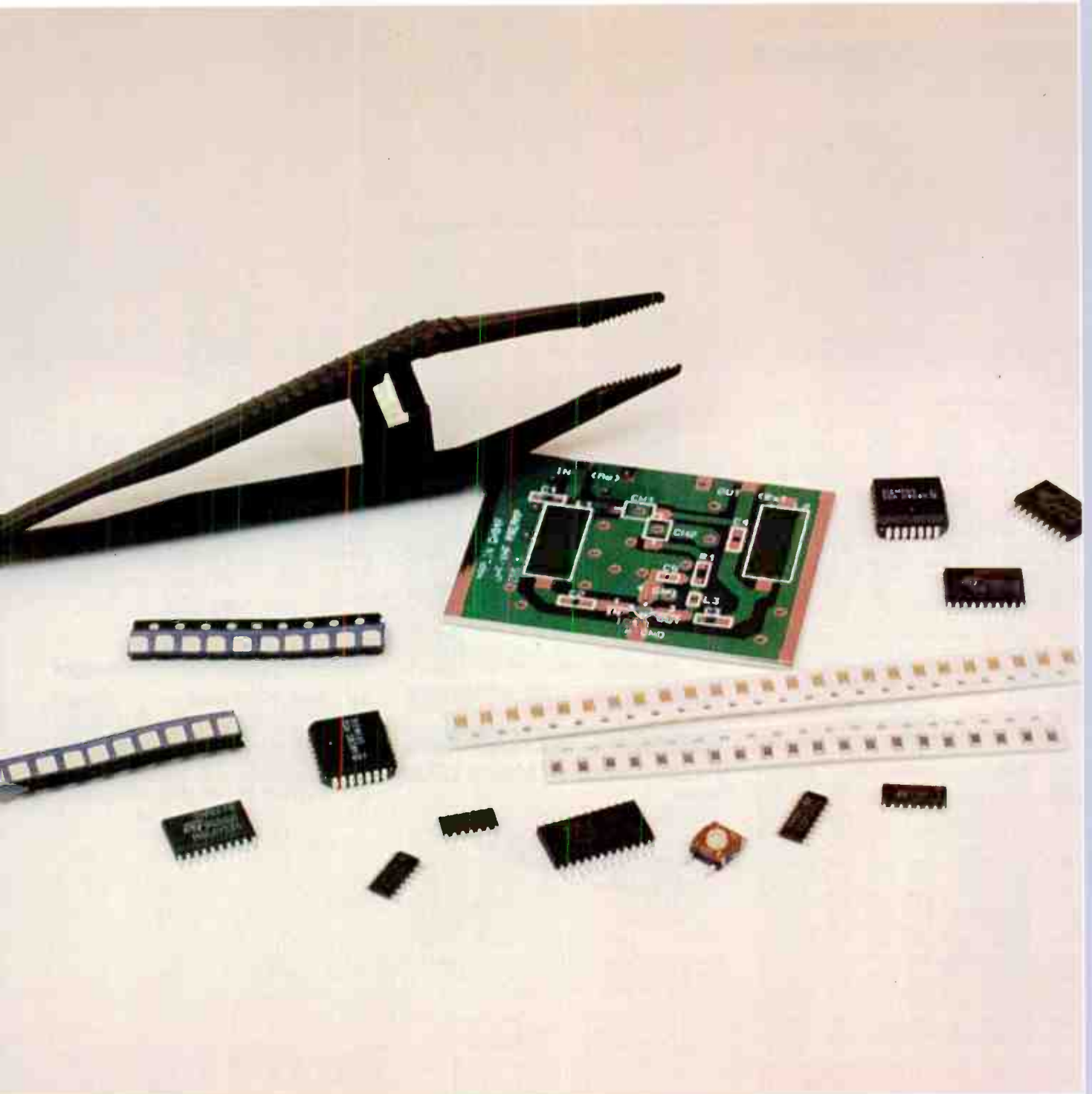
Drawer type disk storage boxes similar in operation to the drawers of a filing cabinet. The boxes can be stacked and have positive locating tongue and groove guides and special clips to join two cases together. The boxes are not portable carrying type, but are intended to be sited on a desk or work station. Two types are available to cater for both 133mm (5 1/4 in.) and 89mm (3 1/2 in.) size disks. Type 180 can accommodate 180 x 133mm floppy disks in two rows, and is provided with 16 dividers, while type 150 can hold up to 150 x 89mm disks, and has 14 dividers. Both are lockable and provided with two keys. Dimensions are identical: width 340mm, height 180mm, depth 285mm. Drawer withdraws to 235mm. Made entirely of tough light grey injection moulded plastic with a smart black fascia 25mm (1 in.) deep which incorporates a recessed handle, barrel lock and two small recessed panels for labels.



Retail Unit Price each (inc. VAT).

Order Code	Type 387	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZAB9W-6	Box 150	£19.560	£15.500	£14.500	£22.990
ZAR0X-5	Box 180	£19.560	£15.500	£14.500	£22.990

See Computer Section for our full range of Computer Media



## Section Contents

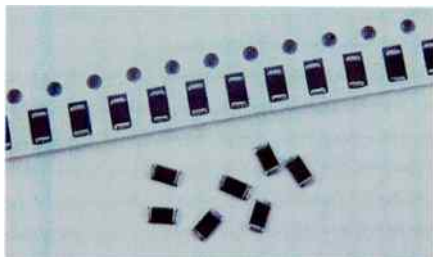
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## CAPACITORS

### 1206 CHIP

#### Ceramic Chip

Universe



A range of multilayer ceramic chip surface-mounted capacitors that are packaged in a standard 1206 format (3.45 x 1.85 x 1.52mm). The terminations are metallised silver with a tin-coated nickel barrier layer.

Value	Operating Voltage	Dielectric Type	Tolerance	Temperature Range
10pF	100V	Very stable	±10%	-55°C to +125°C
22pF	100V	Very stable	±10%	-55°C to +125°C
33pF	100V	Very stable	±10%	-55°C to +125°C
47pF	100V	Very stable	±10%	-55°C to +125°C
100pF	100V	Very stable	±10%	-55°C to +125°C
220pF	100V	Very stable	±10%	-55°C to +125°C
330pF	100V	Very stable	±10%	-55°C to +125°C
470pF	100V	Very stable	±10%	-55°C to +125°C
0.001µF	100V	Very stable	±10%	-55°C to +125°C
0.0022µF	100V	Very stable	±10%	-55°C to +125°C
0.0047µF	100V	High permittivity	±10%	-55°C to +125°C
0.01µF	100V	High permittivity	±10%	-55°C to +125°C
0.022µF	100V	High permittivity	±10%	-55°C to +125°C
0.047µF	100V	High permittivity	±10%	-55°C to +125°C
0.1µF	63V	General purpose	±20%	-25°C to +85°C
0.22µF	63V	General purpose	±20%	-25°C to +85°C

Supplied in multiples of 25 pieces (price per 25)  
Available on reels please phone for prices.

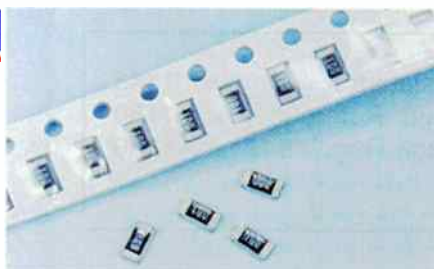
Price each is shown. Order quantities less than 4 will be sold at the one off inc. VAT price.

Order Code	Type 3058	Price each exc. VAT			inc. VAT each
		4+	40+	160+	
DH86T	10pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH87U	22pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH88V	33pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH89W	47pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH90X	100pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH91Y	220pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH92A	330pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH93B	470pF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH94C	0.001µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH95D	0.0022µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH96E	0.0047µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH97F	0.01µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH98G	0.022µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DH99H	0.047µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490
DJ00A	0.1µF SMD Ceramic	£0.890	£0.590	£0.490	£2.290
DJ01B	0.22µF SMD Ceramic	£0.890	£0.590	£0.490	£1.490

## RESISTORS

### 1206 CHIP

#### Surface Mount Resistors



A range of surface mounted resistors that are packaged in the industry standard 1206 format (3.1 x 1.55 x 0.55mm). These high quality resistors are marked with the normal 3-digit resistance code. Sold in packs of 25 (price per 25).

Specification:

Power rating: 0.25W at 70°C  
Operating voltage: 200V max  
Resistance tolerance: ±5%  
Temperature coefficient: ±200ppm/°C  
Operating temperature range: -55°C to +155°C

The following values are available:

10Ω	100Ω	1k	10k	100k	1MΩ
22Ω	220Ω	2k2	22k	220k	
33Ω	330Ω	3k3	33k	330k	
47Ω	470Ω	4k7	47k	470k	
	680Ω	6k8	68k	680k	

Price each is shown. Order quantities less than 4 will be sold at the one off inc. VAT price.

Order Code	Type 3741	Price each exc. VAT			inc. VAT each
		4+	40+	200+	
DJ02C	Surf Mount Res 10R	£0.390	£0.290	£0.150	£0.490
DJ03D	Surf Mount Res 22R	£0.390	£0.290	£0.150	£0.490
DJ04E	Surf Mount Res 33R	£0.390	£0.290	£0.150	£0.490
DJ05F	Surf Mount Res 47R	£0.390	£0.290	£0.150	£0.490
DJ07H	Surf Mount Res 100R	£0.390	£0.290	£0.150	£0.490
DJ08J	Surf Mount Res 220R	£0.390	£0.290	£0.150	£0.490
DJ09K	Surf Mount Res 330R	£0.390	£0.290	£0.150	£0.490
DJ10L	Surf Mount Res 470R	£0.390	£0.290	£0.150	£0.490
DJ11M	Surf Mount Res 680R	£0.390	£0.290	£0.150	£0.490
DJ12N	Surf Mount Res 1k	£0.390	£0.290	£0.150	£0.490
DJ13P	Surf Mount Res 2k2	£0.390	£0.290	£0.150	£0.490
DJ14Q	Surf Mount Res 3k3	£0.390	£0.290	£0.150	£0.490
DJ15R	Surf Mount Res 4k7	£0.390	£0.290	£0.150	£0.490
DJ16S	Surf Mount Res 6k8	£0.390	£0.290	£0.150	£0.490
DJ17T	Surf Mount Res 10k	£0.390	£0.290	£0.150	£0.490
DJ18U	Surf Mount Res 22k	£0.390	£0.290	£0.150	£0.490
DJ19V	Surf Mount Res 33k	£0.390	£0.290	£0.150	£0.490
DJ20W	Surf Mount Res 47k	£0.390	£0.290	£0.150	£0.490
DJ21X	Surf Mount Res 68k	£0.390	£0.290	£0.150	£0.490
DJ22Y	Surf Mount Res 100k	£0.390	£0.290	£0.150	£0.490
DJ23A	Surf Mount Res 220k	£0.390	£0.290	£0.150	£0.490
DJ24B	Surf Mount Res 330k	£0.390	£0.290	£0.150	£0.490
DJ25C	Surf Mount Res 470k	£0.390	£0.290	£0.150	£0.490
DJ26D	Surf Mount Res 680k	£0.390	£0.290	£0.150	£0.490
DJ27E	Surf Mount Res 1M	£0.390	£0.290	£0.150	£0.490

## LEDS

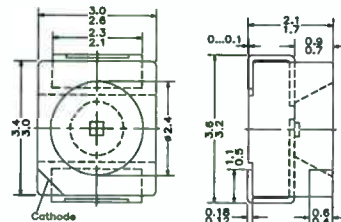
### PLCC2

#### P-LCC-2 Surface Mount LEDs

Siemens



A range of surface mount LEDs that are housed in a white P-LCC-2 package. Available in hyper-red, super-red and green. Sold in strips of 10.



Manufacturer's Viewing Code	Colour Light		MPS Code
	intensity	angle	
LS T670-K	Super red 635nm	12.5mcd120°	CY98G
LH T674-KO	Hyper red 660nm	20mcd120°	CY99H

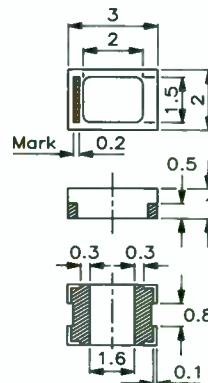
Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 3736	Price each exc. VAT			inc. VAT each
		10+	25+	100+	
CY98G	Super Red SMount	£2.990	£1.990	£1.900	£4.190
CY99H	Hyper Red SMount	£2.990	£2.790	£2.490	£5.640

## 3MM X 2MM

### Low Profile SMD LED Lamps

Kingbright



Dimensions in mm

A miniature 3mm x 2mm (1mm high) LED specifically for direct surface mounting to a PCB. Viewing angle is 90° for all colour types. Available as translucent orange, green and yellow, and clear super-bright red. A marker bar at one end of the ceramic base identifies the cathode, except for the super-bright red type where it identifies the anode. Sold in multiples of 25 (price per 25):

Type	Luminous Intensity @ 20mA
Orange	12.5 to 32mcd
Green	12.5 to 20mcd
Yellow	12.5 to 20mcd
Super red	20 to 60mcd
Clear green	20 to 60mcd

Price each is shown. Order quantities less than 4 will be sold at the one off inc. VAT price.

Order Code	Type 3720	Price each exc. VAT			inc. VAT each
		4+	10+	40+	
CJ72P	SMD Red LED	£3.300	£2.750	£2.490	£4.000
CJ73Q	SMD Green LED	£3.300	£2.750	£2.490	£4.000
CJ74R	SMD Yellow LED	£3.300	£2.750	£2.490	£4.000
CJ71N	SMD Super Red LED	£5.100	£4.000	£3.490	£6.100
AQ80B	Clear Green SMT LED	£3.300	£2.750	£2.490	£3.990

ORDER BEFORE 5PM FOR SAME DAY DESPATCH

Tel: 01702 554000

Fax: 01702 554001

e-mail: Sales@maplin.co.uk

## SEMICONDUCTORS

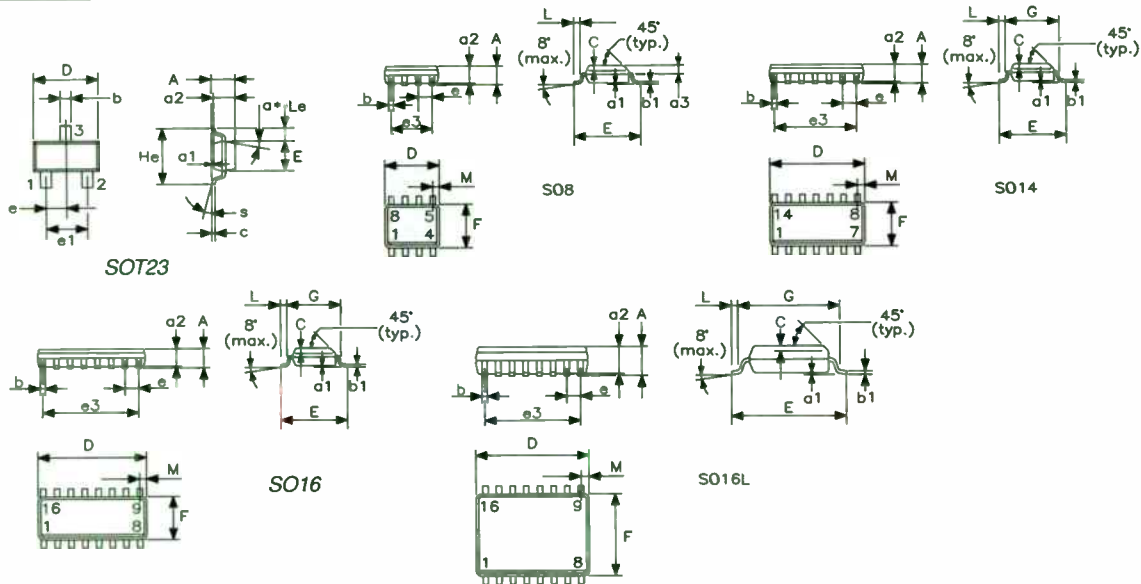
### SMT

#### Diodes and Transistors

Package	Dimensions	A	a1	a2	b	c	D	E	e	e1	He	Le	a*	s
SOT-23	mm	min. typ. max.	1-10	0-10	1-00	0-35 0-08	2-80	1-20	0-95	1-90	2-60	0-60	10°	30°

#### ICs

Package	Dimensions	A	a1	a2	a3	b	b1	C	D	E	e	e3	F	G	L	M
SO8	mm	min. typ. max.	1-75	0-25	1-65	0-65 0-35	0-19	0-25	4-8	5-8	1-27	3-81	3-8	4	1-27	0-6
SO14	mm	min. typ. max.	1-75	0-1 0-2	1-6	0-35 0-46	0-19	0-5	8-55 8-75	5-8 6-2	1-17	3-81	3-8 4	4-6 5-3	0-5 1-27	0-68
SO16	mm	min. typ. max.	1-75	0-1 0-2	1-6	0-35 0-46	0-19	0-5	9-8 10	5-8 6-2	1-27	8-89	3-8 4	4-6 5-3	0-5 1-27	0-62
SO16L	mm	min. typ. max.	2-65	0-1 0-2	2-45	0-35 0-49	0-23	0-5	10-1 10-5	10-0 10-65	1-27	8-89	7-4 7-6	8-8 9-15	0-5 1-27	0-75



#### 'SuperSOT' SOT23 Power Transistors

Zetex

Surface mount, power switching transistors in SOT 23 size package, capable of dissipating 625mW as measured on the industry standard 15 x 15mm ceramic substrate, and retaining high gain and low  $V_{CE}$  at high collector currents. Applications can include printer head and stepper motor drivers, 'moving message' LED displays, miniature supply inverters, etc.

Type	Material	$V_{CBO}$ min.	$V_{CEO}$ min.	$V_{EBO}$ min.	$V_{CE(SAT)}$ mV	$V_{BE(ON)}$	$I_C$ cont.	$I_C$ max.	$h_{FE}$	$f_T$ MHz	$t_{(ON)}$ ns	$t_{(OFF)}$ ns
FMMT618	NPN	20	20	5	130@ $I_C=2-5A$	0-79V	2-5A	6A	200@ $I_C=2A$	140	170	400
FMMT619	NPN	50	50	5	150@ $I_C=2A$	0-8V	2A	6A	225@ $I_C=2A$	165	170	750
FMMT624	NPN	125	125	5	165@ $I_C=1A$	0-7V	1A	3A	140@ $I_C=1A$	155	60	1300
FMMT625	NPN	150	150	5	180@ $I_C=1A$	0-74V	1A	3A	45@ $I_C=1A$	135	160	1500
FMMT718	PNP	-20	-20	-5	-145@ $I_C=1-5A$	-0-81V	1-5A	6A	230@ $I_C=2A$	180	40	670
FMMT720	PNP	-40	-40	-5	-245@ $I_C=1-5A$	-0-8V	1-5A	4A	130@ $I_C=1-5A$	190	40	435
FMMT722	PNP	-70	-70	-5	-175@ $I_C=1-5A$	-0-78V	1-5A	3A	60@ $I_C=1-5A$	200	40	700
FMMT723	PNP	-100	-100	-5	-210@ $I_C=1A$	-0-89V	1A	2-5A	30@ $I_C=1-5A$	200	50	760

Retail Unit Price Each (inc. VAT).

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5598	Price each exc. VAT	inc. VAT each
AE32K	FMMT618	£0.382 25+ £0.275 100+ £0.220 500+	£0.450 1+
AE39N	FMMT723	£0.417 25+ £0.300 100+ £0.230 500+	£0.490 1+

Order Code	Type 5598	Price each exc. VAT	inc. VAT each
AE33L †	FMMT619	£0.220 25+ £0.190 100+ £0.170 500+	£0.450 1+
AE34M †	FMMT624	£0.220 25+ £0.190 100+ £0.170 500+	£0.450 1+
AE35Q †	FMMT625	£0.220 25+ £0.190 100+ £0.170 500+	£0.450 1+
AE36P †	FMMT718	£0.230 25+ £0.190 100+ £0.170 500+	£0.450 1+
AE37S †	FMMT720	£0.230 25+ £0.190 100+ £0.170 500+	£0.450 1+
AE38R †	FMMT722	£0.230 25+ £0.190 100+ £0.170 500+	£0.450 1+

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## Small Signal Transistors

Siemens  
Phillips  
SGS Thomson

A selection of small signal transistors in the standard SOT-23 case, commonly used in modern TVs, VCRs, satellite receivers and other brown goods.

**Type Construction and application**  
BC846A/B NPN silicon for AF input stages and driver applications

BC856B PNP silicon small signal use  
SO2369A NPN switching transistor

Type	V <sub>CEO</sub>	V <sub>CB0</sub>	V <sub>EBO</sub>	I <sub>C max</sub>	Typ f <sub>h</sub> e	
f <sub>t</sub> MHz						
BC846A	65	80	6	100mA	180	250
BC846B	65	80	6	100mA	450	250
BC856B	-65	-80	-5	100mA	220	250
SO2369A	15	40	4-5	200mA	180	250

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 3740	Price each exc. VAT			inc. VAT each 1+
		25+	100+	250+	
VR73L	BC846A	£0.120	£0.090	£0.070	£0.220
VR17T	BC846B	£0.032	£0.029	£0.023	£0.040
VR18U	BC856B	£0.032	£0.029	£0.023	£0.040
VR80B	SO2369A	£0.220	£0.170	£0.120	£0.340

## Diodes and Diode Arrays

**Type Construction and application**

BB515 Si variable capacitance diode  
BAS16 Si diode for high-speed switching  
BAV70 Si diode array for high-speed switching  
BAW56 Si diode array for high-speed switching  
BAV99 Si diode array for high speed switching  
BYD33G Si fast recovery diode  
BYV95A Si fast recovery diode  
BYV96D Si fast recovery diode

Type	PIV V	I <sub>F</sub> mA	P <sub>tot</sub> mW	Package	Pin 1	Pin 2	Pin 3
BB515	30	10nA	—	SOD-123	K denoted by band		
BAS16	85	250	370	SOT-23	A - K		
BAV70	70	200	250	SOT-23	A	A	common K
BAW56	70	200	250	SOT-23	K	K	common A
BAV99	70	200	330	SOT-23	A	K	junction A/K
BYD33G	400	1.3A	—	SOD-81	K denoted by band		
BYV95A	200	1.5A	—	SOD-57	K denoted by band		
BYV96D	800	1.5A	—	SOD-57	K denoted by band		

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 3742	Price each exc. VAT			inc. VAT each 1+
		25+	100+	250+	
VR81C	BAS16	£0.120	£0.090	£0.075	£0.220
VR82D	BAV70	£0.140	£0.110	£0.090	£0.250
VR84F	BAW56	£0.060	£0.050	£0.040	£0.110
VR85G	BAV99	£0.130	£0.110	£0.090	£0.260

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 3742	Price each exc. VAT			inc. VAT each 1+
		25+	100+	500+	
VR20W	BYD33G	£0.084	£0.077	£0.061	£0.200
VR21X	BYV95A	£0.127	£0.117	£0.093	£0.540
VR22Y	BYV96D	£0.156	£0.143	£0.115	£0.580
VR23A	BB515	£0.204	£0.187	£0.149	£0.390

## CMOS LOGIC

### Low Voltage CMOS Logic

Motorola

The LCX family provide the necessary circuitry to bridge the technology gap between the 5V and 3.3V worlds. Most 3.3V logic families can directly interface only with other 3.3V products. The LCX family are the only family that guarantees 5V tolerant inputs, so can easily handle 5V TTL or CMOs interface on the input bus. Features include low static power consumption, high noise margins, high fan-out, low input loading, 50Ω transmission line drive capability, excellent performance with speeds of 5ns at CMOS power levels and ESD and latch-up immunity.

Device	Type
MC74LCX00D	Quad 2-Input Nand
MC74LCX02D	Quad 2-Input NOR
MC74LCX04D	Hex Inverter
MC74LCX08D	Quad 2-Input AND
MC74LCX32D	Quad 2-input OR
MC74LCX74D	Dual D-Type Flip-Flop
MC74LCX86D	Quad 2-Input Exclusive OR
MC74LCX138DW	1-of-8 Decoder/Demultiplexer
MC74LCX240DW	Octal Buffer
MC74LCX244DW	Octal Buffer
MC74LCX245DW	Octal Bus Transceiver
MC74LCX373DW	Octal D-Type Latch
MC74LCX374DW	Octal D-Type Flip-Flop
MC74LCX540DW	Octal Buffer
MC74LCX541DW	Octal Buffer
MC74LCX573DW	Octal D-Type Latch
MC74LCX574DW	Octal D-Type Flip-Flop

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Pinout	Manufacturer	Order Code
14-pin SOIC	MOT	VR48C
14-pin SOIC	MOT	VR49D
14-pin SOIC	MOT	VR50E
14-pin SOIC	MOT	VR51F
14-pin SOIC	MOT	VR52G
14-pin SOIC	MOT	VR53H
14-pin SOIC	MOT	VR54J
16-pin SOIC	MOT	VR55K
20-pin SOIC	MOT	VR56L
20-pin SOIC	MOT	VR57M
20-pin SOIC	MOT	VR58N
20-pin SOIC	MOT	VR59P
20-pin SOIC	MOT	VR60Q
20-pin SOIC	MOT	VR61R
20-pin SOIC	MOT	VR62S
20-pin SOIC	MOT	VR63T
20-pin SOIC	MOT	VR64U

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 13744	Price each exc. VAT			inc. VAT each 1+
		10+	100+	500+	
VR49D	MC74LCX02D	£0.440	£0.367	£0.314	£0.610
VR50E	MC74LCX04D	£0.440	£0.367	£0.314	£0.610
VR51F	MC74LCX08D	£0.440	£0.367	£0.314	£0.610
VR52G	MC74LCX32D	£0.440	£0.367	£0.314	£0.610
VR53H	MC74LCX74D	£0.560	£0.467	£0.400	£0.720
VR54J	MC74LCX86D	£0.480	£0.400	£0.343	£0.720
VR55K	MC74LCX138DW	£0.720	£0.600	£0.514	£0.940
VR56L	MC74LCX240DW	£0.840	£0.700	£0.600	£1.280
VR57M	MC74LCX244DW	£0.840	£0.700	£0.600	£1.380
VR58N	MC74LCX245DW	£0.840	£0.700	£0.600	£1.770
VR59P	MC74LCX373DW	£0.840	£0.700	£0.600	£1.320
VR60Q	MC74LCX374DW	£0.840	£0.700	£0.600	£1.260
VR61R	MC74LCX540DW	£0.840	£0.700	£0.600	£1.380
VR62S	MC74LCX541DW	£0.840	£0.700	£0.600	£1.440
VR63T	MC74LCX573DW	£0.840	£0.700	£0.600	£1.350

Order Code	Type 13744	Price each exc. VAT			inc. VAT each 1+
		10+	25+	100+	
VR48C	MC74LCX00D	£0.400	£0.314	£0.293	£0.650
VR64U	MC74LCX574DW	£0.764	£0.600	£0.560	£1.350

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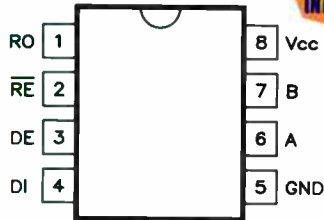




## MAX485 Low Power RS485/RS422 Transceivers

Maxim

RECENTLY INTRODUCED



MAX485

The MAX485 is a half duplex, low power transceiver for RS485 and RS422 communications, and contains one driver and one receiver. The driver slew rate is not limited allowing the device to transmit up to 2.5Mbps. The device draws 300µA of supply current when unloaded or fully loaded with disabled drivers. Drivers are short-circuit current limited and are protected against excessive power dissipation by thermal shutdown circuitry. The receiver input has a fail-safe feature that guarantees a logic high output if the input is open circuit. MAX485CPA is supplied in a 8-pin DIL package, and MAX485CSA is 8-pin SO package.

### Specification

Supply voltage: 12V DC max.  
 Differential driver output no load: 5V max  
 load R=50Ω: (RS422): 2V  
 load R=27Ω (RS485): 1.5V to 5V  
 Input current (A,B): 1mA (V<sub>IN</sub>=12V)  
 Receiver input resistance: 12KΩ

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 13114	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
VR46A	MAX485CPA	£1.450	£1.350	£1.240	£2.420

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 13114	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
VR47B	MAX485CSA	£1.690	£1.460	£1.350	£2.140

## LINEAR IC'S

### SGS-Thomson

The following range of surface mounted ICs are a direct pin equivalent to their respective DIL version.

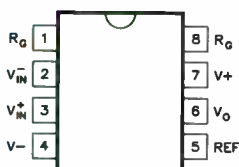
Type	Application	Package
LF351D	J-FET op-amp	SO8
LF353D	Dual J-FET op-amp	SO8
LM308AD	Precision op-amp	SO8
LM311D	Voltage comparator	SO8
LM319D	Dual high-speed comparators	SO14
LM324AD	Quad low power op-amp	SO14
LM339D	Quad precision voltage comparator	SO14
LM358AD	Dual low power op-amp	SO8
LM393D	Dual power voltage comparator	SO8
MC1458D	Dual high-speed performance op-amp	SO8
MC1488D	RS232C quad line driver	SO14
MC1489D	Quad line receiver	SO14
MC3403D	Quad differential input op-amp	SO14
TL064CD	Quad low power J-FET op-amp	SO14
TL071CD	Low noise J-FET op-amp	SO8
TL072CD	Dual low noise J-FET op-amp	SO8
TL074CD	Quad low noise J-FET op-amp	SO14
TL081CD	High-speed J-FET op-amp	SO8
TL082CD	Dual high-speed J-FET op-amp	SO8
TL084CD	Quad high-speed J-FET op-amp	SO14
TL7705ACD1/A	Supply voltage supervisor	SO8
M145026D	Remote control encoder	SO16
M145028D	Remote control decoder	SO16L
NE555D	Precision timer	SO8
NE556D	Dual precision timer	SO14
TS555CD	Low power CMOS timer	SO8
UA741CD	Gen purpose op-amp	SO8

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 4180	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
DB71N	LF351D	£0.355	£0.279	£0.260	£0.620
DB72P	LF353D	£0.355	£0.279	£0.260	£0.620
DB73Q	LM308AD	£0.600	£0.471	£0.440	£1.100
DB74R	LM311D	£0.233	£0.183	£0.171	£0.490
DB76H	LM319D	£0.560	£0.550	£0.540	£0.670
DB79L	LM339D	£0.204	£0.160	£0.149	£0.490
DB80B	LM358AD	£0.227	£0.179	£0.167	£0.490
DB81C	LM383D	£0.204	£0.160	£0.149	£0.490
DB82D	MC1458D	£0.264	£0.207	£0.193	£0.490
DB83E	MC1488D	£0.358	£0.281	£0.263	£0.550
DB84F	MC1489D	£0.189	£0.149	£0.139	£0.550
DB85G	MC3403D	£0.436	£0.343	£0.320	£0.690
DB90X	TL064CD	£0.355	£0.279	£0.260	£1.270
DB91Y	TL071CD	£0.349	£0.274	£0.256	£0.590
DB92A	TL072CD	£0.400	£0.314	£0.293	£0.970
DB93B	TL074CD	£0.455	£0.357	£0.333	£1.270
DB94C	TL081CD	£0.329	£0.259	£0.241	£0.890
DB95D	TL082CD	£0.779	£0.612	£0.571	£1.290
DB96E	TL084CD	£0.808	£0.551	£0.490	£1.270
AH72P	TL7705ACD1/A	£0.550	£0.471	£0.440	£1.360
DB99H	M145026D	£1.520	£1.200	£1.120	£2.290
DC00A	M145028D	£1.980	£1.560	£1.450	£2.790
DB86T	NE555D	£0.255	£0.200	£0.187	£0.310
DB87U	NE556D	£0.291	£0.229	£0.213	£0.520
DB97F	TS555CD	£0.415	£0.326	£0.304	£0.890
DB98G	UA741CD	£0.193	£0.151	£0.141	£0.590

### INA118U

Burr-Brown



118

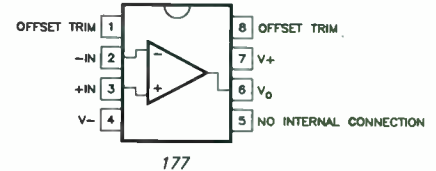
The INA118 is a low power instrumentation amplifier offering excellent accuracy. Its versatile 3 op-amp design and small size make it ideal for a wide range of precision applications. It offers a combination of features such as very high input impedance, wide bandwidth even at high gain settings, single or dual rail power supply operation at voltages as low as ±1.35V. The inputs to the INA118 are protected for voltages up to ±40V. If the inputs are overloaded, the internal protection circuitry limits the input current to

a safe value without the need for high value series input resistors which would contribute excessive noise. Inputs remain protected even if the power supply is switched off. Laser trimmed offset makes external trimming unnecessary in most applications.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11801	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
LE49D	Lo-Power Inst Amp	£4.520	£3.550	£3.320	£5.990

### OPA177GS



177

The OPA177 precision bipolar op-amp features a high open loop gain of at least 130dB, low quiescent current @ 1.5A typ, very low (laser trimmed) offset voltage and low drift. The inputs are internally protected with 500Ω series resistors and diode clamped and can withstand ±30V differential inputs without damage. Internal input bias current compensation means that connection of an external bias current cancellation resistor is unnecessary. Typical applications include compact or portable precision instrumentation, bridge or thermocouple amplifiers, data acquisition amplifiers etc., and the device will replace OP07, OP77, OP177, AD707.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11860	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
LE50E	OPA177GS	£1.180	£0.929	£0.867	£1.490

### BUF634U

Burr-Brown

The BUF634 is a high-speed unity gain open-loop SMD buffer IC which may be used in any application where high output currents are required from a compact surface mount circuit. It is capable of providing a continuous output current of 250mA with internal circuitry limiting output to approximately 350mA maximum, or to a maximum junction temperature of 175°C. The -3dB bandwidth of the BUF634 is approximately 30MHz in low quiescent mode (1.5mA typical with bandwidth control not connected), although it can be extended to approximately 180MHz at 15mA quiescent consumption by connecting the bandwidth control pin to V-.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11802	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
LE48C	Power Buffer 250mA	£3.920	£3.080	£2.880	£5.290

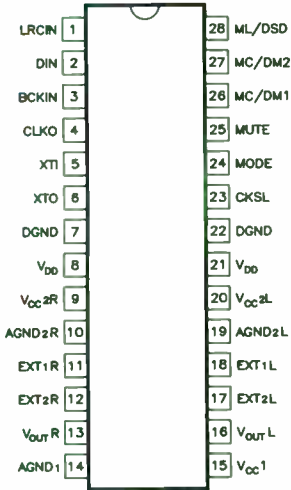
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**DIGITAL AUDIO**

**PCM1710U**

Burr-Brown



171

This dual output (stereo) CMOS digital-to-analogue converter will operate with a single 5V supply and features a unique Delta-Sigma 4th order architecture that eliminates influence from input clock jitter and RF interference, resulting in a truly superior performance in portable digital audio and musical applications.

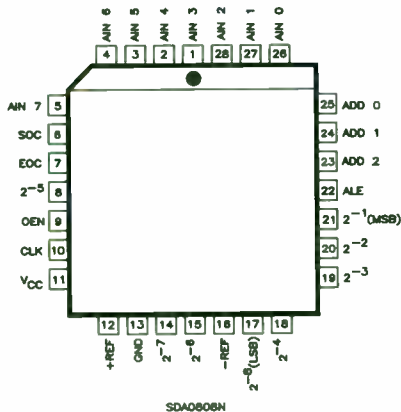
With THD figures of typically 0.0025%, a dynamic range of 98dB and on chip 8X oversampling, the PCM1710 will accept 16 and 20-bit input data as well as normal/11s (1/fs, 32 clock, continuous data) format data. The on-chip digital low-pass filter has -62dB stop band attenuation, resulting in an S/N ratio of typically 110dB, with an analogue output of up to 3.2Vp-p.

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 11858	Price each exc. VAT	inc. VAT each
LES1F	PCM1710U	25+ £6.890 100+ £5.410 500+ £5.050	1+ £10.340

**SDA0808N 8-Bit A/D Converter with 8-Channel Multiplexer**

Siemens



SDA0808N

A monolithic 8-bit CMOS A/D converter with an 8-channel analogue multiplexer, that operates from a single 5V DC supply, with a power consumption of only 15mW. The IC contains a microprocessor compatible control logic and an 8-bit data bus. The converter consists of a capacitor network (approximately 50pF) as a sample-and-hold circuit, a successive-approximation register (SAR) and a temperature stabilised comparator. Interfacing to a microprocessor is provided by 3-bit address latches and an 8-bit tristate data bus. The device operates at a clock frequency of 1.5MHz. Housed in a PLCC-28 package.

**Specification:**

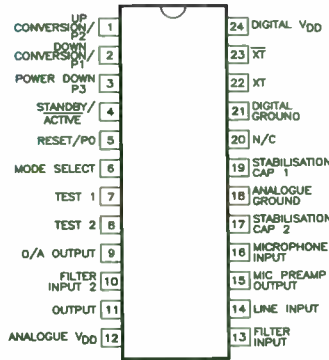
Supply voltage: 5V  
Resolution: 8 bit  
Positive reference voltage: VCC  
Negative reference voltage: -0.1V min  
Analogue input range: -VREF to +VREF  
Slew rate: 60mV/µs  
Clock frequency: 640kHz to 1500kHz  
Linearity error: ±0.5LSB  
Conversion time at 1.5MHz: 13µs

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type #154	Price each exc. VAT	inc. VAT each
DB25C	SDA0808N	10+ £6.740 25+ £5.740 100+ £5.360	1+ £8.490

**MSM6322GSK Speech Pitch Controller**

OKI

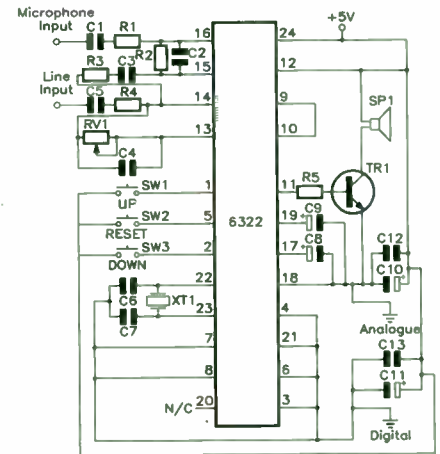
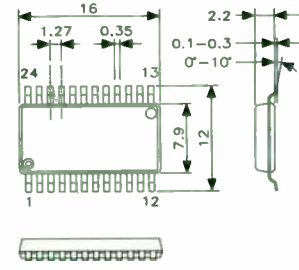


6322

Note: This device is only available in small outline 24-pin plastic SOP style package. A speech pitch converter IC that operates in real time and requires very few external components. It has a microphone preamplifier and line level input and the output requires only a single transistor to directly drive a loudspeaker. As well as the microphone preamplifier, the IC contains a 4th order low pass filter on input and a 3rd order low-pass filter on output. In addition there is a built-in 8-bit A/D converter and 9-bit D/A converter. The pitch of the speech is alterable in 17 steps over a range of one octave up and one octave down, and there are two modes of operation. In the 'up/down' mode two inputs are provided which when pulsed, move the pitch up or down sequentially through the pitches available. In the 'binary' mode four inputs are provided from which 16 of the available pitches can be directly selected. In the example circuit, an application using the 'up/ down' mode is shown. Note that pins 1 and/or 2 could be continuously cycled using an electronic counter to produce an interesting effect. The following table shows the pitches available.

**Pin functions (high = +5V, low = 0V digital)**

- Pin 1. In 'up/down' mode, pulse high to move the pitch up one step. In 'binary' mode, taking this pin high sets bit 3.
- Pin 2. In 'up/down' mode, pulse high to move the pitch down one step. In 'binary' mode, taking this pin high sets bit 2.
- Pin 3. In 'up/down' mode, setting this pin high initiates power down, where all internal clocks are stopped and pin 9 goes low. On reverting to low on pin 3, the clocks take 10ms to restabilise. In 'binary' mode, taking this pin high sets bit 4, the most significant bit.
- Pin 4. When taken high, all internal clocks are stopped except the main 4MHz oscillator. On reverting to low, pin 9 outputs a 2.5V (1/2 of VDD) level for about 15ms.
- Pin 5. In 'up/down' mode, pulse high to set the pitch to stage 8, no pitch change. In 'binary' mode, taking this pin high sets bit 1, the least significant bit.
- Pin 6. Set high to select 'binary' mode; set low to select 'up/down' mode.
- Pin 7. Manufacturers test pin. Must be fixed low.
- Pin 8. Manufacturers test pin. Must be fixed low.
- Pin 9. Output of the digital to analogue converter.
- Pin 10. Input to the output stage's low-pass filter.
- Pin 11. Final output.
- Pin 12. Analogue supply +5V.
- Pin 13. Output of the line amplifier and input to the input stage's low-pass filter. The gain of this amplifier is set by the value of resistance between here and pin 14.
- Pin 14. Input to the line amplifier. Must be capacitively coupled to input signals.
- Pin 15. Output of the microphone preamplifier.
- Pin 16. Input to the microphone preamplifier. Must be capacitively coupled to the microphone.
- Pin 17. Stabilisation capacitor for the internal analogue reference voltage +2.5V (1/2 of VDD).
- Pin 18. Analogue ground. Microphone and line inputs and the output must be referenced to this ground.
- Pin 19. Stabilisation capacitor for the internal analogue reference voltage +2.5V (1/2 of VDD).
- Pin 20. No connection.
- Pin 21. Digital ground. Logic low.
- Pin 22. Crystal oscillator. If using an external clock, it should be connected here.
- Pin 23. Crystal oscillator. If using an external clock, leave this pin open.
- Pin 24. Digital supply +5V. Logic high.



Supply voltages:	4V to 6V (7V max.)
Supply current:	<10mA
Standby current:	<7mA
Power down current:	<1mA
Logic high:	>3.6V
Logic low:	<0.8V
Logic input current:	±10µA max.
Output impedance	pin 15: 5kΩ pin 9: 10kΩ pin 11: 15kΩ pin 13: 15kΩ
Input impedance	pin 16: 100MΩ pin 14: 100MΩ pin 10: 30MΩ

Max. frequency pins 1,2,5 in 'up/down' mode: 16Hz  
Max. operating frequency pin 22: 4.5MHz  
Low-pass filters characteristics:  
Gain 300Hz to: ±3dB at worst  
Gain at fc: -3dB  
Gain at 2 x fc: -20dB  
fc is the cut-off frequency as shown in the table above.

'Binary' mode settings		Scale stage		D/A sampling cycle/frequency	Low-pass filter cut-off	Pitch change
Pin 3	Pin 1	Pin 2	Pin 5			
Not obtainable				16	60µs/16.6kHz	7.6kHz
1	1	1	1	15	71µs/14kHz	7.6kHz
1	1	1	0	14	77µs/13.1kHz	5.7kHz
1	1	0	1	13	80µs/12.5kHz	5.7kHz
1	1	0	0	12	90µs/11.1kHz	5.7kHz
1	0	1	1	11	95µs/10.5kHz	5.7kHz
1	0	1	0	10	101µs/9.9kHz	4.56kHz
1	0	0	1	9	113µs/8.84kHz	4.56kHz
1	0	0	0	8	120µs/8.33kHz	3.8kHz
0	1	1	1	7	127µs/7.87kHz	3.8kHz
0	1	1	0	6	143µs/6.99kHz	3.26kHz
0	1	0	1	5	151µs/6.62kHz	3.26kHz
0	1	0	0	4	160µs/6.25kHz	3.25kHz
0	0	1	1	3	180µs/5.55kHz	2.85kHz
0	0	1	0	2	190µs/5.26kHz	2.53kHz
0	0	0	1	1	202µs/4.95kHz	2.53kHz
0	0	0	0	0	227µs/4.4kHz	2.07kHz

Parts List:

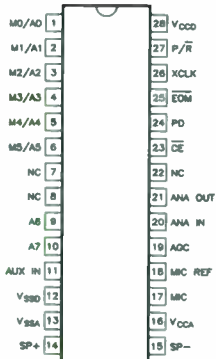
R1,3,4,5	Min Res 10k (M10K)
R2	Min Res 100k (M100K)
RV1	Pot Log 100k (FW25C)
C1,3,5	Mylar 0.22µF (WW83E)
C2,4,5,7	Ceramic 33pF (WX50E)
C8,9	PC Elect 47µF 25V (FF08J)
C10,11	PC Elect 10µF 50V (FF04E)
C12,13	Minidisc 0.1µF 16V (YR75S)
TR1	BC338 (QB69A)
XT1	Crystal 4MHz (FY82D)
SW1,2,3	Tact Switch (JR89W)
SP1	64Ω Loudspeaker (YT29G)

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 2510	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
UL76H	MSM6322GSK	£7.500	£5.350	£5.290	£11.990

## ISD1016A/20A Single-Chip Voice Record/Playback

ISD



**Specification:**  
 Supply voltage: 7V max.  
 Supply current: 30mA max., operating; 10µA max., standby  
 Output load impedance: 8 to 16Ω  
 Output power: 50mW into 16Ω  
 Harmonic distortion: 1%  
 Mic. input level: 20mV pk-pk  
 Mic. input impedance: 10kΩ  
 AGC output impedance: 5kΩ  
 Sampling frequency: 8kHz, ISD1016A; 6.4kHz, ISD1020A; 3.4kHz, ISD1016A; 2.7kHz, ISD1020A  
 Bandwidth:

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

Order Code	Type 4188	Price each exc. VAT			inc. VAT each
		10+	25+	100+	1+
KJ64U	ISD1016AG	£11.990	£8.990	£8.480	£16.490
KJ68Y †	ISD1020AG	£11.990	£8.990	£8.480	£16.490

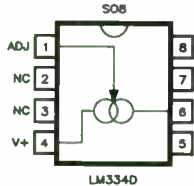
† = While Stocks Last

## VOLTAGE REFERENCES/REGULATORS

### LM334D Adjustable Current Source

SGS Thomson

A three terminal adjustable current source in a SO8 surface mounted package, with a 10,000 to 1 range inoperating current. The operation and characteristics of the device are identical to the TO92 package shown in the Semiconductor Section.



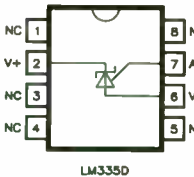
Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 4130	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
DB77J †	LM334D	£0.730	£0.690	£0.610	£0.880

### LM335D Precision Temperature Sensor

SGS Thomson

A precision temperature sensor in a SO8 surface mounted package, whose operation is similar to a Zener diode. The operation and characteristics of the device are identical to the TO92 package shown in the Semiconductor Section.



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 4131	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
DB78K †	LM335D	£1.000	£0.800	£0.670	£1.550

## SMD Positive Voltage Regulators

SGS Thomson

A series of positive voltage regulators constructed using an epitaxial process. These regulators employ internal current-limiting and thermal shut-down, making them virtually indestructible. The case style is SO-8. Duplicated GND connections (pins 2, 3, 6 and 7) provide heatsinking to the PCB track. If adequate heatsinking is provided, the devices can deliver up to 100mA output current. They are intended as fixed voltage regulators in a wide range of applications including local or on-board regulation for the elimination of noise and supply distribution problems associated with single-point regulation. In addition, they can be used with power pass elements to make high current voltage regulators.

The L78L00 series, used as a Zener diode/resistor combination replacement, offers an effective output impedance improvement of typically two orders of magnitude, along with lower quiescent current and lower noise.

**Specification:**

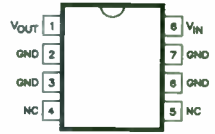
Input voltage, for  $V_{OUT} = 5$  to 9V: 30V max.  
 for  $V_{OUT} = 12$  to 15V: 35V max.  
 for  $V_{OUT} = 24$ V: 40V max.  
 Output current: 100mA max.  
 Power dissipation: Internally limited, depends on track area

Operating temperature range: 0 to 125°C

Output voltage accuracy: 5%

Devices of seven different output voltages are available:

L78L05CD	5V
L78L08CD	8V
L78L09CD	9V
L78L12CD	12V
L78L15CD	15V



Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 4138	Price each exc. VAT			inc. VAT each
		25+	100+	300+	1+
AY90X	L78L05CD	£0.280	£0.250	£0.220	£0.590
AY91Y	L78L08CD	£0.280	£0.250	£0.220	£0.590
AY92A	L78L09CD	£0.280	£0.250	£0.220	£0.590
AY93B	L78L12CD	£0.280	£0.250	£0.220	£0.590
AY96E	L78L15CD	£0.280	£0.250	£0.220	£0.590



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## Fixed 5V 0.5/1A SMD Regulators

Motorola

These surface mount regulators have solderable tabs for heatsinking via the track or PCB land.

Type	Voltage	Current	Input Voltage	Short Circuit Current	Line Reg.	Load Reg.	Ripple Rej.	Case Style	Order Code
MC78M05CDT	5V ±4%	0.5A	+7V to +35V	0.2A	0.06%	0.2%	78dB	DPAK	GS08J
MC7805CD2T	5V ±4%	1A	+7V to +35V	50mA	0.06%	0.2%	80dB	D2PAK	GS09K

Price each is shown. Order quantities less than 10 will be sold at the one off inc. VAT price.

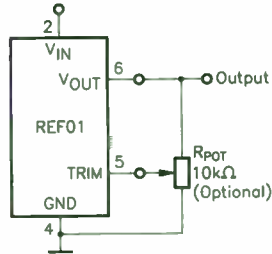
Order Code	Type	Price each exc. VAT	inc. VAT each
GS08J	MC78M05CDT	£0.380 10+ £0.317 50+ £0.271 300+	£0.630 1+
GS09K	MC7805CD2T	£0.620 10+ £0.617 50+ £0.529 300+	£1.140 1+

## REF01AU

Burr-Brown

The REF01 is a high performance precision pin compatible second source 10V reference, offering a 30% improvement over industry standard REF01s. Output noise is 5µVp-p, which is a 75% decrease in noise over all other REF01s. With output line regulation of 0.001%/V max and load regulation of 0.002%/V max, this device is the best choice for precision regulation applications, A/D and D/A references and precision calibration or test equipment.

The REF01 will source 10mA, sink 5mA min and is internally short circuit protected. Input voltage may be from 11.4V to 40V.



+10V Reference with Trimmed Output

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

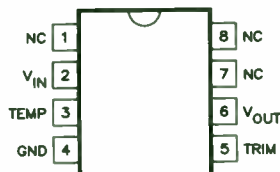
Order Code	Type	Price each exc. VAT	inc. VAT each
LE52G	10V Pos Volt Ref	£1.820 25+ £1.730 100+ £1.690 300+	£2.990 1+

## REF02AU

Burr-Brown

The REF02 is a high performance precision pin compatible second source 5V reference, offering a laser trimmed 8.5ppm/°C max drift and very low current drain of 1mA. Output noise is 10µVpk-pk. With output line regulation of 0.008%/V max and load regulation of 0.005%/V max, this device is the ideal choice for precision regulation applications, A/D and D/A references and precision calibration or test equipment.

The REF02 will source 10mA and is internally short circuit protected. Input voltage may be from 8V to 40V.



02

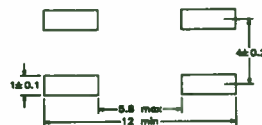
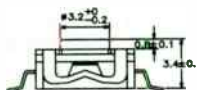
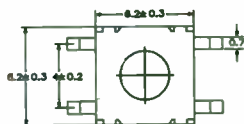
Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
LE53H	5V Pos Volt Ref	£2.540 1+ £2.180 25+ £1.820 100+	£2.990 1+

## SURFACE MOUNT SWITCHES

### Surface Mount Key Switch

A totally sealed, miniature key switch that has been designed for surface mounting on PCBs and has a single-pole, normally open contact. The switch features an actuator, tin plated gullwing terminals for easy soldering, and a positive 'click' action.



#### Specification:

Contact:	Silver
Voltage rating:	20mV minimum, 50V maximum
Current rating:	1mA minimum, 50mA maximum
Maximum switching power:	1VA
Maximum contact resistance:	100mΩ
Nominal operating force:	160g
Life expectancy:	500,000 operations

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DC71N	SurfMount Switch	£0.595 1+ £0.428 25+ £0.388 100+	£0.700 1+

## SURFACE-MOUNTED SELECTION GUIDE



In the early 1970s, surface-mounted technology (SMT) was originally introduced for two main reasons. Firstly, the components are a good deal smaller (and so the pin densities can be correspondingly higher). At roughly the same time as SMT was introduced, the industry began to see the use of multi-layer PCBs - boards in which several layers of conductive tracks (including ground and power planes) are buried. Because SMT does not require structure-weakening through-holes, the boards can be made thinner. Usually, there are smaller plated through-holes that serve to interconnect tracks on the various layers.

With multi-layer and SMT, electronic assemblies can be made much smaller - and this generates cost and marketing benefits for the manufacturer. Without SMT, compact portable devices that we take for granted such as cellular telephones, camcorders and notebook computers would simply not be possible. A small size and weight is clearly an advantage in the military and aerospace industries - indeed, these were the original driving forces behind SMT and its associated technologies.

The second benefit of SMT is that the components - known as surface-mounted devices (SMDs) - have been designed from the outset for automated assembly. A solder paste is silk-screen printed onto the contact areas of the circuit board. The board is then fed into a pick-and-place machine that puts the components (each with a small tab of glue under the body) onto it. The board is then fed into an infra-red reflow soldering machine, that causes the solder paste to melt and form an electrical connection with the component's tinned contacts.

Although the capital costs of setting up a SMT-based manufacturing facility are very high, the overall manufacturing costs per product - remember that large-scale production is generally involved - are low. Remember that these facilities are highly-automated, and employ the bare minimum of expensive human staff. The production lines can be re-tooled to handle different products. In some cases, several such lines within the plant can be co-ordinated to handle different products, or sub-assemblies used within the same product.

But what about the hobbyist, and service technicians called upon to service SMT-based products? Unfortunately, manually-positioning the miniature components onto a circuit board requires patience and skill. Removing a multi-legged SMD for replacement, without damaging the circuit board, is also difficult. A common procedure is to cut the damaged chip away from its legs. The isolated legs are then removed by heating the PCB's tracks gently with a fine-tipped soldering iron.

The components industry is now arriving at the point where many electronic devices - notably specialist ICs - are now available in SMD form

only. The pin spacing of some VLSI chips is a mere 0.65mm. At least one Maplin project includes a surface-mounted chip at its heart. The replacement of through-hole with surface mount is set to continue. Maplin does sell a range of tools, notably soldering iron bits, magnifiers and PCB workstations, that are essential for use with this system of assembly/production.

The benefits of SMT are not limited to the area of manufacturing. Because they dispense with the lead-out wires and are smaller, passive SMDs perform much nearer to their theoretical specification. They have reduced self inductance, resistance and capacitance, which makes them ideal for use at the high switching speeds of today's computers, and at radio frequencies. Disassemble a compact TV tuner, and you will find extensive use made of SMT. The smaller electronic assemblies made possible by SMT and multi-layer boards mean that propagation delay is greatly reduced - this is important where high-speed logic is involved.

### SMD types

**MELF (Metal electrode face-bonded).** Cylindrical components resembling conventional diodes, capacitors and resistors, but with tinned ends instead of wires.

**Cubic chips.** Flat components, available in a range of sizes that reflect component values. Electrical contact and soldering is made via pads at the ends of the component. Resistors, ceramic capacitors and electrolytic capacitors typically up to 33µF/6V available as cubic chips. LEDs are also available in this style

**SO (small-outline).** Normally used for transistors and diodes (SOT23), and for standard logic ICs, memory, voltage regulators, some specialist ICs and DIP switches up to 28 pins (SOx). Standard logic chips normally have the same pin-outs as their through-hole DIL equivalents. Power transistors, with larger (heat-sinking) tabs also available. ICs have gull-wing' pins.

**PLCCs (plastic-leaded chip carriers).** ICs of 18 to 84 pins - typically complex multi-pin ASICs (such as glue logic) and some microprocessors. Normally square in shape, with pins on all four sides. Pins normally J' shaped, the curve of the J folding underneath the device. Sockets for PLCCs are available - hence EPROMs, and other programmable devices, available in this packaging. Leadless ceramic chip carriers (LCCCs) similar, but with ceramic packaging, and contact pads instead of pins. LCCCs are more expensive and tend to be military-specification devices. In both cases, pin spacing is fixed.

**Quad flatpack (QFP).** Again, used for complex ICs - and pins are on all four sides. Lower in profile, rectangular in shape, and the larger multi-pin devices have narrower pin-spacing. Pins are gull-winged'. The QFP packaging is typically used for devices of between 64 and 196 pins.



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## SWITCHES

### TOGGLE

#### Ultra Miniature Toggle Switches

A range of ultra miniature toggle switches. Rated 3A 125V AC, 1A 250V AC. Chrome plated brass dolly. Mounting hole: 5.2mm (0.2in.) Available in SPST, SPDT and DPDT types.



Insulation resistance: >100MΩ  
Contact resistance: 20mΩ max.

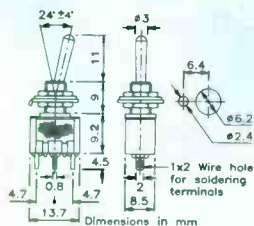
Dimensions	Single-pole	Double-pole
Body	8 x 5 x 7mm	8 x 9 x 7mm
Bush length	5.6mm	5.6mm
Dolly length	9.5mm	9.5mm
Tag length	5mm	5mm

Retail Unit Price each (inc. VAT).

Order Code	Type 2341	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH00A	Sub-Min Toggle A	£1.010	£0.640	£0.540	£1.190
FF70M	Sub-Min Toggle J	£1.020	£0.652	£0.550	£1.200
FH01B	Sub-Min Toggle B	£1.020	£0.652	£0.550	£1.200
FH02C	Sub-Min Toggle C	£1.020	£0.652	£0.550	£1.200
FH03D	Sub-Min Toggle D	£1.020	£0.652	£0.550	£1.200
FH04E	Sub-Min Toggle E	£1.010	£0.640	£0.540	£1.190
FF71N	Sub-Min Toggle K	£1.190	£0.836	£0.724	£1.400
FH05F	Sub-Min Toggle F	£1.190	£0.836	£0.724	£1.400
FH06G	Sub-Min Toggle G	£1.190	£0.836	£0.724	£1.400
FH07H	Sub-Min Toggle H	£1.190	£0.836	£0.724	£1.400

#### Sub-Miniature Toggle Switches

A range of toggle switches in SPDT and DPDT with a variety of switching actions. Switches have chrome-plated brass dolly and silver-plated contacts.

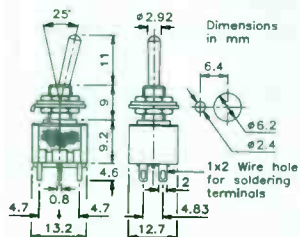


Rated: 2A 250V AC  
5A 125V AC  
5A 30V DC

Contact resistance: <20mΩ  
Insulation resistance: >100MΩ  
Life: 50,000 make/break cycles at full load  
Mounting hole: 6.35mm dia.

Single-pole double-throw (SPDT) types are available in the following switching actions. Non-locking indicates biased or momentary action.

Type	Action	Description
A	ON-ON	Locking both ways
J	ON-(ON)	Locking one way, non-locking one way
B	ON-OFF-ON	Locking both ways, centre off
C	ON-OFF-(ON)	Locking one way, non-locking one way, centre off
D	(ON)-OFF-(ON)	Non-locking both ways, centre off



Similarly double-pole double-throw (DPDT) types are available in the following switching actions.

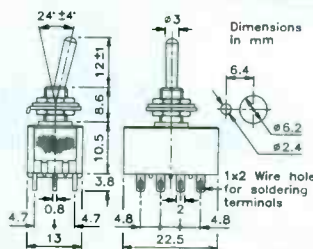
Type	Action	Description
E	ON-ON	Locking both ways
K	ON-(ON)	Locking one way, non-locking one way
F	ON-OFF-ON	Locking both ways, centre off
G	ON-OFF-(ON)	Locking one way, non-locking one way, centre off
H	(ON)-OFF-(ON)	Non-locking both ways, centre off

Retail Unit Price each (inc. VAT).

Order Code	Type 2341	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH00A	Sub-Min Toggle A	£1.010	£0.640	£0.540	£1.190
FF70M	Sub-Min Toggle J	£1.020	£0.652	£0.550	£1.200
FH01B	Sub-Min Toggle B	£1.020	£0.652	£0.550	£1.200
FH02C	Sub-Min Toggle C	£1.020	£0.652	£0.550	£1.200
FH03D	Sub-Min Toggle D	£1.020	£0.652	£0.550	£1.200
FH04E	Sub-Min Toggle E	£1.010	£0.640	£0.540	£1.190
FF71N	Sub-Min Toggle K	£1.190	£0.836	£0.724	£1.400
FH05F	Sub-Min Toggle F	£1.190	£0.836	£0.724	£1.400
FH06G	Sub-Min Toggle G	£1.190	£0.836	£0.724	£1.400
FH07H	Sub-Min Toggle H	£1.190	£0.836	£0.724	£1.400

#### 4-Pole Type

4-pole changeover.  
Dimensions:  
Body 13 x 22.8 x 12.3mm  
Bush length: 8mm  
Dolly length: 12mm  
Tag length: 4mm

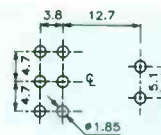
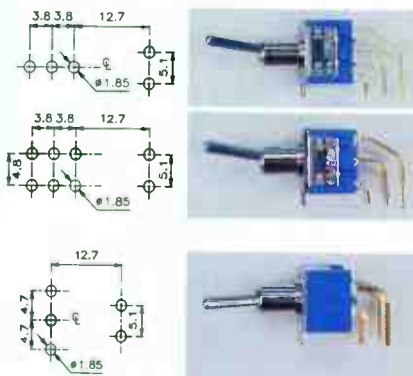


Retail Unit Price each (inc. VAT).

Order Code	Type 2343	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH08J	4-Pole SM Toggle	£2.570	£1.790	£1.590	£3.020

#### Right-Angled PCB Mounting Type

Sub-miniature toggle switches rated at 250V AC 3A, 125V AC 6A, 30V DC 5A. Silver-plated alloy contacts. Nickel-plated brass dolly. The switches have extended right-angled terminals and a pair of pins at the edge of the toggle pivot plate for insertion in a pcb. The switches are not threaded for front panel fixing. Two styles are available for up/down and left/right operation and both are available in single- and double-pole double-throw versions. All other dimensions are as panel mounting types.



SPDT up/down  
DPDT up/down  
SPDT left/right  
DPDT left/right

Retail Unit Price each (inc. VAT).

Order Code	Type 2346	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FA70M	R/A Tggl SPDT Up/Dwn	£2.130	£1.670	£1.490	£2.510
FA72P	R/A Tggl DPDT Up/Dwn	£2.820	£2.230	£2.020	£3.320
FA73C	R/A Tggl DPDT Ltr/Rtr	£2.820	£2.230	£2.020	£3.320

#### Sub-Miniature Waterproof Toggle Switch Cover

##### Moist Components

A waterproof toggle switch cover for use with sub-miniature toggle switches having 1/4-40 UNF threaded mounting bushes. This cover fits the 'Sub-Miniature Toggle Switch' range. The cover comprises of a polychloroprene boot with a knurled nickel-plated brass nut. To provide sealing between the panel and the cover, an O-ring is also supplied. When this toggle switch cover is used, the switch locating plate and outer fixing nut are not required.



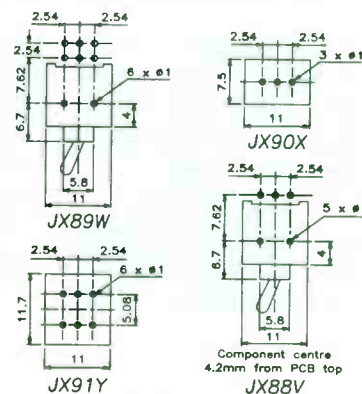
Retail Unit Price each (inc. VAT).

Order Code	Type 2348	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JR79L	Small Toggle Cover	£1.270	£1.120	£1.020	£1.500

#### Miniature PCB Mounting Toggle Switches



A range of miniature toggle switches for direct PCB mounting, available in both single and double pole changeover, both vertical or right-angled mounting. Right-angled types have two extra PCB pins at front near the toggle for secure fixing. Suitable for use with 0.1in. matrix board. All types are rated at 0.3A at 125V DC. Contact resistance is 20mΩ. Insulation resistance, 100MΩ at 500V DC.



Insulation strength, 1000V AC for 1 minute.  
Chrome toggle dolly is 6mm long on all types.



**Dimensions of body**

Type	Height mm	Width mm	Depth mm
Vertical SPDT	13-6	11	7-5
Horizontal SPDT	8	11	14-4
Vertical DPDT	13-6	11	11-7
Horizontal DPDT	12-2	11	14-4

Retail Unit Price each (inc. VAT).

Order Code	Type 2344	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JX90X	PCB Sw Vert SPDT	£1.100	£0.908	£0.836	£1.300
JX88V	PCB Sw Hori SPDT	£1.370	£1.060	£0.958	£1.810
JX91Y	PCB Sw Vert DPDT	£1.370	£1.060	£0.958	£1.810
JX89W	PCB Sw Hori DPDT	£1.960	£1.450	£1.280	£2.310

**Toggle Covers**

Moisture proof covers that fit over the dolly of the miniature toggle switches. Available in the colours red, white or black.



Retail Unit Price each (inc. VAT).

Order Code	Type 2254	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
RA95D	Min Toggle Cover Red	£0.161	£0.102	£0.082	£0.190
RA96E	Min Toggle Cover Wht	£0.161	£0.102	£0.082	£0.190
RA97F	Min Toggle Cover Blk	£0.161	£0.102	£0.082	£0.190

**DPDT Toggle**

A standard DPDT toggle switch rated 2A 250V AC, 6A 125V AC. Supplied with on/off plate.



Body size: 27.5 x 17 x 14.5mm high  
 Tag length: 5.5mm  
 Bush: M12 x 8.5mm long  
 Dolly: 14mm long, 5mm dia.  
 Panel cut-out: 12.7mm dia.  
 Contact resistance: <50mΩ  
 Insulation resistance: >100MΩ  
 Life: >20,000 make/break cycles at full load

Retail Unit Price each (inc. VAT).

Order Code	Type 2335	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FH39N	Toggle Sw	£0.944	£0.684	£0.582	£1.110

**Toggle Switch Cover**



A black flexible PVC boot with integral nut to suit an M12 thread, e.g. FH39N. The cover is splashproof.

Retail Unit Price each (inc. VAT).

Order Code	Type 2358	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
YL01B	Toggle Switch Cover	£0.944	£0.776	£0.714	£1.110

See Stock Code Index For More Price Breaks

**10A Toggle Switches**

A range of heavy duty toggle switches with chrome-plated dolly. Connections are 6.35mm (1/4in.) blade terminals with hole for soldering if desired as an alternative.

Rated 10A 250V AC  
 15A 125V AC  
 Contact resistance: <50mΩ  
 Insulation resistance: >100MΩ  
 Life: >50,000 make/break cycles at full load  
 Available in single pole and double pole.



**Single pole types**

Body size: 29.2 x 15.8 x 17.5mm high  
 Tag length: 11mm  
 Bush: M12 x 11.5mm long  
 Dolly: 16.5mm long x 6mm dia.  
 Panel cut-out: 12.7mm dia.



**Double pole types**

Body size: 32.5 x 19.5 x 20mm high  
 Tag length: 11mm  
 Bush: M12 x 11.5mm long  
 Dolly: 16.5mm long x 6mm dia.  
 Panel cut-out: 12.7mm dia.

Type	Action	Description
SPST	ON-OFF	Single-pole locking, 2-pin
SPDT-A	ON-ON	Single-pole locking, 3-pin
SPDT-B	ON-OFF-ON	Single-pole locking, 3-pin, centre off
DPST	ON-OFF	Double-pole locking, 2-pin
DPDT-E	ON-ON	Double-pole locking, 3-pin
DPDT-F	ON-OFF-ON	Double-pole locking, 3-pin, centre off

Retail Unit Price each (inc. VAT).

Order Code	Type 2360	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JK25C	10A Toggle SPST	£1.350	£0.880	£0.740	£1.590
JK27E	10A Toggle SPDT A	£1.450	£1.030	£0.888	£1.710
JK28F	10A Toggle SPDT B	£1.450	£1.030	£0.888	£1.710
JK26D	10A Toggle DPST	£1.620	£1.230	£1.060	£1.910
JK29G	10A Toggle DPDT E	£1.710	£1.320	£1.120	£2.010
JK30H	10A Toggle DPDT F	£1.710	£1.320	£1.120	£2.010

**ROCKER**

**Round-Faced Miniature Rocker Switches**

A range of three miniature round faced rocker switches with single round hole fixing and solder terminals. Mounting hole: 18mm. Current rating: SPST and SPDT 240V AC 3A; DPDT 240V AC 1.5A.



Retail Unit Price each (inc. VAT).

Order Code	Type 2361	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FG47B	Round Rocker SPST	£1.710	£1.450	£1.340	£2.010
FG48C	Round Rocker SPDT	£1.710	£1.450	£1.340	£2.010
FG49D	Round Rocker DPDT	£1.960	£1.590	£1.420	£2.310

**Snap-in Miniature Round Rocker Switches**

A range of miniature round faced rocker switches which snap-in a 20.4mm diameter hole. Body has a 2mm wide locating lug for which a slot must be provided in the edge of the hole, to prevent rotation.



Available in SPST, SPDT, DPST and DPDT contact configurations with red or black rocker. All buttons have a white spot to indicate the 'on' direction. Connections are 4.8mm push-on style terminals which can be soldered. Contacts are rated at 125V AC @ 5A, 250V AC @ 3A. Contact resistance is 20mΩ max. as measured with 2.5V @ 1A DC. Insulation resistance 100MΩ @ 500V DC, insulation strength is > 1,500V AC.

Retail Unit Price each (inc. VAT).

Order Code	Type 2363	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JR96E	Round Rocker SPST Bk	£1.190	£0.918	£0.816	£1.400
JR97F	Round Rocker SPST Rd	£1.190	£0.918	£0.816	£1.400
JR98G	Round Rocker SPDT Bk	£1.270	£0.990	£0.878	£1.500
JR99H	Round Rocker SPDT Rd	£1.270	£0.990	£0.878	£1.500
JU00A	Round Rocker DPST Bk	£1.450	£1.130	£1.020	£1.710
JU01B	Round Rocker DPST Rd	£1.450	£1.130	£1.020	£1.710
JU02C	Round Rocker DPDT Bk	£1.880	£1.420	£1.250	£2.210
JU03D	Round Rocker DPDT Rd	£1.880	£1.420	£1.250	£2.210

**Miniature Rocker Switches**



A very attractive single hole fixing miniature rocker switch available in SPST and DPDT styles. Switch has a red rocker in a matt finish black frame.

Rating: 6A/125V AC (2A/250V AC)  
 Contact resistance: <20mΩ  
 Panel cut-out: 18mm diameter  
 Overall depth behind front of panel: 14mm  
 Overall height in front of panel: 12mm (including rocker) 7.5mm (frame only)  
 Frame size: 30 x 20mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 2365	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
YX64U	Min Rocker SPST	£0.765	£0.530	£0.438	£0.900
YX65V	Min Rocker DPDT	£1.020	£0.806	£0.704	£1.200

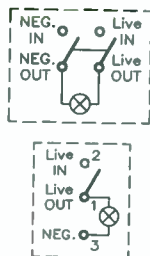
**ORDER BEFORE 5PM FOR SAME DAY DESPATCH**

**Tel: 01702 554000**

**Fax: 01702 554001**

**e-mail: Sales@maplin.co.uk**

## Illuminated Rocker Switch



A smart, snap-in rockerred or green neon illuminated rocker. DPST contacts rated 10A @ 125V, 6A @ 250Vac. Connectors are push-on style terminals which can be soldered. The snap-in switch requires a panel cut-out of 22 x 19mm. Overall depth from front of panel is 23.5mm. Contact resistance is 50mΩ max. Insulation resistance is 100MΩ at 500V DC. Insulation strength is 1500V AC for 1 minute.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KUR9H	Red Neon Switch	£1.540	£1.220	£1.070	£1.810
GU57M	DPST 10A Gm Rocker	£1.710	£1.450	£1.330	£2.010

## Single Pole 16A Rocker Switches

Molveno

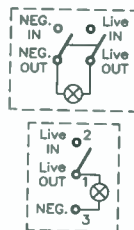
Snap fit mounting rocker switches having a black polycarbonate body and white rocker. These 16A 250VAC rated switches require a 12.5 x 28.0mm cut out, connections are via 6.3mm solder tags. They have a very wide range of approvals including, UL, CSA, VDE, IMQ, SEMKO & DEMKO.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CL92A	SPDT Rocker 16A	£0.672	£0.580	£0.500	£0.790
CL91Y	SPST Rocker 16A	£0.587	£0.450	£0.380	£0.690

## Rocker Switches



A range of 10A 250V AC rocker switches having a black polycarbonate body and white rocker, or green (with white body) or red lens. The switches are snap-mounting and require a panel cut-out 29 x 12.5mm for single-pole types and 29 x 25mm for double-pole types, except for YR70M/FE64U which require a cut-out of 30 x 22mm. Types available are: Single-pole make with integral neon indicator with red or green lens (Neon); Double-pole make (DPST); Double-pole changeover (DPDT); Double-pole make with integral neon indicator with red or green lens (Dual Rocker Neon).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YR68Y	Rocker Neon Red	£1.240	£1.020	£0.878	£1.460
FE63T	Rocker Neon Green	£1.450	£1.170	£1.030	£1.710
YR69A	DPST Rocker	£0.944	£0.786	£0.674	£1.110
FE34M	DPDT Rocker	£1.270	£1.040	£0.878	£1.500
YR70M	Dual Rocker Neon Red	£1.620	£1.270	£1.030	£1.910
FE64U	Dual Rocker Neon Gm	£1.960	£1.500	£1.140	£2.310

## Rocker Switch

Cliff

A snap-in, black rocker switch that is available with either DPDT, or DPST contacts. Suitable for panel thickness 0.75 to 3.00mm.



### Specification

Rating: 250V AC 6A, 125V AC 8A  
 Inrush current: >80A  
 Contact resistance: <20mΩ  
 Dimensions: 24 x 21 x 24mm

### Panel thickness

(mm)  
 0.75 to 1.25  
 1.25 to 2.00  
 2.00 to 3.00

### Size of mounting hole (mm)

width height  
 19.2 21.9  
 19.4 21.9  
 19.8 21.9

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DE62S	DPST Rocker	£1.450	£1.120	£1.020	£1.710
DE63T	DPDT Rocker	£1.710	£1.330	£1.210	£2.010

## Single-Pole Rocker Switch

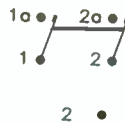


A slim aesthetically styled, single-pole, single-throw, illuminated rocker switch that is mains rated and uses a neon indicator. Moulded in self-extinguishing thermoplastic this switch is supplied with a red illuminated rocker and snap-fits into a cut-out 19 x 13mm in a panel 0.7 to 1.25mm thick. Rated at 10A/250V AC for resistive loads or 4A/250V AC for inductive loads.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RD18U	SP Neon Rocker Sw	£1.100	£0.836	£0.734	£1.300

## Double-Pole Rocker Switch



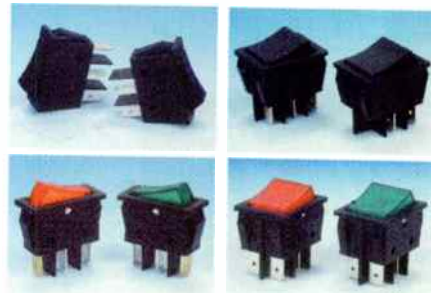
A range of slim aesthetically styled, double-pole, single-throw, rocker switches that are mains rated and available with or without a neon indicator. Moulded in self-extinguishing thermoplastic these switches are supplied with either a black rocker or a red illuminated rocker and snap-fit into a cut-out 19 x 13mm in a panel 0.7 to 1.25mm thick. Rated at 6A/250V AC for resistive loads or 2A/250V AC for inductive loads.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RD17T	DP Neon Rocker Sw	£1.620	£1.250	£1.130	£1.910
RD19V	Rocker Switch	£0.944	£0.786	£0.674	£1.110

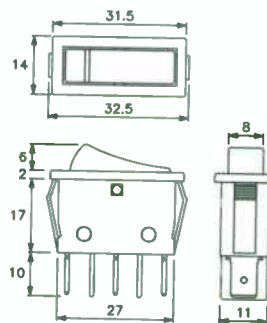
## 16A Rocker Switches

Molveno

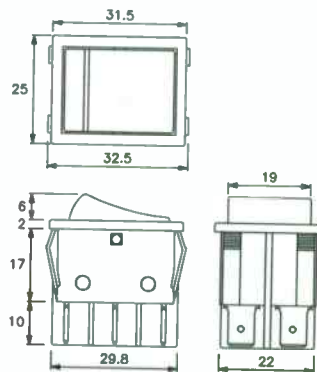


A series of large rocker switches with 11 x 30mm single and 22 x 30mm double EUROPEAN cut-out. They are single/double pole on/off and c/o switches with the option of illuminated rockers. All connections are via 6.5mm fastons.

Rating: 16A @ 240V  
 Action ON/OFF except GU50E & GU54J which are C/O



Order Code	Type	Colour	Illumination
GU49D	SPST B111C11	All Black	NONE
GU50E	SPDT B113C11	All Black	NONE
GU51F	SPST B116C1G	Red Rocker	YES
GU52G	SPST B116C1E	Green Rocker	YES
GU53H	DPST B412C11	All Black	NONE
GU54J	DPDT B411C11	All Black	NONE
GU55K	DPST B418C1G	Red Rocker	YES
GU56L	DPST B418C1E	Green Rocker	YES



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
GU49D	SPST 16A Rocker	£0.417	£0.373	£0.346	£0.490
GU50E	SPDT 16A Rocker	£0.510	£0.433	£0.398	£0.600
GU51F	SPST 16A Red Rocker	£0.765	£0.658	£0.602	£0.900
GU52G	SPST 16A Gm Rocker	£0.851	£0.714	£0.664	£1.000
GU53H	DPST 16A Rocker	£0.680	£0.572	£0.520	£0.800
GU54J	DPDT 16A Rocker	£0.680	£0.582	£0.540	£0.800
GU55K	DPST 16A Red Rocker	£0.936	£0.801	£0.734	£1.100
GU56L	DPST 16A Gm Rocker	£1.100	£0.953	£0.878	£1.300

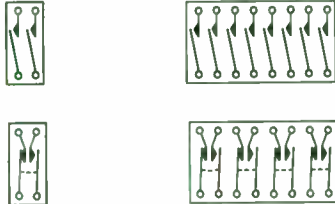


**DUAL IN LINE**

**Sub-miniature PCB Mounting**



Sub-miniature switches in dual-in-line packages for PCB mounting. Pin spacing 7.62 x 2.54mm (0.3in. x 0.1in.) Manufactured in UL94-V0 grade plastic with gold-plated contacts and leads.



Contact rating, non-switching:  
switching:

100mA 50V DC  
25mA 24V DC  
100mA 5V DC

Contact resistance:  
Life:

<50mΩ  
>3000 operations per pole

Dimensions:  
Width:  
Height:

9.7mm  
6.6mm SPST types  
7.7mm SPDT types

Pin length:  
Length:

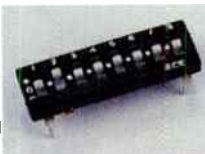
3mm  
2-pole SPST: 6.7mm  
4-pole SPST: 11.7mm  
6-pole SPST: 16.7mm  
8-pole SPST: 21.7mm  
10-pole SPST: 26.7mm  
1-pole SPDT: 6.7mm  
2-pole SPDT: 11.7mm  
4-pole SPDT: 21.7mm

Retail Unit Price each (inc. VAT).

Order Code	Type 2381	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
XX26D	DIL Switch SPST Dual	£0.680	£0.490	£0.408	£0.800
FV43W	DIL Switch SPST Quad	£0.765	£0.582	£0.510	£0.900
FV44X	DIL Switch SPST 8Way	£0.851	£0.664	£0.562	£1.000
XX27E	DIL Switch SPST Octl	£1.020	£0.744	£0.622	£1.200
FV45Y	DIL Switch SPST 10W	£1.190	£0.766	£0.652	£1.400
XX28F	DIL Switch SPDT Sgl	£0.680	£0.490	£0.408	£0.800
JH11M	DIL Switch SPDT 2Way	£0.765	£0.582	£0.510	£0.900
XX29G	DIL Switch SPDT Quad	£1.020	£0.744	£0.622	£1.200

**Slimline Tri-State Switch**

A PCB mounting switch in a dual-in-line package with tri-state switching. The eight outputs can be either 'high', 'indeterminate', or 'low'. The switch is manufactured from UL94V0 plastics with gold plated contacts, to ensure low resistance and long operating life. Designed to fit a standard IC socket or can be directly mounted on the PCB. Ideally suited for encoding/decoding circuitry in digital and computer circuits.



Contact rating non-switching:  
switching:

100mA, 50V DC  
25mA, 24V DC

Contact resistance initial:  
after life test:

50mΩ max.  
100mA max.

Insulation resistance:  
Dielectric strength:

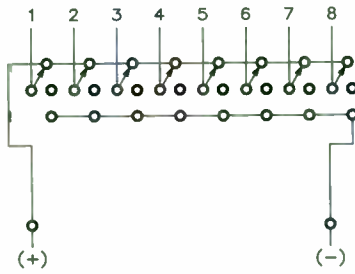
1,000MΩ min at 100V DC  
500V DC min for 1 minute

Capacitance between adjacent switches:  
Operating life:

5pF max.  
> 2,000 operations per pole

Acceptable soldering temperature:

260 ±5°C for 5 ±1 second



Dimensions  
width: 7.62mm  
length: 21.92mm  
height: 4.1mm  
pin spacing: 2.54mm (0.1in.)  
pin length: 3.5mm

Retail Unit Price each (inc. VAT).

Order Code	Type 6443	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GW74F	8W Tri-State DIL Sw	£1.370	£1.170	£0.918	£1.610

**Slimline SPST**



DIL switches with dimensions identical to DIL ICs. The pins fit standard IC sockets or can be directly mounted on the PCB. The white levers are numbered 1 and 2, 1 to 4, 1 to 6, or 1 to 8 depending on size and have a movement of 1mm. The switch is made from UL94V-0 plastics with gold-plated twin contacts to ensure low contact resistance and long operating life. Pin spacing is 7.62 x 2.54mm (0.3in. x 0.1in.).

Contact rating, non-switching:  
switching:

100mA 50V DC  
100mA 5V DC

Contact resistance:

<50mΩ

Insulation resistance:

1000MΩ at 100V DC  
500V DC min. for 1 minute

Dielectric strength:

Capacitance between adjacent switches:  
Life:

5pF  
>2000 operations per pole

Dimensions:  
Width:

7.62mm

Height:

4.3mm

Pin length:

3mm

Actuator height:

1mm

Leaheight:

2-pole: 5.04mm  
4-pole: 10.12mm  
6-pole: 15.20mm  
8-pole: 20.28mm

Retail Unit Price each (inc. VAT).

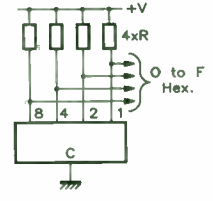
Order Code	Type 2387	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JH19K	Slimline 2W DIL Sw	£0.680	£0.520	£0.460	£0.800
JH68J	Slimline 4W DIL Sw	£0.851	£0.694	£0.602	£1.000
CJW0X	Slimline 6W DIL Sw	£0.936	£0.714	£0.622	£1.100
QV70M	Slimline 8W DIL Sw	£1.100	£0.826	£0.684	£1.300

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Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

**ROTARY**

**Sub-Miniature PCB Mounting 'Hex' Encoded Rotary Switches**



Extremely compact, PCB mounting, sub-miniature switch arrays which can produce any 4-bit hexadecimal number from 0 to F by simply turning the integral slotted actuator with a screwdriver, to one of 16 click-stop positions. The switches are 10mm square and 11mm high overall excluding pins. The five pins are spaced for a 2.54mm (0.1in.) matrix, comprising one common pin and four 'output' pins for hex 0 to 3.

Switch QY68Y is arranged so that any pin output 'bit 0' in hex is connected to the common pin. For identification purposes, the actuator is white. Switch QY69A has the complementary arrangement in that any pin output 'bit 0' in hex is open circuit, or not connected to the common pin. For identification purposes, the actuator is red.

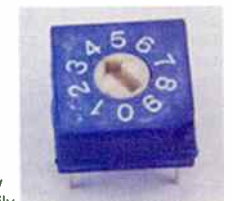
**Specification**

Contact rating: 100mA @ 50V DC non-switching  
100mA @ 5V DC switching  
Contact resistance: 100mΩ  
Dielectric strength: 250V AC for 1 minute  
Insulation resistance: >1000MΩ @ 100V DC  
Life: 10000 operations  
Acceptable soldering temperature: 260°C±5°C for 10 min.

Retail Unit Price each (inc. VAT).

Order Code	Type 6446	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
QY68Y	PCB Hex Sw On = 0	£2.310	£1.860	£1.640	£2.720
QY69A	PCB Hex Sw On = 1	£2.310	£1.860	£1.640	£2.720

**Decimal Rotary DIL Switch**



A PCB mounting, sealed, dual-in-line, 10-position, BCD rotary programming switch with 1-2-4-8 binary coding. The switch is easily operated by means of the screwdriver slot on top of the body and has a positive click action. The switch provides complement coding and is suitable for use in pre-programming of digital circuits and computers.

**Specification**

Contact rating Non-switching: 100mA, 50V DC  
Switching: 25mA, 24V DC resistive  
Contact resistance: 100mΩ max. at 5V DC, 10mA  
Insulation resistance: 1000MΩ min at 100V DC  
Dielectric strength: 240V x 104 operations without load  
Acceptable soldering temperature: 230 ±5°C for 3 ±0.5 secs - (75% coverage)

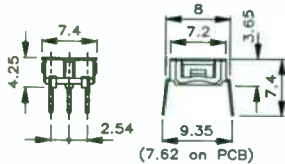
Retail Unit Price each (inc. VAT).

Order Code	Type 6447	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
CJ89W	DIL SW Dec	£1.710	£1.440	£1.200	£2.010

**Business Account Holders**  
No Delivery Charges for any order

## Miniature Sealed Rotary Switch

A sub-miniature coded rotary switch in DIP configuration, that has sealed gold contacts, and is available with either 10 or 16-positions. A screwdriver slot is provided for switch position selection. The 10-position switch has been especially designed for direct binary coding, while the 16-position version has been designed for hexadecimal coding. The small dimensions make the switch ideal for PCB mounting.



### Specification

Switching voltage  
maximum: 30V DC  
minimum: 20mV DC

Switching current  
maximum: 100mA  
minimum: 10µA at 5V DC

Initial contact resistance: 100mΩ

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DK89W	10p Rotary Switch	£1.710	£1.370	£1.220	£2.010
DK90X	16p Rotary Switch	£1.880	£1.490	£1.330	£2.210

## Rotary Switches

Lorlin

A high quality rotary switch moulded in glass-filled nylon. Indexing 30°. 6.3mm (1/4in.) spindle. 9.5mm (3/8in.) bush. With adjustable rotation limit stop. Silver-plated contacts.



Bush length: 8mm  
Spindle length: 30mm (with flat)  
Overall length: 58mm  
Max voltage: 300V AC or DC  
Max current: 5A continuous  
Contact resistance: 10mΩ  
Contact rating: 150mA at 250V AC or DC  
350mA at 110V AC or DC

The following types are available:

### Break before Make action

1 pole 12 way: FF73Q    3 pole 4 way: FF75S  
2 pole 6 way: FF74R    4 pole 3 way: FF76H

### Make before Break action

1 pole 12 way: FH42V    3 pole 4 way: FH44X  
2 pole 6 way: FH43W

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FF73Q	Rotary SW12B	£0.851	£0.808	£0.766	£1.000
FF74R	Rotary SW6B	£0.851	£0.808	£0.766	£1.000
FF75S	Rotary SW4B	£0.851	£0.808	£0.766	£1.000
FF76H	Rotary SW3B	£0.851	£0.808	£0.766	£1.000
FH42V	Rotary SW12	£0.851	£0.808	£0.766	£1.000
FH43W	Rotary SW6	£0.851	£0.808	£0.766	£1.000
FH44X	Rotary SW4	£0.851	£0.808	£0.766	£1.000

## Clickless Switch

Lorlin

A Rotary Sw12 without clicks.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
XX45Y	Switchpot 1p 12w	£0.851	£0.808	£0.766	£1.000

## Right-Angled PCB Mounting Rotary Switch

Lorlin



A right-angled PCB mounting rotary switch which features single line PCB insertion pins on a 2.54mm (0.1in.) spacing. Two mounting pillars and fixing screws are provided under the switch body to ensure rigid support to the PCB, in addition to the usual 9.53mm (3/8in.) spindle bush and nut fitting for front panel mounting, and adjustable end stop. The switch contacts are an integral part of a PCB at rear of the switch and are brought out to the insertion pins at the bottom.

Available as break before make in 1 x 12 way.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FT56L	PCB R/A Rotary 1x12	£3.900	£3.710	£3.510	£4.590

## Stackable PCB Mounting Wafer

Lorlin

A 1-pole, 12-way rotary wafer switch designed to be added behind any of the main PCB switch units above. The main switch couples to a number of secondary wafers via a nylon shaft, which inserts into a keyed recess at rear of the main switch. The shaft will pass through up to 11 stackable wafers, forming one complete, pcb mounted multi-pole rotary switch assembly. Shaft is 76mm in length x 4.5mm dia. Wafers available as 1-pole 12-way only.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FA97F	Wafer 1 Pole 12 Way	£2.280	£2.170	£2.060	£2.690
FA98G	Wafer Shaft Plastic	£0.553	£0.523	£0.495	£0.650

## Rotary Mains Switch

Lorlin



A double-pole single-throw (DPST) rotary mains switch moulded in flame retardant plastic. Recommended for use in circuits where heavy switching current surges occur. Indexing 45°. 6.3mm (1/4in.) spindle. 9.5mm (3/8in.) bush.

### Specification

Bush length: 8mm  
Spindle length: 25mm (with flat)  
Overall length: 47mm  
Contact rating: 4A at 250V AC  
Current surge: 80A for 10msec.  
Contact resistance: 20mΩ

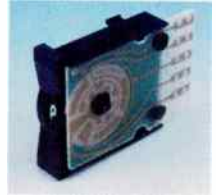
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FH57M	Rotary Mains	£1.310	£1.250	£1.180	£1.550

## THUMBWHEEL

### Thumbwheel Switches

A thumbwheel edge switch in a black plastic housing. This high quality switch has gold plated contacts on both the PCB and wiper to ensure reliable operation. The numbers 0 to 9 appear in the aperture in the front as the aperture is revolved, and the operation is smooth and positive. The switches are front panel mounting with snap-in fixings, and can be snapped together to form a bank of switches if desired.



Connections are made as follows:

No.	Pin numbers	BCD
0	Decimal C and 0	None
1	C and 1	C and 1
2	C and 2	C and 2
3	C and 3	C, 1 and 2
4	C and 4	C and 4
5	C and 5	C, 1 and 4
6	C and 6	C, 2 and 4
7	C and 7	C, 1, 2 and 4
8	C and 8	C and 8
9	C and 9	C, 1 and 8

Switch resistance: 100mΩ max  
Current carrying capacity: 1A max  
Contact rating: 150mA at 50VAC or 28VDC

Character height: 5.8mm  
Width of switch: 8mm  
Overall height: 33mm  
Overall depth: 43mm  
Panel cut-out: 31 x 8mm

## End Cheeks for Thumbwheel Switches

A pair of end cheeks, one right-hand and one left-hand mounting that enable snap-in mounting. To calculate the size of panel cut-out required use the formula:- Multiply the number of switches by eight, then add eight to give the width in mm, and the height is 33mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JK36P	Thumbwheel BCD	£1.960	£1.540	£1.270	£2.310
JK35Q	Thumbwheel Decimal	£1.960	£1.540	£1.270	£2.310
JK37S	End Cheeks	£0.680	£0.530	£0.470	£0.800

## KEY OPERATED

### Miniature Round Type



A single-pole make/break, metal-bodied key switch with a chrome-plated bezel. The key switch uses a round key for extra high security. The switch has two solder buckets at the rear. Supplied with two keys. The key may be withdrawn in either position.

### Specification

Bezel diameter: 15mm  
Panel cut-out: 12mm (the bush is flattened to 10.25mm on opposing sides to prevent twisting)  
Bush length: 20mm  
Indexing: 90°  
Contact rating: 1/2 A at 250V AC

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FE44X	Min Key Switch	£3.850	£2.290	£1.740	£4.530

## Miniature Short Round Type SPST



A single-pole, single-throw, short, zinc-alloy bodied key switch with a chrome-plated bezel. The key switch uses a round key for extra security. The switch position is indicated by an arrow; the key can be withdrawn from either position. The switch has two solder bucket terminals at the rear. Supplied with two keys.

### Specification

Bezel diameter: 15mm  
Panel cut-out: 12mm dia, 10.8mm across the flats (provided to prevent twisting)  
Bush length: 10.3mm  
Indexing: 90°  
Contact rating: 1A 125V AC  
0.5A 250V AC

Retail Unit Price each (inc. VAT).

Order Code	Type 2443	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CJ92A	Min Round Key Sw	£2.130	£1.300	£1.010	£2.510

## Miniature Round Type SPDT



A single-pole, double-throw, key switch with a zinc-alloy die-cast housing and chrome-plated bezel. The key switch uses a round key for extra security; the key can be withdrawn from either position. The switch has four solder bucket terminals at the rear. Supplied with two keys with a range of 200 combinations.

### Specification

Bezel diameter: 15mm  
Panel cutout: 12mm dia, 10.8mm across the flats (provided to prevent twisting)  
Bush length: 21.5mm  
Indexing: 90°  
Contact rating: 1A 125V AC  
0.5A 250V AC

Retail Unit Price each (inc. VAT).

Order Code	Type 2445	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CJ94C	Min SPDT Key	£3.850	£2.290	£1.740	£4.530

## Miniature Four Position



A single-pole, four-position, key switch with a zinc-alloy die-cast housing and stainless steel bezel. This key switch is ideal for specialist alarm systems

where there is a need for separate arming and testing positions; the key can be withdrawn from any of the four positions. At the rear, the switch has four pin terminals and one solder bucket terminal. Supplied with two keys, with a wide range of combinations.

### Specification

Bezel diameter: 15.5mm  
Panel cut-out: 12mm dia, 10.8mm across the flats (provided to prevent twisting)  
Bush length: 23.5mm  
Indexing: 0°, 90°, 180°, 270°  
Contact rating: 400mA 125V AC  
200mA 250V AC

Retail Unit Price each (inc. VAT).

Order Code	Type 2447	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CJ95D	Min 4 Pos Key	£4.280	£2.640	£2.140	£5.040

## Metal Body Round Type DPST



A top quality, double-pole, single-throw, key switch having a zinc-alloy die-cast housing and cylinder with a chrome plated bezel. The key switch uses a round key for extra security; the key can be withdrawn from either position. The radial cylinder has a seven-pin tumbler mechanism, deterring lock-picking and providing a wide range of key differences. Random supply from 50,000 different combinations. Ideal for alarm and security systems. The switch has four solder tags at the rear. Supplied with two keys.

### Specification

Bezel diameter: 22mm  
Panel cut-out: 19mm dia, 15.8mm across the flats (provided to prevent twisting)  
Bush length: 25.5mm  
Indexing: 90°  
Contact rating: 4A 125V AC  
2A 250V AC

Retail Unit Price each (inc. VAT).

Order Code	Type 2448	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CJ96E	Metal DPST Round Key	£4.280	£2.640	£2.140	£5.040

## Metal Body DPST



A top quality, double-pole, single-throw, key switch with a zinc-alloy die-cast housing and cylinder with a chrome plated bezel. The cylinder has a five-disc tumbler mechanism, to deter lock-picking; the reversible key can be withdrawn from either position. Suitable for burglar alarms and security systems. The switch has four solder tags at the rear. Supplied with two keys with a range of 150 combinations.

### Specification

Bezel diameter: 22mm  
Panel cut-out: 19mm dia, 15.8mm across the flats (provided to prevent twisting)  
Bush length: 27mm  
Indexing: 90°  
Contact rating: 4A 125V AC  
2A 250V AC

Retail Unit Price each (inc. VAT).

Order Code	Type 2451	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CJ97F	Metal DPST Key	£4.280	£2.640	£2.140	£5.040

## Metal Body SPST



A top quality, single-pole, single-throw, key switch with a zinc-alloy die-cast housing and cylinder with a chrome plated bezel. The cylinder has a five-disc tumbler mechanism, with dust shutter, to deter lock-picking; the reversible key can be withdrawn from either position. Ideal for burglar alarms and security systems. The switch has two solder bucket terminals at the rear. Supplied with two keys with a range of 150 combinations.

### Specification

Bezel diameter: 22mm  
Panel cut-out: 19mm diam, 16.3mm across the flats (provided to prevent twisting)  
Bush length: 27.5mm  
Indexing: 90°  
Contact rating: 4A 125V AC  
2A 250V AC

Retail Unit Price each (inc. VAT).

Order Code	Type 2455	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CJ98G	Metal SPST Sw	£3.680	£2.040	£1.690	£4.330

## Metal Body DPDT

Lorlin



A DPDT rotary switch operated with a flat key. Ideal for burglar alarms and all security applications. The key may be withdrawn in either position. Two keys provided with each lock. Random supply of 200 different lock numbers. Panel cut-out 19.9mm (3/4in.).

Bezel dia: 22.2mm  
Bush length: 12.7mm  
Indexing: 90°  
Contact rating: 4A 250V AC  
10A 12V DC

Retail Unit Price each (inc. VAT).

Order Code	Type 2457	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH40T	Key Switch	£5.350	£5.080	£4.810	£6.290

## Key Switch Cover

**Calvyn Industrial**

An attractive chrome-plated cover for use with our Key Switch FH40T. Cover is spring loaded and provides weather-proof protection.



Retail Unit Price each (inc. VAT).

Order Code	Type 2460	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FE43W	Key Switch Cover	£1.020	£0.836	£0.744	£1.200

## Plastic Body SPDT



An SPDT rotary switch operated with a non-reversible flat key, in a tough black plastic body. Three solder tags at rear. Barrel has a white pointer dot. Panel cut-out 19.9mm (3/4in.). Supplied with 2 keys. The key may be withdrawn in either position.

### Specification

Bezel diameter: 22mm  
 Bush length: 19.5mm  
 Indexing: 90°  
 Contact rating: 3A 125V AC  
 1A 250V AC  
 Contact resistance: <20mΩ  
 Insulation resistance: @ 500V DC >100MΩ  
 Insulation strength: 1 minute @ 1000V AC

Retail Unit Price each (inc. VAT).

Order Code	Type 2458	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FV42V	Plas Key Switch	£6.430	£5.320	£5.200	£7.560

## MAKA SWITCH

### Maka-Switch

**Lorlin**



Switches may be made up using the various accessories to suit individual requirements. Available only in 'miniature' size. 6.3mm (1/4in.) spindle, 9.5mm (3/8in.) bush.

### Shaft Assembly

Switch mechanism (shafting assembly) accommodates up to 4 wafers.

### Specification

Indexing: 30°  
 Diameter: spindle: 6.3mm (1/4in.)  
 bush: 9.5mm (3/8in.)  
 Spindle length: 41mm (with flat).  
 Bush length: 8mm  
 Overall length: 90mm  
 With adjustable rotation limit stop.

Retail Unit Price each (inc. VAT).

Order Code	Type 2464	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FH46A	Maka Shaft	£2.950	£2.800	£2.650	£3.470

## Wafers

Glass filled diallyl phthalate stators, acetel rotors and silver-plated contacts.



Max working voltage: 300V AC or DC  
 Max current: 5A continuous  
 Contact resistance: 10mΩ  
 Contact rating: 150mA at 250V AC or DC  
 350mA at 110V AC or DC

The following types are available:

### Break before Make action

1 pole 12 way: FH47B, 2 pole 6 way: FH48C.  
 2 pole 9 way: FF81C, 4 pole 3 way: FH50E.  
 6 pole 2 way: FH51F.

### Make before Break action

1 pole 12 way, can also be wired as independent 1 pole 2 way for the first 2 positions (thereafter open circuit), followed by the remaining 10 ways on a separate circuit. The wafer can be reversed to make the SPDT action the last 2 positions.  
 The two wiper contacts must be wired together for single pole 12 ways: FH52G, 2 pole 6 way: FH53H.

Retail Unit Price each (inc. VAT).

Order Code	Type 2467	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FH47B	Maka Wafer 1p 12w	£2.120	£2.020	£1.910	£2.500
FH48C	Maka Wafer 2p 6w	£2.120	£2.020	£1.910	£2.500
FF81C	Maka Wafer 2p 9w	£2.390	£1.580	£1.420	£2.810
FH50E	Maka Wafer 4p 3w	£2.120	£2.020	£1.910	£2.500
FH51F	Maka Wafer 6p 2w	£2.120	£2.020	£1.910	£2.500
FH52G	Maka Wafer 1p 12w MB	£2.030	£1.580	£1.420	£2.390
FH53H	Maka Wafer 2p 6w MB	£2.030	£1.580	£1.420	£2.390

## Screen

Metal plate to mount between wafers for screening.



Retail Unit Price each (inc. VAT).

Order Code	Type 2468	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FH55K	Maka Screen	£0.212	£0.200	£0.189	£0.250

## MICRO SWITCHES

### Sub-Miniature

A low-cost range of subminiature micro-switches produced to an internationally accepted standard size and operating characteristics. These switches are manufactured from glass-reinforced thermoplastic to give rugged performance. Switches are single-pole double-throw and available in the basic style, or with an actuator attached. Terminals are suitable for PCB mounting at a standard pitch.

The actuator is of stainless steel and is a 13mm long lever.

### Specification

Contact rating: 3A 125V AC  
 Body size: 12.8 x 6.5 x 5.8mm  
 Fixing centres: 6.5mm  
 Fixing hole: 1.2mm diameter (for M1 screws)

Retail Unit Price each (inc. VAT).

Order Code	Type 2451	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GW66W	Sub-Microsw	£0.595	£0.510	£0.418	£0.700
GW67X	Sub-Microsw/Lever	£0.680	£0.592	£0.448	£0.800

## Sub Miniature

**Crouzet**



A sub-miniature microswitch of internationally accepted size and operating characteristics. It is manufactured to the highest standards using glass-reinforced thermoplastic with inlaid silver contacts. Switches are single-pole double-throw. BT approved.

### Specification

Contact rating: 5A 250V AC  
 Body size: 19.84 x 6.35 x 9.6mm high  
 Fixing centres: 9.53mm, 2.3mm clear  
 Actuator: 2.4mm above body,  
 2.26mm square

The switch is also available with an 18mm long lever or with a 16.8mm long lever with roller. Solder tag connections.

Retail Unit Price each (inc. VAT).

Order Code	Type 2471	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FP41U	Min Microswitch	£0.987	£0.842	£0.693	£1.160
FP42V	Min M-Sw With Lever	£1.140	£0.969	£0.798	£1.340
FP43W	Min M-Sw With Roller	£1.200	£1.020	£0.840	£1.410

## Low Cost Miniature

A low-cost range of miniature microswitches produced to an internationally accepted standard size and operating characteristics. These switches are manufactured from glass-reinforced thermoplastic to give rugged performance.

Switches are single-pole double-throw and available in the basic style, or with a choice of actuators attached.

Terminals are standard solder lugs. The actuators are of stainless steel and either a 16.5mm long lever, or a 18.5mm long lever carrying a roller.

### Specification

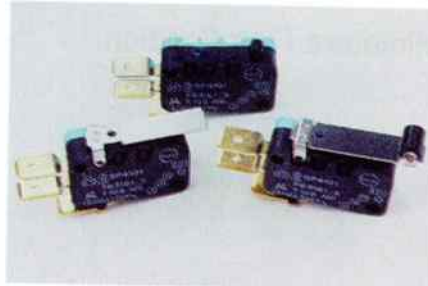
Contact rating: 3A 250V AC  
 Body size: 19.8 x 10.2 x 6.4mm  
 Fixing centres: 9.5mm  
 Fixing hole: 2.35mm diameter (for M2.3 screws)

Retail Unit Price each (inc. VAT).

Order Code	Type 2452	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GW68Y	Min-Microsw	£0.595	£0.510	£0.418	£0.700
GW69A	Min-Microsw/Lever	£0.680	£0.592	£0.448	£0.800
GW70M	Min-Microsw/Roller	£0.731	£0.612	£0.480	£0.860

## Miniature

**Crouzet**



A miniature microswitch of standard size with internationally accepted operating characteristics. Constructed in glass-reinforced thermoplastic to give strength and good temperature performance. Switches are single-pole double-throw.

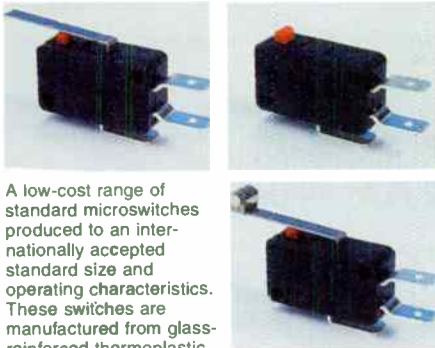
**Specification**

Contact rating: 16A 250VAC  
Body size: 27.76 x 10.3 x 15.9mm high  
Fixing centres: 22.2 x 10.31mm,  
3.16mm clear  
Actuator: 2.76mm above body  
The switch is also available with a 28.3mm long lever, or with a 27mm long lever with roller.  
Standard 6.35mm (1/4in.) blade connections.

Retail Unit Price each (inc. VAT).

Order Code	Type 2472	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FP44X	Microswitch	£1.140	£0.978	£0.805	£1.350
FP45Y	Lever Microswitch	£1.310	£1.120	£0.924	£1.550
FP50E	Roller Microswitch	£1.380	£1.180	£0.973	£1.630

**Low Cost Standard**



A low-cost range of standard microswitches produced to an internationally accepted standard size and operating characteristics. These switches are manufactured from glass-reinforced thermoplastic to give rugged performance. Switches are single-pole double-throw and available in the basic style, or with a choice of actuators attached. Terminals are 6.35mm (1/4in.) blade type that can either be soldered or used with push-on connectors (e.g., HF10L). The actuators are of stainless steel and either a 27.5mm long lever, or a 27.5mm long lever carrying a roller.

**Specification**

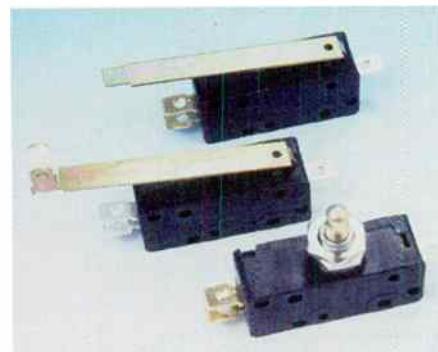
Contact rating: 15A 250V AC  
Body size: 27.8 x 15.9 x 10.3mm  
Fixing centres: 22.2 x 10.3mm  
Fixing hole: 3.1mm diameter

Retail Unit Price each (inc. VAT).

Order Code	Type 1463	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
GW71N	Std-Microsw	£0.765	£0.664	£0.540	£0.900
GW72P	Std-Microsw/Lever	£0.842	£0.720	£0.570	£0.990
GW73Q	Std-Microsw/Roller	£0.902	£0.786	£0.622	£1.060

**Heavy Duty**

Crouzet



A heavy duty microswitch with internationally accepted dimensions and operating characteristics and a particularly rugged construction. Switches are single-pole double-throw.

**Specification**

Contact rating: 16A 250VAC  
Body size: 46.4 x 16.3 x 18.7mm high  
Fixing centres: 25.4mm, 3.78mm clear  
Actuator: 5.26mm above body  
The switch is also available with a 60mm long lever, or a 60mm long lever with roller, or a panel-mounting bush and push-button. Bush requires

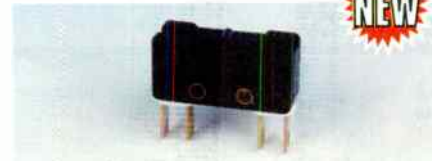
9.5mm panel cut-out and is 8mm long, flattened to 8.1mm on opposing sides. Button is 8mm long. Standard 6.35mm (1/4in.) blade connections.

Retail Unit Price each (inc. VAT).

Order Code	Type 2475	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FP48C	HD M-Sw With Lever	£2.050	£1.750	£1.440	£2.420
FP49D	HD M-Sw With Roller	£2.550	£2.160	£1.780	£3.000
FP50E	HD M-Sw With Button	£2.700	£2.300	£1.890	£3.180

**Protected Sub-Miniature Microswitch**

Crouzet



A protected sub-miniature microswitch housed in a glass filled polyamide case.

- ★ Compact size
  - ★ Double Break C/O
  - ★ UL and CSA approved
- Crouzet Part Number 83 133 035

**Specification**

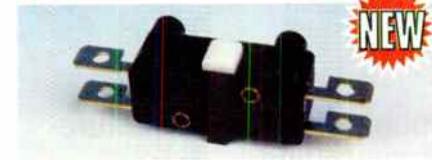
Contact rating: 5A, 250Vac  
Operating temperature: -20°C to +125°C  
Body size: 20.4x10x6.4mm  
Fixing centres: 7mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17872	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MG16R	Prot Submin Microsw	£1.860	£1.770	£1.680	£2.190

**Protected Microswitch**

Crouzet



A general microswitch housed in a polyamide case, incorporating a double break circuit.

- ★ Ideal for industrial applications
- ★ Double Break Circuit
- ★ Nickel Silver Contacts
- ★ UL and CSA approved

Crouzet Part Number 83 106 022

**Specification**

Contact Rating: 5A, 250Vac  
Operating temperature: -20°C to +85°C  
Body size: 32x19x12.6mm  
Fixing centres: 13mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17866	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MG15R	Prot Microswitch	£2.970	£2.830	£2.680	£3.500

**Sealed Microswitch**

Crouzet



A compact low profile microswitch with a nitrile case and passivated mild steel mounting plate.

- ★ Sealed to IP66
  - ★ Rubber casing
  - ★ Supplied with 1m of flexible cable
- Crouzet Part Number 83 123 015

**Specification**

Contact rating: 5A, 250Vac  
Operating temperature: 0°C to +85°C  
Body size with plate: 71x32x12.3mm  
Fixing centres: 26mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17960	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MG14Q	Sealed Microswitch	£17.430	£16.560	£15.690	£20.490

**LIMIT SWITCHES**

**Limit Switch - Plastic Body**

Crouzet



Industry standard limit switches to EN50047 housed in a thermoplastic case which is double insulated. These switches are designed for use in industrial applications and have a fail safe action, the contacts being forced apart in the event of welding.

- ★ Snap Action Contact with Positive Break Operation

- ★ IP66 rated
- ★ UL/CSA and British Rail approved

Maplin Stock Code	Crouzet Part Number
MG17T	83 850 001
MG18U	83 850 301
MG19V	83 850 501

**Specification**

Contact rating: 10A, 250Vac / 8A, 380Vac  
Approvals: UL A300 - Q300, CSA A300 - Q300, British Rail RIA20  
Mechanical life: >3x10<sup>7</sup> operations  
Operating temperature: -25°C to +80°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17975	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MG17T	Limit Sw Plunger	£11.000	£10.460	£9.900	£12.930
MG18U	L/Sw Plastic Roller	£13.750	£13.070	£12.380	£16.160
MG19V	L/Sw Steel Roller	£12.190	£11.590	£10.980	£14.330

## Limit Switch - Metal Body

Crouzet



Industry standard limit switches to EN50041, housed in a metal body and incorporating metal actuator heads. These switches have a fail safe action which forces the contacts open in the event of contacts welding.

★ Snap Action Contact with Positive Break Operation

★ IP66 rated

★ UL and CSA Approved

Maplin Stock Code	Crouzet Part Number
MG20W	83 861 001
MG21X	83 861 301
MFG22Y	83 861 501

### Specification

Contact rating: 6A, 250Vac  
1.9A, 380Vac  
3A, 24Vdc

Approvals: UL  
CSA

Mechanical life: >3x10<sup>7</sup> operations  
Operating temperature: -25°C to +80°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MG20W	Limit Sw Plunger	£19.800	£18.820	£17.820	£23.270
MG21X	L/Sw Plastic Roller	£23.900	£22.710	£21.510	£28.090
MG22Y	L/Sw Steel Roller	£23.370	£22.210	£21.040	£27.470

See Industrial Control Section for our range of Counters and Timeswitches

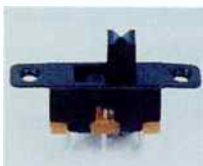
## SLIDE

### Single Pole Sub-Miniature

Sub-miniature SPDT slide switch suitable for use as replacements in calculators, clocks etc. Can be PCB mounted.

Dimensions: Body: 11 x 5 x 6mm  
Front plate: 19 x 5mm  
Tang: 3-8mm long (throw 3mm)  
Tags: 4mm long x 1-5mm wide  
Fixing centres: 15mm x M2 tapped

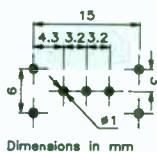
Rating: 125V AC 0-3A



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FF77J	SP Slide	£0.331	£0.230	£0.190	£0.390

## Single-Pole Right-Angled



Dimensions in mm



A sub-miniature right-angled SPDT slide switch for pcb mounting. Ideal for horizontal left/right action on edge of pcb etc.

Dimensions of body: 16mm wide x 6-5mm deep  
Height above pcb: 9-5mm  
Toggle: 8mm (throw 3mm)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FV01B	R/A SPDT Slide	£0.553	£0.440	£0.390	£0.650

## Double Pole Sub-Miniature



A sub miniature DPDT slide switch with wiring tags.

Dimensions: Body: 15 x 7 x 7-5mm  
Front plate: 23 x 7mm  
Tang: 7-5mm long (throw 3-5mm)  
Tags: 3mm long x 1-5mm wide  
Fixing centres: 19mm x M2 clear

Rating: 125V AC 0-3A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH35Q	Sub-Min Slide	£0.468	£0.250	£0.180	£0.550

## Double Pole Sub-Miniature Chrome Tang



A sub-miniature DPDT slide switch with wiring tags and a long tubular turned aluminium tang.

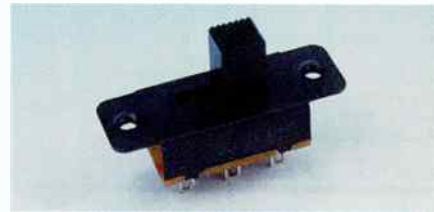
Dimensions: Body: 15 x 7 x 7-5mm  
Front plate: 23 x 7mm  
Tang: 13-5mm long (throw 3-5mm)  
Tags: 3mm long x 1-8mm wide  
Fixing centres: 19mm x M2 tapped

Rating: 125V AC 0-3A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FF79L	Long Chrome Slide	£0.331	£0.224	£0.164	£0.390

## Double Pole Miniature



A miniature DPDT slide switch with wiring tags.

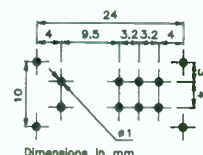
Dimensions: Body: 22 x 12-5 x 8mm  
Front: plate: 35 x 12-5mm  
Tang: 10mm long (throw 5-5mm)  
Tags: 5mm long x 2-5mm wide  
Fixing centres: 28mm x M3 tapped

Rating: 125V AC 0-3A

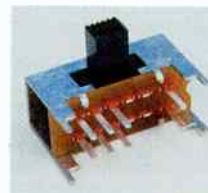
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH36P	Std Slide Switch	£0.400	£0.256	£0.214	£0.470

## Right-Angled 2-Pole 3-Position



Dimensions in mm



A 2-pole 3-way switch with a horizontal slider with left/right action for pcb edge mounting.

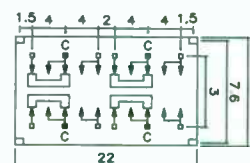
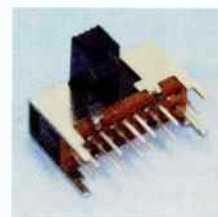
Dimensions of body: 25mm wide x 10mm  
Height above pcb: 14mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FV02C	R/A DT3T Slide	£0.851	£0.642	£0.572	£1.000

## 4-Pole Change-over

A miniature switch incorporating four separate single pole change-over switches. Pin connections allow this switch to be used in PCB designs, and four mounting pins connect to the body of the switch to help shield and anchor it securely.



### Specification

Operating voltage: 30V DC  
Operating current: 1A  
Insulation rating: 500V  
Temperature range: -10 to 60°C  
Life: 10000 cycles

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
AR35Q	4PCD Slide Switch	£0.765	£0.460	£0.378	£0.900

All Orders Account or Not -

PHONE BEFORE 5PM FOR SAME DAY DESPATCH

01702 554000

Fax: 01702 554001

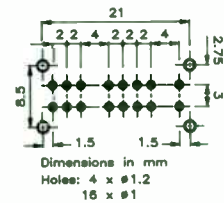
e-mail: Sales@maplin.co.uk



### 4-Pole 3-Position

Calvin Industrial

Miniature 4-pole  
3-position.  
Rated 125V AC 0-3A.



Retail Unit Price each (inc. VAT).

Order Code	Type 1180	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH38R	4-Pole Slide	£0.851	£0.530	£0.438	£1.000

### PUSH

### Illuminated Push-Button Switches



Two 4PDT, PCB mounting, illuminating push switches. An internal light source (red or green) illuminates the clear push plunger when the lighting circuit is activated. A clear push-button cap is available separately (KE62S). The switches are available as latching and non-latching 4PDT illuminating push switches.

Retail Unit Price each (inc. VAT).

Order Code	Type 11899	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE58N	III Sw 4PDT All Red	£2.570	£2.230	£2.060	£3.020
KE59P	III Sw 4PDT Mom Red	£2.570	£2.230	£2.060	£3.020
KE60Q	III Sw 4PDT All Grn	£2.570	£2.230	£2.060	£3.020
KE61R	III Sw 4PDT Mom Grn	£2.570	£2.230	£2.060	£3.020
KE62S	Black PVL Button	£0.765	£0.652	£0.592	£0.900

### PCB Mount Momentary Push Switches

Fujitsu

High quality miniature momentary action push switches. Ideal for PCB mount data or signal reset applications in audio or computer network situations.

Maximum rating 50Ma  
48VAC/DC. Gold plated contacts in a board washable unit.

Terminal pitch 0.1in.  
2 Pole Horizontal mount 5 x 9 x 18.9mm overall  
1 Pole Vertical mount 5 x 9 x 19.3mm overall  
(16.0mm above PCB)



Retail Unit Price each (inc. VAT).

Order Code	Type 12217	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CL46A	PCB Sw 2P Mom Hor	£3.900	£3.250	£2.850	£4.590
CL47B	PCB Sw 1P Mom Vert	£3.140	£2.630	£2.310	£3.690

### Sub Miniature PCB Mount Push Switches

Sansal



Designed for low current applications such as instrumentation and portable test and communications equipment. These switches offer extremely high quality in an extremely small and light weight package. Switch operation is momentary or latching in 2, 4 or 6 pole versions. Connecting pins are on a 2.54mm (0.1 in) grid suitable for PCB mounting and each switch is ready fitted with a mounting bracket.  
Contact Rating 100mA at 30VDC  
Contact Resistance <20mOhm

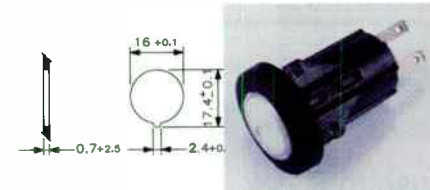
Dimensions mm	Length (Body)	Height (Ex Pins)
2 Pole	14.1	9.0
4 Pole	21.6	9.0
6 Pole	29.1	9.0

Switch Buttons Black  
Rectangular 9.6 x 5.0 x 9.5 deep  
Round 5.0 dia x 9.5 deep

Retail Unit Price each (inc. VAT).

Order Code	Type 12298	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CL78K	2P Alt PCB Push Sw	£1.400	£1.100	£0.970	£1.650
CL79L	2P Mom PCB Push Sw	£1.260	£0.900	£0.790	£1.490
CL80B	4P Alt PCB Push Sw	£1.690	£1.320	£1.170	£1.990
CL81C	4P Mom PCB Push Sw	£1.370	£0.990	£0.870	£1.620
CL82D	6P Alt PCB Push Sw	£2.110	£1.490	£1.290	£2.490
CL83E	6P Mom PCB Push Sw	£1.860	£1.330	£1.150	£2.190
CL84F	Round Push Button	£0.178	£0.170	£0.160	£0.210
CL85G	Rectangular Button	£0.178	£0.170	£0.160	£0.210

### Splashproof Push Switch DPST

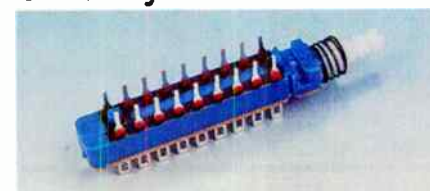


An attractively styled, double-pole, momentary action, circular push-button switch that is mains rated, with normally-open silver contacts. The switch is moulded in black self-extinguishing thermoplastic, with a white push-button, and snap-fits into a 16mm diameter hole in panels 0.7 to 2.5mm thick. Supplied with a waterproof cap and bezel. Rated at 3A/250V AC for resistive loads and 1A/250V AC for inductive loads.

Retail Unit Price each (inc. VAT).

Order Code	Type 2345	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RD20W	Splashproof Sw	£1.880	£1.590	£1.260	£2.210

### Interlocking Push-Button Switch System



A very high quality, low-cost range of push-button switches, each of which is capable of operating as either push-on/push-off (locking), momentary push only (non-locking), or as part of an inter-locked

group (push-on any one to latch and release others). The push-on/push-off action (latching action) is provided by a wire detent. To make the switch a momentary action switch (non-latching action) the wire detent is pulled from the latching mechanism in the switch body and placed on one outside edge of the switch. The other end of the wire detent must be left in under the spring as this prevents the plunger falling out. An almost infinite variety of configurations are possible using the latchbrackets, so that these switches fulfil practically all the likely requirements of a quality push-button switch installation.

### Signal Switches

Moving contacts are spring-loaded and contoured to achieve constant pressure, a positive self-cleaning action and long-term low contact resistance. The housing has printed circuit pins fixed on the bottom face and solder terminals on the top face.

Rated: 0-5A, 100V AC  
0-2A, 250V AC  
1A, 25V DC  
Max. contact resistance: <50mΩ after 20,000 operations

Max. insulation resistance between adjacent contact or frame and any contact: 100MΩ at 500V DC  
Working temperature range: -20°C to +70°C  
Action: Break before make

PCB pins are on a 4 x 6mm matrix. Four different button styles are available. These switches are available in the following types: 2-pole changeover, 4-pole changeover and 6-pole changeover.

Length of body:  
2-pole changeover: 24.5mm  
4-pole changeover: 36.5mm  
6-pole changeover: 48.5mm

Retail Unit Price each (inc. VAT).

Order Code	Type 2596	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH67X	Latchswitch 2-Pole	£0.561	£0.378	£0.306	£0.660
FH68Y	Latchswitch 4-Pole	£0.646	£0.438	£0.368	£0.760
FH69A	Latchswitch 6-Pole	£0.774	£0.530	£0.428	£0.910

### Mains Switch



Double pole single throw latchswitch especially designed for use as an on/off mains power switch.

Specification

Rated: 4A, 250V AC  
Contact resistance: <20mΩ  
Max. voltage: 1500V AC  
Fixing hole centre distance: 20mm  
Button out distance: 8.2mm  
Button in distance: 5.4mm

Retail Unit Price each (inc. VAT).

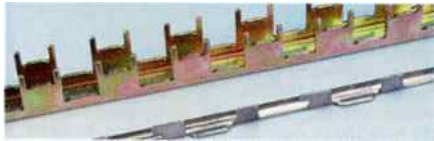
Order Code	Type 3301	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KU79L	Latch Switch Mains	£0.944	£0.652	£0.540	£1.110

Subscribe to

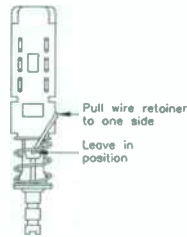
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## Mounting Brackets



A range of mounting brackets for mounting the latching switches and providing interlocking action where required. The switches have no other means of fixing except by their PCB pins. Latchbrackets are available for mounting up to 10 switches, any group of which can be interlocked, and any switch may be locking or non-locking (if not interlocked). The single version is only a mounting frame for one switch, whereas the others include a latching bar and a latch return spring for the interlocking function. The length of the latch bar is matched to the frame, but it can be cut down for only those switches in the whole group which are required to be interlocked, and the return leafspring can be located at any switch position.

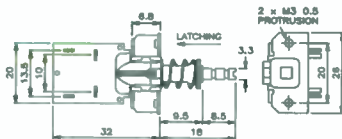
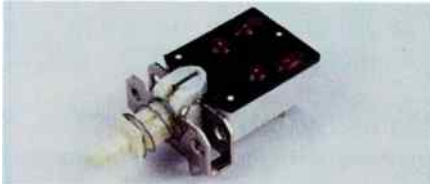


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FH75S	Latchbracket Single	£0.221	£0.122	£0.092	£0.260
FH76H	Latchbracket 2-Way	£0.272	£0.174	£0.122	£0.320
FH78K	Latchbracket 4-Way	£0.323	£0.204	£0.174	£0.380
FH84F	Latchbracket 10-Way	£0.485	£0.346	£0.276	£0.570

## PCB Power Switch

cliff



A DPST power switch for PCB mounting that has a 4.0mm travel, latching mechanism. Body colour white.

Specification

Rating: 250V AC 4A  
Contact resistance: 100mΩ

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DE66W	4mm DPST Power Sw	£2.400	£1.890	£1.670	£2.820

## Rectangular Buttons

Width, 15mm; height, 7.5mm; length, 11mm. Button can be mounted horizontally or vertically. Available in Black and Grey.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FH61R	Rct Latchbutton Bk	£0.229	£0.132	£0.102	£0.270
FH62S	Rct Latchbutton Grey	£0.229	£0.132	£0.102	£0.270

## Small Round Button

Diameter at base, 8.3mm; at top, 8.2mm; length 8mm. Available in black.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
KU75S	Sml Latch Button Black	£0.229	£0.132	£0.102	£0.270

## Sub-Min Push Switch



A sub-miniature push-to-make switch with non locking action. Available with red and black actuating button. Overall size: 20.5mm long, 7mm dia. Rated 0.5A 125V. Panel cut-out 5mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JM01B	Sub Min Push Sw Bk	£0.417	£0.300	£0.270	£0.490
JM47B	Sub Min Push Sw Red	£0.417	£0.300	£0.270	£0.490

## Push to Make Low Cost

Miniature low cost push to make switch non-locking with red button. Overall size: 28mm long, 10.5mm dia. Rated 1A 125V AC. Panel cut-out 7mm dia.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FH59P	Push Switch	£0.442	£0.310	£0.275	£0.520

## Push to Break

Miniature non-locking push to break switch with black button. Rated 300mA @ 250V AC.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FH60Q	Break Push	£0.442	£0.310	£0.275	£0.520

## Large Push to Make

Calyn Industrial

A push button switch with a large red dimpled button and smart chromed bezel. Action is non-locking push to make single pole. Panel fixing requires 12mm dia. cut-out. Rated 1A at 50V AC.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FH91Y	Motor-Start Press	£0.817	£0.572	£0.490	£0.960

## Miniature Momentary Action

Mors Components



A miniature momentary action, panel mounting, push button switch with a separate 10mm cap. Fitted with solder terminals. Initial contact resistance: <10mΩ

Dimensions: Length (overall) 39.5mm  
Diameter (behind panel) 22mm  
Cut-out 6.4mm  
Body size 10 x 13.2mm  
Button diameter 4mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BK66Y	SPCO Nonlock Switch	£2.990	£2.440	£2.070	£3.520
BK71N	10mm Cap Green	£0.161	£0.122	£0.112	£0.190

## Miniature Push-Button Switches

Miniature PCB mounting push-button switches having square buttons with identical dimensions to the body, 11.6mm square, so that any number of switches can be stacked horizontally or vertically with ease, and all buttons will mate together side-by-side. The four pins are on a 7.62 x 5.08mm matrix, which includes a 1.6mm diameter locating peg on the body itself, offset 5.4mm from centre. Total height above PCB, 17.7mm; to base of button, 12mm. Contacts are rated at 3A at 125V AC. Contact resistance is 20mΩ. Insulation resistance, 100MΩ at 500V DC; insulation strength, 1,000V AC for 1 minute. Two types are available, SPST push-on/push-off locking, and SPST push-on/release-off momentary action. Each type is also available with either a Black or White button.

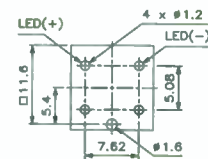


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
JX94C	Min Sw Locking Black	£2.220	£1.740	£1.560	£2.620
JX95D	Min Sw Locking White	£2.220	£1.740	£1.560	£2.620
JX98G	Min Sw Momntry Bk	£2.220	£1.740	£1.560	£2.620
JX99H	Min Sw Momntry Wht	£2.220	£1.740	£1.560	£2.620

## Miniature Illuminated Push-Button Switches

Miniature PCB mounting push-button switches as above, but also having a square LED indicator inset into the button. Again both the body and button are 11.6mm square, so that switches can be stacked. The four pins are on a 7.62 x 5.08mm matrix, which includes a 1.6mm diameter locating peg on the body itself, offset 5.4mm from centre. Two of these are the connections for the integral LED which does not include a dropper resistor. Total height above PCB, 17.7mm; to base of button, 12mm. Contacts are rated at 3A at 125V AC. Contact resistance is 20mΩ. Insulation resistance, 100MΩ at 500V DC; insulation strength, 1,000V AC for 1 minute. Two types are available, SPST push-on/push-off locking, and SPST push-on/release-off momentary action, and both types available with either a red or



green LED within a black button. Forward current of LED must not exceed 40mA, nor power dissipation exceed 80mW (Red) or 100mW (Green). Voltage drop is 1.7V for Red type, and 2.1V for Green at  $I_F = 20mA$ .

Retail Unit Price each (inc. VAT).

Order Code	Type 2303	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JX92A	Min Sw Locking Red	£2.540	£1.980	£1.820	£2.990
JX93B	Min Sw Locking Green	£2.570	£2.020	£1.860	£3.020
JX96E	Min Sw Momentary Red	£2.570	£2.020	£1.860	£3.020
JX97F	Min Sw Momentary Green	£2.570	£2.020	£1.860	£3.020

## Square Push-Button Switches

Smart push-button switches featuring a silver coloured square bezel 14 x 14mm, and a silver square button 10 x 10mm. Remainder of body is threaded for a 10mm dia. panel hole, and a lockwasher and fixing nut are included. Single pole single throw only with two solder terminals. Overall depth from front of panel is 20mm. Rated at 125V at 3A, 250V at 1A AC. Two types are available, push-on/push-off locking, and momentary push-on/release-off non-locking.



Retail Unit Price each (inc. VAT).

Order Code	Type 2304	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FG46A	PB Silver Alternate	£1.100	£0.868	£0.766	£1.300
FG45Y	PB Silver Momentary	£1.100	£0.868	£0.766	£1.300

## Table Light Switch

A push-on push-off single pole make/break switch with a white push button.



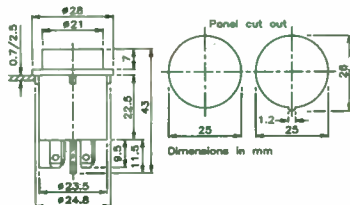
Panel cut-out: 10mm  
Max panel thickness: 4mm  
Switch body dimensions: 24 x 13 x 8.5mm  
Rated: 2A at 250V AC  
Connections by screw terminals.

Retail Unit Price each (inc. VAT).

Order Code	Type 2329	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH94C	Table Light Switch	£0.476	£0.326	£0.276	£0.560

## Large Push Button

A large push button switch in an attractive modern styling. Available with SPST non-latching contact, in red only. Rated at 10A/250V AC, and has snap-in fixing for panels between 0.7mm & 2.5mm thickness.



Retail Unit Price each (inc. VAT).

Order Code	Type 2332	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RK82D	Lge Red Push Button	£1.180	£0.900	£0.790	£1.390

## Square Push to Make Switch

Push to make non-locking switch with large square button available in Black or Red.



### Specifications

Contact rating: 1A @ 125V AC  
0.5A @ 240V AC  
Panel cut-out: 25mm  
Overall length: 12mm x 12mm  
Length behind bezel: 25mm  
Button: 9mm square  
Bezel: 14mm square  
Connection: tags

Retail Unit Price each (inc. VAT).

Order Code	Type 2337	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JB00A	Square Push Sw Red	£0.502	£0.340	£0.290	£0.590
JB01B	Square Push Sw Blk	£0.502	£0.340	£0.290	£0.590

## Square Push to Make

Push to make non-locking switch with a large square button available in Black and Red. Rated 250V AC 3A.

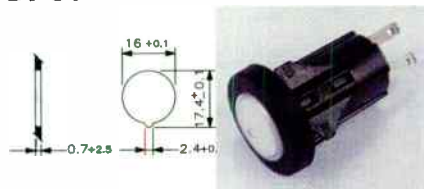


Panel cut-out: 12.7mm (1/2in.) diameter  
Overall length: 39mm (1 1/2in.)  
Length behind bezel: 29mm  
Button: 10mm square  
Bezel (elephant grey): 14mm square

Retail Unit Price each (inc. VAT).

Order Code	Type 2338	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FF96E	Square Push Black	£0.757	£0.480	£0.400	£0.890
FF98G	Square Push Red	£0.757	£0.480	£0.400	£0.890

## Splashproof Push Switch DPST



An attractively styled, double-pole, momentary action, circular push-button switch that is mains rated, with normally-open silver contacts. The switch is moulded in black self-extinguishing thermoplastic, with a white push-button, and snap-fits into a 16mm diameter hole in panels 0.7 to 2.5mm thick. Supplied with a waterproof cap and bezel. Rated at 3A/250V AC for resistive loads and 1A/250V AC for inductive loads.

Retail Unit Price each (inc. VAT).

Order Code	Type 2345	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RD20W	Splashproof Sw	£1.880	£1.590	£1.260	£2.210

## Square Locking

Push to make locking switch with large square button available in Black and Red. Rated 250V AC 3A.



Panel cut-out: 12.7mm dia.  
Overall length: 39mm  
Length behind bezel: 29mm  
Button: 10mm square  
Bezel: 14mm square

Retail Unit Price each (inc. VAT).

Order Code	Type 2353	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW41U	Square Psh Lok Black	£0.851	£0.520	£0.428	£1.000
YW43W	Square Psh Lok Red	£0.851	£0.520	£0.428	£1.000

## Round Locking

Miniature push button switches with 3A 250V AC contacts. Single-pole changeover (SPCO) and double pole changeover (DPCO) types are available. Both are locking (i.e. press-press). Fitted with red plastic button with dimpled top.



Panel cut-out: 6.2mm  
Bush length: 8.5mm  
Body size (excl tags): 17.5 x 9.2 x 13mm (SPCO); 17.2 x 11 x 11.5mm (DPCO)  
Button size: 8 x 10mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type 2354	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH41U	Pushlock SPSC	£2.130	£1.660	£1.500	£2.510
FH66W	Pushlock DPCO	£2.570	£1.980	£1.790	£3.020

## The Complete Modular Switching System

### Apem

This modular switching system, designed and manufactured to very high standards in the UK, offers a comprehensive range of push-button and key operated switches and indicator lamps, all approved to the latest European-wide standards. They are ideal for control systems, office and industrial equipment and many other panel-mounted applications. All components are finished in charcoal grey.

### Modular System Specifications

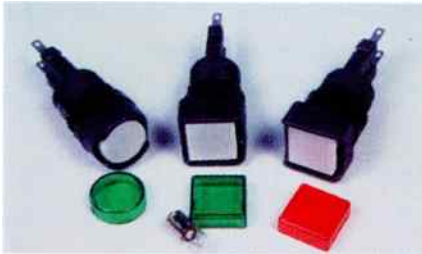
Electrical rating: min 10mA 5V AC  
max 6A 250V AC  
Electrical life: Frequent duty >50,000 operations  
Switch & lamp terminals: 2.8mm for Faston connectors or solder 2 x 1.0mm<sup>2</sup>  
Circuits: Changeover 1.5mm nom. contact gap  
Gold flash silver  
Contacts: Contact resistance initial: <10Ω at 4V DC and 1A >50MΩ  
Insulation resistance: 95%RH  
Operating humidity: 16mm diameter mounting hole  
Panel mounting: IEC 529 IP65 at front of panel, IP40 at back  
Class 2  
Approvals: UL, CSA, BEAB & VDE

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.



## Push-Button Switch Operators



Each push-button switch operator, which can have a square (18 x 18mm) or rectangular (18 x 24mm) bezel, drives a small piston to activate the switches in the switch block below. Switch state is clearly visible from the side, both mechanically and when illuminated.

The white push-button supplied can be covered by an optional removeable coloured or clear screen and can accommodate printed or engraved legends. All push-button switches can be illuminated, bulbs available separately.

Each complete switch assembly requires the additional purchase of a switch block, a screen and bulb.

**Overall dimensions:** 18 x 24 x 52mm (rectangular operator)  
18 x 18 x 52mm (square operator)  
18 x 52mm (round operator)  
Switch height from panel 10mm

*Retail Unit Price each (inc. VAT).*

Order Code	Type 11919	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE35Q	SQ Operator Alt	£2.990	£2.700	£2.540	£3.520
KE34M	Rect Operator Mom	£2.710	£2.460	£2.300	£3.190
KE33L	Rect Operator Alt	£2.990	£2.700	£2.540	£3.520
KE36P	SQ Operator Mom	£2.710	£2.460	£2.300	£3.190

*Retail Unit Price each (inc. VAT).*

Order Code	Type 11919	Price each exc. VAT			inc. VAT each
		1+	50+	100+	1+
CL69A	Round Operator Alt	£2.970	£2.640	£2.490	£3.480
CL70M	Round Operator Mom	£2.800	£2.460	£2.300	£3.290

## Keylock Switch



Available with a rectangular (18 x 24mm) or square (18 x 18mm) bezel this switch has two positions, operated by a key. The key can be removed with the switch locked in either the 'on' or 'off' position. Supplied with two keys.

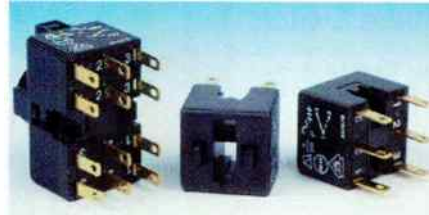
Each complete keylock assembly requires the purchase of a separate switch block.

**Overall dimensions:** 18 x 24 x 52mm (rectangular keylock)  
18 x 18 x 52mm (square keylock)  
Switch height from panel 10mm (34.5mm with key in place).

*Retail Unit Price each (inc. VAT).*

Order Code	Type 11920	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE37S	Rect Keylock Op	£8.330	£7.340	£6.790	£9.790
KE38R	SQ Keylock Op	£8.330	£7.340	£6.790	£9.790

## Switch Blocks

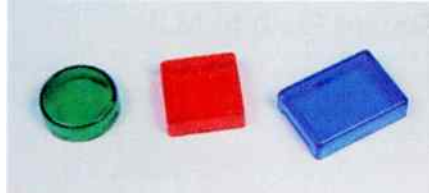


These switch blocks form the heart of the modular switching system. Quality made, they feature gold flash contacts and are available in one, two, three or four pole configurations.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 11921	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE39N	Switch Block 1 Pole	£2.130	£1.940	£1.820	£2.510
KE40T	Switch Block 2 Pole	£3.170	£2.850	£2.680	£3.730
KE41U	Switch Block 3 Pole	£5.260	£4.700	£4.370	£6.190
KE42V	Switch Block 4 Pole	£6.430	£5.760	£5.380	£7.560

## Screens



A range of rectangular and square screens in five colours, suitable for use in push-button switch operators and indicator lamps.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 11922	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE43W	Rect Screen Red	£0.170	£0.153	£0.148	£0.200
KE44X	Rect Screen Yel	£0.170	£0.153	£0.148	£0.200
KE45Y	Rect Screen Grn	£0.170	£0.153	£0.148	£0.200
KE46A	Rect Screen Blu	£0.170	£0.153	£0.148	£0.200
KE47B	Rect Screen Cir	£0.170	£0.153	£0.148	£0.200
KE48C	SQ Screen Red	£0.170	£0.153	£0.148	£0.200
KE63T	SQ Screen Yel	£0.170	£0.153	£0.148	£0.200
KE64U	SQ Screen Grn	£0.170	£0.153	£0.148	£0.200
KE65V	SQ Screen Blu	£0.170	£0.153	£0.148	£0.200
KE66W	SQ Screen Cir	£0.170	£0.153	£0.148	£0.200

*Retail Unit Price each (inc. VAT).*

Order Code	Type 11922	Price each exc. VAT			inc. VAT each
		1+	50+	100+	1+
CL72P	Round Screen Red	£0.161	£0.153	£0.148	£0.190
CL73Q	Round Screen Yel	£0.161	£0.153	£0.148	£0.190
CL74R	Round Screen Grn	£0.161	£0.153	£0.148	£0.190
CL75S	Round Screen Blu	£0.161	£0.153	£0.148	£0.190
CL76H	Round Screen Cir	£0.161	£0.153	£0.148	£0.190

## Indicator Lamps



Indicator lamps complement the design and colour of switch operators but instead of providing a switch action they simply illuminate to indicate circuit state ('on' or 'off'). They are supplied with plain white tops, ready to accept the coloured or clear screens shown above.

Each indicator lamp assembly requires a bulb and a screen which can be purchased separately.

**Overall dimensions:** 18 x 24 x 52mm (rectangular indicator)  
18 x 18 x 52mm (square indicator)  
18 x 52mm (round indicator)  
Indicator lamp height from panel 10mm  
T 1 3/4 Midget Groove bulbs required

*Retail Unit Price each (inc. VAT).*

Order Code	Type 11923	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE67X	Rect Indicator	£2.570	£2.360	£2.240	£3.020
KE68Y	Sq Indicator	£2.570	£2.360	£2.240	£3.020

*Retail Unit Price each (inc. VAT).*

Order Code	Type 11923	Price each exc. VAT			inc. VAT each
		1+	50+	100+	1+
CL71N	Round Indicator	£2.540	£2.320	£2.200	£2.990

## Emergency Stop

**Apem**  
A simple action, highly visible 'emergency stop' switch that's supplied complete with its own integral double pole, positive break switch block. Just strike the bright red mushroom head and everything stops, then twist in the direction shown by the arrows to reset the switch.



**Overall dimensions:** 24mm dia x 60mm  
Switch height from panel 19mm  
16mm Mounting Hole  
Rating 6A 250VAC

*Retail Unit Price each (inc. VAT).*

Order Code	Type 11924	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
KE69A	E/STOP Switch	£5.830	£5.200	£4.860	£6.860

## Vandal Resistant Switches

**Apem**  
Vandal resistant security switches manufactured with stainless steel button and bushing. SPNO momentary action with screw terminal connections for ease of wiring, servicing and replacement.



Maximum rating 2A 48VDC  
Mounting Hole 19.0mm Length Overall 26.0mm  
22mm Hex nut mounting.  
Available with flat or domed actuator.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 12201	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
CL86T	Anti Vandal Flat	£6.800	£5.620	£4.810	£7.990
CL87U	Anti Vandal Domed	£6.800	£5.620	£4.810	£7.990

## Illuminated Vandal Resistant Switches



A range of vandal resistant switches with robust stainless steel button and bushing sealed to IP65  
Illuminated versions available with green or red

LED, or in non illuminated form.  
Gold plated contacts for low level switching, with an excellent tactile feel.

Switch Rating 50mA 24VDC LED 1.6V 2mA  
Panel hole 19.2mm. Overall Length 23.8mm  
Bezel Diameter 22.0mm Fixing 22.0mm hex nut.  
Terminals solder tag.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	50+	1+
CL88V	Anti Vandal Nonillum	£8.840	£7.260	£6.170	£10.390
CL89W	Anti Vandal Grillum	£12.500	£10.150	£8.650	£14.690
CL90X	Anti Vandal Redillum	£12.500	£10.150	£8.650	£14.690

## Foot Switches

Hard-wearing push-on push-off switch with strong metal shaft and knob for use as foot operated switch. Requires a 12.7mm (1/2in.) dia. panel cut-out and has a 12mm long threaded bush.



### 2A Type

SPDT switch.  
Rated 2A at 250V AC.  
Body size: 36 x 12 x 15mm.  
Bush and knob length: 28mm.  
The common terminal is the centre one.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH32A	Press Toe SPDT	£3.850	£3.060	£2.810	£4.530

### 6A Type

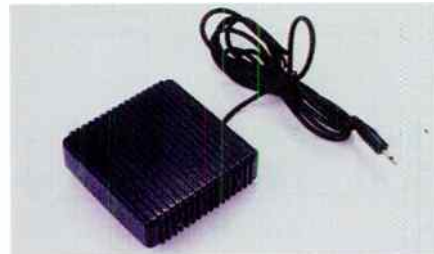
DPDT switch. Rated 6A at 250V AC, 10A at 120V AC. Body: 28 x 18 x 23mm.  
Bush and knob length: 24mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FH33B	Press Toe DPDT	£4.970	£4.180	£3.730	£5.850

## Cassette Recorder Remote Control Footswitch

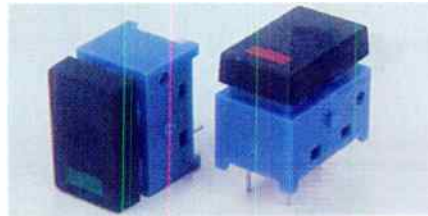


For cassette recorders and dictation machines having a start/stop remote control 2.5mm jack socket. Upon plugging in the footswitch, the machine will be able to play tape while the switch is held down, and pause while the footswitch is released. Fitted with 1.4m of lead terminated in a mono 2.5mm jack plug. Dimensions of switch housing: 77 x 75 x 25mm deep. Has a non-slip rubber pad underneath and a ribbed rocking top face. Colour black.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KW02C	Remote Footswitch	£3.420	£2.610	£2.340	£4.030

## Illuminated Click Effect Push Switches



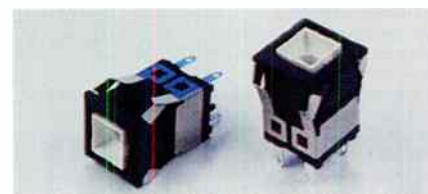
A very smart click effect push switch for direct PCB mounting. The rectangular black button has a dimple over the switch end, and a rectangular window for the LED indicator lamp at the other end. The switch mechanism is of the conductive rubber contact type with a smooth, positive click action, and is single pole push to make connecting a pair of PCB pins underneath. The body is 15.5 x 10.1mm rectangular with support feet at the corners to ensure it stands firm and square on the PCB surface. The switches are stackable side by side and include locating pegs and sockets on the sides for this purpose. A very professional, neat array of switches can be made up in this way. The LED is electrically accessible via a further pair of pins (four in total), with the polarity marked on the switch base. Available with red or green LEDs.

Contact rating: 1A @ 125V AC  
Contact resistance: 20mΩ max.  
Insulation resistance: 100MΩ  
(as measured at 500V)  
Max. voltage: 1000V AC for 1 minute  
Life: 100,000 operations  
Button size: 15.3 x 9.8 x 5.1mm  
Button travel: 1.5mm  
Gap between stacked buttons: 0.5mm  
LED reverse voltage: 4V max.  
LED forward drop: 2.1V @ 20mA  
Max. current: 25mA  
Overall height from PCB: 14.1mm  
Height of body from PCB: 9mm  
Pin length: 3.8mm  
Pin diameter: Switch 0.6mm, LED 0.45mm  
Pin spacing: 'T' pattern, 0.2in. between switch pins, 0.2in. between middle switch pin and both LED pins, which are 0.1in. either side of switch pins' axis.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JU04E	Click Sw+LED Red	£1.450	£1.150	£1.030	£1.710
JU05F	Click Sw+LED Green	£1.450	£1.150	£1.030	£1.710

## Illuminated Push Button Switches



### Switch Assembly

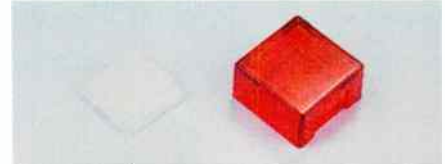
Attractive square push button switches in push/push locking or non-locking styles, with a double pole make function, using two pairs of solder tags at rear.

The switches include a sprung metal snap-in-plate which makes installation simply a process of pressing the switch into a 12.7 x 12.7mm (1/2in. square) hole. The buttons are 9.8mm square in a 14mm square escutcheon. Overall length 23mm less tags. Contact rated 100mA at 30V DC.  
Note: Lens cap and bulb must be ordered separately. The switch can be used without the bulb if desired.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FA78K	Illuminated Momentary Sw	£2.570	£1.960	£1.770	£3.020
FA79L	Illuminated Latch Sw	£2.990	£2.220	£1.960	£3.520

## Lens and Diffuser



A lens and diffuser cap for the above switches, is available in red, white, yellow, blue and green. The diffuser provides an even illumination.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
UF54J	Lens + Diffuser Red	£0.331	£0.276	£0.234	£0.390
UF55K	Lens + Diffuser Wht	£0.331	£0.276	£0.234	£0.390
UF56L	Lens + Diffuser Yel	£0.331	£0.276	£0.234	£0.390
UF57M	Lens + Diffuser Blu	£0.331	£0.276	£0.234	£0.390
UF58N	Lens + Diffuser Grn	£0.331	£0.276	£0.234	£0.390

## Bulbs and Holders

Twin-pin filament bulbs which, using a special holder, plug into the switch body and so illuminate the coloured cap. The bulbs are available in:



Voltage	6V	12V	28V
Current	65mA	50mA	24mA
Average life	10,000h	10,000h	5000h
Colour coded	Red	Green	White

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
UF59P	6V Lamp + Holder	£1.190	£0.958	£0.868	£1.400
UF60Q	12V Lamp + Holder	£1.190	£0.958	£0.868	£1.400
UF61R	28V Lamp + Holder	£1.450	£1.200	£1.120	£1.710

## Bulb Extractor

A tool required to remove the twin-pin filament bulbs.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FA80B	Extraction Tool	£0.161	£0.102	£0.087	£0.190

**ORDER BEFORE 5PM FOR SAME DAY DESPATCH**

**Tel: 01702 554000**  
**Fax: 01702 554001**  
**e-mail: Sales@maplin.co.uk**

## Modular Switch

A switch available in momentary and latching types which may be used on its own or in various combinations with its accessories. Possible combinations are switch with button, switch with button and bezel, and switch with button, bezel and LED. Buttons are available in blue, grey or red; bezels are black, one type being plain and the other having a hole in the top right-hand corner for an LED; and the LEDs are available in red or green. Momentary and latching switches are identical except that momentary type has a black plunger, whilst latching type has a red plunger.



The switch is manufactured in glass-reinforced polycarbonate with ABS buttons and bezels. Fixed contacts are silver-flashed, nickel-coated tin-bronze alloy and moving contacts silver-flashed, nickel-coated beryllium-copper.



### Specification

Contact rating: 250mA and 120V subject to 9W AC max, 6W DC max.  
 Max non-switching current: 500mA  
 Contact resistance: 35mΩ  
 Contact bounce: <5ms  
 Insulation resistance: 5 x 10<sup>13</sup>Ω

### Dimensions

Switch body size: 12.6 x 12.6 x 10.1mm high  
 Plunger size: 3.3 x 3.3 x 5.6mm high  
 Pins: 0.7 x 0.3 x 4mm long  
 Button size: 12.3 x 6 x 4.8mm high (with button fitted overall switch height is increased by 1.1mm)  
 Bezel size: 15.1 x 15.1 x 14.5mm high (when fitted to switch height from base of switch is 16mm and button protrudes by a further 0.8mm)

### LED

Forward voltage at I<sub>F</sub> = 20mA:  
 1.6V red 2.7V green  
 Max forward current:  
 50mA red 30mA green

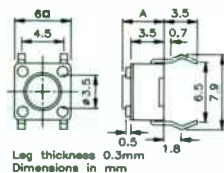
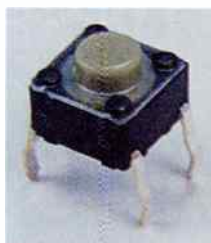


Retail Unit Price each (inc. VAT).

Order Code	Type 2392	Price each exc. VAT	inc. VAT each
FP51F	Mod Sw Momentary	£1.710	£2.010
FP52G	Mod Sw Latching	£1.790	£2.110
UH58N	Mod Sw Button Red	£0.229	£0.270
UH74R	Mod Sw Button Grey	£0.229	£0.270
UH75S	Mod Sw Button Blue	£0.229	£0.270
FP53H	Mod Sw Plain Bezel	£0.229	£0.270
FP54J	Mod Sw LED Bezel	£0.229	£0.270
UH76H	Mod Sw LED Red	£0.765	£0.900
UH77J	Mod Sw LED Green	£0.765	£0.900

## Tactile Switches

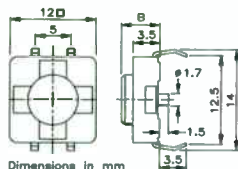
A range of high quality PCB surface mounting click-effect switches with a positive click action in miniature and sub-miniature sizes. The switches are single-pole push-to-make non-locking and each contact is connected to two pins for ease of track layout.



### Sub-Miniature Specification

Rating: 12V DC 50mA  
 Operating force: 120 ± 30gF  
 Travel: 0.25mm ± 0.1mm  
 Contact resistance: 100mΩ max  
 Life: 100,000 cycle min.

Type	Knob height (dim. A)	Colour
SWT105	4.3mm	Black
SWT105A	5.0mm	Black
SWT105B	9.5mm	Black
SWT105T	7.3mm	Black



### Miniature Specification

Rating: 12V DC 30mA  
 Operating force: 150 ± 40gF (KR92A), 160 ± 30gF (KR93B)  
 Travel: 0.30mm ± 0.1mm  
 Contact resistance: 100mΩ at 1mA 5V DC  
 Life: 300,000 cycle min. (KR92A), 100,000 cycle min. (KR93B)

Type	Knob height (dim. B)	Colour
SWT12F	4.3mm	Blue
SWT12J	7.3mm	Black

Retail Unit Price each (inc. VAT).

Order Code	Type 4156	Price each exc. VAT	inc. VAT each
KR92A	Switch 12F	£0.417	£0.490
KR88V	Switch 105	£0.382	£0.450
KR89W	Switch 105A	£0.382	£0.450
KR90X	Switch 105B	£0.382	£0.450
KR91Y	Switch 105T	£0.382	£0.450
KR93B	Switch 12J	£0.468	£0.550

## Click-Effect Push Switch

A neat, small low cost push switch in a matt grey finish for direct PCB mounting. Smooth, gentle and positive action with a click-effect so that you know switch has operated. Action is single-pole push-to-make non-locking.



Switch has a small square button fitted to a circular base. Each contact is connected to two pins for ease of track layout on PCB. Contact is self-cleaning laminated silver.

### Specification

Contact rating: 10mA at 35V DC  
 Contact resistance: >50mΩ  
 Bounce: 1ms  
 Insulation resistance: >10<sup>9</sup>MΩ  
 Life: 500,000 operations  
 Inter-contact capacity at 1MHz: <1pF  
 Key travel: 0.8mm  
 Size of button: 7.7 x 7.7mm  
 Height of button: 4mm  
 Overall diameter: 11.5mm  
 Overall height from pcb: 10.8mm  
 Pin length: 2.8mm  
 Pin diameter: 0.8mm  
 Pin spacing: 5 x 5mm

Retail Unit Price each (inc. VAT).

Order Code	Type 2114	Price each exc. VAT	inc. VAT each
FF87U	Click Switch	£0.553	£0.650

## Caps For Click Switch

Two different colour caps which may be snapped on to our click-effect push switches. (See FF87U)



Size of cap: 12.4 x 12.4mm  
 Height of cap: 5.5mm  
 Overall height from pcb: 12.3mm  
 Available in Black and White.

Retail Unit Price each (inc. VAT).

Order Code	Type 2448	Price each exc. VAT	inc. VAT each
FF88V	Click Cap Black	£0.357	£0.420
FF94C	Click Cap White	£0.357	£0.420

## Multimec PCB Mounting Click Effect Switches

MEC



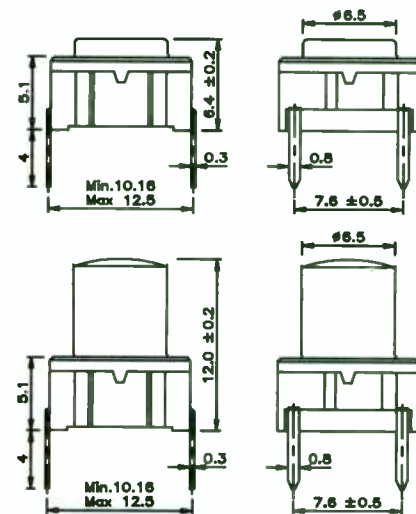
A range of high-quality IP67 sealed, click-effect switches for through-hole mounting.

### Specification:

Max. rating: 50mA max. at 24VDC  
 Contact resistance: <30mΩ max., 10mΩ typ.  
 Contact material: Silver  
 Button travel: 1mm  
 Operating Force: 2.5N  
 Life expectancy: >10m cycles

### Manufacturers Part Number

Type	Order Code
White Actuator	RD14Q
Black Actuator	RD15R
Long Actuator	CL48C



Retail Unit Price each (inc. VAT).

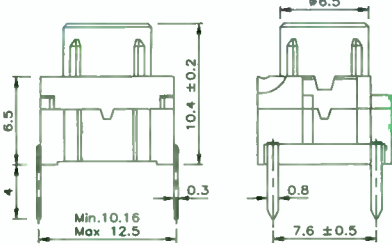
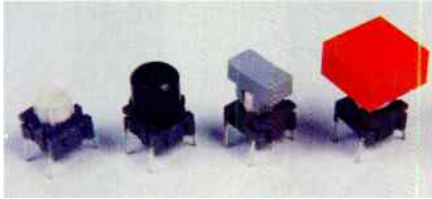
Order Code	Type 12575	Price each exc. VAT	inc. VAT each
CL48C	Lo Profile Sw HiButn	£0.723	£0.850

Retail Unit Price each (inc. VAT).

Order Code	Type 12575	Price each exc. VAT	inc. VAT each
RD14Q	Low Profile Sw White	£0.765	£0.900
RD15R	Low Profile Sw Black	£0.765	£0.900

**Multimec PCB Click-Effect Push Button Switches**

MEC



A range of high-quality IP67 sealed, click-effect switches. These miniature PCB mounting units share the same base switch with different modules for a wide variation of cap designs and colours.

**Height above PCB surface with caps fitted:**

- 1D types 14.9 ± 0.2mm
- 1P types 14.4 ± 0.2mm
- 1K types 19.1 ± 0.2mm

**Specification:**

- Max. rating: 50mA max. at 24VDC
- Contact resistance: <30mΩ max., 10mΩ typ.
- Contact material: Silver
- Button travel: 1mm
- Operating Force: 2.5N
- Life expectancy: >10m cycles

Manufacturers Part Number	Type	Order Code
3FTL6	Base Switch	CL49P
1D03	Round Button Grey	CL50E
1D08	Round Button Red	CL51F
1D09	Round Button Black	CL52G
1P03	Rect. Button Grey	CL53O
1P08	Rect. Button Red	CL54J
1P09	Rect. Button Black	CL55K
1K0316	Square Button Grey	CL56L
1K0816	Square Button Red	CL57M
1K0916	Square Button Black	CL58N

Retail Unit Price each (inc. VAT).

Order Code	Type 12574	Price each exc. VAT			inc. VAT each
		1+	50+	100+	1+
CL49D	Base Switch P/Btms	£0.723	£0.660	£0.610	£0.850
CL54J	Rect Btn Red	£0.161	£0.150	£0.140	£0.190
CL53H	Rect Btn Grey	£0.161	£0.150	£0.140	£0.190
CL52G	Round Btn Blk	£0.161	£0.150	£0.140	£0.190
CL51F	Round Btn Red	£0.161	£0.150	£0.140	£0.190
CL50E	Round Btn Grey	£0.161	£0.150	£0.140	£0.190
CL58N	Squr Btn Blk	£1.000	£0.960	£0.880	£1.140
CL57M	Squr Btn Red	£1.000	£0.960	£0.880	£1.140
CL56L	Squr Btn Grey	£1.000	£0.960	£0.880	£1.140
CL55K	Rect Btn Blk	£0.161	£0.150	£0.140	£0.190

**Multimec PCB Click Effect Keypad Switches**

MEC

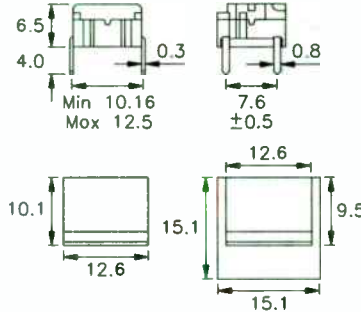


A range of high-quality IP67 sealed, click-effect switches. These miniature PCB mounting units share the same base switch with different modules

for a wide variation of cap designs and colours.

**Specification of common switch base:**

- Max. rating: 50mA max. at 24VDC
- Contact resistance: <30mΩ max., 10mΩ typ.
- Contact material: Silver
- Button travel: 1mm
- Operating Force: 2.5N
- Life expectancy: >10M cycles
- Height with keycap: 12.2mm above PCB surface



Manufacturers Part Number	Product	Order Code
3ATL6	Base Switch	CL59P
1A03	Keycap Grey	CL60Q
1A08	Keycap Red	CL61R
1A09	Keycap Black	CL62S
1B03	Keycap Grey	CL63T
1B08	Keycap Red	CL64U
1B09	Keycap Black	CL65V
2A03	Bezel Grey	CL66W
2A08	Bezel Red	CL67X
2A09	Bezel Black	CL68Y

Keycaps CL63T to CL65V are for use with the bezels CL66W to CL68Y.

Retail Unit Price each (inc. VAT).

Order Code	Type 12411	Price each exc. VAT			inc. VAT each
		1+	50+	100+	1+
CL59P	Base Switch Keypcaps	£0.723	£0.660	£0.610	£0.850
CL60Q	Rect Keycap Grey	£0.161	£0.150	£0.140	£0.190
CL61R	Rect Keycap Red	£0.161	£0.150	£0.140	£0.190
CL62S	Rect Keycap Blk	£0.161	£0.150	£0.140	£0.190
CL63T	Rect Grey Needs Bezel	£0.161	£0.150	£0.140	£0.190
CL64U	Rect Red Needs Bezel	£0.161	£0.150	£0.140	£0.190
CL65V	Rect Blk Needs Bezel	£0.161	£0.150	£0.140	£0.190
CL66W	Grey Bezel for 1B	£0.178	£0.170	£0.160	£0.210
CL67X	Red Bezel for 1B	£0.178	£0.170	£0.160	£0.210
CL68Y	Black Bezel for 1B	£0.178	£0.170	£0.160	£0.210

**KEYPAD / KEYBOARD**

**Miniature Key Switch**



A sealed, miniature key switch for PCB mounting that has a single pole, single throw, normally open contact. The switch features a short actuator, silver terminals and a positive 'click' action. Available with a round snap-in button.

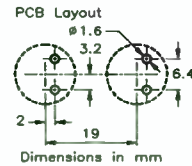
**Specification**

- Contact: Silver
- Voltage rating: 20V min. 50V max.
- Current rating: 1mA min. 50mA max.
- Max. switching power: 1VA
- Max. contact resistance: 50mΩ
- Nominal operating force: 160g
- Life expectancy: 500,000 operations

Retail Unit Price each (inc. VAT).

Order Code	Type 2508	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DC70M	Mini Key Switch	£0.476	£0.378	£0.326	£0.560
DK81C	Rnd Snap-in Button	£0.246	£0.204	£0.189	£0.290

**Keyboard Switch**



A low-cost non-locking push-switch designed for making up keyboards and key pads etc. The keytops must be ordered separately. Designed to be mounted directly on the pcb, the centre of each switch should be 19mm distant from its neighbour. The keytops will then butt up to one another to avoid having a complicated front panel cut-out.

**Specification**

- Rating: 1mA at 24V DC
  - Bounce: 10ms max. (4ms typical)
  - Contact resistance: 200mΩ
  - Stroke: 2.5mm
  - Life: 10<sup>6</sup> operations
  - Overall size: 15 x 15mm
  - Height: 17mm (excluding 3mm pins)
  - Height with key-top: 19mm (excluding pins)
- Switches are non-locking push-to-make.

Retail Unit Price each (inc. VAT).

Order Code	Type 2531	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DM76H	Keyboard Switch	£0.382	£0.266	£0.244	£0.450

**Keyboard Switch Keytop**

A two-part keytop which snaps on to the switch. The top is in two parts, the upper part being transparent. Thus the lower part may be engraved, marked with Letraset, or a piece of printed card may be placed on it, then when the top part is snapped on the key-top appears to have a legend printed on it. Available in: 1 x 1: size 18 x 18 x 9mm.



Retail Unit Price each (inc. VAT).

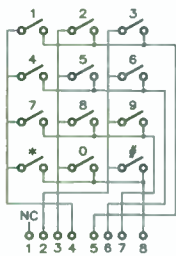
Order Code	Type 2532	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DM77J	Keytop 1 Position	£0.382	£0.266	£0.244	£0.450

**ORDER BEFORE 5PM FOR SAME DAY DESPATCH**

**Tel: 01702 554000**  
**Fax: 01702 554001**  
**e-mail: Sales@maplin.co.uk**

## Numeric Press Button Keypad

A numeric keypad comprising twelve square, double moulded white buttons with black legend, on a black ABS escutcheon. Legends are 0 to 9, asterisk and hash (#). The buttons operate conductive silicon rubber pads and have a click effect. The single pole make switches are arranged on a four by three X/Y matrix. Overall dimensions 51 x 64 x 13mm. Fixing centres 46 x 59.



### Specification

Contact rating:	24V DC 5mA
Contact resistance:	200Ω (max)
Bounce:	5ms (max)
Actuating force:	140g ±40g
Key travel:	1.8mm
Key life:	1,000,000 operations

Retail Unit Price each (inc. VAT).

Order Code	Type 255H	Price each exc. VAT	inc. VAT each
JM09K	Numeric Keypad	1+ £2.570 25+ £1.790 100+ £1.320	1+ £3.020

## Touch Pad

Matt finish chrome-flashed steel touch pad with bevelled edges. An 18.5mm long 6BA threaded stud is welded centrally to the back of the pad.



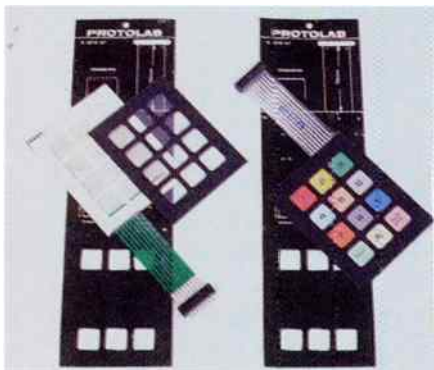
Suitable for mounting on plastic or any insulating material. Pad is triangular. Width of base 21mm. Height: 22mm.

Retail Unit Price each (inc. VAT)

Order Code	Type 2556	Price each exc. VAT	inc. VAT each
HY01B	Touch Pads Tri	1+ £0.595 25+ £0.460 100+ £0.408	1+ £0.700

## MEMBRANE

### Modular Membrane Keypad Kits



A range of membrane keypads and keyboards designed to provide you with exceptional reliability, performance and extended life, and, most importantly of all, are supplied with blank keys, a set of coloured key overlays and rub-down lettering. Now at last you can make up your own keypads with your own individual key legends! From these basic units many different types of keypad switches may be easily created for your one-offs and prototypes with professionally finished,

custom legends.

The flexible membranes are built up from wafer-thin assemblies consisting of an array of normally open contact switches, produced by printing a conductive substrate onto plastic films. The two contact layers, one above the other, are separated by a spacer layer, and the whole laminated together. When the switch area is depressed, the top contact closes with the bottom one to make the connection, and then opens when the pressure is released. Connection to the membrane's switch array is made through a ribbon cable which is simply an extension of the conductive layers, and terminated with an inline, multi-way PCB terminal which plugs onto the end. The ribbon can be easily disconnected and re-inserted into this terminal during service if required. Each membrane keypad kit contains the main basic keypad switch and connector array; a textured, hard wearing top template with a black border surrounding the keys and legends; and the single inline connector which can be directly soldered into a PCB and is compatible with 0.1in. spaced matrix and strip-board. All these parts are supplied separately in the package. The custom overlay system includes a set of pre-cut, self-adhesive transfer pads, designed to fit over each switch key area and fill the key space. The keys are surrounded with a double-sided adhesive film (for the top template) protected by a backing sheet, both of which leave the key areas free. There is a choice of six colours for the transfer pads and enough of them to entirely fill whichever size of keypad chosen with keys of the same colour. To assemble, the desired coloured pad is placed over the key position which, when stuck down, will lie flush with the backing sheet of the adhesive border. It will be helpful to leave the pad attached at one corner to the edge of its carrier sheet while positioning it over the key area. The pads will accept marks from felt tip pens, but better results will be produced by using the rub-down transfer lettering.

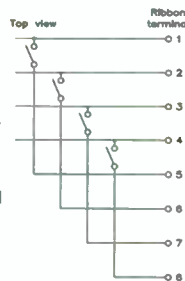
A B C D E F G H I J K  
L M N O P Q R S T U  
V W X Y Z  
0 1 2 3 4 5 6 7 8 9  
# + , - \$ @ = ~

These are specially developed letter transfers for use with the coloured pads. To apply, place the desired character over the pad and rub over with a blunt point, e.g. blunt pencil, tip of an artist's brush, cap of ballpoint pen etc., do this carefully to prevent cracking the character. Only alpha-numeric characters with capital letters are provided, with a selection of other symbols. When the legends are finished, the surrounding backing sheet is carefully peeled off and then the top template applied, making sure that the textured surface is outermost. Six styles of keypad are available.

### 4-Way Keypad

An 80 x 32mm keypad with four keys 13.5mm square with rounded corners. Keys are arranged in one row and spaced 3.5mm apart.

The connecting ribbon cable is 70mm long and 23mm wide. An 8-way PCB terminal is supplied unattached. Pins are spaced 0.1in. apart and the terminal is compatible with 0.1in. matrix and stripboard. Supplied with 8 White, 4 Blue, 4 Red, 4 Green, 12 Grey and 4 Yellow self-adhesive transfer pads and a sheet of alpha-numeric rub-down characters.

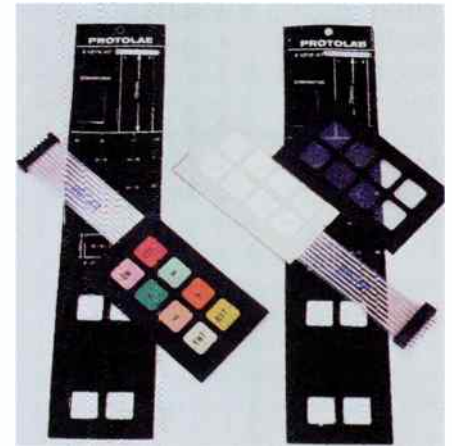


Retail Unit Price each (inc. VAT).

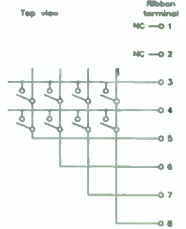
Order Code	Type 2546	Price each exc. VAT	inc. VAT each
JY01B	4-Way Keypad	1+ £4.710 5+ £4.030 10+ £3.780	1+ £5.540

See Stock Code Index For More Price Breaks

## 8-Way Keypad

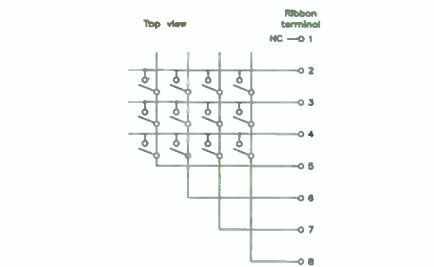


An 83 x 49mm keypad with eight keys 13.5mm square with rounded corners. Keys are arranged in two 2 x 4 rows and are spaced 3mm apart. The connecting ribbon cable is 70mm long and 21mm wide. An 8-way PCB terminal is supplied unattached. Pins are spaced 2.54mm (0.1in.) apart and the terminal is compatible with 2.54mm matrix and stripboard. Supplied with 8 White, 4 Blue, 4 Red, 4 Green, 12 Grey and 4 Yellow self-adhesive transfer pads and a sheet of alpha-numeric rub-down characters.



Order Code	Type 10542	Price each exc. VAT
JY02C	8-Way Keypad	1+ £5.830 5+ £5.000 10+ £4.720 1+ £5.850

## 12-Way Keypad



An 85 x 65mm keypad with twelve keys 13.5mm square with rounded corners. Keys are arranged in three 4 x 3 rows and are spaced 3mm apart. The connecting ribbon cable is 70mm long and 21mm wide. An 8-way PCB terminal is supplied unattached. Pins are spaced 2.54mm apart and the



terminal is compatible with 2.54mm matrix and stripboard. Supplied with 8 White, 4 Blue, 4 Red, 4 Green, 12 Grey and 4 Yellow self-adhesive transfer pads and a sheet of alpha-numeric rub-down characters.

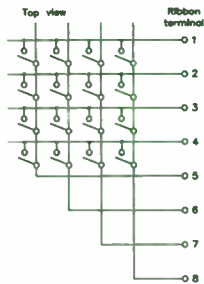
Retail Unit Price each (inc. VAT).

Order Code	Type 2504	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JY03D	12 Way Keypad	£6.260	£5.450	£5.150	£7.360

## 16-Way Keypad



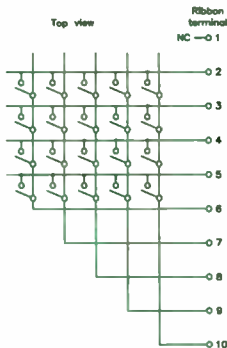
An 85 x 85mm keypad with sixteen keys 13.5mm square with rounded corners. Keys are arranged in four 4 x 4 rows and are spaced 3mm apart. The connecting ribbon cable is 70mm long and 22mm wide. An 8-way PCB terminal is supplied unattached. Pins are spaced 2.54mm apart and the terminal is compatible with 2.54mm matrix and stripboard. Supplied with 8 White, 4 Blue, 4 Red, 4 Green, 12 Grey and 4 Yellow self-adhesive transfer pads and a sheet of alpha-numeric rub-down characters.



Retail Unit Price each (inc. VAT).

Order Code	Type 2575	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JY04E	16 Way Keypad	£6.690	£5.870	£5.450	£7.870

## 20-Way Keypad



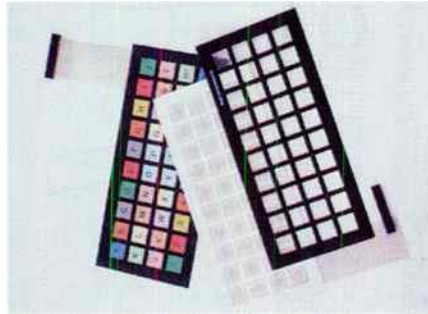
An 85 x 102mm keypad with twenty keys 13.5mm square with rounded corners. Keys are arranged in four 4 x 5 rows and are spaced 3mm apart.

The connecting ribbon cable is 70mm long and 27mm wide. A 10-way PCB terminal is supplied unattached. Pins are spaced 2.54mm apart and the terminal is compatible with 2.54mm matrix and stripboard. Supplied with 8 White, 4 Blue, 4 Red, 4 Green, 12 Grey and 4 Yellow self-adhesive transfer pads and a sheet of alpha-numeric rub-down characters.

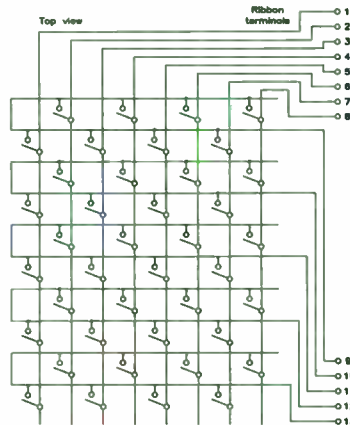
Retail Unit Price each (inc. VAT).

Order Code	Type 2580	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JY05F	20 Way Keypad	£7.550	£6.640	£6.220	£8.880

## 40-Way Keypad



An 87 x 188mm keypad with forty keys 13.5mm square with square corners. Keys are arranged in four 4 x 10 rows and are spaced 4mm apart. The connecting ribbon cable is 70mm long and 32mm wide. A 13-way PCB terminal is supplied unattached. Pins are spaced 2.54mm apart and the terminal is compatible with 2.54mm matrix and stripboard. Supplied with 2 sets of 8 White, 4 Blue, 4 Red, 4 Green, 12 Grey and 4 Yellow self-adhesive transfer pads and a sheet of alpha-numeric rub-down characters.

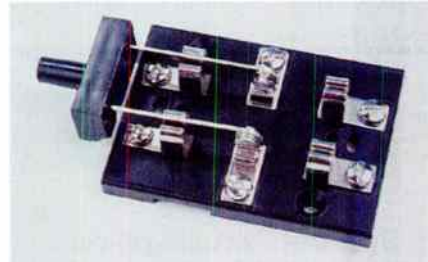


Retail Unit Price each (inc. VAT).

Order Code	Type 2586	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JY06G	40 Way Keypad	£11.160	£9.640	£9.980	£13.120

## KNIFE

### Knife Switch



Ideal for educational and demonstration purposes, the switch is double-pole changeover, having four sets of spring contacts, along with the fulcrums of

the moving contacts, fixed to a base board. Uses should be restricted to switching voltages not exceeding about 24V DC. A safe maximum current rating is about 10 to 15A. The base board is 60mm long x 43mm wide and 6mm thick.

Retail Unit Price each (inc. VAT).

Order Code	Type 2610	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FK31J	Knife Switch	£1.370	£1.070	£0.938	£1.610

## REED

### Rhodium Plated Reed Switches



A dry-reed switch with rhodium plated contacts for long life. When a magnet or electromagnet is brought near the reed, magnetism is induced into both halves of the reed in the same direction. Thus, of the overlapping ends, one becomes a north pole and one a south pole and the attraction of the poles causes the switch to close. When the operating magnet is removed, the springiness of the reed enables the switch to break.

Type	Standard	Compact	Miniature
Glass length (mm)	52	38-8	20-3
Glass diameter (mm)	5-4	5-5	3-2
Overall length (mm)	79	88	57-2
Contact arrangement	Single pole make	Single pole changeover	Single pole make
Max power	25W	10W	15W
Max current AC or DC	2A	0-5A	0-5A
Switching voltage DC	800V	100V	200V
Switching voltage AC rms	250V	125V	125V
Operate ampere-turns	75-95	50-90	20-50
Contact capacitance	0.8pF	3pF	0.2pF
Max contact resistance	80mΩ	100mΩ	150mΩ
Life (millions of operations)	100	100	100
Operate time	4ms	2ms	1ms
Release time	0.2ms	4ms	0.2ms
Insulation resistance	10 <sup>11</sup> Ω	10 <sup>11</sup> Ω	10 <sup>11</sup> Ω

Retail Unit Price each (inc. VAT).

Order Code	Type 2620	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FX68Y	Reed SW Standard	£1.370	£1.180	£1.020	£1.610
FX69A	Reed SW Compact	£2.570	£1.740	£1.500	£3.020
FX70M	Reed SW Miniature	£0.595	£0.408	£0.291	£0.700

## Magnets

Magnets for use with our Reed Switches. Approximate sizes: Small: 18 x 3 x 3mm. Large: 25 x 5 x 5mm.



In the table below the distance in mm is that when the reed just operates and just releases when the wide face of the reed is parallel to a long face of the magnet and is measured from the centre of the reed to the nearest face of the magnet. In practice reduce the operate distance and increase the release distance by 25% to ensure reliable operation.

Magnet	Standard	Compact	Miniature
Large	Operate distance 22mm Release distance 36mm	Operate distance 19mm Release distance 29mm	Operate distance 26mm Release distance 36mm
Small	Operate distance 6mm Release distance 12mm	Operate distance 5mm Release distance 9mm	Operate distance 10mm Release distance 15mm

Retail Unit Price each (inc. VAT).

Order Code	Type 2624	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FX71N	Magnet Small	£0.765	£0.674	£0.582	£0.900
FX72P	Magnet Large	£1.620	£1.320	£1.210	£1.910

## Miniature Reed Switches

Assmtech



A range of magnetic reed switches with sealed Rhodium contacts for low contact resistance and high operating speeds, giving high quality performance and long mechanical life. A wide range of sizes in form A and form C contacts suitable for sensors proximity switching instrumentation and level sensing. UL & CSA approved.

Switches N/O	2522	2314	2722	1513
Order Code	CL36P	CL37S	CL38R	CL39N
Length OA	55	55	55	79
Length Glass	11.0	14.1	18.5	52
Dia. Glass	2.1	2.3	2.6	5.4
Rating VA	6	10	12	120
Sw Current A	0.5	0.5	1.0	3.0
Range AT	10-40	15-35	20-50	75-95
Operate ms	1.0	1.8	2.0	3.5
Release ms	0.05	0.05	0.1	0.2

Switches C/O	0551	1917
Order Code	CL40T	CL41U
Length OA	52.0	70.0
Length Glass	14.0	36.0
Dia Glass	2.54	5.6
Rating VA	3	60
Sw Current A	0.2	1.0
Range AT	15-30	40-80
Operate ms	1.0	4.0
Release ms	0.05	0.15

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CL36P	Micro/Min Reed Sw N/O	£0.842	£0.690	£0.620	£0.990
CL37S	Micro Reed Sw N/O	£0.553	£0.440	£0.390	£0.650
CL38R	Mini Reed Sw N/O	£0.638	£0.450	£0.370	£0.750
CL39N	Standard Reed N/O	£2.540	£1.990	£1.600	£2.990
CL40T	Micro Reed Sw C/O	£2.370	£1.800	£1.450	£2.790
CL41U	Compact Reed C/O	£7.650	£5.750	£4.600	£8.990
CL42V	Reed Mag Min	£0.502	£0.360	£0.300	£0.590
CL43W	Reed Mag Med	£0.936	£0.680	£0.540	£1.100
CL44X	Reed Mag SmI	£0.527	£0.380	£0.300	£0.620
CL45Y	Reed Mag Lrg	£1.690	£1.260	£1.000	£1.990

## ENCLOSED REED SWITCHES

Assmtech



Fully encapsulated reed switches which can be used as proximity sensors. When a moving actuator (magnetic assembly) reaches a predetermined distance from the sensor contacts will close. Ideal for monitoring whether a door is open or closed and whether levels are rising or falling.

	PPS24	PPS470
Max switching voltage	24Vac	470Vac
Max switching current	100mA	500mA
Max switching capacity	1VA	10VA
Contact resistance	200mΩ	150mΩ
Contact type	N/O	N/O
Operating temperature	-20°C to +70°C	
Case material	Polypropylene	

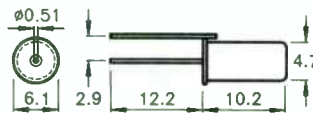
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
SH44X	Enclosed Reed 24VAC	£0.876	£0.840	£0.790	£1.030
SH45Y	Enclosed Reed 470VAC	£0.782	£0.740	£0.700	£0.920

## TILT

### Non-Mercury Tilt Switches

A hermetically sealed tilt and motion detector ideal for use with industrial control equipment, household goods and security devices. The CM1300 (DP50E) is designed for low level switching applications which are currently using mercury switches. Enclosed in a metal housing for longer life. Features hermetically sealed contacts and filled with an inert gas for stable, resistance and quiet operation.



**Specifications:** **CM1300**  
 Switching current: 450ma (at 1.5V DC)  
 Switching voltage: 120V AC  
 Contact resistance: 0.8Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DP50E	Mini Tilt Switch	£0.851	£0.684	£0.622	£1.000

### Non-Mercury Tilt Switches



A pair of hermetically sealed tilt and motion detectors ideal for use with industrial control equipment, household goods and security devices. MTA240 (DP48C) and MTC175 (DP49D) are hermetically sealed tilt switches incorporating reed switch contacts featuring non-bouncing contacts and estimated mechanical switching life in excess of 105 operations. The MTA240 has a simple N.O. configuration while the MTC175 incorporates a change-over function. Ideal for use in a wide variety of industrial, household and leisure-time applications.

**Specifications:** **MTA240** **MTC175**  
 Switching current: 500mA 500mA  
 Switching voltage: 240V AC 175V AC  
 Contact resistance: 0.1Ω 0.15Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DP48C	Tilt Switch N/O	£3.850	£3.210	£2.960	£4.530
DP49D	Tilt Switch C/O	£6.000	£5.050	£4.650	£7.060

## Tilt Switches



A sealed encapsulated mercury tilt switch which finds applications in sensing angles of position for machine control, angular movement detectors, etc. The switch is finished in black and includes a mounting clip. It is fitted with a pair of 14cm long leads terminated in 4BA (M5) crimped ring tags.

**Specification**  
 Type: G5Z-003  
 Included angle: 11° max.  
 Contact rating: 13A @ 240V AC  
 10A @ 240V DC

**Insulation Strength:**  
 Contact to contact, off state: 1500V  
 Encapsulation: 5000V

**Dimensions:**  
 Length: 46mm  
 Diameter: 13mm  
 \*Max included angle = degree of movement from position to guarantee an 'off' state through horizontal to position to guarantee an 'on' state.

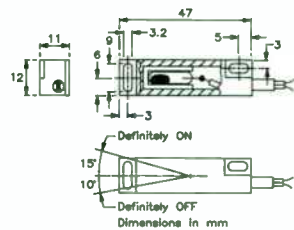
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FA74R	13A Mercury Tilt Sw	£8.580	£6.890	£6.220	£10.090

## Encapsulated Mercury Switch



A surface mounted mercury tilt switch encapsulated in a plastic housing. Slotted screw holes are incorporated in the casing to allow fine adjustments to be made. The switch is supplied with 300mm of 2 core cable.



**Specifications**  
 Included Angle: 25° about the horizontal  
 Contact Rating: 1A @ 240V AC  
 Contact Resistance: 300mΩ  
 Dimensions 47mm long x 12mm wide x 11mm high

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FS99H	Encap Merc Switch	£4.710	£3.830	£3.510	£5.540

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

**Business Account Holders**  
 No Delivery Charges for any order

## Tip-Over Safety Switch

### Assemtch

Potted in a robust polypropylene housing these sealed mercury tip over switches are designed for level and position sensing as well as safety systems. The switch contacts are closed when vertical and open when tilted beyond the 35° from vertical.



Max Contact Rating 15A 240VAC  
Terminals 2 x 200mm leads 17awg silicone rubber insulated. Diameter 28.0mm Height 29.0mm Fixing centres 42.0mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CE59P	35deg Tipover Switch	£5.770	£5.000	£4.570	£6.790

## Tip-Over Break Contact Switches



A pair of mercury switches in nickel plated steel encapsulations. These switches are designed to be installed such that they are normally 'on' whilst 'upright', and break contact if tilted off vertical.

### Safety Supply Breaker Type

The T03-1016 finds applications in free standing electric heaters for example, and will turn off the appliance should it fall over. The switch is terminated with a right-angled 'Lucar' blade at top and a 'Lucar' terminal at the side, suitable for use with our push-on connectors in the Connectors Section.

### Motion Break Contact Switch

The 4539 is a tip-over switch which can be used in security applications to detect vibration or for detecting motion. It is quite sensitive to side-ways and vertical displacement, and will break contact if moved or knocked sharply. The switch remains closed for gentle movements. The break angle ensures 'normal' operation of the sensing circuit for any angle up to 79° relative to absolute vertical. The vertical terminals are 7mm long pins spaced at 2.5mm.

### Specification

Type	T03-1016	4539
Break angle	45°	79°
Contact rating	6A @ 240V AC	1.7A @ 120VAC
Insulation strength:		
Contact to contact, open	1240V	500V
Overall height	23mm inc. tag	16mm inc. pins
Overall diameter	23mm	15mm
	excluding side connector	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FA76H	45deg Tipover Switch	£3.850	£3.210	£2.810	£4.530
FA77J	79deg Tipover Switch	£2.570	£2.040	£1.790	£3.020

**Order £30 or above?**

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## Miniature Tilt Switches

### Assemtch



Miniature tilt switches which: due to their low cost are ideally suited as position sensors. When mounted horizontally contact is made when the device is tipped up and broken when tipped down. Contact is made / broken when the device is 10° from the horizontal.

	Type 1	Type2
Max switching voltage	240Vac	60Vac
Max switching current	300mA	250mA
Differential angle	10°	10°
Contact resistance	1Ω	10Ω
Body length	10.2mm	5.6mm
Body dia.	4.7mm	3.55mm
Lead length	17mm	3mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FE11M	Min Tilt Switch	£1.420	£1.360	£1.290	£1.680
SH41U	Tiny Tilt Switch	£2.440	£2.320	£2.200	£2.870

## Vibration Switches

### Assemtch



Miniature vibration switches ideal for mobile security units on cars, bikes etc or as a safety device on machinery. The contacts are normally open but when vibrated the switch pulses on and off continuously until movement stops.

	Type 1	Type2
Max switching voltage	240Vac	120Vac
Max switching current	500mA	150mA
Switching capacity	200VA	3VA
Contact resistance	N/A	5Ω
Operating temp	-37°C to 100°C	
Overall length	20.7mm	7.1mm
Body dia.	8.2mm	4.6mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
UK57M	Vibration Switch	£2.530	£2.410	£2.290	£2.980
SH40T	Mini Vibration Sw	£1.940	£1.850	£1.760	£2.290

## ACCELERATION



## LINEAR ACCELERATION SWITCHES

### Assemtch

Linear acceleration switches which are fitted with a spring loaded contact which closes when the switch detects shock or acceleration above certain thresholds (see technical specification). Contacts will open again when activation levels decrease.

Three versions are available:

	AS1-25	ASLS-5	ASS-25
Max switching voltage	24Vdc	24Vdc	24Vdc
Max switching current	250mA	250mA	250mA
Max switching capacity	5VA	5VA	5VA
Max contact resistance	10Ω	10Ω	10Ω
Activation level (G)	25.0±2.0	5.0±1.5	25.0±2.0
Operating temperature	-20°C to +85°C		

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
SH46A	LinAcc Sw Mini	£22.090	£20.990	£19.880	£25.960
SH47B	LinAcc Sw LowForce	£4.450	£4.230	£4.010	£5.230
SH48C	LinAcc Sw Std	£17.770	£16.890	£16.000	£20.890

## FLOAT

## Compact Float Switches - Horizontal Mounting

### Assemtch



Horizontal mounting liquid level float switches designed to be mounted on the side of a vessel from the inside. The switches are used to indicate either high or low levels when the pivoted actuator magnet comes close to the reed switch mounted in the main body.

Two fixing styles available, Compression gland on 16.5mm diameter mounting hole and 1/2 in NPT gland fitting. The case material is polysulphone and nylon it complies to food contact regulations and is resistant to acids and alkalis.

Minimum Specific Gravity	0.7	
Temperature range	-20°C to +80°C	
Max Switching Voltage	240VAC/200VDC	
Max Switching Current	SPST 50W/0.5A	

Dimensions	Length O/A	Length Actuator
Panel Fig.	90.0	52.0
1/2in NPT	97.5	52.0
Lead Wires approx.	300mm.	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
CL25C	Float Sw Panel Fig	£10.200	£8.350	£7.300	£11.990
CL26D	Float Sw 1/2 NPT Fig	£10.200	£7.950	£6.750	£11.990

## Compact Float Switches - Vertical Mount

### Assemtch



Vertical mounting liquid level float switches for indicating high or low levels. As the float containing the magnet rises or falls it will turn the reed on or off. Both versions are reversible allowing normally open or normally closed operation

Max switching voltage	230Vac/200Vdc
	OR 125Va
Max switching current	200ms±
Temp range	-20°C to +80C
Material	Polypropylene
Clearance hole dia.	10mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
SH42V	Vert Float Sw 125VAC	£6.930	£6.590	£6.250	£8.150
SH43W	Vert Float Sw 250VAC	£14.400	£13.680	£12.960	£16.920

## POWER

### Battery Isolator Switch



The safer way to control circuits up to 300A at 12V or 24V. Insert the key and turn it clockwise to make the circuit live. To switch off and isolate the circuit turn the key anti-clockwise and remove.

Retail Unit Price each (inc. VAT).

Order Code	Type 9586	Price each exc. VAT 1+	inc. VAT each 1+
WD16S	Battery Isolator	£9.930	£8.150

### Control Panels

Zig

This three-way switched and fused 12V distribution panel includes a battery condition monitor (green light=normal charge, red light=low charge) and power source selector switch. Available in horizontal (WD32K) or vertical formats (WD33L), these panels are designed to be installed remotely from the power supply.

#### Overall Dimensions

Horizontal Panel: 215 x 80 x 40mm  
Vertical Panel: 175 x 75 x 60mm



Retail Unit Price each (inc. VAT).

Order Code	Type 9601	Price each exc. VAT 1+	inc. VAT each 1+
WD32K	CP400 Control Panel	£21.690	£25.490
WD33L	CP400V Control Panel	£21.690	£25.490

## PROXIMITY SWITCHES

### MAGNETIC

#### Proximity Switches

Assemtech

Magnetic proximity switches with reliable hermetically sealed contacts in Normally Open and Changeover styles. Contacts actuate when the magnet is in close proximity to the switch. Suitable for safety systems, position sensing, level sensing, flow sensing, security and anti tamper applications. The rectangular housing style has two slotted holes to provide easy fixing and adjustment of both switch and actuator. The cylindrical housing style are available in standard and miniature housing.



#### Rectangular Housing

Order Code	CL27E	CL28F	SH49D
Part No	PSA	PSC	PSC
	240/30	175/30	150/30
Style	N/O	C/O	C/O
Switching Voltage	240VAC	175VAC	150VDC
Switching Current	0.5A	0.25A	1.0A
Switching Capacity	10VA	5VA	20VA
Dimensions	Switch and Actuator 30 x 20 x 7mm		

#### Cylindrical Housing

Order Code	CL30H	CL31J	CL32K
Part No	PRA	PRC	PRA
	240/30	175/30	30/10
Style	N/O	C/O	N/O
Switching Voltage	0.5A	0.25A	0.01A
Switching Current	240VAC	175VAC	30VAC
Switching Capacity	10VA	5VA	0.25VA
Dimensions			
Length mm	28.0	28.0	12.0
Diameter mm	6.0	6.0	2.5

#### Actuator Dimensions

Order Code	CL33L	CL34M
Part No	PRM	PRLM
Length mm	20.0	15.0
Diameter mm	6.0	3.0

Retail Unit Price each (inc. VAT).

Order Code	Type 10560	Price each exc. VAT 1+	25+	100+	inc. VAT each 1+
CL29G	Rectangular Magnet	£1.940	£1.750	£1.450	£2.290
CL30H	Prox Sw N/O Cylind	£3.220	£2.600	£2.250	£3.790
CL31J	Prox Sw C/O Cylind	£3.900	£3.400	£2.900	£4.590
CL32K	Prox Sw N/O Small	£4.500	£3.830	£3.430	£5.290
CL33L	Cylindrical Magnet	£1.940	£1.400	£1.200	£2.290
CL34M	SmI Cylind Magnet	£0.967	£0.500	£0.420	£1.160

Retail Unit Price each (inc. VAT).

Order Code	Type 10560	Price each exc. VAT 1+	5+	10+	inc. VAT each 1+
SH49D	Prox Sw C/O 20VA	£7.140	£6.780	£6.430	£8.390
CL27E	Prox Sw N/O Rect	£3.220	£3.060	£2.900	£3.790
CL28F	Prox Sw C/O Rect	£4.070	£3.870	£3.660	£4.790

**All Customers**  
No additional freight charges for heavy items

### Panel Mounting Proximity Switch

Assemtech



Magnetic proximity switch with highly reliable hermetically sealed contacts encapsulated in an M6 threaded nickel plated brass housing. This construction enables a wide range of adjustment in through panel mounting.

Switching Voltage 470VAC  
Switching Current 0.5A max  
Switching Capacity 10VA max  
Dimensions Length 28.0mm  
Dia M6 thread  
Wire 300mm of 7/0.2 PVC  
Temperature Range -20°C to +85°C

Retail Unit Price each (inc. VAT).

Order Code	Type 10173	Price each exc. VAT 1+	25+	100+	inc. VAT each 1+
CL35Q	Prox Sw Panel Flg	£9.920	£7.250	£6.350	£10.490

## SENSORS

### PHOTOELECTRIC

#### Compact Photoelectric Sensors - UZA Range

Matsushita



A range of compact photoelectric sensors for use in detecting the presence of objects using light emitted from the sensor. The sensors output a signal to inform other devices of detection. Three versions are offered, with either NPN or PNP transistor output:

#### Diffuse: A23 (NPN) & A235 (PNP)

The sensor emits a constant beam of light and when an object passes in front of the sensor, within 0.8m, it is reflected back to the sensor which then outputs a signal.

#### Retro-reflective: A24 (NPN) & A245 (PNP)

As for the Diffuse type a beam of light is emitted by the sensor but in this case the beam is reflected back to the sensor by a reflector. Only when an object breaks the beam is a signal transmitted. The advantage of the this type is a greater detection distance (0.1 to 3.0m) but at a lower cost than a Through beam device.

#### Through beam: A20 (NPN) & A205 (PNP)

For the maximum sensing distance (Up to 10m) a separate transmitter and receiver are utilised. With this type of sensor when the receiver no longer detects a light source it will output a signal. An added advantage of this type of sensor is that the beam can penetrate up to 20 sheets of A4 paper and a typical application would be detecting for contents in a paper bag.

#### Mounting brackets are also available:

UZA811 Vertical mounting bracket  
UZA812 Horizontal mounting bracket  
UZA813 Protective mounting bracket

	A23/A235	A24/A245	A20A/205
Sensing range	0 - 8m	0.1 - 3m	0 - 10m
Emitting diode	Infrared LED	Red LED	Infrared LED
Detectable object	White paper 10x10cm	Metal, black Δ ≥50mm	Metal, black Δ ≥12mm
Current consumption without load, max	35mA	35mA	Transmitter: 35mA Receiver: 30mA
Operating voltage		12-24Vdc	
Output transistor, max		100mA	
Response time, max		1ms	
Connection method		Cable, 2m	
Environmental protection		IP67	
Ambient temperature		-25 °C to +55 °C	
Dimensions		33x12x20mm	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
SH04E	Sensor, NPN, UZA23	£65.270	£76.700
SH05F	Sensor, PNP, UZA235	£65.270	£76.700
SH02C	Sensor, NPN, UZA24	£62.950	£73.970
SH03D	Sensor, PNP, UZA245	£62.950	£73.970
SH00A	Sensor, NPN, UZA20	£71.890	£84.480
SH01B	Sensor, PNP, UZA205	£71.890	£84.480
SH06G	UZA811 Vertical Bkt	£2.520	£2.970
SH07H	UZA812 Horiz Bkt	£3.820	£4.500
SH08J	UZA813 Protect Bkt	£5.600	£6.580

## Cylindrical Photoelectric Sensors - UZC Range

Matsushita



Cylindrical or Barrel photoelectric sensors for industry standard through hole mounting. Housed in a threaded M18 plastic body these sensors are sealed to IP67 allowing use in severe industrial environments.

Three variants are available, with either NPN or PNP transistor output.

**Diffuse type: A230 (NPN) & A2305 (PNP)**

For close range applications (<12cm) the optical beam is reflected back from the object to the sensor giving an output.

**Retro-reflective type: A250 (NPN) & A2505 (PNP)**

Using a reflector the sensor is triggered when the beam is broken by an object. Ideal for applications with a range of up to 3m such as items on a conveyor belt.

**Through beam type: A200 (NPN) & A2005 (PNP).**

Where detection is required over longer distances (Up to 12m) a transmitter and receiver are utilised. When the beam is broken the receiver produces an output.

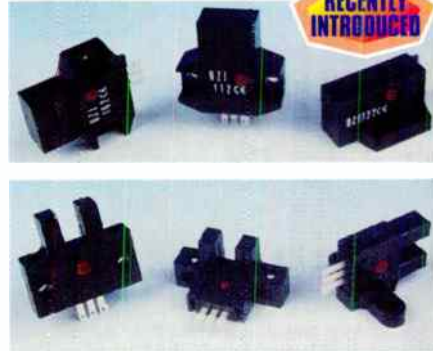
	A230/A2305	A250/A2505	A200/A2005
Sensing range	12cm	3m	12m
Emitting diode	Infrared LED	Infrared LED	Infrared LED
Detectable object	White paper 5x5cm	Metal, black Δ ≥50mm	Metal, black Δ ≥8mm
Current consumption without load, max	25mA	25mA	Transmitter: 20mA Receiver: 25mA
Operating voltage		10-30Vdc	
Output transistor, max		100mA	
Connection method		Cable, 2m	
Environmental protection		IP67	
Ambient temperature		-25 °C to +55 °C	
Dimensions		M18x56mm	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
SH11M	Sensor, NPN, UZC230	£32.050	£37.660
SH12N	Sensor, PNP, UZC2305	£32.050	£37.660
SH13P	Sensor, NPN, UZC250	£34.290	£40.300
SH14C	Sensor, PNP, UZC2505	£34.290	£40.300
SH09K	Sensor, NPN, UZC200	£44.850	£52.700
SH10L	Sensor, PNP, UZC2005	£48.000	£56.400

## Miniature Photoelectric Sensors - UZJ Range

Matsushita



Miniature photoelectric sensors available as Diffuse or Through Beam 'U' shaped types. These sensors use fixed focusing of the light beam enabling precise object detection in a defined sensing range and are ideal for sensing at close ranges (typ <5/8mm). Due to their compact size and different design styles these sensors are also ideal for applications where space is limited.

Three different mounting versions are available in both Diffuse and Through Beam 'U' shaped variants. Each version is available with either Light ON or Dark ON output.

**Diffuse types:**

Top Sensing: Light ON (UZJ101), Dark ON (UZJ102)

Front sensing: Light ON (UZJ111), Dark ON (UZJ112)

L Type (Top sensing): Light ON (UZJ121), Dark ON (UZJ122)

**Through beam types, 'U' shaped:**

K Type: Light ON, (UZJ251), Dark ON (UZJ252)

L Type: Light ON (UZJ261), Dark ON (UZJ262)

T Type: Light ON (UZJ271), Dark ON (UZJ272)

	Diffuse	Through Beam
Rated sensing distance	8mm	5mm
Sensing range	2.5-8mm	5mm
Emitting diode	Infrared LED	Infrared LED
Detectable object	White paper 15x15mm	Metal, black Ø ≥5mm
Current consumption without load, max	25mA	30mA
Response time	0.8ms	Light ON: 20ms Dark ON: 200ms
Ambient temperature	-10 °C to +55 °C	-25 °C to +60 °C
Operating voltage	5-24Vdc	
Output transistor, max	NPN (Open collector), 100mA	
Connection method	Connector or solder terminals	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
SH15R	P/E TopSnsr Light ON	£26.730	£31.410
SH16S	P/E TopSnsr Dark ON	£26.730	£31.410
SH17T	P/E SideSnsr LightON	£24.950	£29.320
SH18U	P/E SideSnsr DarkON	£26.730	£31.410
SH19V	P/E EdgeSnsr LightON	£24.950	£29.320
SH20W	P/E EdgeSnsr DarkON	£26.730	£31.410
SH21X	P/E ThruB Ktyp DkON	£9.940	£11.690
SH22Y	P/E ThruB Ktyp LtON	£10.640	£12.510
SH23A	P/E ThruB Lttyp DkON	£14.200	£16.690
SH24B	P/E ThruB Lttyp LtON	£14.200	£16.690
SH25C	P/E ThruB Typ DkON	£13.250	£15.570
SH26D	P/E ThruB Typ LtON	£13.250	£15.570

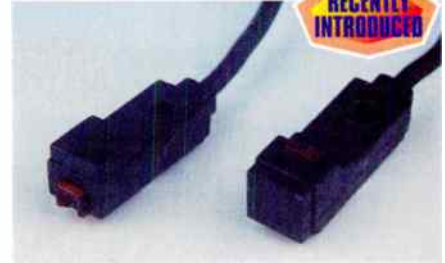
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## INDUCTIVE

## Miniature Proximity Sensor - UZP Range

Matsushita



Miniature inductive proximity sensors for use in detecting metal objects at very close range (<1.8mm). Being both compact and lightweight these sensors are ideal for confined spaces. Available in either Top or Front detection housings two variants are offered:

**Approach - ON:** A signal is output when a metal object comes within range.

**Leave - ON:** When an object leaves detection range a signal is output.

**Top detection, Approach - ON: UZP141**

**Top detection, Leave - ON: UZP151**

**Front detection, Approach - ON: UZP101**

**Front detection, Leave - ON: UZP111**

Typical applications include monitoring objects moving past a fixed point (conveyor belt) or monitoring whether a door/window is open or closed, making these sensors ideal for alarm systems.

Operating voltage	12-24Vdc
Output	NPN transistor
Output transistor current, (Open collector) max	100mA
Rated current, max	15mA
Detection frequency	500Hz
Sensing range	0 - 1.8mm
Standard detectable	Steel plate, 15x15x1mm
Environmental protection	IP67
Weight	12g
Ambient temperature	-10°C to +55°C

Dimensions:	Front detection	Top detection
	21x8x7.4mm	23x8x8mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
SH27E	Top Detect, Approach	£29.080	£34.170
SH28F	Top Detect, Leave	£27.140	£31.900
SH29G	Front Detect, Appr	£27.140	£31.900
SH30H	Front Detect, Leave	£27.140	£31.900

See Industrial Control Section for our range of Counters and Timeswitches

## TIMERS

### MOTOR DRIVEN

#### Run Back Timers

Crouzet



Motor driven run back timers designed for panel mounting applications. These timers feature a graduated setting knob allowing for quick setting and easy identification of remaining run time

#### Features

- ★ Available in single or double pole versions
- ★ 60 minute or 5 hour versions available
- ★ Operating voltage selectable between 115Vac and 230Vac

#### Specification

Operating voltage 115Vac or 230Vac  
 Contact rating 16A (Res), 4A (Inductive)  
 Power consumption 3.1VA  
 Mechanical life >10<sup>7</sup> operations  
 Operating temp -5°C to +70°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17932	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG31J	1 SP R/Back 60min	£29.510	£28.040	£26.560	£34.680
MG32K	1 SP R/Back 5 Hrs	£29.510	£28.040	£26.560	£34.680
MG33L	1 DIP R/Back 60min	£41.520	£39.450	£37.370	£48.790
MG34M	1 DIP R/Back 5 Hrs	£41.520	£39.450	£37.370	£48.790

### 4 POLE PLUG IN

#### Miniature On Delay Timers

Crouzet

H. 27mm W. 21mm  
 D. 69mm

On Delay timers with 4 SPDT contacts housed in a compact housing. These timers are designed for mounting into a 14 pin base and are easily set utilising a front mounted analogue dial.

#### Features

- ★ On Delay (Delay on energisation) function
- ★ Simple setting by analogue dial
- ★ Multiple Time Ranges:  
 0.1s to 1s, 1s to 10s, 0.1min to 1min, 1min to 10min, 0.1h to 1h, 1h to 10h
- ★ Available in four voltage versions:  
 24Vac, 24Vdc, 115Vac & 230Vac
- ★ LED indication of power and relay status

#### Specification

★ UL and CSA approved  
 Operating voltage 24Vdc  
 or 24Vac, 50/60Hz  
 or 115Vac, 50/60Hz  
 or 230Vac, 50/60Hz  
 Contact rating 3A, 250Vac (Res)  
 Reset time (max) 100ms  
 Mechanical life 10<sup>7</sup> operations  
 Operating temperature -20°C to +60°C

Retail Unit Price each (inc. VAT).

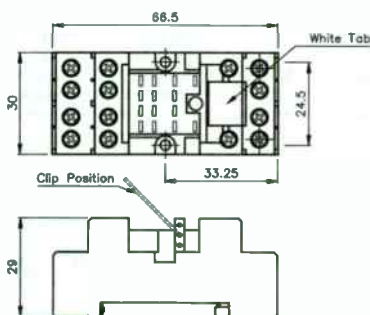
Order Code	Type 17935	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG27E	1 4 Pole Timer 24Vac	£26.260	£24.950	£23.640	£30.860
MG28F	1 4 Pole Timer 24Vdc	£26.260	£24.950	£23.640	£30.860
MG29G	1 4 Pole Timer 115vac	£26.260	£24.950	£23.640	£30.860
MG30H	1 4 Pole Timer 230Vac	£26.260	£24.950	£23.640	£30.860

#### 4 Pole (14-Pin) DIN Relay Socket

Camden



Compact 14 pin relay socket for 2.2/2.6 mm blade terminal 4 pole relays. Suitable for DIN rail or chassis moulded with rising clamp type terminals and moulded in UL94 V1 self extinguishing PA6 with contacts rated at 7A, 300Vac. The socket terminals are finger proof to IP20.



Retail Unit Price each (inc. VAT).

Order Code	Type 13821	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
SDB1C	DIN 14 Pin 4P Skt	£2.220	£2.120	£2.010	£2.620

### DIN RAIL MOUNTING

#### DIN Rail Mounting Timers

Crouzet



H. 78.5mm W. 22.5mm D. 103.5mm  
 Electronic timers in a standard 22.5mm wide case for mounting onto 35mm symmetric DIN rail to EN50022 (DIN 46277-3).

#### Features

##### ★ Four types available

- TRA - On Delay (Delay on energisation)
- TRL - Assymetrical recycler (Cyclic), pulse or pause start
- TRQ - Star Delta
- TRU - Four function timer, including:  
 On Delay, On Pulse (Timing on impulse), Off Delay (Timing after impulse) and On pulse (Timing on energisation or Interval Timer - one shot)

- ★ Multi time range : 1s, 10s, 1m, 10m, 1h & 10h For Star Delta (TRQ) 2 sub ranges - 20s & 160s

- ★ Time ranges easily set by a front mounted switch (Two in the case of the TRL, one for pulse and one for pause)

- ★ Multi voltage: 24Vac/dc and 115 to 230Vac
- ★ LED indication of power & relay status
- ★ UL and CSA approved

#### Specification

Operating voltage 24Vac/dc & 115-230Vac, 50/60Hz  
 Contact rating 8A, 250Vac (res)  
 Contact type SPDT, AgCdO  
 Mechanical life >5x10<sup>6</sup> operations  
 Operating temperature -20°C to +60°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17929	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MG23A	1 DIN Timer TRU	£34.970	£33.220	£31.470	£41.090
MG24B	1 DIN Timer TRA	£24.810	£23.570	£22.330	£29.160
MG25C	1 DIN Timer TRL	£42.800	£40.660	£38.520	£50.290
MG26D	1 DIN Timer TRQ	£40.230	£38.220	£36.210	£47.280

See Industrial Control Section for DIN Rail and Terminals

### PROGRAMMABLE LOGIC CONTROLLERS

#### PLC Starter Kit - FP1

Matsushita



A low cost PLC (Programmable Logic Controller) kit consisting of everything the first time user needs to get started.

The PLC is a microprocessor based control system designed to replace timers, counters and relays for the control of complex systems with one compact unit.

This particular PLC is capable of accepting up to 8 inputs and supplying 6 outputs making it ideally suited to small industrial applications such as controlling lighting, machinery, motors etc. Due to its low cost it is also ideal for controlling model railways and other moderately complex systems.

#### Kit contents:

- FP1-C14 PLC
- NPST-GR programming software
- Programming lead with built in RS232C/422 converter
- Input simulator switches
- Operation and Application manuals
- Supply voltage 100-240Vac
- Max current 200mA @ 200V
- Input/Outputs (I/O) 8/6
- Processing speed 1.6ms / logical instruction
- Program capacity 900 steps
- Memory type EEPROM
- Number of commands  
 Basic 41  
 Additional 85
- Timers/counters 128
- Working temperature range 0°C to +55°C
- Dimensions 120x81x74mm

Retail Unit Price each (inc. VAT).

Order Code	Type 13795	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
SH31J	PLC Starter Kit	£349.000	£331.550	£314.100	£410.080

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## Telephones

### Dialatron 66/1 Telephone

Dialatron



- ★ Pulse/tone operation
- ★ Mute key
- ★ Last number redial
- ★ Ringer on/off switch
- ★ Wall mounting
- ★ Suitable for PSTN connection

A cost effective telephone ideal for the bedroom, garage, conservatory and anywhere that occasional use may be required. Features included a mute switch for privacy, last number redial, ringer on/off and a dial tone reset button. The clear, simple key layout allows easy operation, while the holster (supplied) provides an effective solution to wall mounting. This unit has a REN of 1 and operates in 'Pulse' mode only but will still work correctly with the new digital exchanges. Suitable for PSTN (Public Switched Telephone Network) connection and some PABX (Private Automatic Branch Exchange). Supplied with full operating instructions and wall holster.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BJ49D	66/1 White D/T Phone	£6.80*	£7.990

### Horizon Telephone

Betacom



- ★ Visual ring indicator
- ★ Tone/pulse dialling
- ★ Timed/Break/Recall
- ★ Desk/wall mountable
- ★ Last number redial

This slim gondola style telephone combines a unique modern design with a keypad in a car phone style. Buttons are flush fitted to avoid accidental operation. This telephone comes in white and has a REN of 1. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD24B	Horizon Telephone	£8.50 10+	£9.990 1+

### Designer BB Telephone

Dialatron



- ★ Tone/pulse dialling
- ★ Last number redial
- ★ Secrecy button
- ★ Ringer on/off switch
- ★ Wall mountable

This stylish two piece telephone is ideal for use in the home or office. It is fully PABX compatible with a choice of either Earth or Timed break recall and Pause function. When in tone dialling mode, BT Select Services can be accessed. It comes in a choice of two colours - Racing green or Midnight blue, has a REN of 1 and is supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD25C	Designer BB Green	£7.650 1+ 5+	£8.990 1+
YD26D	Designer BB Blue	£7.650 1+ 5+	£8.990 1+

### Dialogue Telephone

Binatone



- ★ Mute key
- ★ Pause during dialling
- ★ Last number redial
- ★ Tone/pulse dialling
- ★ Earth loop/timed break recall
- ★ Ringer on/off switch
- ★ BT Star Services compatible
- ★ PABX compatible
- ★ REN=1

An elegantly styled two-piece telephone, ideal for use at home or in the office. This versatile telephone is able to connect to BT Star Services, PABX and home banking services by using the # and \* symbols in Tone dialling mode. For compatibility with older style exchanges this unit also operates in Pulse dialling mode. Last number redial is supplied as standard, allowing rapid dialling of engaged numbers and a mute key will prove useful during private conversations while online. Suitable for desk or wall mounting, supplied with screws and mounting template. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BJ50E	Dialogue T/P Phone	£8.500 1+ 10+ 25+	£9.990 1+

### Venice M Telephone

Geomarc



- ★ 10 Memories
- ★ Available in the latest colours
- ★ Hi/low/off volume control
- ★ Pause function
- ★ Recall facilities
- ★ Mercury button
- ★ Pulse/tone dialling
- ★ Last number redial
- ★ 3 one-touch keys
- ★ 6 hour memory backup

A highly featured two piece telephone with 10 two key-press accessible memories and 3 single press. A three position control allows the ringer to be set to off, low or high volume levels, making it ideal for a variety of locations. Available in White, Midnight Blue, Burgundy and Racing Green. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CH12N	Venice M White	£11.050 1+	£12.990 1+
YD28F	Venice M Blue	£11.050 1+	£12.990 1+
YD29G	Venice M Burgundy	£11.050 1+	£12.990 1+
MU52G	Venice M Green	£11.050 1+	£12.990 1+

### Avon 100S Telephone

Binatone



- ★ Last number redial
- ★ Pulse/tone dialling
- ★ Pause function
- ★ Full recall facilities
- ★ BT Star Services compatible
- ★ PABX compatible
- ★ Adjustable volume control
- ★ REN=1
- ★ Visual ring indicator
- ★ Mute key
- ★ Pull-out directory card

A sleek desk or wall mounted telephone for use in the home or office, etc. Full compatibility with BT Star Services and PABX systems. Switchable Pulse/Tone dialling capability enables this telephone to be used with old style as well as newer digital exchanges. Added secrecy can be achieved when talking to persons locally by pressing the mute key, totally blocking signals from the in-built microphone. A visual ring indicator is provided and a pull-out directory card can be used to store your most frequently used numbers. Suitable for desk or wall mounting. This telephone has a REN of 1. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BJ53H	Avon 100S Phone	£11.050 1+ 5+ 10+	£12.990 1+

Account Enquiries: 01702 554187



**Madrid Telephone**

Geemarc



- ★ Mute Key
- ★ Recall Key
- ★ Last number redial
- ★ Pulse/tone dialling
- ★ Ringer on/off switch
- ★ PABX compatible

A stylish and compact telephone ideally suited to home and office use. The handset can be placed on the base unit pointing either to the left or to the right depending on personal preference. This unit has a REN of 1, is available in Racing green or Burgundy and is supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MU53H	Madrid Phone Blue	£12.750	£12.500	£12.100	£14.990
YD31J	Madrid Phone Burgundy	£12.750	£12.500	£12.100	£14.990
YD30H	Madrid Phone Green	£12.750	£12.500	£12.100	£14.990

**Flair Telephone**

Betacom



- ★ Last number redial
- ★ Mute button
- ★ Visual ringer
- ★ Star services compatible
- ★ Tone/pulse dialling

A beautifully styled telephone offering outstanding value for money. This unit has a REN of 1, comes in white and is supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YD33L	Flair Telephone	£14.450	£13.200	£12.700	£16.990

**Florenteen Telephone**

Geemarc



- ★ Pulse/tone dialling
- ★ Last number redial
- ★ Variable handset position

- ★ Ringer high/low/off switch
- ★ Timed break recall

The Geemarc Florenteen combines attractive compact styling, unique fashionable colours and easy to use practical features. Clever use of cable channelling allows the handset to be reversed for left or right handed use. The unit has a REN of 1, comes in a multicoloured, eye catching finish and is supplied with full operating instructions. Guaranteed to be a talking point with friends and visitors.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YD34M	Florenteen Phone	£17.010	£15.600	£15.050	£19.990

**Vogue Featurephone**

Betacom



- ★ 10 one-touch memories
- ★ Last number redial
- ★ Mute button
- ★ Visual ringer
- ★ Ringer pitch control
- ★ Mercury button

This stylish telephone is ideal for either home or office use. It comes in charcoal grey and is PABX compatible making it ideal for business use. Other features include: tone/pulse switchable; mercury button; and ringer pitch control. This telephone has a REN of 1 and is supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YD35Q	Vogue Plus Grey	£17.010	£15.600	£15.050	£19.990

**Designer TRAC Alarm Clock/Telephone**

Dialatron



- ★ AM/FM alarm clock
- ★ On-station tuning indicator
- ★ Green LED clock
- ★ Dimming control for LED clock
- ★ Alarm wake to music or buzzer
- ★ Snooze facility
- ★ Sleep facility
- ★ Radio mute on lifting telephone
- ★ Backup battery for clock when power fails
- ★ Pulse/tone dialling telephone
- ★ Last number redial
- ★ Mute button for privacy

- ★ Ringer on/off control
- ★ Full recall functions
- ★ PABX compatible
- ★ BT Star Services compatible
- ★ Desk or wall mounting

A stylish telephone and alarm clock featuring an AM/FM radio, buzzer alarm sound, and a clear LED readout of current time. All the controls are easily accessible from the front of the unit and the radio mutes when the telephone handset is lifted. A backup battery is used to keep the alarm memory alive during power failures. With this unit you awake to radio or alarm sounds, and have the ability to set a sleep timer to give you up to 59 minutes of radio listening before automatically switching off. Supplied with full operating instructions and a template to allow wall mounting.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	
YS00A	Clock Radio Phone	£17.010		£19.990

**Speakerphone 5 Telephone**

Blnatone



- ★ Hands free dialling
- ★ Hands free call answering
- ★ Three 1-touch memory keys
- ★ Ten 2-touch memory keys
- ★ Mute key
- ★ Visual ring indicator
- ★ Pause function
- ★ Full recall facilities
- ★ Sliding ringer control
- ★ Desk or wall mounting
- ★ REN=1

A rugged and highly practical telephone featuring a total of 13 memory keys to access you frequently used telephone numbers. Full hands free operation on both dialling and answering of calls means this telephone will find applications in the office and home – ideal for kitchens. Compatibility with PABX and BT Star Services is maintained, with full Recall and a Pause function for use when accessing exchange lines from a PABX system. Both pulse and tone signalling methods are employed, allowing this telephone to be used with old style and newer digital exchanges. A pull-out memory card is provided in the base of the telephone and shows important telephone numbers – ideal for important but infrequently used numbers. Suitable for desk and wall mounting. This telephone has a REN of 1. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	
BU52G	SpeakerPhone 5 White	£17.010		£19.990

**Urgent Requirement?**

Call and collect from your local Maplin store.

## Oxford Featurephone

Betacom



- ★ Handsfree speech
- ★ Ringing pitch control
- ★ Ringing volume control
- ★ Mute key
- ★ Mixed mode dialling
- ★ Full recall facilities
- ★ Pause function
- ★ 10 memories
- ★ Mercury compatible
- ★ Last number redial

A sleek desk and wall mounted telephone featuring compatibility with Mercury and Star Services and full hands free operation. Other features include a ringer pitch and volume control, mute key, pause function, full Recall, 10 memories and last number redial. A stand-alone Mercury button allows access to the Mercury. This telephone has a REN of 1 and is supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YE06G	Oxford Speakerphone	£23.820	£21.150	£20.150	£27.990

## Horizon 30 Telephone

Betacom



- ★ 10 indirect memories
- ★ Mercury button
- ★ Handsfree speech
- ★ LCD display
- ★ Last number redial
- ★ Speaker volume control
- ★ Tone/pulse switchable
- ★ Mixed mode dialling

A compact and versatile telephone featuring an LCD readout of telephone number dialled/call duration, and 13 memories. Compatible with BT Star Services, home banking facilities and PABX systems. Pulse and Tone signalling methods are supported, including mixed mode dialling and full Recall facilities conforming to Earth Loop and Timed Break conventions. This telephone has a REN of 1 and is supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YE07H	Horizon 30 Telephone	£25.520			£29.990

## Speakerphone 6

Binatone



- ★ Full Handsfree speech
- ★ 10 Digit LCD display
- ★ Clock & call timer
- ★ 10 Direct memories
- ★ 10 Indirect memories
- ★ Pulse/Tone dialling
- ★ Last number redial

A stylish, fully featured phone ideally suited to home or office use. The Speakerphone 6 has full 2 way loudspeaker facilities with adjustable volume control. The 10 digit LCD display shows the time in hours, minutes and seconds and can also display the duration of conversations if required (up to 59 minutes). Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YD37S	Speakerphone 6 White	£21.260	£19.750	£18.340	£24.990

## Executive Featurephone

Betacom



- ★ Handsfree speech
- ★ Displays clock/call timer/number dialled
- ★ 10 one-touch memories
- ★ Visual ringer
- ★ Mercury button

This beautifully styled telephone will suit any home or office. It comes in dark green and is fully featured. Clock, call timer and number dialled are shown on an LCD display. On-hook dialling and handsfree speech make this an ideal business telephone. It is fully PABX and Star services compatible. This telephone has a REN of 1 and is supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YD38R	Executive Plus Phone	£29.770	£27.150	£26.150	£34.990

## Preview 1 Caller ID

Betacom



- ★ 15 Character dot matrix display
- ★ 30 name & number memory
- ★ Pause/delete button
- ★ Review call button
- ★ New call indicator
- ★ Stores answered and unanswered calls
- ★ Desk or wall mountable

This competitively priced caller line identification unit is ideal for home or office use and has many useful features in addition to number identification. It is compatible with BT and cable networks and will store both answered and unanswered calls. This unit can be used to screen unwanted calls without having to answer them and can be used with any telephone. Supplied with full operating instructions, batteries and 12 month guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YD39N	Preview 1 Caller ID	£25.520	£23.000	£22.100	£29.990

## Decorative Telephones

### Spotlight 753

Mybelle



- ★ Innovative, fun, see-through design allows you to see the workings of a modern telephone.
- ★ Illuminated keypad.
- ★ Ringer Flash - special neons flash for incoming calls.
- ★ Last number re-dial.
- ★ Desk or wall mount.
- ★ Tone or pulse dialling to ensure compatibility to all exchanges.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
MS12N	Spotlight 753	£17.010			£19.990

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

**KEY CALL**  
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**Big Button Phone**

Mybelle



**NEW**

The big button phone has all the essential features for anyone with poor eyesight, hearing or grip.

- ★ **Big buttons - easy to see, easy to press.**
- ★ **Receiver amplifier - increases the volume in the earpiece upto twice the normal level.**
- ★ **Ringer flash - flashes for incoming calls.**
- ★ **Easy-to-grip handset with high clearance between handset and body.**
- ★ **Hearing aid compatible.**
- ★ **10 memories.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS10L	Big Button Phone	£21.260	£24.990

**Aloha**

Geomarc



**NEW**

A stylish, modern phone in dazzling metallic green and metallic grey.

- ★ **10 memories for your most frequently used numbers**
- ★ **Pulse / Tone dialling allowing you to use all the latest network services.**
- ★ **Last number redial**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU54J	Aloha Metallic Green	£21.260	£24.990
MU55K	Aloha Metallic Grey	£21.260	£24.990

**Real Porcelain Phone**

Mybelle



**NEW**

A very stylish telephone that is not a plastic copy but real porcelain at a very reasonable price. The Cameo 401 has push buttons for dialling that look like an old-fashioned dial. This is the ideal phone for anyone who enjoys period furniture.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MS13P 1	Real Porcelain Phone	£34.030	£39.990

**Deco Classic 872**

Mybelle



**NEW**

The Deco Classic 872 recalls the nostalgic era of the 20s and 30s. The style and design of the Art Deco movement is captured in this chrome-plated telephone that invokes a distinctive period feel. The dial is actually made up of push buttons for convenient dialling.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU83E	Deco Classic 872	£25.120	£29.990

**Memophone**

Blnatone



**NEW**

Ideal for the kitchen, workshop or study, this ingenious 10 memory telephone incorporates a wipe-clean white board and Post-it notes. The board incorporates a holder for the special white board pen that is included, along with a selection of decals to suit its location. You will never need to hunt around for pen and paper again!

- ★ **10 memories.**
- ★ **Last number redial and secrecy buttons.**
- ★ **Tone or pulse dialling and recall button.**
- ★ **Ringer volume control.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU84F	Memo-Phone	£13.600	£15.990

**Businesses and Government Establishments – open a Maplin MPS Account**

Just complete form at back of catalogue

**Business Telephones**

**Euroset 802**

Siemens



**NEW**

A high quality standard business telephone that can be desk or wall mounted. It is switchable between tone and pulse dialling and has a 3 position ringer volume control, high, low, off. Last number redial and time break recall (for use with PABXs) buttons are also available. Hearing aid compatible.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU56L	Siemens Euroset 802	£21.230	£24.950

**Euroset 815**

Siemens



**NEW**

A high quality hands-free business telephone with built-in microphone, loudspeaker and on-hook dialling facility.

- ★ **Make and receive calls without having to lift the handset.**
- ★ **Last number redial.**
- ★ **Saved number redial.**
- ★ **8 single key memories.**
- ★ **LCD display of number dialled.**
- ★ **Mute, volume control, recall and lock buttons.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU57M1	Siemens Euroset 815	£35.700	£41.950

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**Telephone / Answering Machines**

**Duo Answering Machine**

Betacom



- ★ Pulse/tone dialling
- ★ Last number redial
- ★ Timed break recall
- ★ PABX compatible
- ★ BT Star Services compatible
- ★ Combined telephone/answering machine
- ★ Call progress monitoring
- ★ Remote control access
- ★ Volume control
- ★ Single microcassette recording
- ★ Mercury compatible
- ★ Mixed dialling
- ★ Pause during dialling
- ★ 10 memories

Combining the versatility of a fully featured telephone and the practical advantages of an answering machine, this unit provides all the features you're ever likely to need. Ideal for use in the home or office, when you cannot guarantee you'll be in range of the phone all the time. Compatibility with Mercury and BT Star Services means that you can access new network features as they become available and can keep your telephone bill down by using Mercury for those long distance calls. Other features include Remote Message Retrieval, Call Progress Monitoring, 10 Memories and Mixed Dialling. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE0BJ	Duo Answerphone	£34.030	£39.990

**Telcorder 2300 Telephone/Answering Machine**

Binatone



- ★ Auto change to answer mode
- ★ Fast forward/rewind during playback
- ★ Full remote control facilities
- ★ Power up restore of all messages
- ★ Call monitoring
- ★ Save facility for messages

This slimline, compact combined telephone and answering machine is fully digital and can be accessed remotely using an ordinary tone phone. It incorporates a 'Beep' tone which sounds for every successful key press to avoid mistakes and will

automatically switch to answer mode after 15 rings are encountered so that the machine may be switched on remotely. It is supplied with DC power supply, full operating instructions and 12 month guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD36P	Telcorder 2300	£29.780	£34.990

**Director Digital Telephone/Answering Machine**

Betacom



- ★ Full digital operation
- ★ Time/day stamp
- ★ Call Screening
- ★ 2 digit LED status/message indicator
- ★ Two way record
- ★ Memo facility
- ★ Full remote control facility
- ★ Toll saver facility

This combined telephone and answering machine has all of the features of a modern digital answering machine and telephone, housed in a slimline, elegant casing. This unit comes in white and is supplied with DC power supply, full operating instructions and 12 month guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD02C	Director Phone	£42.540	£38.950 £37.700 £42.990

**Response 130 Tel/TAM**

BT



Telephone and digital answering machine.

- ★ Fully digital recording.
- ★ Call screening.
- ★ Time and day announcement.
- ★ Memo message.
- ★ Led message indicator.
- ★ Skip forward and backward.
- ★ Remote interrogation.
- ★ 10 memories, 5 one-touch, 5 two-touch.
- ★ Volume control.
- ★ Secrecy button with LED indicator.
- ★ Last number redial.
- ★ Ringer volume High/Low/Off

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU60Q	BT Response 130	£59.560	£69.990

**Micro-Cassette C60**



MC60 micro-cassettes for use with dictation machines and answering machines, etc. Each pack contains two micro-cassettes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BD66W	Micro Cassette C60	£5.090	£3.500 £3.150 £5.990

**Micro Cassette and Headcleaner**

Sanyo

The telpack features a MC60 cassette and Headcleaner and is compatible with other micro cassettes as well as telephone answering machines.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KS73Q	micro cass+hd clnr	£4.240	£4.990

**Endless Loop Cassettes**



A range of endless cassettes for use with answering machines as outgoing message tapes. Available in a selection of capacities, with an electronic contact strip at the tape join to ensure correct operation with most types of answering machines. Tape capacities include 30, 45 and 60 seconds of recording time, for outgoing messages. Each pack includes a single cassette.

Capacity (seconds)	Order Code
30	BD69A
45	BD70M
60	BD71N

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BD69A	Message Tape 30 Sec	£1.860	£1.530 £1.380 £2.190
BD70M	Message Tape 45 Sec	£2.030	£1.670 £1.490 £2.390
BD71N	Message Tape 60 Sec	£2.110	£1.730 £1.540 £2.490

See Stock Code Index For More Price Breaks

## Discovery Cordless Phone

Betacom



- ★ Audible 'out of range' warning
- ★ Auto talk/auto clear
- ★ Paging facility
- ★ Talk LED and button
- ★ Last number redial
- ★ LED Charging indicator
- ★ PABX compatible

This excellent value cordless phone has many of the features that you would expect from a more expensive model. This unit is desk or wall mountable and is supplied with DC power supply, full operating instructions and 12 month guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD22Y 1	Discovery Cordless	£46.800 10+ £42.950 25+ £41.200	£54.990 1+

## Cordless

## Quest Cordless Telephone

Betacom



- ★ Cordless operation
- ★ Mute facility
- ★ Last number redial
- ★ 2 direct memories
- ★ 9 other memories
- ★ Mercury compatible
- ★ Pulse/tone dialling
- ★ PABX compatible
- ★ BT Star Services compatible
- ★ Paging facility
- ★ Power saver facilities
- ★ Desk or wall mounting

A high quality cordless telephone featuring Mercury compatibility, a total of 11 memories, PABX and BT Star Services compatibility and advanced power management facilities. A useful paging function allows the mobile unit to be contacted from the base station - ideal for calling a remote user or locating your phone when you've lost it. Full recall

functions are available on this telephone, allowing it to be used with a wide range of PABX systems. Battery life has been maximised by the built-in power management functions and low power integrated circuitry. Suitable for desk or wall mounting. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE00A 1	Quest Cordless Phone	£51.050	£59.990 1+

## Airlink 8 Cordless Telephone

Binatone



- ★ Cordless operation
- ★ 8-channel auto-scanning
- ★ Automatic 65536-combination security code
- ★ PABX compatible
- ★ Last number redial
- ★ 9 memories
- ★ Paging facility
- ★ Full 2-way intercom
- ★ Power saver facility
- ★ Low battery light
- ★ Automatic line seizure
- ★ Ringer volume control
- ★ Mute key
- ★ Mercury compatible
- ★ BT Star Services compatible

A very advanced cordless telephone employing the latest technology to ensure no other cordless phone users can use your line. 65536 different codes are used to 'password' the mobile to base station link, so that only your telephone will work with your base unit. Whenever the telephone is placed in the cradle to charge, the code is updated making it virtually impossible to work out the current code. 8-channel auto-scanning enables different frequency allocations to be altered - even while making a call. This makes it unlikely that another user in the area will be able to overhear your phone calls. The 2-way intercom allows message relay between the base and mobile units - ideal for contacting your partner in the garage or garden, etc. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BJ55K 1	Airlink 8 CordisPhone	£51.050	£59.990 1+

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## Atlanta 100 Cordless Phone

Geemarc



- ★ Second charger supplied
- ★ 'Clear sound' noise reduction circuit
- ★ Digital security code
- ★ Pager facility (base to handset)
- ★ 3 direct & 10 indirect memories
- ★ Easy talk - any button answer
- ★ Auto talk/auto clear
- ★ Latching mute button with indicator
- ★ PABX compatible

This highly featured cordless phone has the added benefit of being supplied with a second charger unit. Ideal for positioning in secondary locations such as bedrooms, kitchens or out-buildings. It's advanced technology gives a greatly reduced noise level and the auto talk/auto clear facility eliminates the possibility of forgetting to end a call. This unit is supplied with DC power adaptor, full operating instructions and 12 month guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD04E 1	Atlanta 100 + Pod	£63.820 1+ £60.900 10+ £55.950 25+	£74.990 1+

## Compact 8 cordless phone

Binatone



- ★ 8 Channel Auto scanning
- ★ Up to 4 handsets can be used
- ★ Two way intercom facility
- ★ Call transfer between handsets
- ★ Noise reduction circuitry
- ★ 10 Memories from handset
- ★ Out of range warning

This stylish cordless phone benefits from the latest technology in noise reduction and 8 channel auto scanning in order to give crystal clear, interference free speech. Up to 4 handsets may be used with the ability to transfer calls between them. (only one handset supplied with unit). The base unit has a built in speaker which allows on hook dialling and an ID security code prevents unauthorized users from making calls on your line. This unit comes complete with DC power supply, full operating instructions and 12 month guarantee.

Additional handset available

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD05F 1	Compact 8 Cordless	£68.070	£79.990 1+
VR99H	Additional Handset	£24.500	£39.990

**Freestyle 120**

BT



**NEW**

8 channel autoselecting cordless telephone that ensures best possible reception.

- ★ **Intercom facility between handset and base station.**
- ★ **10 number memory.**
- ★ **Out of range and low battery warning.**
- ★ **Handset ringer option and base station ringer volume control.**
- ★ **Hearing aid compatible.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU61R 1	BT Freestyle 120	£76.580	£89.990

**Freestyle 320**

BT



**NEW**

8 channel auto selecting cordless telephone with LCD display and loudspeaker for group listeng.

- ★ **10 number memory.**
- ★ **100m range.**
- ★ **Intercom between handset and base station.**
- ★ **Secrecy and last number redial buttons.**
- ★ **Out of range warning.**
- ★ **Handset ringer on/off.**
- ★ **Base ringer high/low/off.**
- ★ **Easy acces to Select Services - Call diversion, Call Waiting, Call Return.**
- ★ **Hearing aid compatible.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU62S 1	BT Freestyle 320	£85.090	£99.990

**DECT Cordless Telephone**

Hagenuk

The Hagenuk HomeHandy uses the latest Digital Cordless Technology standard for crystal clear reception.

In addition to the voice encryption stipulated in the DECT standard, speech is encrypted in the base station and 'phone thus providing effective protection against eavesdropping by scanners.

Range of upto 300m in the clear, up to 50m inside buildings.

- ★ **Speed calling memory for 10 numbers.**
- ★ **Adjustable receiver volume.**
- ★ **Standby up to 70 hours.**
- ★ **Talk time up to 8 hours.**
- ★ **Last 5 numbers redial.**
- ★ **GAP compatibility.**
- ★ **No overcharging or total discharging of the battery thanks to the intelligent charge management.**



**NEW**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU63T 1	Hagenuk DECT	£119.140	£139.990

**Cordless Telephone/Answering Machine**

**Airlink 800 Cordless Telephone/Answering Machine**

Blatone

**NEW LOW PRICE**



- ★ **Noise reduction circuit**
- ★ **10 indirect memories on handset**
- ★ **Base to handset paging intercom**
- ★ **Handset battery saver circuit**
- ★ **User replaceable handset batteries**
- ★ **Combination security code**
- ★ **Two outgoing messages**
- ★ **Time/day stamp**
- ★ **Voice prompt menu**
- ★ **Full remote control features**
- ★ **Toll saver feature**
- ★ **2 digit visual display**

This fully featured cordless telephone answering machine offers all of the facilities available on a cordless telephone and a digital answering machine all in one. Its advanced noise reduction circuitry combined with 8 channel auto scanning means crystal clear reception and no interruption during calls. It is fully PABX compatible and therefore ideally suited to business as well as home use. This unit is supplied with batteries, DC power supply, full operating instructions and 12 month guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD07H 1	Airlink 800 Cordless	£85.090	£99.990

**Freestyle 1100**

BT



**NEW**

Combined cordless telephone and digital answering machine with 8 channel autoselect and compander for optimum sound quality. The Freestyle 1100 has all the facilities you would expect of a top of the range cordless telephone plus the convenience of a digital answering machine with 6 minutes of recording, all in one unit.

- ★ **10 number memory.**
- ★ **100m range with out of range warning.**
- ★ **Backlit keypad.**
- ★ **Intercom between handset and base station.**
- ★ **Hearing aid compatible.**
- ★ **PIN security on answering machine.**
- ★ **Remote interrogation.**
- ★ **Time and date stamping of messages.**
- ★ **Message counter.**


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU64U 1	BT Freestyle 1100	£110.620	£129.990


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## Cordless Phone Batteries

### Replacement Batteries for Cordless Telephones



K

J1



J3

J4



G1

G3



G4

A range of quality battery packs for a wide range of popular cordless telephones. Brands of cordless telephones mentioned in the following list are registered trademarks of the respective manufacturers.

#### Type K

GEC Envoy 1043, GEC Esprit 1042/1042H, Geemarc M400/Pt400/Pt400B, Geemarc Europa Pt, Geemarc Capital 3M.

#### Type J1

Geemarc G-2000, Southwestern Bell 700/770, Answercall Ranger 1000/2000, Panasonic KXT3806/26/36/4300, Geemarc Atlanta 100.

#### Type J3

Betacom Premier, Betacom Venture XT/XT2.

#### Type J4

BT Freestyle 50, Betacom Quest, Betacom Roma, Binatone Airlink 8, Southwestern Bell 760/790/880.

#### Type G1

Betacom 7000Mk1/Mk11, Betacom C1000, BT Freeway, BT Freestyle, BT Freelance 1 + 2, Geemarc Capital, Uniden 300E, Commtel 829.

#### Type G3

BT Freelance 100/200, Southwestern Bell 650/1150/1735, BT Freestyle 500/600/1000.

#### Type G4

Panasonic 3816, Sharp CLS200E, Sharp CLA400E, Sharp CLA500E.

Retail Unit Price each (inc. VAT).

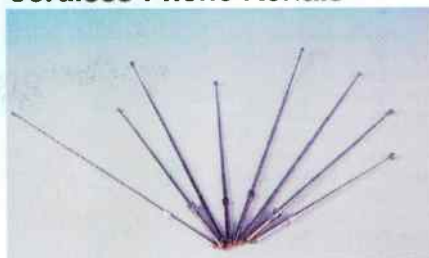
Order Code	Type 11588	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AG39N	Phone Battery K	£5.090	£3.740	£3.080	£5.990
MB52G	Phone Battery J1	£6.800	£5.130	£4.490	£7.990
MB53H	Phone Battery J3	£6.800	£5.130	£4.490	£7.990
MB54J	Phone Battery J4	£6.800	£5.130	£4.490	£7.990
MB55K	Phone Battery G1	£6.800	£5.130	£4.490	£7.990
MB56L	Phone Battery G3	£6.800	£5.130	£4.490	£7.990
MB57M	Phone Battery G4	£6.800	£5.130	£4.490	£7.990

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

## Replacement Aerials

### Cordless Phone Aerials



A range of telephone aerials to suit the most popular cordless telephones. Eight types are available as replacements for the following makes and models.

Brands of cordless telephones mentioned are registered trade marks of the respective manufacturers.

#### CTA01BP

Audioline CDL1/2/3, Autophon Solo, BT Freeway, BT Freelance I & II, BT Freelance 100/200, GPT Elan, Southwestern Bell 650/1150/1735/700/770/760/790/880, Southwestern Bell FF680, Uniden EX300E, Uniden Liberty, Commtel 829, Geemarc Atlanta 100.

#### CTA02BP

Answercall Ranger 1000/2000, GEC Envoy 1041/1043, GEC Esprit 1042/1042H, Geemarc M400/Pt400/Pt400b, Geemarc Capital/Europa Pt/G2000, Harrier 707.

#### CTA03BP

Betacom C100.

#### CTA05BP

Betacom 7000 Mk11, Betacom Quest, Betacom Roma.

#### CTA06BP

Betacom Cruiser, Fidelity CTP300, Goodmans GT10/12, Goodmans Liberty.

#### CTA08BP

Panasonic KXT 3806/26/36.

#### CTA10BP

BT Freestyle 500 & 600.

#### CTA11BP

BT Freestyle 50 & 1000.

Retail Unit Price each (inc. VAT).

Order Code	Type 11461	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JY85G	Phone Aerial CTA01BP	£2.970	£1.800	£1.590	£3.490
JY86T	Phone Aerial CTA02BP	£2.970	£1.800	£1.590	£3.490
JY84F	Phone Aerial CTA03BP	£2.970	£2.220	£2.070	£3.490
CW55K	Phone Aerial CTA05BP	£2.970	£2.220	£2.070	£3.490
CW54J	Phone Aerial CTA06BP	£2.970	£1.800	£1.590	£3.490
CW56L	Phone Aerial CTA08BP	£2.970	£2.220	£2.070	£3.490
MB50E	Phone Aerial CTA10BP	£2.970	£2.220	£2.070	£3.490
MB51F	Phone Aerial CTA11BP	£2.970	£2.220	£2.070	£3.490

## Flexible Universal Type



A short flexible antenna for a cordless telephone which incorporates a universal fitting to suit most cordless 'phone handsets and can be adapted to fit a new or broken telescopic antenna up to 6mm diameter, using a socket and clamp screw arrangement. Length 200mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 835	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JY87U	Phone Aerial KR5	£6.370	£4.600	£3.840	£7.490

† = While Stocks Last

## Payphones

### Imperial Payphone

Betacom



- ★ Accepts 10p,20p,50p & £1 coins
- ★ Pay on answer
- ★ Follow on call facility
- ★ 3 Direct memories
- ★ Handset volume control
- ★ Allows 999/112 calls without coins
- ★ Programmable tariff control
- ★ Programmable call barring
- ★ Connects to standard telephone line

This easy to use payphone has many of the facilities that you would expect from a more expensive model. The liquid crystal display shows the owner the amount of cash in the cash container eliminating the need to open and check each time. The owner may make free calls at any time by using a unique PIN code. Call barring can be programmed to prevent international calls etc, and tariff can be adjusted when required. The unit comes complete with full operating instructions and 12 month guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type 12489	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YD08J	Imperial Payphone	£110.620	£99.500	£91.500	£129.990

## Solitaire 6000 Payphone

GN Rathdown



- ★ Supplied pre-programmed ready to use
- ★ 4 x AA Batteries supplied
- ★ Pay on answer with refund
- ★ Accepts 10p,20p,50p & £1 coins with future coin learning mode
- ★ Adjustable charge rates
- ★ Five year battery life
- ★ Next call button
- ★ International barring options
- ★ PABX compatible
- ★ Large 11 digit LCD display

In addition to the above features, the Solitaire 6000 has the ability to automatically route calls via the Mercury network to reduce call costs for the owner. By simply turning a key, the owner may also see on the LCD display, the amount of money contained in the cashbox. This total is then reset to zero when the cashbox is opened to empty. The Solitaire 6000 also has the ability to learn new coins to enable any new currency to be accepted at the correct rate. This unit is supplied with full operating instructions and 12 month guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type 12423	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YD09K	Solitaire 6000	£161.690	£151.000	£145.500	£189.990



**Fax Machines**

**DF50 Fax Machine**

British Telecom



- ★ Group 3 compatible
- ★ Monitor Speaker
- ★ Auto receive
- ★ Voice/Fax switch
- ★ Answering machine interface
- ★ Copy facility
- ★ Standard/fine resolution
- ★ 15 number coded dialling
- ★ Confirmation & activity report

An ideal machine for the home or small business user. This unit has many facilities generally associated with more expensive models. The inbuilt voice/fax switch combined with the answering machine interface means that you should never miss that important call or fax which, of course is essential for business use. It comes complete with fax roll, full operating instructions and 12 month guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD11M 1+	BT DF50 Fax	£195.750	£229.990

**PPF 200**

Betacom



An economical, compact, desktop plain paper fax that offers all the advantages of printing on plain paper but at a cost comparable to a thermal fax.

- ★ Group 3 compatible
- ★ 30 page document memory.
- ★ 5 page document feeder.
- ★ Ink film printing.
- ★ 16 character LCD.
- ★ 4 one touch memories.
- ★ 45 two touch memories.
- ★ Answering machine interface.
- ★ 16 level greyscale resolution.
- ★ Fax / Tel switch.
- ★ Auto redial.
- ★ Integral handset.
- ★ Desktop copying.
- ★ Broadcasting.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU177 1	PPF 200	£221.260	£259.990

**PPF700 Plain Paper Fax**

Betacom



- ★ 10 page automatic document feeder
- ★ 100 sheet receiving paper capacity
- ★ Auto voice/fax switch
- ★ 16 Character LCD display
- ★ 10 one touch memories
- ★ 40 two touch memories
- ★ Auto/manual redial
- ★ Telephone index
- ★ Handsfree dialling
- ★ Up to one month delay transmission
- ★ Silent operation
- ★ PABX compatible

This advanced unit offers exceptional value for money. It is fully featured, compact and incorporates a local copy facility to enable it to be used as a photocopier.

The unit comes in light grey and is supplied with full installation/operating instructions and a comprehensive 12 month guarantee.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VD23A	Plain Paper Fax	£297.860 £0.000 £0.000	£349.990

**PPF 800**

Betacom



A desktop plain paper fax with fully integrated handset, digital answering machine and PC interface.

- ★ PC interface enables PC printing, scanning and PC fax send and receive.
- ★ 10 page automatic document feeder.
- ★ 100 sheet receiving paper capacity.
- ★ Local copy.
- ★ Auto tel/fax switching
- ★ 16 character LCD.
- ★ Thermal transfer / Ink
- ★ 10 one touch memories.
- ★ 40 two touch memories.
- ★ Up to one month delay transmission.
- ★ Normal / Fine / Superfine and 16 greyscale resolution.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MU18U 1	PPF 800	£340.410	£399.990

**Fax Accessories**

**Fax Cleaning Kit**

Help maintain your fax machine and prolong its life with this comprehensive cleaning kit. The kit includes a bottle of cleaning fluid, cleaning papers, blower brush, cleaning swabs, and a cleaning cloth.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE16S	Fax Cleaning Kit	£6.800	£7.990

**Automatic Fax Switch**

Avro Pacific



- ★ Fax and phone on a single line
- ★ Remote control of your fax from any extension
- ★ Works with cordless telephones
- ★ Easy to install - just plug in to any telephone socket
- ★ Fully approved, cost effective and PABX compatible
- ★ No recorded voice tones or clicks

Fax Friend works with all types of fax machines including those with a built-in telephone switch. It is compatible with all types of answering machine and can be used with fax and data modems. Fax Friend replaces the need for installing a new dedicated telephone line for fax or modem, power supply included and can be installed in minutes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YD61R 1	Fax Switch	£51.050 £46.950 £44.250	£59.990

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## Telephone Systems

### D-I-Y Telephone System



A simple to use telephone system that allows users with only one telephone line to make, receive, hold and transfer calls in complete privacy from any of up to four different locations of the user's choice. Standard (pulse or tone) and cordless telephones can be used to access all features of the system. Special phones, answering machines, modems and other equipment with a REN of 1 can be connected to the system, making it ideal for home-based businesses. Additional features include: intercom between extensions, call-hold during internal enquiry, baby monitoring facility, day and night time ringing selection, 'ring-me-back' when line becomes free, courtesy tone when caller is 'on hold', and 'do not disturb this extension' facility. The system comes with adhesive quick reference labels, for use with MF tone dial telephones, and four extension sockets.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KC60Q 3	DIY Phone System	£136.160	£159.990

### PABX System – FS2828

Omnicom



- ★ Voice prompting
- ★ Fully programmable
- ★ Connects to existing BT modular socket
- ★ Up to 2 Incoming lines
- ★ Up to 8 extension telephones
- ★ REN=4
- ★ Pulse/tone dialling
- ★ Door release circuit
- ★ Connects to a printer
- ★ Smoke alarm interface

An ideal PABX for a small office or large home, accommodating up to two incoming lines and up to eight extensions. Internal communications between extensions is possible, as well as hold, transfer, park and divert functions for all incoming calls. Performs many advanced features and is fully programmable to accommodate the structure of any office. Also included are features including Intrude, Talking Clock, Do Not Disturb, Door Intercom, Smoke Alarm and Self Test functions, adding to the versatility and practical uses for this PABX system. Supplied with full operating instructions including Installation Manual, Operators Manual, Systems Programming Manual and a full systems specification. Approved for connection to BT network and suitable for host subsidiary connection.

Specification  
Dimensions 235 x 195 x 63mm (L x W x D)

Weight Approximately 2kg  
Power requirements 230V AC 50Hz  
Mains fuse rating 3A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YE15R 1	2+8 Phone System	£280.000 £273.500 £268.000	£329.000

## Tone Diallers

### Miniature Tone Dialler



A pocket size tone dialler that can be attached to a key ring and easily slipped into a pocket. Powered by two AG-12 batteries (included), the dialler emits DTMF tones for accessing remote equipment, i.e. answering machines or computer services etc. Replacement batteries available, order code FM29G.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK25C	Tone Dialler	£4.240 £3.790 £3.130	£4.990

### Pocket Tone Dialler Pad



A universal key tone pad which emits audible Dual-Tone Multi-Frequency (D.T.M.F.) encoded signals, for controlling a growing number of products and services which are steadily coming on-stream in the UK, and which require the use of tone signalling over the telephone line. Suitable for use with answering machines shown elsewhere in this section. Powered by two AG13 type button cells, supplied. Replacements available, order code FM28F. Size: 89 x 55 x 16mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZB19V	Tone Pad	£5.090 £4.700 £3.540	£5.990

† This symbol beside an order code in the price block indicates WHILE STOCKS LAST

## Telephone Amplifier

Simply attach this compact Telephone Amplifier by its strap to the ear piece of your telephone handset and you can adjust the volume of the caller's voice to your own comfort setting. It's ideal for hearing telephone conversations in noisy places or for people with slight hearing difficulties. Can be easily fitted to any telephone, even cordless and cellular. Requires 1 x AAA battery (not Supplied), See Batteries, Torches and Accessories section.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GT33L	Telephone Amplifier	£8.500	£9.990

## Pagers

### Instinct Plus

PageOne MiniCall



- ★ No monthly Fees ever, no connection fee and no contracts, just buy the pager.
- ★ The unit is live and connected to the MiniCall service; as soon as you buy the pager, you're ready to go.
- ★ Ideal affordable communication tool for keeping in touch.
- ★ Secrecy and fun.
- ★ Communicate in code only you and your friends understand or simply send a telephone number.
- ★ Mobile phone companion.
- ★ A discreet way to remain in contact during meetings, in the cinema, restaurant or train.
- ★ 5 Free Rechargeable Phone Cards available with Instinct Plus. Each card providing 2 Free pager calls. Subsequent calls, after recharging can be used for telephone calls.
- ★ Free Lottery Results available on Instinct Plus.
- ★ Coverage extends across 98% of the UK population.
- ★ Our PageOne MiniCall service is extremely user-friendly. A welcoming voice guides callers through a simple process lasting only a few seconds.

Callers to PageOne MiniCall pay by the second. When sending a numeric message the call rate is 49p per minute. Use standard tone phones to leave numerical message or use the exclusive PageOne MiniCall voice-recognition technology to allow non-tone phone users to easily send a message.

Dimensions: 70mm X 50mm X 31.5mm  
Weight: 64g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MT25C 1	Instinct Plus	£42.540	£49.990

## Text Express

PageOne MiniCall



- ★ No monthly Fees ever, no connection fee and no contracts, just buy the pager.
- ★ The unit is live and connected to the MiniCall service; as soon as you buy the pager, you're ready to go.
- ★ Full text capability.

- ★ Free headline news service and lottery results available.
- ★ Coverage extends across 98% of the UK population.
- ★ A live operator is responsible for immediately transmitting your message.
- ★ 1 line, 16 character LCD display that clearly displays your messages and allow you to scroll through messages longer than one screen.
- ★ Messages can be stored for future reference, protected or deleted - maximum message capacity; 16 messages, 100 characters per message.
- ★ Weighs approximately 59g and easily fits into a pocket, bag or on a belt
- ★ Battery life is approximately 6 weeks, with low battery indicator
- ★ Vibration option when an audible bleep would be intrusive
- ★ Timestamps each message with date and time

Callers to PageOne MiniCall pay a drop charge of 55p standard rate, 35p cheap rate for alphanumeric messages.

Dimensions: 69mm X 50mm X 19mm  
Weight: 59g

Retail Unit Price each (inc. VAT).

Order Code	Type 18425	Price each exc. VAT	inc. VAT each
MT26D	Text Express	£68.070	£79.990

## Alpha Express

PageOne MiniCall

- ★ No monthly Fees ever, no connection fee and no contracts, just buy the pager.
- ★ The unit is live and connected to the MiniCall service; as soon as you buy the pager, you're ready to go.
- ★ 1 line, 16 character LCD display clearly displays your messages and allow you to scroll through messages longer than one screen.
- ★ Messages can be stored for future reference, protected or deleted.
- ★ Maximum Message Capacity - 15 messages. 100 characters per message.
- ★ Screen backlight automatically comes on with an incoming message.
- ★ Built-in clock/alarm facility.
- ★ Date and 12/24 hour time facility. Alarm facility is useful when away from home.
- ★ Lightweight design fits into a pocket, bag or on a belt.
- ★ Battery life is approximately 6 weeks, with low battery indicator.
- ★ Vibration option when an audible bleep would be intrusive.
- ★ Audible call alert choices.
- ★ 5 musical alerts for you to choose.
- ★ Timestamps each message with date and time.

Callers to PageOne MiniCall pay a drop charge of 55p standard rate, 35p cheap rate for alphanumeric messages.

Dimensions: 76mm X 50mm X 14mm  
Weight: 67g

Retail Unit Price each (inc. VAT).

Order Code	Type 18436	Price each exc. VAT	inc. VAT each
MT27E	Alpha Express	£76.580	£89.990

**Order £30 or above?**

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue).

## Script Express

PageOne MiniCall

- ★ 40 character 2 line LCD display clearly displays your messages and allow you to scroll through messages longer than one screen.
- ★ Maximum message capacity; 1200 characters - 20 messages.
- ★ Prompts you to read unread or forgotten messages.
- ★ Conserve battery life with auto function.
- ★ Stylish protective holster protects your pager.
- ★ Stylish gold chain secures your pager to you.



This 2 line alphanumeric pager is in a class of its own. Sleek and stylish this not only supports information services but its extensive memory capacity is ideal for receiving lengthy messages. Callers to PageOne MiniCall pay a drop charge of 55p standard rate, 35p cheap rate for alphanumeric messages.

Dimensions: 77mm X 51mm X 18mm  
Weight: 72g

Retail Unit Price each (inc. VAT).

Order Code	Type 18439	Price each exc. VAT	inc. VAT each
MT28F	Script Express	£85.090	£99.990

## Telephone Accessories

### Surface Mounting

#### Master Jack Unit 2/4A Secondary Line Jack Unit 2/6A

A wall or surface mounting Master or Secondary Jack Unit. Size 67 x 67 x 29mm deep.



Retail Unit Price each (inc. VAT).

Order Code	Type 887	Price each exc. VAT	inc. VAT each
FT48C	Stce Mt Mstr Jk 2/4A	£4.240	£2.630
FG28F	Line Jack Unit 2/6A	£3.390	£2.270

#### Flush Fitting Master Line Jack Unit 3/4A Secondary Line Jack Unit 3/6A

Standard BT type Master Line Jack Unit, including bell capacitor, surge arrester and 'out of service' resistor.

A standard BT type Secondary Line Jack is also available in the same style. For flush fitting to a wall. Screw terminal connections. BT has the franchise for fitting the first socket on every exchange line at an installation, thus the Master socket will only be required by private individuals and companies for PBX extensions etc. Size 84 x 84mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 885	Price each exc. VAT	inc. VAT each
FJ27E	Fish Mstr LJok 3/4A	£4.240	£2.680
FJ34M	Flush Sec LJok 3/6A	£3.390	£1.970

#### Twin Flush Mounting Master Jack Unit 5/4A Secondary Jack Unit 5/6A

A flush mounting Master or Secondary Jack Unit having two commoned outlets. For use where two appliances may need to share one socket, e.g. telephone and answering machine, modem etc. Size 84 x 84mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 884	Price each exc. VAT	inc. VAT each
FT46A	Twin Master Jk 5/4A	£5.520	£3.990
FT47B	Twin Second Jk 5/6A	£4.670	£2.680

#### Small Locking Plate



A locking strip for use with the small Master and Secondary Line Jack units 2/4A and 2/6A, fitting is identical with large locking plate.

Retail Unit Price each (inc. VAT).

Order Code	Type 883	Price each exc. VAT	inc. VAT each
FV94C	Small Locking Plate	£0.587	£0.455

#### Large Locking Plate



A strip which when fitted to master or secondary Line Jack units 3/4A or 3/6A by using the two cover retaining screws, will lock the line plug into position so that it cannot be removed.

Retail Unit Price each (inc. VAT).

Order Code	Type 881	Price each exc. VAT	inc. VAT each
FV95D	Large Locking Plate	£0.757	£0.606

#### Telephone Extension Socket

A compact surface mount slave telephone extension socket ideal for use in conjunction with an existing master telephone socket. Ideal for bedrooms, kitchens, etc. where a larger socket could not be fitted.. This unit can be fitted unobtrusively to a skirting board, etc.



Retail Unit Price each (inc. VAT).

Order Code	Type 880	Price each exc. VAT	inc. VAT each
BD48C	Extension Socket	£3.226	£2.070

See Stock Code Index For More Price Breaks

## 4-Wire 4-Way Junction Box

A white junction box containing a 4-way screw terminal block for joining 4 way telephone leads. Four breakouts are provided in the edge of the cover and up to two flat IPC type 'phone leads can be fitted in any one of these side by side. The terminals are labelled for conductors 2 to 5. The base has two fixing holes for 3mm countersunk screws. The cover is retained by two self-tap screws.



Retail Unit Price each (inc. VAT).

Order Code	Type 903	Price each exc. VAT			inc. VAT each 1+
		1+	10+	33+	
BD51F	Junction Box	£2.880	£2.070	£1.770	£3.390

## Telephone Plug Kit



A telephone plug kit for fixing modular BT style connectors to flat telephone type cable. The kit contains two modular plugs and a tool die to enable the plugs to be crimped on firmly.

Retail Unit Price each (inc. VAT).

Order Code	Type 8972	Price each exc. VAT			inc. VAT each 1+
		1+	10+	33+	
BD41U	Telephone Kit	£1.690	£1.320	£1.210	£1.990

## Standard 4-Way and 6-Way Line Plugs 431A and 631A

Standard BT type 4-way and 6-way Line Plugs using Insulation Piercing Contacts (IPC), with strain relief. To fit the flat line cord (shown in the Cables Section) to an IPC plug, simply provide a clean cut across the end, and strip off 11 to 12mm of the outer sheath. Allow the wires to separate from one another by approximately 1mm, then push and tease them gently into the plug, which has locating guides built in for each conductor. Once fully home (the coloured wires can be seen through the slot behind the contacts) use heavy duty pliers or a small vice to press all the gold coloured contacts flush with the plug body; push down the small strain relief members immediately behind the contacts, then force down the cable clamp at rear.



Retail Unit Price each (inc. VAT).

Order Code	Type 928	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
BD39N	Telephone Plg 4-Pin	£0.468	£0.354	£0.293	£0.550
BD40T	Telephone Plg 6-Pin	£0.553	£0.455	£0.343	£0.650

## Telephone Plug Crimp Tool



A handy tool for cutting and preparing the cable and crimping on standard BT style telephone cable. Suitable for use with flat IPC telephone cable and both 4 way and 6 way plugs.

Retail Unit Price each (inc. VAT).

Order Code	Type 18449	Price each exc. VAT 1+	inc. VAT each 1+

## 3m Line Cord and Line Plug

Standard PTC Line Cord with a moulded on Line Plug at one end and four spade terminals at the other. A square grommet is moulded onto the outer sheath at the spade end for entry into a telephone. The four wires are coloured either Red, Black, Green and Yellow, or Red, Blue, Green and White.



Retail Unit Price each (inc. VAT).

Order Code	Type 923	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
FG29G	PTC Line Cord	£3.390	£1.690	£1.470	£3.990

## Telephone Line Jack Extension Cords

A range of line extension cords having a standard 4-way IPC plug at one end and matching line socket at the other; a quick and simple means of extending telephone or modem leads etc. Available as 3m, 5m, 10m, 15m and 20m extensions.



Retail Unit Price each (inc. VAT).

Order Code	Type 922	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BD06J	Extension Lead 3m	£3.390	£2.370	£2.070	£3.990
FT45Y	5m Telephone Ext Ld	£4.240	£3.000	£2.380	£4.990
BD13P	Extension Lead 10m	£5.520	£3.540	£3.030	£6.490
BD37S	Extension Lead 15m	£6.800	£4.190	£3.640	£7.990
BD38R	Extension Lead 20m	£7.650	£4.750	£4.140	£8.990

## 5m Telephone Line Jack Extension Cord with Dual Outlet

A 5-metre line extension cord having a standard 4-way IPC plug at one end and twin outlet at the other. Very useful for telephones used with modems, answering machines etc.



Retail Unit Price each (inc. VAT).

Order Code	Type 921	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
FS21X	Double Slt Lead 5m	£5.520	£3.700	£3.380	£6.490

## 3m Extension Lead/4-Way Adaptor



A 3-metre long extension lead terminated with a 4-pin Line Plug at one end and a 4-way adaptor socket at the other, allowing up to four extensions to share one master socket. Dimensions of adaptor: 75 x 61 x 29mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 925	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
ZB18U †	3m 4w Tel Ext Lead	£7.650	£5.960	£5.200	£8.990

## 15m Telephone Extension Reel



A handy extension lead in a white moulded case with carrying handle. Cable can be simply pulled out and then wound back in using the rotary handle for easy storage. Ideal for use in the garden, garage, workshop etc.

Retail Unit Price each (inc. VAT).

Order Code	Type 927	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YT51F †	15m Phone Ext Reel	£8.500	£6.460	£5.710	£9.990

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### Coiled Handset Cords



A pair of coiled cords for use with telephone handsets, etc. Supplied in two lengths, 1.8m and 6m fully extended. Both cables are terminated in standard RJ11/FCC68 plugs at each end.

Retail Unit Price each (inc. VAT).

Order Code	Type 3447	Price each exc. VAT			inc. VAT each
		1+	10+	20+	
BD52G	Coil H/Set Cord 1.8m	£3.390	£2.990	£2.640	£3.990
BD53H	Coiled H/Set Cord 6m	£5.940	£4.800	£4.340	£6.990

### Swivel Handset Plug

Banish the sheer misery of coiled cables, eradicate the exasperation of entwined extensions and terminate the twisted tangles of telephone torment with this state-of-the-art swivel plug. Simply plug in and watch your tangle troubles tumble away. Suitable for equipment with RJ11/FCC68 connections.



Retail Unit Price each (inc. VAT).

Order Code	Type 3407	Price each exc. VAT			inc. VAT each
		1+	10+	20+	
BD54J	Swivel Plg For H/Set	£3.220	£2.430	£2.140	£3.790

### Line Plug to Line Plug Adaptor

An adaptor that enables two line plugs to be connected together to facilitate cord extension, cord matching etc. Note that the plug inserted into the deeper socket will not be easy to remove without the use of a small screwdriver.



Retail Unit Price each (inc. VAT).

Order Code	Type 015	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FV97F	In Line Skt/Ext Skt	£2.370	£2.020	£1.870	£2.790

### Two-, Three- or Four-Way Telephone Adaptors

An adaptor that can be plugged into any BT Line Jack unit to convert it to a two-, three- or four-way outlet for 4-way line plugs.



Retail Unit Price each (inc. VAT).

Order Code	Type 307	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BD43W	Double Adaptor	£3.650	£2.410	£2.070	£4.290
BD44X	Triple Adaptor	£4.240	£2.930	£2.580	£4.960
BD45Y	4-Way Adaptor	£4.920	£3.430	£3.030	£5.790

### Extension Kits



A range of kits containing everything you need to provide an outlet for a second (or subsequent) telephone extension. The kits simply plug into an existing socket and provide a new double socket at that point for the existing telephone, etc. to plug back into. Cable lengths of 10m, 15m, 20m and 30m are available and a pack of suitable cable clips is provided. These kits are approved for private DIY installation and full instructions are supplied. **Note: The 30m kit has two extension sockets, (as illustrated), the other kits have one socket.**

Retail Unit Price each (inc. VAT).

Order Code	Type 582	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BD06F	Extension Kit 10m	£6.370	£5.400	£4.700	£7.490
YT54J	15m Extension Kit	£7.220	£5.710	£4.950	£8.490
BD06G	Extension Kit 20m	£8.500	£6.820	£5.760	£9.990
BD07H	Extension Kit 30m	£11.050	£9.850	£8.380	£12.990

### IPC Insertion Tool



An insertion tool for attaching the BT IPC cable to master or secondary jack units having the BT type numbers with suffix /3A, which have IPC terminations as opposed to /6A types with screw terminal blocks. The tool is used to force the four wires of the line cord into the Insulation Piercing Connectors of the jack unit.

Retail Unit Price each (inc. VAT).

Order Code	Type 929	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FT51F	BT IPC Insrtn Tool	£0.842	£0.354	£0.283	£0.990

### Plug-In Ringer

A self contained unit which can be plugged into a Line Jack unit, having its own plug extension at rear. The ringer will give an audible alarm of an incoming call being received.



Retail Unit Price each (inc. VAT).

Order Code	Type 931	Price each exc. VAT			inc. VAT each
		1+	10+	27+	
BD42V	Plug-In Sounder	£6.800	£4.950	£4.190	£7.990

### Telephone to Tape Recorder Adaptor



A compact adaptor to allow tape recordings to be made from a standard telephone line. Ideal for recording business details or announcements so that you can listen to them later. Simply plug the adaptor into a standard modular BT socket and insert the 3.5mm jack socket into the microphone input on your tape recorder. Now when you make a telephone call simply place the tape recorder into RECORD mode to store exactly what you hear and say. Alternatively if you use a voice activated tape recorder you will be able to automatically detect telephone conversations and begin recording as soon as the telephone line goes busy. A socket is provided on the back of the adaptor to allow your telephone to be plugged in - ideal for single outlet type wall sockets. Supplied with full operating and installation instructions.

This item is not approved for use on the BT system.

Retail Unit Price each (inc. VAT).

Order Code	Type 10436	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YS78K	Telephone Recorder	£8.500			£9.990

### Telephone Recorder Accessory



A device that is designed to fit between a telephone handset and its base. Your telephone must use a RJ11 mini 4 pin plug to attach the handset cord to the base - most modern phones do. The 3.5mm jack plug that is attached to the device via a length of cable can then be plugged into cassette recorders, dictation machines, etc. A switch on top of the device allows you to select whether you are recording from the line or playing back to the line.

Retail Unit Price each (inc. VAT).

Order Code	Type 10436	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
MU66W	Phone Recorder	£8.500			£9.990

### US/BT Adaptor



This adaptor consists of a US Style socket to a BT style plug, enabling you to connect US type connectors to BT type sockets.

Retail Unit Price each (inc. VAT).

Order Code	Type 12454	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AR34M	US To BT Adaptor	£3.820	£2.770	£2.160	£4.490

## BT/US Adaptors

**NEW EXTENDED RANGE**



This range of adaptors consists of a BT style socket to a US style plug, enabling you to plug devices fitted with a standard BT type telephone plug into a US type socket. Three versions are available:

**RZ79L** Secondary type that does not contain any other components

**VD36P** Part master type with the ringing capacitor, so that the phone will ring when called.

**MU67X** Full master type that contains all the components of a telephone master socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 12482	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
RZ79L	BT/US Socket Adaptor	£3.820	£2.770	£2.160	£4.490
VD36P	US/BT Adaptor/Cap.	£5.940	£5.380	£4.860	£6.990
MU67X	BT/US Full Master	£6.800			£7.990

## Telephone/Modem Double Adaptor



This double adaptor is designed to enable a telephone and modem to be plugged into the same socket. The plug side of the adaptor is a standard BT style plug and the socket side consists of one BT style socket (for the telephone) and one RJ11 style socket (for the modem).

Retail Unit Price each (inc. VAT).

Order Code	Type 12815	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
VD35Q	Phone/Modem Doublr	£2.970	£2.600	£2.400	£3.490

## BT to US Telephone Plug Conversion Cord



This telephone conversion line cord is 3m (approximately) and has a BT type telephone plug at one end and a US type telephone plug (RJ11) at the other. The conductors are suitably crossed and the cord finds most use in connecting fax/modems, etc.

Retail Unit Price each (inc. VAT).

Order Code	Type 4592	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
RZ75S	UK/US Ext Line Cord	£2.970	£1.970	£1.770	£3.490

## BT to US Extension Cords



A range of extension cords whose conductors are connected straight through. One end of each cable is terminated in a BT style plug and the other end is terminated in a US type plug (RJ11). Not suitable for BT / US conversion. Available in various lengths, i.e. 3m (BD00A), 6m (BD03D) and 10m (BD04E).

Retail Unit Price each (inc. VAT).

Order Code	Type 8813	Price each exc. VAT			inc. VAT each 1+
		1+	10+	20+	
BD00A	Conversion Cord 3m	£3.390	£2.370	£1.970	£3.990
BD03D	Conversion Cord 6m	£4.240	£2.980	£2.470	£4.990
BD04E	Conversion Cord 10m	£5.520	£3.690	£3.230	£6.490

## FCC68 Modular Plugs



A range of modular plugs that are used on computer equipment and American telephones. Available in the following contact configurations: Four contacts in a four position shell (4C4P), four contacts in a six position shell (4C6P), six contacts in a six position shell (6C6P) and eight contacts in an eight position shell (8C8P).

Retail Unit Price each (inc. VAT).

Order Code	Type 1433	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
JW42V	FCC68 Plg 4C4P	£0.340	£0.270	£0.185	£0.400
JW43W	FCC68 Plg 4C6P	£0.382	£0.290	£0.220	£0.450
JW41U	FCC68 Plg 6C6P	£0.425	£0.330	£0.240	£0.500
JW44X	FCC68 Plg 8C8P	£0.808	£0.580	£0.360	£0.950

## Crimping Tools for Modular FCC68 Connectors



Crimping tools for use with FCC68 modular connectors which are used on computers and American telephones. Simply place the plug with the cable in the tool and squeeze the grips together, thus causing the plug to bite into the cable. The handles are spring loaded for automatic opening. Wire can be cut with blades built into the handle. All made from toughened plastic. Overall length 190mm.

The following types are available:

**Plastic Crimp 4C4P**

This model is used on plugs with 4 contacts in a 4 position shell.

**Plastic Crimp 4C6P**

This model is used on plugs with 4 contacts in 6 position shell.

**Plastic Crimp 6C6P**

This model is used on plugs with 6 contacts in a 6 position shell.

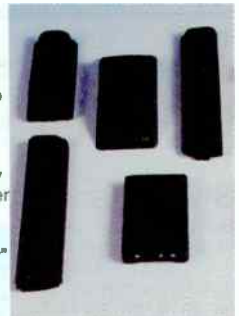
Retail Unit Price each (inc. VAT).

Order Code	Type 1435	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JW51F	Plas FCC68 Crmp 4C4P	£5.190	£2.800	£2.550	£6.100
JW50E	Plas FCC68 Crmp 4C6P	£5.190	£3.650	£3.200	£6.100
JW49D	Plas FCC68 Crmp 6C6P	£6.110	£4.290	£3.780	£7.190

## Cellular Accessories

### Cellular Phone Batteries

A range of high quality Nickel Metal Hydride (NiMH) slim-line replacement batteries to fit the most popular mobile phones. NiMH batteries have the advantage over ordinary NiCad batteries of higher capacity in a smaller space. They also do not suffer from the "memory" effect that shortens the effective life of NiCads.



Code Telephone Model

MU00A Nokia 1610, 1611, One 2 One 1620  
 MU01B Nokia 2011, 2110, 2120, 2121, 2190, 2191, One 2 One 2146, Orange 2140  
 MU02C Ericsson 218, 237, 288, 318, 337, 388  
 Orange ER100, ER500, One 2 One PH337  
 MU03D Motorola 5200, 6200, 7200, 7500, 8200, 8400, 8700, Duo, Elite, Flare, Classic, MicroTac I & II, One 2 One M300, M301, M400, M750, Orange MR 1, MR 20

Retail Unit Price each (inc. VAT).

Order Code	Type 12587	Price each exc. VAT		inc. VAT each 1+
		1+	10+	
MU00A	Nokia 1610 NiMH Batt	£29.770		£34.990
MU01B	Nokia 2110 NiMH Batt	£29.770		£34.990
MU02C	Eric 2337 NiMH Batt	£29.770		£34.990
MU03D	MTac NiMH Slim Batt	£29.770		£34.990



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Stockholding and Supply

Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

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**Cellular Phone Cases**



A range of high quality leather cases to fit the most popular mobile phones. These cases provide essential protection against knocks, scratches and dirt and incorporate a sturdy belt clip for ease of carrying. The cases have a clear front panel allowing access to your phone functions and holes punched in the relevant positions to enable the phone to be used whilst inside the case.

Code	Mobile Phone Model
MU04E	Nokia 2011, 2110, 2120, 2121, 2190, 2191, One 2 One 2146, Orange 2140
MU05F	Nokia 1610, 1611, One 2 One 1620,
MU06G	Nokia 8110, 8111
MU07H	Ericsson 218, 237, 288, 318, 337, 388 One 2 One PH337, Orange ER100, ER500
MU08J	Motorola 8200, 8400
MU09K	Motorola 5200, 7200, 7500, MicroTac II One 2 One M300, M301, Orange MR 1
MU10L	Motorola Flare, Orange MR 20

Retail Unit Price each (inc. VAT).

Order Code	Type 1254E	Price each exc. VAT	inc. VAT each
MU04E	Nok 2110/2140 Case	£15.310	£17.990
MU05F	Nokia 1610 Case	£15.310	£17.990
MU06G	Nokia 8110 Case	£15.310	£17.990
MU07H	Eric 237/337 Case	£15.310	£17.990
MU08J	Motorola 8200 Case	£15.310	£17.990
MU09K	Mot 5200/7200 Case	£15.310	£17.990
MU10L	Motorola Flare Case	£15.310	£17.990

**Cellular Phone In-Car Saver/Charger Cords**

CommTel



A range of high quality in-car saver/charger cords to fit the most popular mobile phones. These enable you to charge the battery directly from the cigar lighter socket as you drive.

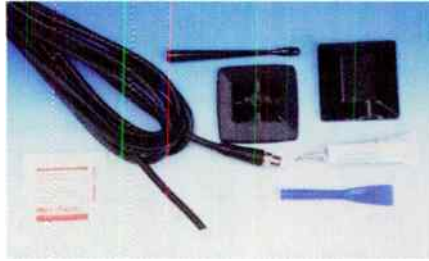
Code	Mobile Phone Model
MU11M	Nokia 101, 2011, 2110, 2120, 2121, 2190, 2191, One 2 One 2146, Orange 2140
MU12N	Nokia 8110, 8111
MU13P	Nokia 1610, 1611,
MU14Q	Nokia 1610, One 2 One 1620
MU15R	Motorola 6200, 8200, 8400, 8700, Elite, Flare(GSM)), Orange MR 20
MU16S	Motorola 5200, 7200, 7500, Duo, Flare, C'assic, MicroTac I & II, One 2 One M300, M301, M400, Orange MR 1

Please note that in order to obtain the maximum life expectancy from NiCad batteries it is advised to fully discharge them before recharging; at least once a week.

Retail Unit Price each (inc. VAT).

Order Code	Type 1250E	Price each exc. VAT	inc. VAT each
MU11M	Nok 101/2121/2110 Cord	£21.260	£24.390
MU12N	Nokia 8110 Pwr Cord	£21.260	£24.390
MU13P	Nokia 1610 Pwr Cord	£21.260	£24.390
MU14Q	Ericsson 237/337 Cord	£21.260	£24.390
MU15R	Motorola 8200 Cord	£21.260	£24.390
MU16S	Mot 5200/7200 Cord	£21.260	£24.390

**1/4 Wave Glass-Mount Aerial Kit**



For use with mobile cellular telephones, this kit is designed to allow the aerial to be mounted on the rear window of a vehicle without the need to drill. The aerial base is stuck to the outside of the window with its super-strong self adhesive base and, on the inside of the glass, the base proper is similarly attached. The signal is inductively coupled through the glass. Supplied complete with 1/4 wave aerial, approximately 4m of coaxial cable and alcohol swab for cleaning the glass. Full instructions are included. The coaxial cable requires the appropriate plug to be crimped on the free end; suitable connectors are shown below.

Retail Unit Price each (inc. VAT).

Order Code	Type 1846E	Price each exc. VAT	inc. VAT each
MU69A	Glass-Mnt. Aerial Kit	£25.520	£29.990

**1/4 Wave Body-Mount Aerial Kit**



For use with mobile cellular telephones, this kit is designed to allow the aerial to be mounted on a wing or other suitable position. Direct access to the underside is not required but care should be taken to ensure that there is enough clearance. A 19mm hole is required. The kit is supplied complete with 1/4 wave aerial, approximately 4.5m of coaxial cable, a special assembly tool and a hex key for tightening the grub screw on the aerial. Full instructions are included. The coaxial cable requires the appropriate plug to be crimped on the free end; suitable connectors are shown below.

Retail Unit Price each (inc. VAT).

Order Code	Type 1845B	Price each exc. VAT	inc. VAT each
MU71N	3dB Whip Aerial	£11.050	£12.990

**3dB Whip aerial**

An aerial that offers 3dB gain, relative to a 1/4 wave aerial. The aerial is suitable for use with both our glass-mount and body-mount kits. The aerial is supplied with a special hinged base that can be attached in the same manner as the 1/4 wave aerial, over the 'stub' of the body-mount base via a collar with a grub screw. To use on the glass-mount base, the aerial is unscrewed from this base and screwed directly on to the thread of the glass-mount base. Supplied with hex key which is used to tighten the grub screw and hinge.



Retail Unit Price each (inc. VAT).

Order Code	Type 1845B	Price each exc. VAT	inc. VAT each
MU71N	3dB Whip Aerial	£11.050	£12.990

**FME Connector**



An RF connector that is designed to crimp on to RG58 coax cable. This connector finds a major use in cellular telephone in-car aerial systems.

Retail Unit Price each (inc. VAT).

Order Code	Type 1846E	Price each exc. VAT	inc. VAT each
MU72P	FME Connector	£0.842	£0.990

**M UHF Crimp Plug**

Vitelc

A high quality M UHF crimp plug with gold plated contacts.



Retail Unit Price each (inc. VAT).

Order Code	Type 1591	Price each exc. VAT	inc. VAT each
DV54J	UHF Mini Plug RG58	£1.500	£1.390
		£1.240	£1.770

**TNC Crimp Plug 58**

Vitelc

A high quality TNC crimp plug with gold plated contacts. This connector is suitable for use with 50Ω screened cable RG58, Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type 1553	Price each exc. VAT	inc. VAT each
DV37S	TNC Crimp Plug RG58	£1.320	£1.230
		£1.090	£1.560

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## BNC Plug

Vitelc

A high quality BNC plug with gold plated contacts. This connector is suitable for use with 50Ω screened cable RG58. Order Code XS51F.



Retail Unit Price each (inc. VAT).

Order Code	Type 1513	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DV14Q	Clamp Plug (RG58)	£1.540	£1.420	£1.270	£1.810

## Coax Connector Crimping Tool



A coax crimping tool that has five separate sections to accept 1.72, 2.5, 5.4, 6.48 and 8.2mm connectors for crimping. The pressure necessary for crimping can be adjusted for individual requirements, and is made easy with the aid of long contoured, plastic covered handles.

Retail Unit Price each (inc. VAT).

Order Code	Type 1107	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZF41U	Coax Crimper	£19.080	£16.650	£15.140	£22.430

## Intercoms

### Motorcycle Intercom



Now you can communicate with your pillion passenger with this convenient and lightweight 2-way intercom. The battery powered unit has an on/off volume control and can be clipped to your belt. The mic, which is on an adjustable stem, and earpiece are clipped to your jacket. Dimensions of unit: 100 x 55 x 18mm. Requires 4 x 'AAA' batteries (not included, JY50E).

Retail Unit Price each (inc. VAT).

Order Code	Type 1106	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YE23A	Motorcycle Intercom	£17.010			£19.990

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

## Wireless Baby Monitor



A highly sensitive baby monitor featuring continuous or automatic transmit modes. Ideal in continuous mode for small babies and in automatic mode for toddlers! All signals are transmitted through your household wiring, so installation is as simple as plugging in. Operation up to approximately 1km. Other applications include monitoring a waiting room or shop area. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type 1105	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YE26D	Baby Monitor	£17.010	£15.150	£14.500	£19.990

## YT16S 2-Channel FM Wireless Intercom



A very high quality mains operated intercom which transmits and receives via the mains wiring. No interwiring is required, each unit simply plugs into a normal 230V AC mains outlet socket. Available only in pairs.

Retail Unit Price each (inc. VAT).

Order Code	Type 11310	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YT16S	2 FM Intercom 2 Chn Pr	£30.620	£24.640	£22.320	£35.990

## Doorbell Intercom



This reliable, attractive doorbell intercom provides easy communication and ensures maximum security and privacy at home or office. The system comprises a wall-mounting (in sheltered position) outdoor annunciator and a wall or free standing indoor unit. Both units are made from unbreakable ABS plastic resin and are connected by 20m of connecting lead via 3.5mm jacks. The outdoor unit has a push button which sounds a pleasant 'ding-dong' on the indoor station. The intercom is powered by a 9V PP3 battery (not included, JY49D). A weak battery is indicated by a flashing LED when any button is pressed. Ideal for home, office, shop, warehouse, etc.

Retail Unit Price each (inc. VAT).

Order Code	Type 11001	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YE17T	Doorbell Intercom	£12.750			£14.990

## 2-Way Wired Intercom



An inexpensive wired intercom that is ideal for situations where the stations are to be used in permanent positions. The two stations are connected by 20m of twin cable via 3.5mm mono jacks. The master station houses the 9V PP3 battery (not supplied) and has a socket for an external 9V supply. The stations can be wall mounted or free standing on a convenient surface. The master station is normally left switched off. To make a call, the 'call' key is pressed at either station, a call signal will follow and the master station is switched on. To speak from the master station, the 'call/talk' key is held down and the LED lights, the key is released to listen to the substation. The LED on the substation will now light, and the substation can now speak to the master station, without pressing a key. When the conversation is over, the master station is switched off. A volume control is provided on the master station. Dimensions (each) 130 x 90 x 46mm. Supplied in pairs only. Cable clips included.

Retail Unit Price each (inc. VAT).

Order Code	Type 110	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BZ61R	2-Way Intercom Pr	£9.350	£7.580	£6.510	£10.990

## P153 Master Station (6 Station)



A master/slave system with 'All Call' facility, ideal for receptionists. Can be used with up to five slave units (BE10L). Incorporates speech volume, ringer level, call and talk buttons. Slave LED indicator. Can be wall mounted.

Power supply 6V DC, 300mA external regulated power supply, JC90X or (4 x 'AA' batteries) (not supplied)

Cable 2-core PB07H (not supplied)  
Cable length 200m maximum to each slave  
Dimensions 43 x 182 x 140mm

Retail Unit Price each (inc. VAT).

Order Code	Type 11315	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BE09K	Master Station	£23.820	£18.400		£27.990
JC90X	6V 300mA Mains Adptr	£7.650			£8.990

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\*Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue.



**P153B Slave Station**



For use with P153 master station. The unit incorporates a call button and a privacy switch, which prevents master eavesdropping. Can be wall mounted. Not compatible with P153C, YT16S or P153F. Dimensions 43 x 182 x 140mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	
BE10L	Slave Station	£9.770	£7.990	£11.490

**P153C All Master System (6 Station)**



All master system of up to six stations, which allows any station to communicate with any other. Station indicator LEDs, volume control, tone volume switch, talk and call buttons. Can be wall mounted.

Power supply 6V DC, 300mA external regulated power supply, JC90X or (4 x 'AA' batteries) (not supplied)

Cable Number of stations plus 3 wires (BE20W)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	
BE11M	6Way Master Intercom	£25.520	£19.400	£29.990
JC90X	6V 300mA Mains Adptr	£7.650		£8.990

**P150B 6-Station Intercom/Paging System**



A high specification non-private, all master 6 station system which offers duplex operation and only requires 4 core cable for wiring. A built in amplifier

permits addition of an external speaker. The unit is desk or wall mountable. A separate 12v dc power supply is required to power this system (JC93B is recommended).  
Wiring 4 core/0.65mm  
Distance 500m max  
Dimensions 220 x 115 x 65mm  
Power requirements 12V dc/1.5 Amp

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each	
		1+	6+	25+	1+
YD46A	6 Way Intercom	£31.480	£25.950	£22.250	£36.990
JC93B	12V 1.5A Mains Adptr	£19.140			£22.490

**P665T Handset Intercom System - 2 Stations**



Ideal for shops, restaurants and in the home, the P665T is a complete two station system. One station is designated the 'master': this has a power indicator and volume control. Stations may be wall mounted. The system is simply wired using 2-core cable and runs off either batteries or an external power supply; model JC90X. Not compatible with P666 units.

Power requirements: 6V DC, 300mA Adaptor or 4 x AA batteries (not supplied).

Cable: 2-core 0.5mm2 for best results (max. run 400m approx.)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	4+	
BE07H	2 Station Intercom	£34.030	£25.990	£39.990
JC90X	6V 300mA Mains Adptr	£7.650		£8.990

**P150C 12 Station Intercom/Paging System**



A high specification non-private, all master 12 station system which offers duplex operation and only requires 4 core cable for wiring. It operates from a 12V dc power supply (not included). JC93B is recommended. A built-in amplifier permits addition of an external speaker. The unit can be desk top or wall mounted.

Wiring 4 core/0.65mm  
Distance 500m max  
Dimensions 220 x 115 x 65mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each	
		1+	12+	25+	1+
YD45Y	12 Way Intercom	£34.030	£26.900	£23.250	£39.990
JC93B	12V 1.5A Mains Adptr	£19.140			£22.490

**P666 6 Station - Master Station**

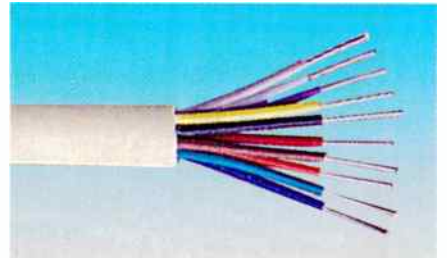


The P666 can start as a simple two station system and can be added to when necessary, up to a maximum of six stations. Features: any number of private conversations, conference facility by invitation, engaged tone, desktop or wall-mounting. Easy wiring into terminal box. The number of conductors required in the cable is the number of stations plus two wires, max. run 300m using 0.5mm2 cable. Recommended cable is P601M cable (BE20W). A single power supply unit is required per intercom, at 17V DC, 1A regulated (not supplied). A suitable unit is (BE21X). Dimensions 210 x 110 x 80mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	
BE08J	Master/Slave Int/Com	£42.540	£32.720	£49.990
BE21X	5 17VDC 1.2A PSU	£22.970	£17.570	£26.990

**P601M 10-Way Colour-Coded Cable (Twisted Pairs)**



10-way colour-coded cable for wiring intercoms, doorphones and similar installations. 10 x 1/0.5mm (0.2mm<sup>2</sup>). White 5mm OD. 50m reel.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	5+	
BE20W	Intercom Cable 10Way	£25.520	£19.060	£29.990





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## MPS PRECISION CALIBRATION SERVICE

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Please note that the prices shown for calibration in this catalogue also include the purchase price for the instrument concerned.

### Academy Digital Multimeters

A high quality, cost-effective range of multimeters, especially suitable for the hobbyist and electronics student. They provide measurements over a number of different ranges including voltage, current and resistance (and continuity on selected models), and test facilities for diodes, LEDs, transistors and capacitance and frequency measurement (depending on model). The measuring ranges are selected by a single rotary switch which also selects the test facilities. Two sockets marked 'VΩ' and 'COM' are provided for the measurement ranges and a 4-way socket for the test facilities where applicable. A 3 1/2-digit LCD screen displays the reading and the polarity, battery low warning and range overload indicators. With the exception of the 200Ω range, all the resistance ranges are 'low power', which means that accurate measurement of in-circuit resistances can be made, because the test voltage is below that necessary to forward bias a silicon diode junction. The diode test function allows that actual voltage drop across the junction to be measured and compared against other devices. It is also possible to perform these measurements on a device in-circuit, but this test will be inaccurate if the junction is shunted by a resistance of 1kΩ or less. Readings on all ranges are sampled at the rate of 2 1/2 times per second on average. Supplied with a pair of test leads, battery and full instruction manual.

## PORTABLE MULTIMETERS

### ACADEMY

## PG010 Digital Multimeter with Test Signal Output and LED Test



- ★ 3 1/2-digit LCD
- ★ Test signal output
- ★ LED and diode test
- ★ Transistor h<sub>FE</sub>

For the price, this multimeter offers an amazing range of functions. As well as the usual volts and resistance ranges there are LED and diode test functions, transistor h<sub>FE</sub> measurement, and a very useful square wave signal output for fault finding. Ideal for the hobbyist and experimenter. A spare set of test leads, (GW92A) are available separately.

#### Specification

Display: 3 1/2-Digit LCD

#### DC voltage

Range	Resolution	Accuracy
2V	1mV	±(1.5% rdg + 1dgt)
20V	10mV	±(1.5% rdg + 1dgt)
200V	100mV	±(1.5% rdg + 1dgt)
600V	1V	±(1.5% rdg + 1dgt)

Input impedance: 1MΩ

Overload protection: 600V DC or 500V AC

#### AC Voltage

Range	Resolution	Accuracy
200V	100mV	±(2.9% rdg+4dgt)
500V	1V	±(2.9% rdg+4dgt)

Input impedance: 450kΩ

#### Resistance

Range	Resolution	Accuracy
200Ω	100mΩ	±(1.5% rdg+3dgt)
2kΩ	1Ω	±(1.5% rdg + 1dgt)
20kΩ	10Ω	±(1.5% rdg + 1dgt)
200kΩ	100Ω	±(1.5% rdg + 1dgt)
2MΩ	1kΩ	±(1.5% rdg + 1dgt)

#### Signal output

Voltage: +3.0V -0.5V  
 Type: square wave  
 Duty cycle: 50%  
 Frequency: 50Hz approx.  
 Output impedance: 120kΩ  
 Input protection: 500V DC or AC rms

#### LED test

Accuracy: ±(3% rdg + 3dgt)  
 Resolution: 10mV  
 Test current: 10mA ±6mA  
 Test voltage: <3.5V

#### Diode test

Accuracy: ±(3% rdg + 3dgt)  
 Test current: 1.0mA ±0.6mA  
 Open circuit voltage: 3.3V DC typical  
 Overload protection: 500V DC or AC rms

#### Transistor h<sub>FE</sub>

Ranges: 0 - 1000  
 Base current: 10µA DC approx.  
 V<sub>CE</sub>: 3.0V DC  
**Dimensions:** 151 x 70 x 38mm  
**Weight:** 200g including battery  
**Battery:** 9V PP3 type

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW17T	Model PG010 Digi MM	£21.290	£24.990
AL56L 1	GW17 Std Calib	£45.940	£58.690
AL57M 1	GW17 NAMAS Calib	£69.940	£82.190
GW92A	Test Leads	£2.970	£3.490

## PG10B Digital Multimeter with DC Current Measurement



- ★ 3 1/2-digit LCD
- ★ DC current
- ★ Continuity test
- ★ Diode test
- ★ Transistor h<sub>FE</sub>
- ★ Battery test

A well specified low-cost multimeter with DC current function, battery and continuity test. With the exception of the 200Ω range, all resistance ranges are low power which allows accurate in-circuit resistance measurements to be made. Ideal for students and hobbyists on a budget. Diode and transistor test specification as per PG010. A spare set of test leads (GW92A) are available separately.

#### Specification

Display: 3 1/2-Digit LCD

#### DC Voltage

Range	Resolution	Accuracy
200mV	100µV	±(1.5% rdg + 1dgt)
2V	1mV	±(1.5% rdg + 1dgt)
20V	10mV	±(1.5% rdg + 1dgt)
200V	100mV	±(1.5% rdg + 1dgt)
600V	1V	±(1.5% rdg + 1dgt)

Input impedance: 10MΩ

#### AC Voltage

Range	Resolution	Accuracy
200V	100mV	±(2.9% rdg+4dgt)
600V	1V	±(2.9% rdg+4dgt)

Input impedance: 4.5MΩ

#### DC Current

Range	Resolution	Accuracy
2mA	1µA	±(2% rdg+1dgt)
20mA	10µA	±(2% rdg+1dgt)
2000mA	100µA	±(2% rdg+1dgt)
10A	10mA	±(3% rdg+1dgt)

#### Resistance

Range	Resolution	Accuracy
200Ω	100mΩ	±(1.5% rdg+3dgt)
2kΩ	1Ω	±(1.5% rdg + 1dgt)
20kΩ	10Ω	±(1.5% rdg + 1dgt)
200kΩ	100Ω	±(1.5% rdg + 1dgt)
2000kΩ	1kΩ	±(1.5% rdg + 1dgt)
20MΩ	10kΩ	±(3.0% rdg+3dgt)

#### Battery Test

Range	Resolution	Load current	Accuracy
1.5V:	1mV	150mA	±(3% rdg + 3 dgt)
9V:	10mV	6mA	±(3% rdg + 3 dgt)

#### Continuity

Audible indication: <40Ω ±20Ω  
 Overload protection: 500V DC or AC rms

#### Dimensions:

151 x 70 x 38mm  
 Weight: 200g including battery  
 Battery: 9V PP3 type

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW11U	Model PG10B Digi MM	£14.080	£16.650
AL58N 1	GW11B Std Calib	£56.030	£65.840
AL59P 1	GW11B NAMAS Calib	£76.030	£89.340
GW92A	Test Leads	£2.970	£3.490

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## PG014 Digital Multimeter with DC Current and Frequency Measurement



- ★ 3 1/2-digit LCD
- ★ Autoranging frequency counter to 15MHz ±(5%rdg +1dgt)
- ★ Battery and continuity test
- ★ Diode test and Transistor  $h_{FE}$

This quality meter offers the same features as Model PG10B but with the added advantage of an autoranging frequency function – at an easily affordable price. A spare set of test leads (GW92A) are available separately.

**Specification Display:**  
3 1/2-Digit LCD

### DC Voltage

Range	Resolution	Accuracy
200mV	100µV	±(1.5% rdg + 1dgt)
2V	1mV	±(1.5% rdg + 1dgt)
20V	10mV	±(1.5% rdg + 1dgt)
200V	100mV	±(1.5% rdg + 1dgt)
600V	1V	±(1.5% rdg + 1dgt)

Input impedance: 10MΩ

### AC Voltage

Range	Resolution	Accuracy
200V	100mV	±(2.9% rdg+4dgts)
600V	1V	±(2.9% rdg+4dgts)

Input impedance: 4.5MΩ

### DC Current

Range	Resolution	Accuracy
2mA	1µA	±(2% rdg + 1dgt)
20mA	10µA	±(2% rdg + 1dgt)
200mA	100µA	±(2% rdg + 1dgt)
10A	10mA	±(3% rdg + 1dgt)

### Resistance

Range	Resolution	Accuracy
200Ω	100mΩ	±(1.5% rdg+3dgts)
2kΩ	1Ω	±(1.5% rdg + 1dgt)
20kΩ	10Ω	±(1.5% rdg + 1dgt)
200kΩ	100Ω	±(1.5% rdg + 1dgt)
2000kΩ	1kΩ	±(1.5% rdg + 1dgt)
20MΩ	10kΩ	±(3.0% rdg+3dgts)

### Frequency (autoranging)

Range: 2kHz to 15MHz  
Accuracy: ±(0.5% rdg + 1dgt) (10Hz to 15MHz)

### Sensitivity

Trig Lo: 1V rms  
Trig Hi: 2V rms

Overload protection: 500V DC or AC rms

Dimensions: 151 x 70 x 38mm

Weight: 200g including battery

Battery: 9V PP3 type

Retail Unit Price each (inc. VAT).

Order Code	Type #403	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GW22Y	Model PG014 Digi MM	£34.030	£21.990	£18.990	£31.990
AL66W	GW22 Std Calib	£58.620			£68.690
AL67X	GW22 NAMAS Calib	£78.620			£92.390
GW92A	Test Leads	£2.970	£2.390	£1.790	£3.490

## PG012 Digital Multimeter with Frequency and Capacitance Test



- ★ 3 1/2-digit LCD
- ★ Autoranging frequency counter to 15MHz ±(0.5%rdg+1dgt)
- ★ Capacitance to 20µF in 5 ranges ±(5%rdg +10dgts)
- ★ Continuity and diode test
- ★ Transistor  $h_{FE}$

A sensitive, accurate, multimeter for the more serious electronics enthusiast offering an autoranging frequency function in addition to the normal basic functions. A spare set of test leads (GW92A) are available separately.

### Specification

Display: 3 1/2-Digit LCD

### DC Voltage

Range	Resolution	Accuracy
200mV	100µV	±(0.9% rdg + 1dgt)
2V	1mV	±(0.9% rdg + 1dgt)
20V	10mV	±(0.9% rdg + 1dgt)
200V	100mV	±(0.9% rdg + 1dgt)
600V	1V	±(0.9% rdg + 1dgt)

Input impedance: 10MΩ

### AC Voltage

Range	Resolution	Accuracy
200mV	100µV	±(1.9% rdg+4dgts)
2V	1mV	±(1.9% rdg+4dgts)
20V	10mV	±(1.9% rdg+4dgts)
200V	100mV	±(1.9% rdg+4dgts)
600V	1V	±(1.9% rdg+4dgts)

Input impedance: 10MΩ

### Resistance

Range	Resolution	Accuracy
200Ω	100mΩ	±(1.5% rdg+3dgts)
2kΩ	1Ω	±(1.5% rdg + 1dgt)
20kΩ	10Ω	±(1.5% rdg + 1dgt)
200kΩ	100Ω	±(1.5% rdg + 1dgt)
2000kΩ	1kΩ	±(1.5% rdg + 1dgt)
20MΩ	10kΩ	±(3% rdg + 3dgts)
200MΩ	1MΩ	±((5% rdg-10dgts) + 10dgts)

### Capacitance

Range: 2000pF to 20µF (5 ranges)

Test frequency: 400Hz

Frequency (autoranging)

Range: to 15MHz

Sensitivity

Trig Lo: 1V rms min (TTL signal only)

Trig Hi: 2V rms min (TTL signal only)

Overload protection: 500V DC or AC rms

Continuity

Audible indication: <40Ω ±20Ω

Overload protection: 500V DC or AC rms

### Diode test

Accuracy: ±(3% rdg + 3dgts)

Test current: 1.0mA ±0.6mA

Open circuit voltage: 3.3V DC typical

Overload protection: 500V DC or AC rms

### Transistor $h_{FE}$

Ranges: 0 to 1000

Base current: 10µA DC approx

V<sub>CE</sub>: 3.3V DC

Dimensions: 151 x 70 x 38mm

Weight: 200g including battery

Battery: 9V PP3 type

Retail Unit Price each (inc. VAT).

Order Code	Type #404	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GW20W	Model PG012 Digi MM	£34.000	£24.950	£22.950	£39.950
AL62S	GW20 Std Calib	£62.110			£72.980
AL63T	GW20 NAMAS Calib	£82.110			£96.480
GW92A	Test Leads	£2.970	£2.390	£1.790	£3.490

## PG017 3 1/2-Digit Digital Multimeter



- ★ 3 1/2-digit LCD
- ★ Capacitance to 20µF in 5 ranges ±(5%rdg +10dgts)
- ★ Autoranging frequency counter to 15MHz ±(0.5%rdg+10dgts)
- ★ Continuity and diode test
- ★ Transistor  $h_{FE}$

A highly specified, cost-effective digital multimeter for the serious amateur and electronics engineer. This superb multimeter has a comprehensive range of facilities including an autoranging frequency function, capacitance, and a transistor test function that is ideal for selecting transistors for matched pairs. A spare set of test leads (GW92A) are available separately.

### Specification

Display: 3 1/2-Digit LCD

### DC Voltage

Range	Resolution	Accuracy
200mV	100µV	±(0.9% rdg + 1dgt)
2V	1mV	±(0.9% rdg + 1dgt)
20V	10mV	±(0.9% rdg + 1dgt)
200V	100mV	±(0.9% rdg + 1dgt)
600V	1V	±(0.9% rdg + 1dgt)

Input impedance: 10MΩ

### AC Voltage

Range	Resolution	Accuracy
200mV	100µV	±(1.9% rdg+4dgts)
2V	1mV	±(1.9% rdg+4dgts)
20V	10mV	±(1.9% rdg+4dgts)
200V	100mV	±(1.9% rdg+4dgts)
600V	1V	±(1.9% rdg+4dgts)

### DC Current

Range	Resolution	Accuracy
2mA	1µA	±(2% rdg + 1dgt)
20mA	10µA	±(2% rdg + 1dgt)
200mA	100µA	±(2% rdg + 1dgt)
10A	10mA	±(3% rdg + 1dgt)

### AC Current

Range	Resolution	Accuracy
2mA	1µA	±(2.5% rdg+4dgts)
20mA	10µA	±(2.5% rdg+4dgts)
200mA	100µA	±(2.5% rdg+4dgts)
10A	10mA	±(3.5% rdg+4dgts)

### Resistance

Range	Resolution	Accuracy
200Ω	100mΩ	±(1.5% rdg+3dgts)
2kΩ	1Ω	±(1.5% rdg + 1dgt)
20kΩ	10Ω	±(1.5% rdg + 1dgt)
200kΩ	100Ω	±(1.5% rdg + 1dgt)
2000kΩ	1kΩ	±(1.5% rdg + 1dgt)
20MΩ	10kΩ	±(3% rdg + 3dgts)

Input impedance: 10MΩ

Dimensions: 151 x 70 x 38mm

Weight: 200g including battery

Battery: 9V PP3 type

Retail Unit Price each (inc. VAT).

Order Code	Type #407	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GW24B	Model PG017 MM	£42.540	£29.950	£26.990	£49.990
AL70M	GW24 Std Calib	£67.310			£79.090
AL71N	GW24 NAMAS Calib	£67.310			£102.590
GW92A	Test Leads	£2.970	£2.390	£1.790	£3.490

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## Academy Multimeter Carry Case



A black PVC carry case designed for multimeters in the Academy range. The three-quarter zip case has a convenient carry handle and internal pouch for test leads.

Retail Unit Price each (inc. VAT).

Order Code	Type 12705	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AN84F	Academy Soft Case	£5.090	£3.990	£3.750	£5.990

### PRECISION GOLD

#### Precision Gold Range

Our original and extremely popular range of multimeters still offers outstanding performance, reliability and value for money. The Precision Gold range features easy to read 3 1/2 digit 22mm LCDs, and also offer polarity, low battery and over-range indications. In addition to the extensive DC/AC voltage, current and resistance measuring ranges, there is a selection of diode, transistor and continuity testing. All meters have been designed to comply with the new IEC 348 class 11 and UL1244 international safety standards, and are supplied complete with battery, test probes and a detailed instruction manual.

## M215 Low-Cost 3 1/2-Digit Digital Multimeter



- ★ 22mm 3 1/2-digit LCD readout
- ★ Polarity, low battery and overload indicators
- ★ Diode test function

This is the entry level model in the highly regarded 'Precision Gold' range and offers a high quality multimeter with basic functions at an affordable price. An ideal basic multimeter for applications either in the home or in the field. Supplied with a pair of test probes, battery and instruction manual.

**Specification**  
Display: 3 1/2-Digit LCD

Range	Resolution	Accuracy
200mV	100µV	±(0.8% rdg +2 digits)
2V	1mV	±(0.8% rdg +2 digits)
20V	10mV	±(0.8% rdg +2 digits)
200V	100mV	±(0.8% rdg +2 digits)
1000V	1V	±(0.8% rdg +2 digits)

Input impedance: 10MΩ all ranges.

#### AC Voltage

Range	Resolution	Accuracy
200V	100mV	±(1.5% rdg +4 digits)
750V	1V	±(1.5% rdg +4 digits)

Input impedance: 4.5MΩ.

#### DC Current

Range	Resolution	Accuracy
200µA	0.1µA	±(1.5% rdg +2 digits)
20mA	10µA	±(1.5% rdg +2 digits)
200mA	100µA	±(1.5% rdg +2 digits)
20A	10mA	±(2% rdg +2 digits)

Dimensions: 171 x 88 x 39mm. Weight: 300g.

#### Resistance

Range	Resolution	Accuracy
200Ω	100mΩ	±(0.8% rdg +2 digits)
2kΩ	1Ω	±(0.8% rdg +2 digits)
20kΩ	10Ω	±(0.8% rdg +2 digits)
200kΩ	100Ω	±(0.8% rdg +2 digits)
2MΩ	1kΩ	±(0.8% rdg +2 digits)
20MΩ	10kΩ	±(1.5% rdg +3 digits)

Retail Unit Price each (inc. VAT).

Order Code	Type 4371	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KW10L	Digi Multimeter M215	£21.690	£17.290	£15.810	£25.490
AK17T	KW10 Std Calib	£51.250			£60.230
AK18U	KW10 NAMAS Calib	£71.250			£83.730
ZCS8N	Meter Case 180	£3.460	£3.010	£2.650	£4.070

## M216 Digital Multimeter with Transistor Tester



- ★ 22mm 3 1/2-digit LCD readout
- ★ Diode and transistor tester
- ★ Continuity and battery tester

Offering the same basic functions as the Model M215, this multimeter benefits from the addition of continuity and battery tester functions. The diode test function can also measure transistor forward voltage drop and transistor hFE measurement is possible for both NPN and PNP devices up to a DC gain of 999.

#### Specification

Display: 3 1/2-Digit 22mm high LCD

#### DC Voltage

Range	Resolution	Accuracy
200mV	100µV	±(0.8% rdg +2 digits)
2V	1mV	±(0.8% rdg +2 digits)
20V	10mV	±(0.8% rdg +2 digits)
200V	100mV	±(0.8% rdg +2 digits)
1000V	1V	±(0.8% rdg +2 digits)

Input impedance: 10MΩ for all ranges.

#### AC Voltage

Range	Resolution	Accuracy
200V	0.1V	±(1.5% rdg +4 digits)
750V	1V	±(1.5% rdg +4 digits)

Input impedance: 4.5MΩ all ranges.

#### DC Current

Range	Resolution	Accuracy
2mA	1µA	±(1.5% rdg +2 digits)
20mA	10µA	±(1.5% rdg +2 digits)
200mA	100µA	±(1.5% rdg +2 digits)
20A	1mA	±(2% rdg +2 digits)

Overload protection: 0.5A 250V fuse mA input only.

#### Resistance

Range	Resolution	Accuracy
200Ω	100mΩ	±(0.8% rdg +2 digits)
2kΩ	1Ω	±(0.8% rdg +2 digits)
20kΩ	10Ω	±(0.8% rdg +2 digits)
200kΩ	100Ω	±(0.8% rdg +2 digits)
2MΩ	1kΩ	±(0.8% rdg +2 digits)
20MΩ	10kΩ	±(1.5% rdg +3 digits)

Dimensions: 171 x 88 x 39mm.

Weight: 300g.

Supplied with red and black probes and leads, and instruction manual.

Retail Unit Price each (inc. VAT).

Order Code	Type 4372	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KW11M	Digi Multimeter M216	£4.240	£3.990	£3.420	£4.990
AK19V	KW11 Std Calib	£58.070			£68.230
AK20W	KW11 NAMAS Calib	£78.060			£91.730
ZCS8N	Meter Case 180	£3.460	£3.010	£2.650	£4.070

## M218 Digital Multimeter with Frequency Counter



- ★ Frequency function
- ★ 3 1/2-digit LCD
- ★ Transistor and diode tester
- ★ Continuity tester

This well specified multimeter has all the basic functions of the M216, plus the added features of a frequency counter. A special socket is provided for small signal transistors with different pin-outs.

#### Specification

Display: 3 1/2-Digit 22mm high LCD

#### DC Voltage

Input impedance: 10MΩ for all ranges.

#### AC Voltage

Input impedance: 4.5MΩ all ranges.

#### DC Current

Overload protection: 0.5A 250V fuse mA input only.

#### Resistance

#### Autoranging Frequency Counter

Input sensitivity: 50mV rms

Overload protection: 500V DC, 500V AC

Dimensions: 171 x 88 x 39mm. Weight: 300g.

Supplied with red and black probes and leads, battery and instruction manual.

Retail Unit Price each (inc. VAT).

Order Code	Type 4373	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KW12N	Digi Multimeter M218	£34.000	£28.510	£26.010	£39.950
AK21X	KW12 Std Calib	£61.470			£72.230
AK22Y	KW12 NAMAS Calib	£81.470			£95.730
ZCS8N	Meter Case 180	£3.460	£3.010	£2.650	£4.070

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## WHITE GOLD

### White Gold Multimeters

A range of high quality, versatile digital multimeters each providing a comprehensive range of useful features in one, easy to use package. In addition to voltage, current and resistance ranges, some models feature extra functions for the measurement of capacitance, inductance, frequency and duty cycle, transistor and diode test facilities and a continuity buzzer (depending on model). All of these features are selected by a single multi-function rotary switch and sockets provided for the measurement ranges and an additional 4-way socket is provided for the test facilities where applicable. This may be accompanied by a 2-way socket that accepts component leads. An LCD screen displays the reading with polarity indicator and the function/range selected. Also shown are battery low warning and range overload indicators. Most resistance ranges are 'low power', meaning that accurate measurement of in-circuit resistances can be made because the test voltage is below that necessary to forward bias a silicon diode junction. The diode test function (where applicable) allows the actual voltage drop across the junction to be measured and compared against other devices. It is also possible to perform the diode test function on a device in-circuit. The transistor test function (where available) allows the actual gain (hFE) to be measured and compared with other devices. The duty cycle function is a useful aid for measuring digital circuits and provides a measure of square-wave pulse width up to 90% of the duty cycle. Readings on all ranges are sampled at a rate of 2 1/2 times per second. Each meter is supplied with a pair of test leads, battery and full instruction manual.

### WG020 Digital Multimeter with Capacitance, Inductance and Frequency Measurement



- ★ **Capacitance test to 200µF in 5 ranges**  
±(8%rdg +10dgt)
- ★ **Inductance test to 20H in 5 ranges**  
±(5%rdg +20dgt)
- ★ **Frequency counter to 15MHz in 5 ranges**  
±(0.5%rdg +1dgt)

This accurate, versatile multimeter features a comprehensive range of functions for the serious hobbyist and professional. The frequency function is autoranging, and a 'MAX' hold facility allows the highest reading of a varying measurement to be stored. In addition to the basic functions, a 'duty cycle' measurement facility is provided, which is a useful aid for analysing pulsed signals in digital circuits. Continuity test, diode test, and a transistor hFE tester are also included. A protective holster (GW91Y) is available separately for this multimeter and is strongly recommended.

**Specification**  
Display: 3 1/2-Digit LCD

#### DC Voltage

Range	Resolution	Accuracy
200mV	100µV	±(0.5% rdg + 1dgt)
2V	1mV	±(0.5% rdg + 1dgt)
20V	10mV	±(0.5% rdg + 1dgt)
200V	100mV	±(0.5% rdg + 1dgt)
1000V	1V	±(0.5% rdg + 1dgt)

Input impedance: 10MΩ

#### AC Voltage

Range	Resolution	Accuracy
200mV	100µV	±(1.5% rdg-4dgt)
2V	1mV	±(1.5% rdg-4dgt)

20V	10mV	±(1.5% rdg+4dgt)
200V	100mV	±(1.5% rdg+4dgt)
750V	1V	±(2% rdg + 4dgt)

Input impedance: 10MΩ

#### DC Current

Range	Resolution	Accuracy
20mA	10µA	±(1.5% rdg + 1dgt)
200mA	100µA	±(1.5% rdg + 1dgt)
20A	10mA	±(3% rdg + 1dgt)

#### AC Current

Range	Resolution	Accuracy
20mA	10µA	±(2% rdg + 4dgt)
200mA	100µA	±(2% rdg + 4dgt)
20A	10mA	±(3.5% rdg+4dgt)

#### Resistance

Range	Resolution	Accuracy
200Ω	100mΩ	±(1% rdg + 4dgt)
2kΩ	1Ω	±(0.8% rdg+2dgt)
20kΩ	10Ω	±(0.8% rdg+2dgt)
200kΩ	100Ω	±(0.8% rdg+2dgt)
2MΩ	1kΩ	±(0.8% rdg+2dgt)
20MΩ	10kΩ	±(3% rdg+4dgt)
2000MΩ	1MΩ	±((5% rdg-10dgt) +10dgt)

Dimensions: 200 x 90 x 40mm

Weight: 400g including battery

Battery: 9V PP3 type

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GW25D1	Model WG020 Digi MM	£55.310	£49.990	£39.990	£84.990
AL74R1	GW26 Std Calib	£82.060			£96.430
AL75S1	GW26 NAMAS Calib	£102.060			£119.930
GW91Y	Holster	£5.480	£4.880	£3.790	£6.450

### WG023 4 1/2-Digit Digital Multimeter



- ★ **4 1/2-Digit LCD**
- ★ **Basic accuracy 0.5%**
- ★ **Transistor hFE test**
- ★ **Continuity and diode test**
- ★ **Incredible resolution; 10nA / 10µV / 1mΩ**

A precision, sensitive, multimeter with a large 4 1/2-digit LCD readout, ideal for measuring very low readings. The multimeter has a 200mV voltage range (AC/DC) with a resolution of 10µV (100µV AC) and a 200µA current range (AC/DC) with a resolution of 10nA. Additional features include continuity and diode test, plus transistor hFE tester. A protective holster (GW91Y) is available for this multimeter and is strongly recommended.

**Specification**

Display: 4 1/2-Digit LCD

#### DC Voltage

Range	Resolution	Accuracy
200mV	10µV	±(0.5% rdg+4dgt)
2V	100µV	±(0.5% rdg+4dgt)
20V	1mV	±(0.5% rdg+4dgt)
200V	10mV	±(0.5% rdg+4dgt)
1000V	100mV	±(0.5% rdg+4dgt)

Input impedance: 10MΩ

#### AC Voltage

Range	Resolution	Accuracy
200mV	100µV	±(0.5% rdg+30dgt)
2V	1mV	±(0.5% rdg+10dgt)

20V	10mV	±(0.5% rdg+10dgt)
200V	100mV	±(0.5% rdg+10dgt)
750V	1V	±(1.0% rdg+10dgt)

#### DC Current

Range	Resolution	Accuracy
200µA	10nA	±(0.5% rdg+10dgt)
2mA	100nA	±(0.5% rdg+10dgt)
20mA	1µA	±(0.5% rdg+10dgt)
200mA	10µA	±(0.5% rdg+10dgt)
20A	1mA	±(2.0% rdg+10dgt)

Input protection: 0.5A/250V fuse  
20A/600V fuse

#### AC Current

Range	Resolution	Accuracy
200µA	10nA	±(0.75% rdg+10dgt)
2mA	100nA	±(0.75% rdg+10dgt)
20mA	1µA	±(0.75% rdg+10dgt)
200mA	10µA	±(0.75% rdg+10dgt)
20A	1mA	±(2.5% rdg+10dgt)

#### Resistance

Range	Resolution	Accuracy
20Ω	1mΩ	±(1.0% rdg+20dgt)
200Ω	10mΩ	±(0.2% rdg+20dgt)
2kΩ	100mΩ	±(0.2% rdg+20dgt)
20kΩ	1Ω	±(0.2% rdg+20dgt)
200kΩ	10Ω	±(0.2% rdg+20dgt)
2MΩ	100Ω	±(0.2% rdg+20dgt)
20MΩ	1kΩ	±(2.0% rdg+3dgt)

Dimensions: 200 x 90 x 40mm

Weight: 400g including battery

Battery: 9V PP3 type

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GW29G1	Model WG023 Digi MM	£61.750	£50.950	£45.850	£72.560
AL80B1	GW29 Std Calib	£90.740			£106.630
AL81C1	GW29 NAMAS Calib	£110.740			£130.130
GW91Y	Holster	£5.480	£4.880	£3.790	£6.450

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## WG022 4-Digit Digital Multimeter



- ★ **Min/Max/Hold range recording facility**
- ★ **Capacitance test to 40µF in 5 ranges ±(5%rdg +4dgts)**
- ★ **Frequency counter to 1MHz in 5 angles ±(0.5%rdg +2dgts)**
- ★ **Autorange and manual operation**

A laboratory grade multimeter for the most demanding applications, featuring 0.5% basic accuracy, a 3999 count display and a 40-segment analogue bargraph – ideal for delicate adjustments. Extra features include capacitance and frequency test, a min/max and memory recording facility, last reading hold, continuity and diode test and a battery saving power off. A protective holster (GW91Y) is available for this multimeter and is strongly recommended.

**Specification**  
Display: 4-Digit LCD

### DC Voltage

Range	Resolution	Accuracy
400mV	100µV	±(0.5% rdg+1dgt)
4V	1mV	±(0.5% rdg+1dgt)
40V	10mV	±(0.5% rdg+1dgt)
400V	100mV	±(0.5% rdg+1dgt)
1000V	1V	±(0.5% rdg+1dgt)

Input impedance: >10MΩ

### AC Voltage

Range	Resolution	Accuracy
400mV	100µV	±(1.5% rdg+4dgts) Manual only
4V	1mV	±(1.5% rdg+4dgts)
40V	10mV	±(1.5% rdg+4dgts)
400V	100mV	±(1.5% rdg+4dgts)
750V	1V	±(2% rdg+4dgts)

Input impedance: >10MΩ

### DC Current

Range	Resolution	Accuracy
4mA	1µA	±(1.5% rdg+1dgt)
40mA	10µA	±(1.5% rdg+1dgt)
400mA	100µA	±(1.5% rdg+1dgt)
20A	10mA	±(3% rdg+1dgt)

### AC Current

Range	Resolution	Accuracy
4mA	1µA	±(2% rdg+4dgts)
40mA	10µA	±(2% rdg+4dgts)
400mA	100µA	±(2% rdg+4dgts)
20A	10mA	±(3.5% rdg+4dgts)

### Resistance

Range	Resolution	Accuracy
400Ω	100mΩ	±(1.2% rdg+4dgts)
4kΩ	1Ω	±(1% rdg+2dgts)
40kΩ	10Ω	±(1% rdg+2dgts)
400kΩ	100Ω	±(1% rdg+2dgts)
4MΩ	1kΩ	±(1% rdg+2dgts)
40MΩ	10kΩ	±(3% rdg+4dgts)

Dimensions: 200 x 90 x 40mm  
Weight: 400g including battery  
Battery: 9V PP3 type

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW28F 1	Model WG022 Digi MM	£70.620	£82.480
AL78K 1	GW28 Std Calib	£99.420	£116.830
AL79L 1	GW28 NAMAS Calib	£119.420	£140.330
GW91Y	Holster	£5.480	£6.450

## Ceramic Fuses

A range of spare ceramic cartridge fuses suitable for our White Gold digital multimeters. The following ratings are available: 0.5A/600V, 20A/600V.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW88V	Fuse 0.5A	£2.540	£2.990
GW90X	Fuse 20A	£3.070	£3.610

## White Gold Multimeter Carry Case



A black PVC carry case designed for multimeters in the White Gold range. The three-quarter zip case has a convenient carry handle and internal pouch for test leads.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JA21X	White Gold Soft Case	£5.940	£6.990

## HOLSTER

### Multimeter Holster

A resilient, flexible and durable holster for supporting and protecting our White Gold range of digital multimeters. These holsters incorporate a belt hook and provision for stowing/holding test leads. Colour yellow.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW91Y	Holster	£5.480	£6.450

## BATTERY CHECKER

### Battery and Alternator Checker



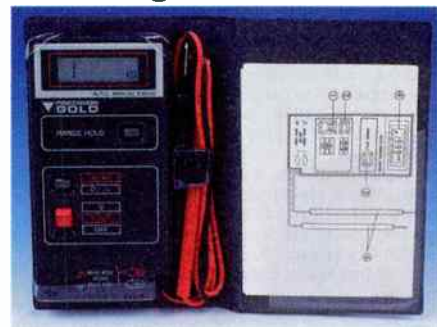
A handy device for checking the condition of your car battery and alternator charging voltage. Simply connect the tester to a suitable ground point and

place the test probe on the positive terminal of the battery while the engine is switched off. A number of LEDs will now light up to show the current state of the battery. One LED shows the battery is discharged, two indicate a slightly discharged state and three indicate a good battery condition. Now with the engine running at about 2000 rpm, connect the test probe to the output of the alternator. Indicators now illuminate to show the state of the alternator. As with the battery condition, combinations of LEDs indicate whether the alternator voltage is low, normal or too high. Ideal for fast and simple diagnostics. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FU00A	Batt/Volt Checker	£7.660	£8.990

## Pocket Digital Multimeter



A calculator sized, auto-ranging digital multimeter in a plastic wallet and featuring a 3 1/2-digit LCD readout, continuity test and range hold facility. The leads are permanently connected and fold up into the wallet. In addition to the display and range indication, there is a 'low battery' warning on the LCD panel. The meter is supplied with batteries (replacement type SG13), test leads and instruction manual.

**Specification**  
Display: 3 1/2-Digit LCD

Range: 1mV to 200V  
Accuracy: ±(2% rdg ±2 dgits)

### DC volts

Range: 1mV to 400V  
Accuracy: ±(3% rdg ±5 dgits)

Max. input voltage: ±400V

### AC volts

Range: 0.1Ω to 2MΩ  
Accuracy: ±(2% rdg ±2 dgits)

Max. input voltage: ±400V

### Resistance

Overload protection: 400V RMS  
Continuity test: Buzzer sounds if resistance under 200Ω.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZA37S 1	Pocket DMM	£19.550	£22.980

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**ANALOGUE**

**Pocket Multimeter**



A rugged, easy to operate, general purpose multimeter having a sensitivity of 2000Ω/V for DC and AC voltage ranges. Its compact size and ease of portability makes it ideal for those situations where fast, accurate measurements are required. Ideal for use in the house, boat, car etc.

- Ranges:**
- DC volts: 10, 50, 250, 500V at 2000 ohms per volt
  - AC volts: 10, 50, 250, 500V at 2000 ohms per volt
  - DC current: 0.5, 50, 250mA
  - Resistance: 0 to 1MΩ (5kΩ at centre of scale) (Minimum reading: 200Ω)
  - Decibels: -20 to +56dB, using AC volts ranges

The meter has an accuracy of 4% at full scale deflection for DC and AC voltage ranges, and resistance measurements are accurate to 4° of scale arc. The two-colour mirrored scale has a total arc of 90°. Supplied complete with operating instructions, one red and one black test lead with probes and one battery (replacement type AA size). Dimensions 90 x 60 x 30mm. Weight: 110g.

Retail Unit Price each (inc. VAT).

Order Code	Type #362	Price each exc. VAT	inc. VAT each
YJ06G	Pocket Multimeter	£5.940 £4.630	£4.330 £5.990

**Hobby Multimeter**



This analogue Multimeter is a rugged, easy-to-operate instrument offering 10,000Ω/V DC and 4000Ω/V AC sensitivity, with a linear meter movement which provides for accurate measurement of DC and AC voltages, direct currents, resistance and decibels on a 90° arc mirrored scale. The meter uses the most modern components and circuit techniques in a high impact case.

- Ranges** 18
- DC volts 0 to 2.5, 50, 250, 1000V
  - AC volts 0 to 10, 50, 250, 1000V
  - DC current 0 to 10, 250mA
  - Resistance R x 10, R x 1k
  - Decibels -20dB to 62dB on AC volt ranges
- The meter has an accuracy of 4% of full scale

deflection for DC voltage ranges and 5% for AC voltage ranges. Resistance readings are accurate to 4% of scale arc. The 18 measuring ranges provided make this meter an ideal instrument for general purpose applications, or for a beginner to electronics who needs an instrument that is not too difficult to operate but at the same time must have most of the basic functions. Also provided with two special 'BAT' test functions for both 1.5V cells and 9V PP3 type batteries. Supplied complete with operating instructions, one red and one black test lead with probes and one battery (replacement type AA size). Dimensions: 105 x 64 x 32mm Weight: 136g

Retail Unit Price each (inc. VAT).

Order Code	Type #364	Price each exc. VAT	inc. VAT each
YJ76H	Hobby Multimeter	£11.480 £7.560	£7.090 £13.490

**Multimeter M-102BZ**



A wide range multimeter having a 90° three colour mirrored scale and 40μA F.S.D sensitivity, with a double jewelled precision moving coil movement. A dual silicon diode overload protection system is included with a 1A fuse. The meter has a sensitivity of 20,000Ω/volt DC, and 8,000Ω/volt AC. There are 23 measuring ranges.

- Ranges:**
- DC volts: 2.5, 10, 50, 250, 1000V
  - AC volts: 10, 50, 250, 1000V
  - DC current: 5, 50, 500mA and 10A
  - Resistance: 0 to 10kΩ (50Ω at centre of scale) 0 to 100kΩ (500Ω at centre of scale) 0 to 10MΩ (50kΩ at centre of scale) (Minimum reading: 1Ω)
  - Decibels: -8dB to +62dB using AC V ranges

The M-102BZ has the additional facilities of a battery test function, for 1.5V cells and 9V power packs, and an audible buzzer so that the meter can be used as a continuity tester. It also has a separate audio input for decibel measurements with an impedance of 600Ω.

During the battery testing functions the cells are loaded for a realistic result; the 1.5V cell under test is loaded with 75Ω for 20mA, and the 9V battery under test is loaded with 450Ω for 20mA.

The scale has an accuracy of 4% F.S.D for measuring DC volts, and 5% F.S.D measuring AC volts. When measuring ohms it is accurate to 4° of arc. A full instruction manual is included. The meter incorporates a rugged carrying handle that can also be used as a bench stand.

Supplied complete with operating instructions, one red and one black test lead with probes, and batteries (two size AA). Dimensions 133 x 89 x 38mm, not including handle. Weight: 255g.

Retail Unit Price each (inc. VAT).

Order Code	Type #365	Price each exc. VAT	inc. VAT each
YJ07H	Multimeter M-102BZ	£23.340 £15.450	£12.220 £27.430

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**Multimeter HC-3030S**



A quality, comprehensive multimeter having a 90mm, full 90° arc mirrored two-colour scale with a knife edge pointer needle. It features a sensitivity of 30,000Ω/volt DC and 10,000Ω/volt AC, with a rated accuracy of 3% of F.S.D for all DC ranges and 4% for all AC ranges.

In addition to the usual multimeter functions this instrument also has a transistor checking facility, which can determine transistor type (npn/pnp) and operational integrity, by means of one green and one red alternately flashing LEDs, which are very easily interpreted. The green LED flashes if the transistor is an npn type that functions correctly, and the red flashes if it is a working pnp type. If the transistor is open circuit, both flash. If there is a collector-to-emitter short circuit neither LEDs will light. A front panel 4-pin socket is provided into which the transistor to be tested is inserted. The leakage current of the transistor can also be measured and the scale is marked to show defective types.

- Ranges:**
- DC volts: 3, 10, 30, 100, 300, 1000V
  - AC volts: 10, 30, 100, 300, 1000V
  - DC current: 100μA, 3mA, 30mA, 300mA, 10A
  - Resistance: 0 to 1kΩ (10Ω at centre of scale) 0 to 10kΩ (100Ω at centre of scale) 0 to 1MΩ (10kΩ at centre of scale) 0 to 10MΩ (100kΩ at centre of scale) (Minimum reading: 0.2Ω)
  - Decibels: -10dB to +22dB (10V AC range) +10dB to +42dB (30V AC range) +20dB to +52dB (300V AC range) +30dB to +62dB (1000V AC range)

Transistor Tester  
I<sub>CEO</sub>: 15mA, 150mA

Battery tester - working current  
1.5V AA: 27mA  
1.5V C/D: 300mA  
9V: 27mA  
Dimensions: 160 x 110 x 50mm  
Weight: 440g

The multimeter includes a polarity reversal switch, overload protection with 2A fuse, and a bench stand. Also has two non-slip rubber feet. Uses 2 x 1.5V AA and a 9V PP3 type battery, supplied. Full operating instructions and one red and one black test lead with safety probes and fully shrouded plugs are included.

Retail Unit Price each (inc. VAT).

Order Code	Type #368	Price each exc. VAT	inc. VAT each
YJ08J	Multimeter HC-3030S	£31.840 £19.510	£15.490 £37.420

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## Soft Carrying Cases for Analogue multimeters

The following table lists the multimeter model against a suitable soft case.



Multimeter Model	Case Order Code
M105	ZC58N
M125	ZC58N
M135L	ZC58N
M205	ZC59P
M225	ZC59P
M285	ZC59P
M2020S	YN68Y
M2500I	YN68Y
M3030S	YN68Y

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZC58N	Meter Case 180	£3.460	£4.070
ZC59P	Meter Case 160	£3.730	£4.390
YN68Y	Case CB25K	£3.730	£4.390

**TEKTRONIX**

**900 SERIES MULTIMETERS**

## DMM900 Series Handheld Digital Multimeter

Tektronix



This range of high performance digital multimeters from Tektronix offers superb accuracy, resolution and reliability at an affordable price, and backed by a 3-year warranty. All the multimeters are true RMS with a dual numeric display and a full range of features including voltage, current, resistance, capacitance, frequency, dB and temperature (not 912 model).

- ★ Designed for the most demanding applications
- ★ True RMS for reliable, accurate readings
- ★ 40,000/4,000 display range
- ★ Full 3 year warranty
- ★ Temperature measurement (not 912)
- ★ Autoranging

Specification	912	914	916
Accuracy			
DC volts:	0.2%	0.1%	0.06%
AC volts:	1%	0.8%	0.7%
AC+DC volts:	1.2%	1%	0.9%
DC current:	0.5%	0.4%	0.3%
AC current:	1%	0.9%	0.9%
Resistance:	0.5%	0.4%	0.3%
Lo-V $\Omega$ :	1%	1%	1%
Capacitance:	1%	1%	1%
Frequency:	0.01%	0.01%	0.01%
<b>Features</b>			
Temperature range:	----	50°C to 980°C	
Temp accuracy (K-type)	----	2°C	2°C
Hi/Lo limits:	----	Yes	Yes
Peak hold (1ms):	----	----	Yes
Backlight:	----	----	Yes

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NP14Q	DMM914 Meter	£220,000	£258,500
NP13P	DMM912 Meter	£160,000	£188,000
NP15R	DMM916 Meter	£264,990	£311,370

**FLUKE**

**PROFESSIONAL MULTIMETERS**

## VoltAlert

Fluke



- ★ Detects voltage without metallic contact
- ★ Outer surfaces non-conductive for safety
- ★ Fits in shirt/coat pocket
- ★ Made from high-impact non-flammable PVC/ABS

The VoltAlert from Fluke is a pocket-sized AC mains voltage detector. It is very easy to use - just touch the tip to an outlet or mains lead/cable, and if the tip glows red then the line is live. Ideal for home, shop, factory or workshop to detect energised circuits and defective earths. The VoltAlert will detect a voltage in the range 200 to 600V AC and uses two 'AAA' size alkaline batteries (supplied). Dimensions: 146 x 19mm, Weight: 40.6g including batteries.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JJ18U	Fluke VoltAlert	£17.940	£21.090

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## Fluke 7 Series Electrical Testers



- ★ Automatic selection mode
- ★ Automatic reading of AC/Dc volts
- ★ 400-count digital display
- ★ Continuity beeper
- ★ 400 $\Omega$  range

For fast accurate test of electrical power, then nothing beats the easy-to-use Fluke 7-300 and 7-600 Electrical Testers - there is just an on/off switch. The Testers automatically switch to the right setting - AC/DC volts, continuity or Ohms, with the results displayed on a clear 4000-count LCD display. The 7-300 measures up to 300V AC/DC and is ideal for the home and general electrical needs. The 7-600 measures up to 600V AC/DC, and is ideal for fast voltage and continuity checks in industrial environments, including the growing number of low-voltage DC systems. These Electrical Testers set a whole new standard in professional performance at a low price and are backed with a two year guarantee. The Testers meet the following international standards: protection Class II requirement for UL3111, UL3111 compliant, IIEC 1010 over voltage Category III, TUV-EN61010-1, ANSI/ISA S.8.2.01-1994 and CSA c22.2 No 1010.1. Supplied with hard point test leads, fitted 9V battery and instruction manual.

### Specification

Resolution AC/DC	
4V:	0.001V
40V:	0.01V
300V (7-300):	0.1V
400V (7-600):	0.1V
600V (7-600):	1V
Accuracy (not specified at 4V)	
AC:	$\pm(2.9\%rdg + 3dgt)$
DC:	$\pm(1.5\%rdg + 1dgt)$
Ohms	
range:	400 $\Omega$
resolution:	0.1 $\Omega$
accuracy:	$\pm(1.5\%rdg + 2dgt)$
Beeper	
on at:	<25 $\Omega$
off at:	>400 $\Omega$

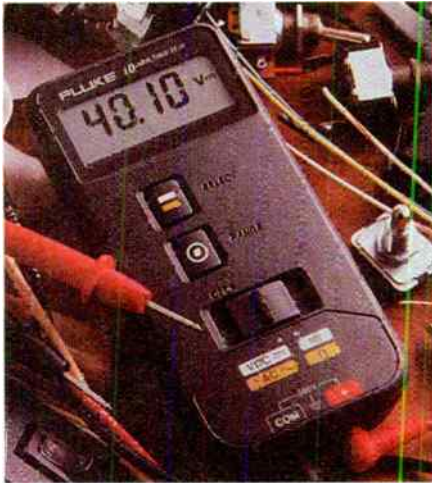
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JU31J	Fluke 7-300	£42,000	£49.35
JU32K	Fluke 7-600	£59,900	£69.33

## Fluke Professional Multimeters

A range of professional, quality multimeters from Fluke. These precision digital meters offer a smart set of troubleshooting features in a design that's exceptionally fast and simple to operate - with one hand. The versatile Series 10 have a large, easy-to-read, 4000-count autoranging display, that updates 4 times per second. These meters measure AC and DC voltage to 600V and ohms to 40M $\Omega$ . Also featured are continuity and diode tests and a 'sleep' mode allows the meter to conserve battery power if left on and unused for some time. The Fluke Series 10 range sets a new standard in low-cost, tough, dependable meters, backed by a 3-year warranty.

**Fluke 10**



- ★ Diode test
- ★ Continuity test
- ★ 3 1/4-digit LCD
- ★ Autoranging with manual override
- ★ 3-year warranty

This meter has a basic accuracy of 1.5% on DC and ohms and 2.9% on AC, and has a large easy-to-read 4000 count digital display, which gives a far better resolution than 1,999-count meters. Autoranging selects the range with the best resolution for the job and when you want to control the range manually, just push a button – ideal for fast, repetitive testing. In addition to the standard AC and DC voltage ranges, the meter also measures resistance, and the voltage drop of properly working diodes. Fast continuity checks can be made without the need to watch the display, just listen for the bleep; for continuity as short as 250µs. A protective holster (ZF45Y) is available separately and is strongly recommended.

**Specification**

**Display:** 3 1/4-Digit 4000 Count LCD  
**DC Voltage**  
 Range: 4000mV, 4V, 40V, 400V, 600V  
 Resolution at 4000mV: 1mV  
 Accuracy: ±(1.5% rdg + 2 dgts), on 4000mV/4V ±(1.5% rdg + 1 dgt), on other ranges >10MΩ <100pF

**AC Voltage**  
 Range: 4000mV, 4V, 40V, 400V, 600V  
 Resolution at 4000mV: 1mV  
 Accuracy: ±(2.9% rdg + 3 dgts) on all ranges >5MΩ <100pF (AC-coupled)  
 Overload protection: 600V rms  
 CMRR(50Hz or 60Hz): >100dB  
 NMRR(50Hz or 60Hz): >50dB

**Resistance**  
 Range: 440Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ  
 Resolution: 0.1Ω on 400Ω range  
 Accuracy: ±(1.5% rdg + 1 dgt) ±(1.5% rdg + 2 dgts) on 400Ω range ±(1.9% rdg + 3 dgts) on 40MΩ range

**Open circuit test voltage:** <1.5V  
**Full scale voltage:** <450mV DC to 4MΩ, <1.5V DC 40MΩ  
 Overload protection: 600V rms

**General**  
 Dimensions: 142.3 x 70.5 x 34.6mm  
 Weight: 286g  
 Supplied with battery, instruction manual and a pair of test leads

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 Weight: 286g  
 Supplied with battery, instruction manual and a pair of test leads

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZF42V	Fluke 10 Multimeter	£59.000 £55.850 £55.950	£69.330
AK37D	ZF42 Std Calib	£98.700	£104.230
AK38F	ZF42 NAMAS Calib	£104.700	£127.730
ZF45Y	Fluke C10 Holster	£12.800 £11.580 £11.250	£14.100

**Fluke 11**



- ★ Autoranging with manual override
- ★ Diode test
- ★ Continuity test
- ★ 3-year warranty
- ★ 0.9% DC accuracy
- ★ Capacitance to 10,000µF in 5 ranges ±(1.9%rdg +2dgts)
- ★ V Chek™

This meter has a basic accuracy of 0.9% on DC and ohms and 1.9% on AC, and has a large easy-to-read 4000 count digital display, which gives a far better resolution than 1,999-count meters. The Fluke 11 has V Chek™; an ingenious additional feature that allows you to make fast accurate checks on power sources and supplies. V Chek™ will determine if your circuit is open or if you have a short. If a voltage greater than 4.5V is present, it will automatically change modes to measure AC or DC volts, whichever is detected. If AC and DC are both present, it will display the greater of the two. V Chek™ lowers the meter's normal 10MΩ impedance to a minimum of 2kΩ, so you can distinguish real voltage from false readings caused by leakage from other sources. It even tells you, with a bleep, as it switches function from continuity to voltage. Capacitance can be measured from 1nF to 9999µF in manual or autoranging mode, with an accuracy of ±(1.9%rdg + 2dgts) except 10,000µF range. A protective holster (ZF41Y) is available separately, and is strongly recommended.

**Specification**

**Display:** 3 1/4-Digit 4000 Count LCD  
**DC Voltage**  
 Range: 4000mV, 4V, 40V, 400V, 600V  
 Resolution at 4000mV: 1mV  
 Accuracy: ±(0.9% rdg + 2 dgts), on 4000mV/4V ±(0.9% rdg + 1 dgt), on other ranges

**AC Voltage**  
 Range: 4000mV, 4V, 40V, 400V, 600V  
 Resolution at 4000mV: 1mV  
 Accuracy: ±(1.9% rdg + 3 dgts) on all ranges

**Resistance**  
 Range: 400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ  
 Resolution: 0.1Ω on 400Ω range  
 Accuracy: ±(0.9% rdg + 1 dgt) ±(1.5% rdg + 3 dgts) on 40MΩ range

**Open circuit test voltage:** <1.5V  
**Full scale voltage:** <450mV DC to 4MΩ, <1.5V DC 40MΩ

**General**  
 Dimensions: 142.3 x 70.5 x 34.6mm  
 Weight: 286g  
 Supplied with battery, instruction manual and a pair of test leads.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZF43V	Fluke 11 Multimeter	£99.000 £96.950 £94.950	£116.080
AK37S	ZF43 Std Calib	£98.910	£116.230
AK38F	ZF43 NAMAS Calib	£118.910	£139.730
ZF45Y	Fluke C10 Holster	£12.800 £11.580 £11.250	£14.100

**Fluke 12B**



- ★ Large easy-to-use rotary dial
- ★ Autoranging with manual override
- ★ 0.9% DC accuracy
- ★ Capacitance to 10,000µF in 5 ranges ±(1.9%rdg +2dgts)
- ★ 3-year warranty
- ★ V Chek™
- ★ Highest/Lowest reading
- ★ Continuity test
- ★ Diode test

The top of the range Fluke 12B has all the features of the Fluke 11, and in addition, extra features that make solving intermittent, troublesome, faults so much easier. The Fluke 12B has the ability to record the highest and lowest voltage readings during a 100-hour period and 'time stamps' the readings to the nearest minute. Now you can hook up, walk away, come back later and see what happened – and when. Continuity Capture™ will display intermittent shorts as brief as 250µs, and display them as open-to-short and short-to-open transitions. The display shows the initial condition (either an open or short) and if the meter detects a transition, it beeps and the display captures the transition. Subsequent transitions cause the meter to beep, but the display does not change. Capacitance can be measured from 1nF to 9999µF in manual or autoranging mode with an accuracy of ±(1.9%rdg + 2dgts) except 10,000µF range. A protective holster (ZF41Y) is available separately, and is strongly recommended.

**Specification**

**Display:** 3 1/4-Digit 4000 Count LCD  
**DC Voltage**  
 Range: 4000mV, 4V, 40V, 400V, 600V  
 Resolution at 4000mV: 1mV  
 Accuracy: ±(0.9% rdg + 2 dgts), on 4000mV/4V ±(0.9% rdg + 1 dgt), on other ranges

**AC Voltage**  
 Range: 4000mV, 4V, 40V, 400V, 600V  
 Resolution at 4000mV: 1mV  
 Accuracy: ±(1.9% rdg + 3 dgts) on all ranges

**Resistance**  
 Range: 400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ  
 Resolution: 0.1Ω on 400Ω range  
 Accuracy: ±(0.9% rdg + 1 dgt) ±(1.5% rdg + 3 dgts) on 40MΩ range

**Open circuit test voltage:** <1.5V  
**Full scale voltage:** <450mV DC to 4MΩ, <1.5V DC 40MΩ

**General**  
 Dimensions: 142.3 x 70.5 x 34.6mm  
 Weight: 286g  
 Supplied with battery, instruction manual and a pair of 'hard point' test leads.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS73Q	Fluke Multimeter 12B	£81.000 £78.000 £75.000	£95.180

## Holster for Fluke 10 Range

Fluke



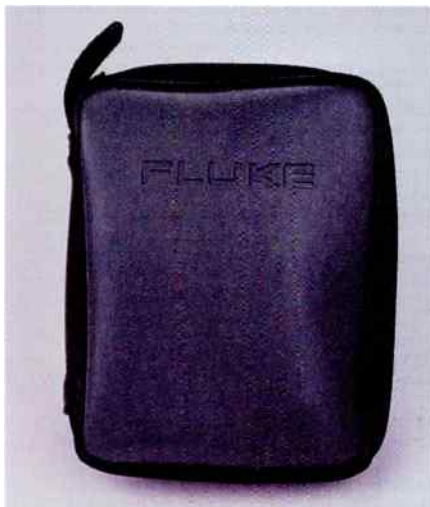
A tough, strong, flexible snap-on holster for any Fluke Series 10 meters. The holster fits tightly round the meter and gives a high degree of protection should the meter receive any rough handling. A built-in stand positions the meter for a better viewing angle, and a moulded hanger loop allows the meter to be suspended while taking measurements. The loop can also be used to hold a probe, allowing the meter and a probe to be held conveniently in one hand.  
Size: 160 x 76 x 40mm

Retail Unit Price each (inc. VAT).

Order Code	Type 4415	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
ZF45Y	Fluke C10 Holster	£12.000	£11.590	£11.290	£14.100

## Soft Case for Fluke 10 Range

Fluke



A soft vinyl zip-fastened carrying case, with belt loop, to safely carry your Fluke Series 10 meters. The manual and test leads fit into the case with the meter and there is a handy plastic holder for your calling cards.  
Size: 180 x 145 x 50mm

Retail Unit Price each (inc. VAT).

Order Code	Type 4416	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
ZF46A	Fluke C12 Softcase	£13.000	£12.490	£12.290	£15.280

## Fluke 70



- ★ Diode test
- ★ Continuity test
- ★ 0.5% DC accuracy
- ★ 3-year warranty

This meter has a basic accuracy of 0.5% – better than that of the finest analogue-only meters. Autoranging software instantly selects the proper range for maximum resolution. This meter offers a superb 3200 count resolution and also 31 segment analogue scale. A manual range-holding facility enables a range to be held on-screen, whilst a touch hold facility captures a reading. A 'sleep' mode allows the meter to conserve battery power, should the meter be left on.

### Specification

#### DC Voltage

Range: 320mV, 3.2V, 32V, 320V, 1000V  
Sensitivity at 320mV: 0.1mV  
Accuracy: ±0.5% rdg ±1 dgt  
±0.6% rdg ±1 dgt on 1000V range  
Input resistance: 10MΩ  
Overload protection: 1000V, 500V on 320mV range  
NMRR (50Hz to 60Hz): >60dB  
CMRR (50Hz to 60Hz): >120dB

#### AC Voltage

Range: 3.2V, 32V, 320V, 750V  
Sensitivity: 1mV on 3.2V range  
Accuracy: ±2% rdg ±2 dgts  
Overload protection: 750V AC, 1000V AC

#### Resistance

Range: 320Ω, 3200Ω, 32kΩ, 320kΩ, 3.2MΩ, 32MΩ  
Sensitivity: 0.1Ω  
Accuracy: ±0.5% rdg ±1 dgt  
±0.5% rdg ±2 dgts on 320Ω range  
±2% rdg ±1 dgt on 32Ω range

General  
Dimensions: 28 x 75 x 166mm  
Weight: 240g  
Supplied with battery (replacement type PB), instruction manual and a pair of test leads.

Retail Unit Price each (inc. VAT).

Order Code	Type 13811	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
ZC62S	Fluke 70 Multimeter	£79.000	£73.100	£71.200	£92.830
AK41U	ZC62 Std Calib	£104.870			£123.230
AK42V	ZC62 NAMAS Calib	£124.870			£146.730

## Fluke 73



- ★ 0.4% DC accuracy
- ★ Manual range hold
- ★ Touch hold facility
- ★ Diode test
- ★ Continuity test

This meter has a basic accuracy of 0.4%, which is better than that provided by most other DMMs. Autoranging software instantly selects the proper range for maximum resolution. In addition to the standard AC and DC voltage ranges the meter also measures AC and DC current, and resistance. The meter has a 3200 count resolution surpassing most other digital meters and a 31 segment analogue scale. Additional features include a 'Touch Hold' facility which captures and holds readings on the display. A sleep mode allows the meter to conserve battery power should the meter be left on.

### Specification

#### DC Voltage

Range: 320mV, 3.2V, 32V, 320V, 1000V  
Sensitivity at 320mV: 0.1mV  
Accuracy: ±0.4% rdg ±1 dgt  
Input resistance: 10MΩ  
Overload protection: 1000V, 500V on 320mV range  
NMRR (50Hz to 60Hz): >60dB  
CMRR (50Hz to 60Hz): >120dB

#### AC Voltage

Range: 3.2V, 32V, 320V, 750V  
Sensitivity: 1mV on 3.2V range  
Accuracy: ±2% rdg ±2 dgts  
Overload protection: 750V AC, 1000V AC

#### DC Current

Range: 0 to 10A  
Accuracy: ±1.5% rdg ±2 dgts  
Sensitivity: 0.01A  
Overload protection: 10A continuous, 20A for 30 secs. max

#### AC Current

Range: 0 to 10A  
Accuracy: ±2.5% rdg ±2dgts  
Frequency: 45Hz to 1kHz  
Sensitivity: 0.01A  
Overload protection: 10A continuous, 20A for 30 secs. max

#### Resistance

Range: 320Ω, 3200Ω, 32kΩ, 320kΩ, 3.2MΩ, 32MΩ  
Sensitivity: 0.1Ω  
Accuracy: ±0.5% rdg ±1 dgt  
±0.5% rdg ±2 dgts on 320Ω range  
±2% rdg ±1 dgt on 32Ω range

#### General

Dimensions: 28 x 75 x 166mm  
Weight: 240g  
Supplied with battery (replacement type PP3), instruction manual and a pair of test leads.

Retail Unit Price each (inc. VAT).

Order Code	Type 4418	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
YK78K	Fluke 73 Multimeter	£105.000	£101.950	£98.490	£123.380
AK43W	YK78 Std Calib	£132.970			£156.240
AK44X	YK78 NAMAS Calib	£152.970			£179.740

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## Fluke 75



- ★ **Autoranging**
- ★ **Manual range hold**
- ★ **Touch hold facility**
- ★ **Diode test**
- ★ **Continuity test**
- ★ **0.4% DC accuracy**
- ★ **3-year warranty**

This meter has a basic accuracy of 0.4%, and is similar to the Fluke 73, but with better resolution and featuring a current range with improved accuracy. Autoranging software instantly selects the proper range for maximum resolution. In addition to the standard AC and DC voltage ranges, the meter also measures AC and DC current, and resistance. It contains a diode tester and audible continuity tester, and has a 3200 count resolution (unlike most other digital meters with a 31 segment analogue scale. Additional features include a 'Touch Hold' facility which captures and holds readings on the display. A sleep mode allows the meter to conserve battery power should the meter be left on.

### Specification

#### DC Voltage

Range: 320mV, 3.2V, 32V, 320V, 1000V  
Sensitivity at 320mV: 0.1mV  
Accuracy:  $\pm 0.4\%$  rdg  $\pm 1$  dgt  
Input resistance: 10M $\Omega$   
Overload protection: 1000V, 500V on 320mV range

#### AC Voltage

Range: 3.2V, 32V, 320V, 750V  
Sensitivity: 1mV on 3.2V range  
Accuracy:  $\pm 2\%$  rdg  $\pm 2$  dgts  
Overload protection: 750V AC, 1000V AC

#### DC Current

Range: 32mA, 320mA, 10A  
Accuracy:  $\pm 1.5\%$  rdg  $\pm 2$  dgts  
Sensitivity: 0.01mA  
Overload protection: 10A continuous, 20A for 30 secs. max.

#### AC Current

Range: 32mA, 320mA, 10A  
Accuracy:  $\pm 2.5\%$  rdg  $\pm 2$  dgts  
Frequency: 45Hz to 1kHz  
Sensitivity: 0.01mA  
Overload protection: 10A continuous, 20A for 30 secs. max.

#### Resistance

Range: 320 $\Omega$ , 3200 $\Omega$ , 32k $\Omega$ , 320k $\Omega$ , 3.2M $\Omega$ , 32M $\Omega$   
Sensitivity: 0.1 $\Omega$   
Accuracy:  $\pm 0.5\%$  rdg  $\pm 1$  dgt  
 $\pm 0.5\%$  rdg  $\pm 2$  dgts on 320 $\Omega$  range  $\pm 2\%$  rdg  $\pm 1$  dgt on 32M $\Omega$  range

#### Dimensions:

Weight: 240g  
Supplied with battery (replacement type PP3), instruction manual and a pair of test leads.

#### Retail Unit Price each (inc. VAT).

Order Code	Type 4410	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
YJ88V 1	Fluke 75 Multimeter	£145.000	£140.950	£136.950	£170.380
AK45Y 1	YJ88 Std Calib	£170.400			£200.230
AK46A 1	YJ88 NAMAS Calib	£190.400			£223.730

## Fluke 77



- ★ **Autoranging**
- ★ **Manual range hold**
- ★ **Touch hold**
- ★ **Diode test**
- ★ **Continuity test**
- ★ **0.3% DC accuracy**
- ★ **3-year warranty**

This meter has the same resolution as the Fluke 75 and includes the same facilities, but has a better DC voltage accuracy ( $\pm 0.3\%$  rdg  $\pm 1$  dgt, and  $\pm 0.4\%$  rdg  $\pm 1$  dgt on 1000V range). A tough protective holster is included for impact protection during everyday use. This item features a stand so that the meter can be angled for better visibility if required. Features of the meter include a basic accuracy of 0.4%, autoranging software, a 3200 count resolution and a 31 segment analogue scale. In addition a 'sleep' mode allows the meter to conserve battery power if left on and unused for some time. When taking readings the digital display is updated 2 1/2 times every second while the analogue display is updated 25 times a second. A 'Touch Hold' facility enables readings to be captured and held on the display. The LCD panel also indicates overload, low battery and 'sleep' conditions. Supplied with test leads, battery (replacement type PP3), instruction manual and protective holster.

#### Retail Unit Price each (inc. VAT).

Order Code	Type 4430	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
YJ89W 1	Fluke 77 Multimeter	£169.000	£163.950	£159.950	£198.580
AK47B 2	YJ89 Std Calib	£194.230			£228.230
AK48C 2	YJ89 NAMAS Calib	£214.230			£251.730

## Fluke 79

- ★ **Autoranging**
- ★ **Manual range hold**
- ★ **0.3% DC accuracy**
- ★ **Diode test**
- ★ **Continuity test**
- ★ **Capacitance to 10,000 $\mu$ F in 6 ranges**
- ★ **Frequency to 1MHz**
- ★ **Touch hold**

The most comprehensive meter of the Fluke series II range, the Fluke 79 has a better accuracy than most others in its class and offers more facilities. In addition a tough protective holster is included for impact protection during everyday use. This item features a stand so that the meter can be angled for better visibility if required.

In addition to several AC/DC voltage/current ranges and resistance measurement (including a 40 $\Omega$  range), this meter also includes a frequency counter, capacitance meter, diode and continuity testers. Other attributes of the meter include a basic accuracy of 0.3%, autoranging software, a 4000 count resolution, and a 63 segment analogue scale. A 'Touch Hold' facility enables readings to be captured and held on the display. Supplied complete



with test leads, battery, instruction manual and protective holster.

### Specification

#### DC Voltage

Range: 40mV, 400mV, 4V, 40V, 400V, 1000V  
Sensitivity: 0.01mV at 400mV  
Accuracy:  $\pm 0.3\%$  rdg  $\pm 1$  dgt  $\pm 0.3\%$  rdg  $\pm 5$  dgts on 40mV range  
Input resistance: 10M $\Omega$   
Overload protection: 1000V, 750V  
NMRR (50Hz to 60Hz): >60dB  
CMRR (50Hz to 60Hz): >120dB

#### AC Voltage

Range: 400mV, 4V, 40V, 400V, 750V  
Accuracy:  $\pm 1\%$  rdg  $\pm 2$  dgts  $\pm 1.5\%$  rdg  $\pm 4$  dgts on 400mV  $\pm 1.5\%$  rdg  $\pm 2$  dgts on 4V  
Overload protection: 750V AC, 1000V DC

#### DC Current

Range: 4mA, 40mA, 4A, 10A  
Accuracy:  $\pm 0.5\%$  rdg  $\pm 2$  dgts on 4mA and 4A ranges  $\pm 0.5\%$  rdg  $\pm 5$  dgts on 40mA and 10A ranges  
Sensitivity: 0.001mA on 4mA range  
Overload protection: 10A continuous, 20A for 30 secs. max.

#### AC Current

Range: 4mA, 40mA, 4A, 10A  
Accuracy:  $\pm 1.5\%$  rdg  $\pm 2$  dgt on 40mA and 10A ranges  $\pm 1.5\%$  rdg  $\pm 4$  dgts on 4mA and 4A ranges  
Frequency: 45Hz to 1kHz  
Sensitivity: 0.001mA  
Overload protection: 10A continuous, 20A for 30 secs. max.

#### Resistance

Range: 400 $\Omega$ , 4k $\Omega$ , 40k $\Omega$ , 400k $\Omega$ , 4M $\Omega$ , 40M $\Omega$   
Sensitivity: 0.1 $\Omega$   
Accuracy:  $\pm 0.4\%$  rdg  $\pm 1$  dgt  $\pm 0.4\%$  rdg  $\pm 2$  dgts on 400 $\Omega$  range  $\pm 1\%$  rdg  $\pm 3$  dgt on 40M $\Omega$  range

#### General

Dimensions: 28 x 75 x 166mm  
Weight: 240g

#### Retail Unit Price each (inc. VAT).

Order Code	Type 4421	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
ZC66W 1	Fluke 79 Multimeter	£190.000	£184.950	£179.950	£223.250
AK49D 1	ZC66 Std Calib	£218.930			£257.240
AK50E 1	ZC66 NAMAS Calib	£238.920			£280.740

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## Fluke 87 True RMS Meter



The Fluke 87 True RMS Multimeter is a handheld, 400-count instrument designed to be used in the field, laboratory or at home and combines the precision of a digital meter with the speed and versatility of a high resolution analogue display. It can measure frequencies between 0.5Hz and 200KHz with up to 0.01Hz resolution and has an impressive range of extra features, including a MIN MAX recording mode that 'remembers' the lowest and highest readings over a period as long as 36 hours, a peak MIN MAX mode that captures changes as brief as 1 millisecond, an alternate Frequency Counter to measure duty cycle and display it as a value between 0.0 and 99.9%, an Input Alert that sounds the bleeper if the test leads are plugged into the wrong terminals, REL mode and a Touch Hold that allows you to keep your eyes fixed on the probes when taking measurements in difficult or hazardous circumstances. The display has a 4 1/2-digit display mode for a ten times increase in resolution and contains a back-light. The DMM's rotary selector switch allows the selection of testing for standard AC voltage, millivolts in the 400mV range, resistance, conductance, capacitance or continuity, diode testing, milliamperes or amperes and microamps. Push buttons control the back-light, choice of AC/DC, resistance or capacitance, minimum, maximum and average recording, manual ranging, continuity bleeper, relative readings, frequency counter mode and duty cycle.

The Fluke 87 is supplied with test leads, a rugged snap-on holster with flexible stand, a comprehensive user manual and quick reference guide.

### Specification

#### AC Voltage Range

Range	Resolution	Accuracy at 50/60Hz
400mV	0.1mV	±0.7% + 4 digits
4V	0.001V	±0.7% + 2 digits
40V	0.01V	±0.7% + 2 digits
400V	0.1V	±0.7% + 2 digits
1000V	1V	±0.7% + 2 digits

#### DC Voltage Range

Range	Resolution	Accuracy at 50/60Hz
4V	0.001V	±0.1% + 1 digit
40V	0.01V	±0.1% + 1 digit
400V	0.1V	±0.1% + 1 digit
1000V	1V	±0.1% + 1 digit

Overload protection: 1000V rms

#### Display

Digital: 4000 counts, updates 4/sec  
19,999 counts (4 1/2-digit mode), updates 1/sec

Analog: 4 x 32 segments, updates 40/sec

Frequency: 19,999 counts, updates 3/sec @ >10Hz

Back-light: on for 68 seconds when selected

Temperature: -20°C to 55°C (operating)

-40°C to 60°C (storage)

Dimensions: 31 x 86 x 186mm (52 x 98 x 210mm in holster)

Weight: 355g (624g with holster and stand)

Retail Unit Price each (inc. VAT).

Order Code	Type 8655	Price each exc. VAT	inc. VAT each
CN67X 1	Fluke RMS Multimeter	£325.00	£331.950
		£307.950	£314.880

## FLUKE CLAMP METERS

### Fluke 30 Clamp Meter



Continuing the Fluke tradition for reliability and ingenuity, the Fluke 30 is the general purpose clamp meter that you really can take just about anywhere. In fact, it's so rugged you can drop it from a 2 metre ladder and it will still deliver reliable measurements day in and day out.

With the Fluke 30 you can single-handedly measure ac current, ac volts, ohms and continuity and have your results displayed on an easy-to-read digital display. Special features include a 'Display Hold' button that holds the last reading on your display, a 6 position manual ranging dial (200A, 400A, 200Ω, 200V, 600V and off), and the tough, well insulated clamp jaws which will accept one 300mm<sup>2</sup> cable or two 150mm<sup>2</sup> cables. With all those capabilities in one reliable, high precision self-contained package, it's the only troubleshooting tool you need for most jobs. The Fluke 30 meets UL, CSA and TUV certification standards and conforms to IEC 1010 safety standards. If you are looking for a rugged, general purpose, professional quality clamp meter at a basic price, this is the one to choose. The Fluke 30 is supplied with Fluke Hard Point TL75 test leads, a soft vinyl zip-fastened carry case and a user's manual.

### Specification

#### AC Current 50/60Hz

Range	Resolution	Accuracy	Overload protection
400A	1A	1.3% of reading + 3 digits	600A continuous
200	0.1A	1.4% of reading + 0 digits	600V rms continuous
	0.1A	1.8% of reading + 8 digits	

#### AC Volts 50/60Hz

Range	Accuracy	Overload protection
200V/600V	1.2% of reading + 3 digits	660V rms continuous

#### Ohms

Range	Accuracy	Overload protection
200Ω	1.5% of reading + 2 digits	660V rms continuous

#### Continuity:

Beeper under 25Ω

Maximum voltage between any terminal and earth ground: 600V rms

Humidity: Up to 30°C 95% RH

Up to 40°C 75% RH

Up to 50°C 45% RH

Battery type/life: 9V carbon zinc 200 hours continuous, Alkaline 300 hours continuous.

Automatic low battery indicator.

Dimensions: 213 x 45 x 93mm

Retail Unit Price each (inc. VAT).

Order Code	Type 9048	Price each exc. VAT	inc. VAT each
CN70M 1	Fluke 30 Clamp Meter	£93.000	£96.950
		£87.950	£91.880

## Fluke 32 True RMS Clamp Meter



For testing circuits with non-linear loads such as computers and adjustable speed drives, this true rms clamp meter is the ideal solution. The Model 32 measures true rms AC current to 400A with a crest factor of 3, and to 600A with a crest factor of 2. You can single-handedly measure AC current, AC volts, ohms and continuity and have your results displayed on an easy-to-read digital display. Special features include a 'Display Hold' button that holds the last reading on your display, a 6 position manual ranging dial (200A, 600A, 200Ω, 200V, 600V and off), and the tough, well insulated clamp jaws which will accept one 750 MCM cable or 350 MCM cable, up to 38mm in diameter. With all those capabilities in one reliable, high precision self-contained package, it's the only troubleshooting tool you need for most jobs.

The Fluke 32 meets UL, CSA and TUV certification standards and conforms to IEC 1010 Cat III safety standards.

If you are looking for a rugged, general purpose, professional quality clamp meter at a basic price, this is the one to choose. The Fluke 32 is supplied with Fluke Hard Point TL75 test leads, a soft vinyl zip-fastened carry case and a user's manual.

### Specification

#### AC Current 50/60Hz

Range	Resolution	Accuracy	Overload protection
600A	1A	2.5% of reading + 3 digits	600A continuous
400A	1A	1.3% of reading + 3 digits	600V rms continuous
200	0.1A	1.4% of reading + 0 digits	
	0.1A	1.8% of reading + 8 digits	

#### AC Volts 50/60Hz

Range	Accuracy	Overload protection
200V/600V	1.2% of reading + 3 digits	660V rms continuous

#### Ohms

Range	Accuracy	Overload protection
200Ω	1.5% of reading + 2 digits	660V rms continuous

#### Continuity:

Beeper under 25Ω

Maximum voltage between any terminal and earth ground: 600V rms

Humidity: Up to 30°C 95% RH

Up to 40°C 75% RH

Up to 50°C 45% RH

Battery type/life: 9V alkaline 200 hours continuous, Alkaline 300 hours continuous. Automatic low battery indicator.

Dimensions: 213 x 45 x 93mm.

Weight: 450gms

Retail Unit Price each (inc. VAT).

Order Code	Type 1348	Price each exc. VAT	inc. VAT each
G557M	Fluke 32 Clamp Meter	£126.000	£130.050
		£121.000	£125.050

## ACCESSORIES

### Infrared Temperature Probe



The Fluke 80T-IR Infrared Temperature Probe is a non-contact temperature measurement accessory for use with a digital multimeter (DMM). Simply plug its red connector into the V dc input jack, its black connector into the common or ground input jack on your DMM, point the tip of the probe at the object to be measured and after 1 second its temperature will appear on your DMM's display. The probe can be adjusted to display its readings in centigrade or fahrenheit at the flick of a switch.

How does it work? All objects emit invisible infrared energy in proportion to their temperature and their ability to emit IR energy (this ability is called 'emissivity' and ranges from 0.10 for a very reflective surface to 1.00 for a black body). The probe senses this energy and calculates a temperature based upon the amount of IR energy it receives and a factory set emissivity value of 0.95, which will cover 90% of typical applications. To extend battery life the probe will automatically shift to SLEEP mode after 10 minutes of use.

#### Specification

Temperature range: -18 to 260°C (0 to 500°F)  
 Ambient operating range: 0 to 63°C (32 to 145°F)  
 Accuracy (for 1 year): ±3% of reading or ±3°C, whichever is greater  
 Temperature Coefficient: ±0.2% of reading or ±0.2°C, whichever is greater  
 Response time: 1 second  
 Spectral response: 8 to 14 microns nominal  
 Emissivity: preset at 0.95  
 Power: 9V PP3 type battery (supplied)  
 Dimensions: 180 x 30 x 50mm

Retail Unit Price each (inc. VAT).

Order Code	Type 3910	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CN68Y 1	Fluke TIR Temp Probe	£173.600	£169.830	£166.770	£203.990

### TL75SR Right Angled Test Leads



Red and black replacement leads for the Fluke Mk I and Mk II multimeters. The probes are connected to a flexible insulated cable and a right angled shrouded plug for safety purposes.

Retail Unit Price each (inc. VAT).

Order Code	Type 4422	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
ZC67X	R/A Test Lead TL75SR	£11.000	£10.490	£10.390	£12.930

### Holster

Fluke

A shock-absorbing holster for all series 70 meters to protect against rough handling. The holster incorporates a tilt stand, and will hold or store test leads, and has a belt hook for hands-free carrying.



Retail Unit Price each (inc. VAT).

Order Code	Type 4413	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
YK61C	Fluke Meter Holster	£18.000	£17.490	£16.950	£21.150

### Soft Carrying Case

Fluke



A soft vinyl case for Fluke 20, 50 and 70 series meters (without holsters), with removable belt loop.

Retail Unit Price each (inc. VAT).

Order Code	Type 4424	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
YK79L	Fluke Meter Case	£18.000	£17.490	£16.950	£21.150

### Fluke 7x Replacement Fuse

Fluke

The manufacturers replacement fuse for the Fluke 70, 73, 75, 77 and 79 digital multimeters. Fuse rating is 15A, 600V AC (max).

Retail Unit Price each (inc. VAT).

Order Code	Type 5817	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
UL73Q	Fluke 70V Fuse	£6.800	£6.100	£5.750	£7.990

## METRIX

### ASYCII SERIES

#### ASYCII Series Multimeters

Metrix

The Metrix ASYCII (Advanced SafeY Concept) multimeters offer a performance and safety that is second-to-none, and set a new standard in accuracy for hand-held multimeters. These multimeters will display up to 50,000 counts (5000 on capacitance), and deliver true rms performance for applications where accuracy is needed for non-sinusoidal wave shapes. Designed for the most demanding situations, these multimeters have advanced safety features. Separate battery and fuse compartments isolate the electronics from outside contaminants- no tools are needed to replace fuses or battery, and there is no need to disturb the main case seal. The unique test lead retaining system keeps leads plugged-in, even when accidentally pulled or caught. 600V fuses, metal oxide varistors voltage ranges that will withstand 1100V peaks, and sealed, waterproof cases make these multimeters amongst the best available, at any price. Each multimeter carries a three-year guarantee and is provided with a Declaration of Conformity and test report for traceability to national and international standards. Re-calibration is digital via a serial interface, and does not require the meter seals to be disturbed.

#### General Specification

Counts: 50,000  
 Bar graph segments: 34  
 Digit height: 14mm  
 Update rate digits: 2 per sec  
 bargraph: 20 per sec  
 AC conversion: true rms, AC or AC+DC (selectable); crest factor 6 IEC1010-1, class 2, degree pollution 2, 600V CAT III, and 1000V CAT II  
 Ruggedness: IP 677 and ML-T-28800  
 EMC: emission EN55011, class B; susceptibility IEC 801, level 3  
 Power: 9V 6LF22 battery  
 Auto switch-off: after 30mins  
 Battery life: 500hrs  
 Dimensions: 40 x 82 x 189mm  
 Weight: 40g

#### Continuity Indicator

Beeps below 15Ω with a response time of 1mS

#### Capacitance

5000 counts with resolution of 10pF and accuracy of 1%+2.  
 Ranges: 50nF, 500nF, 5μF, 50μF, 500μF, 5mF, 50mF

#### Diode Test

Measures forward drop of diode in 0 to 1.999V with a current of 1mA±20%.

#### Frequency Counter

Bandwidth: 0.6Hz to 500kHz  
 Accuracy: 0.03%+1  
 Sensitivity: 2% to 5% of voltage range  
 Duty cycle: %+ and %-



RS12750

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## Model MX53

Metrix



The entry level multimeter offering excellent specification and accuracy

### Specification

#### AC & DC Voltage

Range	Resolution	I/P impedance
500mV	10µV	100µV Sel*/100pF
5V	100µV	11MΩ/100pF
50V	1mV	10MΩ/100pF
500V	10mV	10MΩ/100pF
750V AC	---	10MΩ/100pF
1000V DC	100mV	---

\* = selectable 10MΩ or 1GΩ

#### DC Voltage Accuracy

Range	Accuracy
500mV	0.1% + 2
5V	0.1% + 2
50V	0.1% + 2
500V	0.2% + 2
1000V	0.3% + 2

#### Voltage Accuracy True rms (>10% of range)

Range	500mV range AC+DC	Other ranges AC or AC+DC
DC to 1kHz	1% + 3	1% + 3
10kHz	4% + 3	1% + 3
20kHz	4% + 3	2% + 3
30kHz	---	3% + 3

#### AC & DC Amps

Range	Resolution	Max voltage drop
5mA	1µA	700mV
50mA	10µA	700mV
500mA	100µA	1.5V
10A	10mA	500mV

#### DC Amps Accuracy

all ranges: 0.2% + 2

#### Amps Accuracy True rms (AC or AC+DC)

Range	5mA	50mA	500mA	10A
DC-1kHz	1%+3	1%+3	1%+3	1%+7
20kHz	2%+3	2%+3	---	---
30kHz	3%+3	3%+3	---	---

#### Resistance

Range	Resolution	Test current	Accuracy
500Ω	10mΩ	1mA	0.1%+3
5kΩ	100mΩ	100µA	0.1%+3
50kΩ	1Ω	10µA	0.1%+3
500kΩ	10Ω	1µA	0.1%+3
5MΩ	100Ω	100nA	0.1%+3
50MΩ	1kΩ	10nA	0.1%+3

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS58N	MX53 Multimeter	£154.000 £187.400 £180.000	£227.950

See Stock Code Index For More Price Breaks

## Model MX54

Metrix



The Metrix MX54 combines superior performance with safety, reliability and environmental integrity. The 50,000 counts capability, high accuracy and resolution, mains disturbance indication and power measurements are complemented by good transient protection and a wide temperature range.

### Specification

#### AC & DC Voltage

Range	Resolution	I/P impedance
500mV	10µV	10MΩ/1GΩ*/100pF
5V	100µV	11MΩ/100pF
50V	1mV	10MΩ/100pF
500V	10mV	10MΩ/100pF
750V AC	100mV	10MΩ/100pF
1000V DC	100mV	10MΩ/100pF

\* = selectable

#### DC Voltage Accuracy

Range	Accuracy
500mV	0.05% + 2
5V	0.05% + 2
50V	0.05% + 2
500V	0.05% + 2
1000V	0.05% + 2

#### Voltage Accuracy True rms (>10% of range)

Range	500mV range AC+DC	Other ranges AC or AC+DC
DC to 1kHz	0.3% + 30	0.3% + 30
5kHz	1% + 50	0.5% + 50
10kHz	4% + 50	0.5% + 50
30kHz	---	1% + 50
50kHz	---	2.5% + 50
100kHz	---	6% (full scale)

#### AC & DC Amps

Range	Resolution	Max voltage drop
500µA	1µA	700mV
5mA	10µA	700mV
50mA	100µA	1.5V
10A	10mA	500mV

#### DC Amps Accuracy

all ranges: 0.2% + 2

#### Amps Accuracy True rms (AC or AC+DC)

Range	500µA	5mA/50mA	500mA	10A
DC-1kHz	0.75%+50	0.75%+50	0.75%+50	1%+50
5kHz	0.75%+50	0.75%+50	0.75%+50	---
10kHz	0.75%+50	0.75%+50	---	---
20kHz	1%+50	1%+50	---	---
30kHz	3%+50	2%+50	---	---

#### Resistance

Range	Resolution	Test current	Accuracy
500Ω	10mΩ	1mA	0.1%+3
5kΩ	100mΩ	100µA	0.1%+3
50kΩ	1Ω	10µA	0.1%+3
500kΩ	10Ω	1µA	0.1%+3
5MΩ	100Ω	100nA	0.1%+3
50MΩ	1kΩ	10nA	0.1%+3

#### dB Measurement

Converts V AC to dB, impedance selectable by user from 1Ω to 9999Ω with resolution of 0.01dB.

#### Mains Disturbance Indicator

LCD indication of transient voltage disturbance >80V. LCD indication of high frequency disturbances >25V, bandwidth 1kHz to 100kHz.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS59P	MX54 Multimeter	£247.000 £238.500 £229.000	£290.230

## BENCH MULTIMETERS

## True RMS Digital Multimeter - 3210

Black Star



- ★ True RMS
- ★ 0.1% basic accuracy
- ★ Diode test
- ★ Continuity buzzer
- ★ 7000 hours battery life

A battery powered, sensitive bench or field multimeter that will measure true rms voltages. The meter will measure down to 100µV and 200µA on both AC and DC inputs. The 3 1/2-digit 12.5mm LCD readout also indicates polarity, overrange and low battery indication. Battery life is typically over 7000 hours with alkaline batteries.

### Specification

#### DC Voltage

Range	Resolution	Accuracy
200mV	100µV	±(0.1% rdg + 1d)
2V	1mV	±(0.1% rdg + 1d)
20V	10mV	±(0.1% rdg + 1d)
200V	100mV	±(0.1% rdg + 1d)
1000V	1V	±(0.1% rdg + 1d)

Max i/p voltage: 1100V Dc or peak AC

NMRR: >60dB at 50Hz/60Hz

CMRR: >100dB at 50Hz/60Hz

#### DC Current

Range	Resolution	Accuracy
200µA	100nA	±(0.15% rdg + 1d)
2mA	1µA	±(0.15% rdg + 1d)
20mA	10µA	±(0.15% rdg + 1d)
200mA	100µA	±(0.15% rdg + 1d)
2000mA	1mA	±(0.3% rdg + 1d)
10A	10mA	±(2% rdg + 3d)

#### Overload protection

up to 2A: 2A 250V fuse

10A range: 20A max for 10 seconds

Maximum voltage burden is <200mV on all ranges.

On 10A range with currents >5A, accuracy is limited to 20 seconds after application of input.

#### AC Voltage true rms

Range	Resolution	Accuracy - 45Hz-1kHz
200mV	100µV	±(0.5% rdg + 2d)
2V	1mV	±(0.5% rdg + 2d)
20V	10mV	±(0.5% rdg + 2d)

Range	Resolution	Accuracy - 1kHz-10kHz
200mV	100µV	±(1.5% rdg + 2d)
2V	1mV	±(1.5% rdg + 2d)
20V	10mV	±(2% rdg + 2d)

Range	Resolution	Accuracy - 10kHz-20kHz
200mV	100µV	±(3% rdg + 5d)
2V	1mV	±(5% rdg + 5d)
20V	10mV	±(5% rdg + 5d)

Range	Resolution	Accuracy - 45Hz-400Hz
200V	100mV	±(0.5% rdg + 2d)
750V	1V	±(0.5% rdg + 2d)

Range	Resolution	Accuracy - 400Hz-2kHz
200V	100mV	±(3% rdg + 5d)

Range	Resolution	Accuracy - 2kHz-10kHz
200V	100mV	±(5% rdg + 5d)

Accuracy specification apply for inputs between 20% and 100% of full scale.

Maximum permissible input voltage

200mV range: 250V rms, 400V DC

all other ranges: 750V rms, 1100V peak AC

I/P impedance: 10MΩ

CMRR: >60dB at 50Hz/60Hz



Crest factor: >5 at full scale

**AC current**

Range	Resolution	Accuracy - 45Hz-1kHz
200µA	100nA	±(1% rdg + 2d)
2000µA	1µA	±(1% rdg + 2d)
20mA	10µA	±(1% rdg + 2d)
200mA	100µA	±(1% rdg + 2d)
2000mA	1mA	±(1% rdg + 2d)
10A	10mA	±(2.5% rdg + 2d)

Overload protection up to 2A: 2A 250V fuse  
 10A range: 20A max for 10 seconds  
 Crest factor: >5 at full scale  
 Voltage burden: <200mV max. all ranges

**Diode test**  
 The 20kΩ range has sufficient full-scale voltage to turn on a silicon diode at a current of approximately 100µA.

**Continuity test**  
 When the continuity tester is selected an internal audible 'BEEPER' sounds when the resistance between the test probes is less than approximately 50Ω.

**Resistance**

Range	Resolution	Accuracy
200Ω	100mΩ	±(0.15% rdg + 1d)
2kΩ	1Ω	±(0.15% rdg + 1d)
20kΩ	10Ω	±(0.15% rdg + 1d)
200kΩ	100Ω	±(0.15% rdg + 1d)
2000kΩ	1kΩ	±(0.2% rdg + 1d)
20MΩ	10kΩ	±(1% rdg + 2d)
Max. i/p voltage:		250V DC or AC rms
Full scale voltage		
200Ω/2kΩ:		<0.5V
20kΩ/200kΩ:		>0.7V
2000kΩ/20MΩ:		>0.7V
Dimensions:		79 x 219 x 240mm
Weight:		1.2kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS56L	True RMS Bench MM	£138.990	£134.000
		£130.000	£163.320

## 1906 Computing Multimeter

TTI (Thurby-Thandar)



A highly advanced autoranging DMM that combines a 5 1/2-digit display with a 1µV sensitivity and a 0.012% basic accuracy. AC ranges are true RMS, giving accurate measurements regardless of the waveform shape. With a maximum resolution of 1µV, 1mΩ, and 1nA, the DMM is ten times more sensitive than a 4 1/2-digit meter. This extra sensitivity enables accurate measurements to be made in areas previously impossible, such as thermocouple junctions, switch contact resistance or capacitor leakage. All functions, including current, feature auto or manual ranging. Resistance measurements can be made in either 2 terminal or 4 terminal mode. High impedance sensing ensures that the meter switches automatically between modes. The resistance function also provides audible continuity and diode test capabilities. The DMM can store up to six front panel set-ups in non-volatile memory. In addition to the range and function, each set-up defines the active computing or logging function along with their parameters. This facility is particularly valuable when similar tests need to be repeated at regular intervals. The DMM stores its calibration constants in permanent memory (EEPROM), which can be recalibrated in software without ever opening the case. Up to 100 readings can be stored at any required time interval from 1 reading per second up to 1 reading every 3 hours. A simple recall sequence allows the readings to be scrolled onto the display whenever required. Tedious time related measurement sequences can now be handled automatically. Every function of the instrument can be controlled using the RS-232 interface, which is compatible

with the TTIARC system. The ARC system (Addressable RS232 Chain) enable up to 32 instruments to be 'daisy-chained' together, and to be individually addressed and controlled using a single RS232, port of a PC. The 1906 can be purchased with a GPIB interface as an option. When installed, a rear panel switch allows the user to choose between RS232 or GPIB control. The GPIB interface fully conforms with both IEEE-488.1 and IEEE-488.2.

**Specification**

**DC Volts**

Range	Accuracy	Input Impedance
200mV	0-0.17% + 3 digit	10MΩ or >1GΩ (Hi Z mode)
2V	0-0.12% + 3 digit	10MΩ or >1GΩ (Hi Z mode)
20V	0-0.19% + 3 digit	10MΩ
200V	0-0.19% + 3 digit	10MΩ
1000V	0-0.19% + 3 digit	10MΩ

Maximum input is 1kV DC or AC peak, any range  
**AC Volts (true RMS)**  
 Maximum input 750V RMS, 1kV peak, any range  
**Amps DC and AC (True RMS)**

**Accuracy**

Range	45Hz-5kHz	5kHz-10kHz	10kHz-20kHz	20kHz-50kHz
200mV	0.2% + 150d	0.2% + 250d	3% + 500d	—
2V	0.2% + 150d	0.2% + 150d	0.5% + 300d	3% + 1500d
20V	0.2% + 150d	0.2% + 250d	0.5% + 300d	2% + 1000d
200V	0.2% + 150d	0.2% + 250d	0.5% + 500d	—
750V	0.2% + 150d	—	—	—

Up to 200mA the maximum input is 300V 1A fuse protected. For the 10A range the maximum input is 300V 10A fuse protected.

**Resistance**

Range	Accuracy	Max. measuring current
200Ω	0-0.025% + 4dgt	1.5mA
2kΩ	0-0.19% + 3dgt	1.5mA
20kΩ	0-0.19% + 3dgt	0.4mA
200kΩ	0-0.19% + 3dgt	40µA
2MΩ	0-0.22% + 3dgt	4µA
20MΩ	0-0.7% + 3dgt	400nA

Maximum open circuit voltage 3-5V. Audible continuity check available on all ranges.

**Computing Functions**  
 Null: Operates over full range; values can be stored for every function  
 Digital filter: 10 options, including optimised default values for each range and function  
 Touch & hold: Reading is held when stable  
 % DEV: Displays % deviation from entered reference value  
 dB: Displays measurement in dB relative to 1V, 1mA, 1kΩ or user entered value, or in dBm  
 Ax+B: Linear scaling of results, with offset  
 Limits: Reading displayed with 'H', 'L' or 'P' (pass) with respect to user-defined high and low limits  
 Min/Max: Minimum and maximum reading stored  
 Data logger: Manual or automatic storage of 100 measurements, 0.33s to 9999s

**Display**  
 Display type: 13mm LED, 8-digit  
 Scale length: Selectable 5 1/2-digit or 4 1/2-digit  
 Reading rate: 3 readings/s (5 1/2-digit)  
 10 readings/s (4 1/2-digit)  
 Over range: Displays 'OL' if input too great for range  
 Overflow: Displays 'OFLO' if calculated result overflows display  
 Annunciators: LED annunciator for range, function and program modes  
 Power requirements: 110/120V or 220/240V AC 50/60Hz, 25VA  
 Dimensions: 260 x 235 x 88mm, excluding handle/feet  
 Weight: 2.2kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DE95D	4 Comp DMM 1906 RS232	£399.310	£392.700
AK61R	DE95 Std Calib	£449.310	£527.940
AK62S	DE95 NAMAS Calib	£464.300	£545.560
DM36P	5 Comp DMM 1906 GPIB	£499.140	£486.540
AK63T	DM36 Std Calib	£549.140	£645.240
AK64U	DM36 NAMAS Calib	£564.130	£662.860

## ACCESSORIES

### PROBES & LEADS

#### Test Leads

A set of spare test leads for our Academy and White Gold ranges of digital multimeters.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW92A	Test Leads	£2.970	£2.390
		£1.790	£3.490

#### 2mm Stackable Plugs

Multi-Contact

A touch-proof 2mm stackable plug with gold plated brass centre pins, and beryllium copper spring contacts rated at 600V/10A. Will accept cable up to 0.5mm<sup>2</sup>. Available in black (MF21X) or red (MF22Y).

- ★ Touch-proof
- ★ Rated at 600V/10A
- ★ Stackable



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MF62S	2mm Stackable Black	£1.140	£1.090
MF63T	2mm Stackable Red	£1.140	£1.090

#### 2mm Stackable Hollow Pin Plug

Multi-Contact



A laboratory standard 2mm stackable plug with gold plated hard-drawn copper alloy contacts, rated at 600V/10A.

- ★ Hollow pin
- ★ Rated at 600V/10A
- ★ Stackable

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MF64U	2mm+Insulator Red	£0.800	£0.760
MF65V	2mm+Insulator black	£0.800	£0.760

## 2mm Safety Socket

Multi-Contact



A fully insulated safety socket for 2mm safety plugs and any similar 2mm spring-loaded plug. The socket is designed for screw, or push-fit mounting in to a suitable pre-drilled plastic or metal panel. The socket is gold-plated copper, and the 1.9mm dia. connecting pin is gold-plated brass.

★ Rated at 600V/10A

★ Easy panel mounting

★ Gold-plated connections

A spacing sleeve is supplied for panels below 5mm thickness which allows the socket to be either proud or flush mounted. For panels 5 to 9mm thickness the spacing sleeve is not used.

Type of mounting	Panel thickness mm	Hole dia. mm
Push fit	1.5 min	8.3
Flush - no spacer	5 to 9	8.6
Flush with spacer	5 max	8.6
Proud with spacer	5 max	8.2

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MF66W	2mm Safety Sckt Black	£1.200	£1.140	£1.080	£1.410
MF67X	2mm Safety Sckt Red	£1.200	£1.140	£1.080	£1.410

## Test Probe Leads

Moulded 2mm



A red and black test lead pair. Terminated in 2mm plugs to suit many multimeters etc. Other end terminated in heavy duty moulded PVC test prods. Heavy duty extra-flexible PVC covered wire 750mm long.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
HF32K	Moulded Test Probe	£1.860	£1.220	£0.990	£2.190

## Moulded 4mm



A red and black test lead pair terminated in moulded 4mm plugs. The other end is terminated in heavy duty moulded PVC test prods. Heavy duty extra-flexible PVC covered wire 850mm long.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
HF33L	4mm Test Probe	£2.630	£1.990	£1.650	£3.100

## Test Lead Kit



A universal test lead kit comprising one red and one black extra-flexible lead 1m long, and terminated in either a 4mm plug at one end and a test prod at the other, or any combination of terminators; the test prod having a 27mm long tip in a 86mm long x 9mm diameter handle. The 4mm plugs can be plugged into one of three alternative terminations comprising 4mm (minimum) spade terminals, 38mm long crocodile clips (maximum gape 8mm), or 20mm long x 2mm diameter needle point plugs, all red/black colour matched pairs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FK21X	4mm Test Lead Kit	£3.900	£2.990	£2.490	£4.590

## Banana Plug Probes



Test leads for Precision Gold series multimeters M810, M195 and M920. Alligator clips for use with these probes are also available.

## Shroud Plug/Probes



Test leads for multimeters M105, M125, M135, M205, M225 and M285. Alligator clips for use with these probes are shown below.

## Alligator Clips



Alligator clips that screw onto the probes of the M105, M108, M125, M135, M205, M225, M285, M300A, M400D, M775, M779, M810, M874, M920,

M990, M1300K, M2020S, M25001, M3500TC, M4510, M5010, M5010EC, M5020A, M5050DB, M5050E, and M6000. Sold as a red and black pair.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KW07H	Banana Plug Probes	£2.750	£2.320	£1.990	£3.240
KW06J	Shroud Plug Probes	£3.710	£2.550	£2.250	£4.360
JG13P	Alligator Clip	£1.690	£1.290	£1.090	£1.990

## 4mm Uninsulated Plug

Multi-Contact



A 4mm plug made from gold plated brass with copper alloy spring contacts for uniform contact pressure and low resistance. Connection is via M4 threaded stud.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MF72P	4mm plug SA403	£0.944	£0.903	£0.855	£1.110

## 4mm Stackable Hollow Pin Plug

Multi-Contact



A 4mm stackable hollow pin plug with gold-plated hard-drawn contacts rated at 19A. The plug is very easy to assemble, and is available in red (MF68Y) or black (MF69A).

★ Contacts rated at 19A

★ Gold-plated contacts

★ Easy to assemble

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MF68Y	4mm+Insulator Red	£1.080	£1.040	£0.990	£1.290
MF69A	4mm+Insulator Black	£1.090	£1.040	£0.990	£1.290

## 4mm Retractable Plug

Multi-Contact



A 4mm plug with nickel plated contacts and a protection guard to prevent accidental contact to the 'live' part. The transparent guard sleeve is spring-loaded and retracts when the plug is inserted in to a socket. Rated at 500V/32A with a contact resistance of 0.8Ω. Available in red (MF70M), and black (MF71N).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MF70M	5mm Retract Red	£2.840	£2.700	£2.560	£3.340
MF71N	4mm Retract Black	£2.840	£2.700	£2.560	£3.340

## Plug/Socket Adaptor

Multi-Contact



A range of plug/socket adaptors with either a 2mm plug and 4mm socket, or a 4mm plug and 2mm socket. Contacts made from gold-plated machined brass, and rated at 25A. Each type available in red or black.

Type	2mm plug with 4mm socket	4mm plug with 2mm socket	Order Code
Colour	Red	Black	MF73Q
Contact Resistance	0.6mΩ	0.6mΩ	MF74R
Colour	Red	Black	MF75S
Contact Resistance	<1.0mΩ	<1.0mΩ	MF76H

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MF73Q	4mm Plug-2mm Skt Red	£1.790	£1.710	£1.620	£2.110
MF74R	4mm Plug-2mm Bk	£1.790	£1.710	£1.620	£2.110
MF75S	2mm Plug-4mm Skt Red	£1.290	£1.230	£1.170	£1.520
MF76H	2mm plug 4mm Skt Bk	£1.290	£1.230	£1.170	£1.520

## Insulated Right-Angled Plug/Socket Adaptor

Multi-Contact



An insulated right-angled adaptor with a 4mm plug and 2mm socket, ideal for connecting a 2mm system to a 4mm shrouded system such as multimeters and test equipment. Contacts are gold-plated machined brass, and rated at 600V/25A. Available in black (MF77J) or red (MF78K).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MF77J	4mm Plug 2mm Skt Red	£2.290	£2.180	£2.070	£2.700
MF78K	4mm Plug 2mm Skt Bk	£2.290	£2.180	£2.070	£2.700

## Safety Right-Angled Plug/Socket Adaptor

Multi-Contact



This 1000V/25A adaptor has a 4mm plug and 4mm socket, configured at right-angles in a fully insulated body. The adaptor is designed to allow 90° entry to safety sockets where there is restricted access. Available in black (MF79L) or red (MF80B).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MF79L	4mm-4mm R/A Black	£2.990	£2.850	£2.700	£3.520
MF80B	4mm-4mm R/A Red	£3.140	£2.980	£2.820	£3.690

## Miniature Test Clip

Multi-Contact



A miniature test clip with revolving grapper and spring-loaded 1mm dia. socket, suitable for 1mm test leads. Available in red (MF81C), or black (MG02C).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MF81C	Min Test Clip Red	£7.240	£6.880	£6.520	£8.510
MG02C	Min Test Clip Black	£7.240	£6.880	£6.520	£8.510

## 1m Safety Test Lead with 4mm Shrouded Plug

Multi-Contact



A highly flexible safety 1 metre connecting lead with a 4mm banana plug at either end. The lead is insulated with PVC. Rated current: 16A. Rated voltage: 1000V. Available in red and black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DN18U	Safety Lead 1m Red	£2.850			£3.360
DN19V	Safety Lead 1m Black	£2.850			£3.360

## High-Current 4mm Safety Test Lead

Multi-Contact



An updated version of the above, with a rated current of 32A. Rated voltage: 1000V. Available in red and black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CN73Q	In-Line Safe Lead Rd	£5.020			£5.910
CN74R	In-Line Safe Lead Bk	£5.020			£5.910

## 1m 20A Safety Test Lead with 4mm Shrouded Plug/Socket

Multi-Contact



A highly flexible safety 1 metre connecting lead with a 4mm banana plug (with integrated 4mm socket) at either end. The integral socket means that the lead can be 'stacked' – in other words, multiple connections can be made to a piece of equipment. The plug/socket conductor is formed from gold-plated brass for low contact resistance and long life, and the lead is insulated with high-temperature PVC. Rated current: 20A. Rated voltage: 1000V. Available in red and black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DN16S	20A Stackable Lead Rd	£3.890			£4.580
DN17T	20A Stackable Lead Bk	£3.890			£4.580

## 1m 32A Safety Test Lead with 4mm Shrouded Plug/Socket

Multi-Contact



A stackable version of the above. Rated current: 32A. Rated voltage: 1000V. Contact resistance: 0-3mΩ. Available in red and black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CN71N	Safety Lead 1m Red	£5.940			£6.980
CN72P	Safety Lead 1m Black	£5.940			£6.980

## Probe Clip Sets



Sets of the sub-miniature and miniature probe clips described above previously. Each set contains twelve probe clips, two of each colour, black, blue, green, red, white and yellow. Each colour pair is connected together by a wire of the same colour such that the set contains six different colour test leads. Leads are 500mm long tip to tip.

Retail Unit Price each (inc. VAT).

Order Code	Type 5661	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
FA96E	S-Min Probe Clip Set	£9.700	£6.990	£5.490	£11.400
FE22Y	Min Probe Clip Set	£10.190	£7.870	£5.990	£11.980

## Probe to Croc Clip Leads



A red and black pair of test leads with a 57mm probe clip at one end and a 35mm crocodile clip at the other. Each lead is 1m long tip to tip. Crocodile clips have a vinyl sleeve 42mm long red and black to match wire and clip. Sold only in pairs.

Retail Unit Price each (inc. VAT).

Order Code	Type 5667	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
FE23A	Probe/Croc Clip Lead	£3.220	£2.790	£1.990	£3.790

## Miniature Probe Clips



Ideally suited for use with our extra flexible wire, these probe clips feature a spring-loaded wire hooked probe which retracts into the probe moulding. Two types are available. The 43mm type is available in black, blue, green, red, white or yellow and the 57mm type in black, green or red. Probe material is phosphor bronze plate 0.3mm thick on small and 0.4mm thick on larger type. Housing is nylon. Sold individually.

Dielectric strength: 2kV for 1 minute  
Insulation resistance: >100MΩ at 50V DC

### Dimensions

Length	43mm	57mm	
Cap diameter	8mm	13mm	
Cap stroke		3.5mm	4mm
Probe tip		2 x 3mm	2.8 x 4.6mm
Wire entry hole	2.2mm	3mm	
Probe length	24mm	40mm	

Retail Unit Price each (inc. VAT).

Order Code	Type 5660	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FE16S	Sub-Min Probe Black	£0.510	£0.357	£0.296	£0.600
FE17T	Sub-Min Probe Blue	£0.510	£0.357	£0.296	£0.600
FE18U	Sub-Min Probe Green	£0.510	£0.357	£0.296	£0.600
FE19V	Sub-Min Probe Red	£0.510	£0.357	£0.296	£0.600
FE20W	Sub-Min Probe White	£0.510	£0.357	£0.296	£0.600
FE21X	Sub-Min Probe Yellow	£0.510	£0.357	£0.296	£0.600
YX57M	Min Probe Black	£0.595	£0.428	£0.388	£0.700
YX59P	Min Probe Green	£0.595	£0.428	£0.388	£0.700
YX60Q	Min Probe Red	£0.595	£0.428	£0.388	£0.700

## Probe Clip



Probe with a positive spring-loaded hook grip for use in confined spaces. Fully insulated, with acetel mouldings and gold-plated contact. Screw or soldered connections. One red and one black. Supplied in pairs only. Overall length 83mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5662	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
HF21X	Probe Clips	£2.110	£1.370	£0.990	£2.490

## Hook Clip for IC Pins

Multi-Contact



This clip, which has a solder terminal for wires of 0.5mm total diameter (insulation diameter 2mm), is ideal for monitoring signals from IC pins, wires, terminals and test points. The spring-loaded hook is made from copper-beryllium. The low weight of 1.3g allows contact even with fragile components. Voltage rating: 30V AC (60V DC). Available in red or black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type 10291	Price each exc. VAT		inc. VAT each
		1+	1+	
DN20W	IC Test Clip Red	£1.260		£1.490
DN21X	IC Test Clip Black	£1.260		£1.490

## Hook Grabber for 4mm Safety Test Leads

Multi-Contact



A fully-enclosed test probe for use with 4mm test leads. Squeezing the spring-loaded pistol-type grip reveals a pair of stainless-steel wire clamps for hooking onto the test conductor. The shaft is 50mm in length, flexible and coated in silicone rubber. Voltage rating: 1000V. Current rating: 1A. Available in red and black colours.

Retail Unit Price each (inc. VAT).

Order Code	Type 10276	Price each exc. VAT		inc. VAT each
		1+	1+	
DN30H	Flexible Probe Red	£5.090		£5.990
DN31J	Flexible Probe Black	£5.090		£5.990

## Solderable Test Prods



A pair of test probes with plastic body, one red and one black, which can be unscrewed so that a cable can be soldered into the threaded well of the tip. Together with the required wander plugs or crocodile clips, and using preferably extra-flexible wire, it is possible to make up your own test leads to your own specifications. The prods have 27mm long tips with 100mm long x 10mm diameter handles.

Retail Unit Price each (inc. VAT).

Order Code	Type 5663	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
FK32K	Solder Test Prods	£2.110	£1.370	£0.990	£2.490

## Rigid Test Probe for Safety Test Leads

Multi-Contact



A 122mm long test probe with a refined non-slip steel tip, which is covered with a removable transparent cap for safely working on densely populated circuit boards. A 4mm socket is built into the handle for the test lead. Available in red and black colours.

### Specification

Length:	122mm
Shank:	70mm
Rated voltage:	1000V
Insulation co-ordination:	6kV/2 (only applies to handling part between guard collar and socket)
Test voltage:	3250V
Operating temperature:	-40oC to 80oC

Retail Unit Price each (inc. VAT).

Order Code	Type 10296	Price each exc. VAT		inc. VAT each
		1+	1+	
DN46A	Rigid Test Probe Red	£2.540		£2.990
DN47B	Rigid Test Probe Bk	£2.540		£2.990

ORDER BEFORE 5PM FOR SAME DAY DESPATCH

Tel: 01702 554000  
Fax: 01702 554001  
e-mail: Sales@maplin.co.uk

## GS38 Fused Test Probes

Multi-Contact



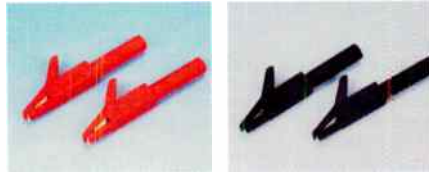
A pair of novel test probes that accommodate a fuse, and so are ideal for working on delicate or potentially-dangerous equipment. To access the fuseholder, the bayonet-fitting top section of the probe is removed from the base. The fuse section is transparent, so that the state of the fuse can be readily seen. To access the pointed test tip, the probe's handles are squeezed. Designed for use with high-power fuses of up to 20A (Isc = 100kA). Available in red and black. Fuses suitable 15A (UL73Q), 20A (GW90X) (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type 11022	Price each exc. VAT	inc. VAT each
DN44X	Fused Test Probe Red	£14.880	£17.490
DN45Y	Fused Test Probe Blk	£14.880	£17.490

## Small Crocodile Clip for Safety Test Leads

Multi-Contact



Designed for a good contact on small conductors – both round and rectangular. The spring-loaded clip has an ergonomically-designed insulated handle, which accommodates a 4mm socket for the test lead. The jaws, which will open out to accept cables of up to 11mm in diameter, are nickel-plated, have a flat clamping area for very fine wires. Available in red and black.

### Specification

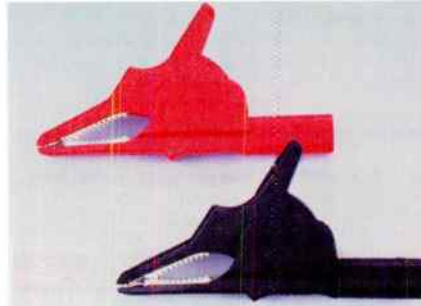
Clamping limit: 11mm (max)  
 Length: 53mm  
 Operating temperature: -40°C to 80°C  
 Rated voltage: 300V  
 Rated current: 15A (max, depends on cross-sectional area of connecting lead and the clamped conductor)  
 Insulation co-ordination: 2-5kV/2 (applies only to handling part and safety socket)  
 Test voltage: 1350V

Retail Unit Price each (inc. VAT).

Order Code	Type 11022	Price each exc. VAT	inc. VAT each
DN24B	Small Croc Clip Red	£2.330	£2.740
DN25C	Small Croc Clip Blk	£2.330	£2.740

## Large Crocodile Clip for Safety Test Leads

Multi-Contact



Designed for a good contact on conducting surfaces – large and small, round and rectangular. The spring-loaded clip has an ergonomically-designed insulated handle, which accommodates a 4mm socket for the test lead. The jaws, which will open out to accept cables of up to 30mm in diameter, are nickel-plated, have a flat clamping area for very fine wires. Available in red and black.

### Specification

Clamping limit: 30mm (max)  
 Length: 80mm  
 Rated voltage: 1000V  
 Rated current: 32A (max, depends on cross-sectional area of connecting lead and the clamped conductor)  
 Insulation co-ordination: 6kV/2 (applies only to handling part and safety socket)  
 Test voltage: 3250V

Retail Unit Price each (inc. VAT).

Order Code	Type 11025	Price each exc. VAT	inc. VAT each
DN22Y	Large Croc Clip Red	£2.800	£3.290
DN23A	Large Croc Clip Blk	£2.800	£3.290

## Adaptor for 4mm Safety Test Leads

Multi-Contact



This insulated adaptor is designed for the attachment of safety test leads to all kinds of conventional 4mm sockets. The splined shaft is made from gold-plated machined brass. Buried in the shaft is an Allen screw, which is tightened for a secure fit in the socket (a suitable Allen key (DN29G) is available separately). Available in red, black and green/yellow colours.

### Specification

Rated voltage: 1000V  
 Insulation co-ordination: 6kV/2  
 Test voltage: 3250V

Retail Unit Price each (inc. VAT).

Order Code	Type 11024	Price each exc. VAT	inc. VAT each
DN26D	Safety Adaptor Red	£2.800	£3.290
DN27E	Safety Adaptor Black	£2.800	£3.290
DN28F	Safety Adaptor Gr/Yl	£2.800	£3.290

## Allen Key for 4mm Safety

## Adaptors

Multi-Contact



A STS 1.5mm Allen key designed for installing the above items in a 4mm socket.

Retail Unit Price each (inc. VAT).

Order Code	Type 11026	Price each exc. VAT	inc. VAT each
DN29G	Socket Screw Wrench	£0.340	£0.400

## Safety Plug Adaptor

Multi-Contact



Designed to connect 4mm safety plugs, with a rigid insulating sleeve, to conventional 4mm sockets, binding posts, etc. The adaptor's plug has a relatively high plug-in force and is protected by a retractable insulating sleeve. Once the adaptor has been inserted into a socket, considerable force is required to withdraw it – since the safety plug requires a weaker withdrawal force, the adaptor will remain in place. Contact parts nickel-plated. Available in red only.

### Specification

Rated current: 25A  
 Contact resistance: 0-8mΩ  
 Rated voltage: 1000V (plugged in only, plug side)  
 Insulation co-ordination: 6kV/2  
 Test voltage: 3250V  
 Operating temperature: -40°C to 80°C

Retail Unit Price each (inc. VAT).

Order Code	Type 11027	Price each exc. VAT	inc. VAT each
DN58N	Die Socket Adaptor	£1.870	£2.200

## PCB PROBES

### Concave Type



The CSP-2A contact probe has a non-slip concave conical tip, ideal for use on solder joints and similar surfaces.



Price each shown, but sold only in multiples of 1.

Order Code	Type 5651	Price each exc. VAT	inc. VAT each
UL99H	Concave Probes 2A	£0.740	£0.870

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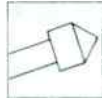
Sales Tel: 01702 554000 • Fax: 01702 554001 • Technical Helpline: 01702 556001

Export carriage charges (1,2 etc.) and price information see back of catalogue. † symbol in price block indicates While Stocks Last.

## Convex Type



The CSP-2E contact probe has a convex conical tip, with a small surface area, ideal for use on fine PCB tracks, solder joints and plated-through holes.



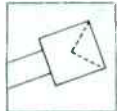
Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
UM00A	Convex Probes 2E	£0.740	£0.612	£0.561	£0.870

## Concave Type



Cylindrical tip with a concave centre, used for connection to a soldered component lead on a PCB pad.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
UM01B	Concave Probes	£0.927	£0.550	£0.520	£1.090

## Convex Type



Convex cylindrical tip, used for connection to plated-through holes, eyelets and open unused pads.



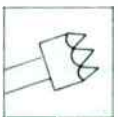
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
UM02C	Convex Probes	£0.927	£0.550	£0.450	£1.090

## Toothed Type



Cylindrical tip with small teeth on top, used for connection to short component leads. The teeth provide positive electric connection.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
UM03D	Toothed Probes	£0.927	£0.524	£0.437	£1.090

## Circular Receptacle



A circular pin projection receptacle for holding the above probes. Fits into a 1.5mm hole.

Retail Unit Price each (inc. VAT).

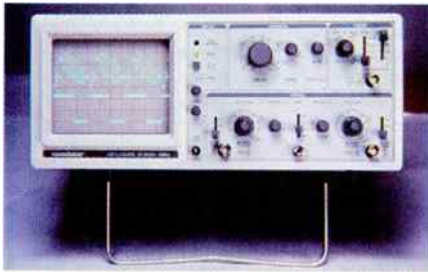
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
UM05F	Circular Receptacle	£0.434	£0.226	£0.188	£0.510

## ANALOGUE OSCILLOSCOPES

### GOLDSTAR

## 20MHz 2-Channel Oscilloscope OS-9020P

LG Goldstar



A portable 2-channel, dual trace oscilloscope built to a high quality, using the latest surface mount technology for performance and reliability. The front panel layout follows a simple and logical format with which the new user will quickly become familiar. The 9020P has all the capabilities required of a general purpose oscilloscope and will accept signals from DC to 20MHz with a high degree of accuracy, and includes TV field and line triggering for video work.

#### Features

Large 150mm (6in.) high luminance CRT with internal graticule of 8 x 10cm. Wide dynamic range even at high frequencies where sensitivity is down -3dB. Fast rise time with low overshoot. Flat frequency response up to half of the -3dB frequency point. Selectable alternate and chop for 2-channel display. Polarity inversion and algebraic summing of channel 1 and channel 2. Superb, jitterless trigger sensitivity. TV sync separator and hold-off useful for video signal observation. Z-axis brightness modulation available. Electronically compensated for low trace drift. X - Y phase difference measurement possible up to 50kHz.

#### Specification

**CRT:**  
Screen: 150mm (6in.) rectangular with internal graticule, effective area 8 x 10cm  
Acceleration: 1.9kV  
Z-axis input (intensity modulation): DC (-3dB @ 10Hz) to 20MHz (7MHz if x5 X magnification on)  
Input signal: Positive going for decreasing intensity, effective from 5V pk-pk at normal  
Bandwidth: DC to 2MHz (-3dB)  
Coupling: DC  
Input impedance: 20kΩ to 30kΩ  
Maximum input voltage: 30V DC + peak AC  
Vertical deflection (Ch1 & Ch2): DC (-3dB @ 10Hz) to 20MHz (7MHz if x5 X magnification on)  
Ch1, Ch2, Add, Dual, Chop, Alt.  
Bandwidth: 5mV/cm to 5V/cm in 10 calibrated steps in 1-2-5 sequence ±3% (1mV/cm to 1V/cm if x5 magnification on, ±5%)  
Modes: ±3% (±5% if x5 magnification on)  
Sensitivity: 1MΩ/25pF  
Accuracy: ±3% (±5% if x5 magnification on)  
Input impedance: 1MΩ/25pF  
Maximum input voltage: 250V DC + peak AC  
Input coupling: DC/AC/Gnd ref.  
Risettime: <17.5ns (<50ns if x5 magnification on)

Ch1 out: 20mV/cm into 50Ω, DC to 10MHz (-3dB)  
Polarity: Ch2 invert option  
Horizontal deflection: A, X-Y  
Sweep modes: 0.2μs/cm to 0.2s/cm in 19 calibrated steps in 1-2-5 sequence  
Timebase A: Variable  
Hold-off time: 10 times (20ns/cm max.)  
Sweep magnification: ±3% (add 2% for magnifier)  
Triggering: Auto, Norm, TV vertical, TV horizontal  
Modes: Ch1, Ch2, Line, External AC  
+ or -

Source: AC  
Coupling: + or -  
Sensitivity, Auto, Norm: 0.5cm @ 20Hz to 2MHz internal, 0.2V pk-pk external 1.5cm @ 2MHz to 20MHz internal, 0.8V pk-pk external  
TV field or line: At least 1cm internal or 1V pk-pk external

External trigger input impedance: 1MΩ/30pF  
Maximum input voltage: 250V DC + peak AC  
X-Y operation: Same as vertical deflection for both Ch1 = X and Ch2 = Y  
Sensitivity: DC to 500kHz (-3dB)  
X-axis bandwidth: 3Ω or less (@ DC to 50kHz)  
X-Y phase error: 1kHz square wave, 0.5V pk-pk ±3%, 50% duty cycle

Calibrator: 1kHz square wave, 0.5V pk-pk ±3%, 50% duty cycle  
Power supply: 240V AC ±10%  
Line voltage: 50/60Hz  
Line frequency: 35W  
Power consumption: 320(W) x 140(H) x 430(L)mm  
Dimensions: 7.5kg  
Weight: Supplied with operating manual, mains lead, spare fuse. Case fitted with stand. A service manual (GS94C) is available separately. Probes not included. Refer to Oscilloscope Accessories for suitable probes.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GW03D20	Scope OS-9020P	£305.530	£257.000	£249.000	£359.000
AL28F 19	GW03 Std Calib	£396.450			£395.330
AL28G 19	GW03 NAMAS Calib	£361.440			£424.700
GS94C	Manual for Scope	£12.590			£12.590 NV

## 20MHz 2-Channel Oscilloscope with Function Generator OS-9020G

LG Goldstar



Based on model OS-9020P, this dual trace oscilloscope has the additional advantage of a built-in function generator. Outputs include triangle, sine and square wave - all with an adjustable frequency range from 0.1Hz to 1MHz, plus DC offset. A separate TTL level pulse with the same adjustable frequency range is also provided.

#### Function Generator Specification

Output frequency: 0.1Hz to 1MHz (7-steps)  
Output waveform: Sine, square, triangle, TTL level square wave  
Frequency stability: ±0.5%: 0, 10, 100, 1k, 10k, 100k  
±1%: 1M  
Frequency variable range: 10:1 or more

Output impedance: 50Ω ±10%, TTL Fanout 20EA

Output voltage  
open circuit: 14V pk-pk  
DC offset: over ±6%  
TTL level: over 3V pk-pk

Rise/fall time  
50Ω (max output): <120ns  
TTL output: <25ns

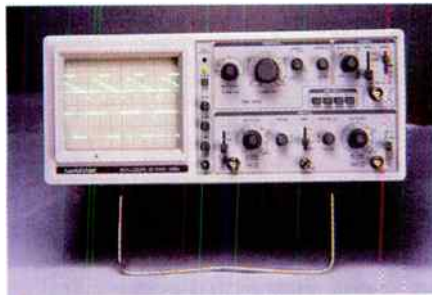
Please note probes are not included. Refer to Oscilloscope Accessories for suitable probes. A service manual GS91Y is available separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
ZE99H 1	Oscilloscope OS-9020G	£365.100	£309.950	£299.000	£429.030
GS91Y	Manual OS-9020G	£11.990			£11.960 NV

## 40/60MHz 2-Channel Oscilloscopes OS-9040D/60D

LG Goldstar



A choice of two portable 2-channel, dual trace oscilloscopes built to a high quality and incorporating a full scale delayed sweep function, where any portion of the signal displayed with the main timebase can be magnified, and both the magnified portion and the original display can be shown simultaneously. This is invaluable for examining short duration events. The front panel layout follows a simple and logical format with which the new user will quickly become familiar. The 9040D is ideally suited to the observation of high speed events in TV, video and the general purpose fields and will accept signals from DC to 40MHz with a high degree of accuracy. A delay line is also included for the observation of fast leading edges. The 9060D will accept signals from DC to 60MHz, again with a high degree of accuracy.

### Features

Large 150mm, high luminance CRT with internal graticule of 8 x 10cm.  
Wide dynamic range even at high frequencies where sensitivity is down -3dB.  
Fast risetime with low overshoot.  
Flat frequency response up to half of the -3dB frequency point.  
Selectable alternate and chop for 2-channel display.  
Polarity inversion and algebraic summing of channel 1 and channel 2.  
Maximum sweep rates of 20ns/cm for the 9040D and 10ns/cm for the 9060D.  
Variable scale illumination.  
Delayed sweep function with minimum delay time jitter of 1/20,000 or less.  
Superb, jitterless trigger sensitivity.  
TV sync separator and hold-off useful for video signal observation.  
Z-axis brightness modulation available.  
Electronically compensated for low trace drift.  
Signal delay with delay line useful for high speed pulse work.  
X - Y phase difference measurement possible up to 50kHz.

### Specification

**CRT:**  
Screen: 150mm rectangular with internal graticule, effective area 8 x 10cm  
Acceleration  
OS-9040D: 12kV  
OS-9060D: 10kV  
**Z-axis input (intensity modulation):**  
Input signal: Positive going for decreasing intensity, effective from 5V pk-pk

at normal brightness

Bandwidth  
OS-9040D: DC to 2.0MHz (-3dB)  
OS-9060D: DC to 3.5MHz (-3dB)  
Coupling: DC  
Input impedance: 20kΩ to 30kΩ  
Maximum input voltage: 30V DC + peak AC  
**Vertical deflection (Ch1 & Ch2):**  
Bandwidth  
OS-9040D: DC (-3dB @ 10Hz) to 40MHz (7MHz if x5 X magnification on)  
OS-9060D: DC (-3dB @ 10Hz) to 60MHz (20MHz if x5 X magnification on)

on)  
Modes: Ch1, Ch2, Add, Dual, Chop, Alt. (CHOP: Time/div 0.2s to 5ms  
ALT: Time/div 2ms to 0.1µs, to 0.1µs on OS-9060D.  
5mV/cm to 5V/cm in 10 calibrated steps in 1-2-5 sequence ±3% (1mV/cm to 1V/cm if x5 magnification on, ±5%)  
Accuracy: ±3% (±5% if x5 magnification on)  
Inout impedance: 1MΩ/25pF  
Maximum input voltage: 250V DC + peak AC  
Input coupling: DC/AC/Gnd ref.  
Risetime  
OS-9040D: <8.8ns (<50ns if x5 magnification on)  
OS-9060D: <5.8ns (<17.5ns if x5 magnification on)  
Ch1 out: 20mV/cm into 50Ω, DC to 10MHz (-3dB)  
Polarity: Ch2 invert option

**Horizontal deflection:**  
Sweep modes: A, A int B, B, B triggered, X-Y  
Timebase A: 0.1µs/cm to 0.2s/cm in 20 calibrated steps in 1-2-5 sequence  
Hold-off time: Variable  
Timebase B: 0.1µs/cm to 10µs/cm in 7 calibrated steps in 1-2-5 sequence  
Delayed sweep start: <1cm to >10cm  
Delay time jitter: Better than 1/20,000  
Sweep magnification  
OS-9040D: 10 times (20ns/cm max.)  
OS-9060D: 10 times (10ns/cm max.)  
Accuracy: ±3% (add 2% for magnifier)

**Triggering:**  
Modes: Auto, Norm, TV vertical, TV horizontal  
Source: Ch1, Ch2, Line, External  
Coupling: AC  
Slope: + or - Sensitivity, Auto, Norm  
OS-9040D: 0.5cm at 20Hz to 2MHz internal, 0.2V pk-pk external  
1.5cm at 2MHz to 40MHz internal, 0.8V pk-pk external  
OS-9060D: 0.5cm at 20Hz to 2MHz internal, 0.15V pk-pk external  
1.5cm at 2MHz to 60MHz internal, 0.3V pk-pk external  
TV field or line: At least 1cm internal or 1V pk-pk external

External trigger input impedance: 1MΩ/30pF  
Maximum input voltage: 250V DC + peak AC

**X-Y operation:**  
Sensitivity: Same as vertical deflection for both  
Ch1 = X and Ch2 = Y  
X-axis bandwidth: DC to 500kHz (-3dB)  
X-Y phase error: 3° or less (at DC to 50kHz)

**Calibrator:** 1kHz square wave, 0.5V pk-pk ±3%, 50% duty cycle

**Power supply:**  
Line voltage: 240V AC ±10%  
Line frequency: 50/60Hz  
Power consumption  
OS-9040D: 40W  
OS-9060D: 50W  
Dimensions: 320(W) x 135(H) x 320(L)mm  
Weight  
OS-9040D: 7.2kg  
OS-9060D: 7.7kg  
Supplied with operating manual, mains lead and two spare fuses. Case is fitted with stand. A 60MHz Scope Probe for use on the 9060D is available

separately (AQ58N).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GW04E14	Scope OS-9040D	£421.270	£404.000	£399.000	£495.000
DK26D 15	Scope OS-9060D	£583.000	£573.000	£569.000	£685.030

## Service Manuals for Goldstar Oscilloscopes

Comprehensive service manuals for the Goldstar range of Oscilloscopes



Scope Model	Scope Order Code	Manual Order Code
OS9020A	GW03D Pre Sept 1996	AP95D
OS9020P	GW03D Post Sept 1996	GS94C
OS9020G	ZE99H	GS91Y
OS9040D	GW04E	AP95D
OS904RD	GW06G	AP95D
OS9100D	GW05F	AP96E

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AP95D	Manual Fr GW03/04/06	£15.990			£15.960 NV
GS91Y	Manual OS-9020G	£11.990			£11.960 NV
GS94C	Manual for Scope	£12.590			£12.560 NV
AP96E	Manual for GW05	£13.990			£13.960 NV

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## MHz 2-Channel Read-Out Oscilloscope OS-904RD

LG Goldstar



A portable 2-channel, 40MHz bandwidth dual trace oscilloscope built to a high quality and incorporating a full scale delayed sweep function invaluable for examining short duration events. The front panel layout follows a simple and logical format with which the new user will quickly become familiar.

In addition the 904RD has on-screen generated, character read-out capability showing voltage and timing information about the trace if required. The on-waveform potential difference measurement displays the potential difference between two points of the waveform where the moveable cursors intersect. This is helpful for measuring peak to peak voltages of a signal, for example. The measured value is displayed in the top left corner of the screen. In addition the time difference, as measured between the two cursors, is shown at top right. The two cursors are shown as 'X' and '+' symbols, and can be positioned horizontally anywhere on the trace. In addition the input channel number, attenuation level (vertical sensitivity per cm) and horizontal timebase sweep per cm are shown at the bottom of the screen.

Finally the read-out can also show the frequency of the waveform, or that part of it that lies between the two cursors. This is most useful for finding the frequency of a harmonic or some other superimposed signal over the fundamental waveform. This display appears at top right in place of the time difference reading in this mode; all other parts of the read-out are as before.

The 904RD is ideally suited to laboratory or workshop uses and the observation of high speed events in TV, video and the general purpose fields, and will accept signals from DC to 40MHz with a high degree of accuracy. The read-out facility provides the ability to examine waveforms in minute detail more easily than by interpreting the graticule alone. A delay line is also included for the observation of fast leading edges. The CRT includes automatic focusing responding to screen intensity changes, variable graticule illumination and a rotateable trace.

### Features

Large 150mm (6in.) 8 x 10cm, high illumination CRT with internal graticule. Wide dynamic range even at high frequencies with -3dB. Fast risetime with low overshoot. Flat frequency response up to half the -3dB point. Signal delay line useful for observing fast leading edged waveforms. Maximum sweep rate of 20ns/cm. Variable scale illumination. Delayed sweep function with minimum delay time jitter of 1/20,000 or less. TV sync separator and hold-off for video signal observation. X-Y phase shift difference measurement possible up to 50kHz. Character and cursor read-out on CRT with a selection of character and cursor styles. High precision measurement of  $fV$ ,  $fT$  and  $1/fT$  with the cursors.

### Specification

#### CRT:

Configuration: 150mm (6in.) with internal 8 x 10cm graticule also marked for risetime with 2mm divisions along central axes

Accelerating potential: 12kV  
Phosphor: P31 (standard)

#### Z-axis (intensity modulation):

Input signal: Negative going for increase in intensity, 5V pk-pk for discernable change in brightness at normal settings

Bandwidth: DC to 2MHz (-3dB)  
Coupling: DC  
Input impedance: 20k $\Omega$  to 30k $\Omega$  typical  
Maximum input voltage: 30V DC + peak AC  
Vertical deflection: DC (-3dB @ 10Hz AC) to 40MHz

Modes: (7MHz if x5 magnifier on)  
Ch1, Ch2, Add, Dual, Chop (0.2s - 5ms/cm), Alt (2ms - 0.2 $\mu$ s/cm)  
Sensitivity: 5mV/cm to 5V/cm in 10 calibrated steps in 1-2-5 sequence (1mV/cm to 1V/cm if x5 magnification on)  
Accuracy:  $\pm 3\%$  ( $\pm 5\%$  if x5 magnification)  
Input impedance: 1M $\Omega$ /25pF  
Maximum input voltage: 250V DC + peak AC  
Input coupling: DC, AC, Gnd ref.  
Risettime: <8.8ns (<50ns if x5 magnification on)

Ch1 out: 10MHz  
Polarity inversion: (-3dB)  
Ch2 only  
Display modes: A, A int B, B, B triggered, X-Y  
Horizontal deflection: Timebase A: 0.2 $\mu$ s/cm to 0.2s/cm in 10 calibrated steps in 1-2-5 sequence  
Hold-off: Variable  
Timebase B: 0.2 $\mu$ s/cm to 20 $\mu$ s/cm in 7 calibrated steps in 1-2-5 sequence

Delayed sweep start: <1cm to >10cm  
Delayed sweep jitter: >1/20,000  
Sweep magnification: 10 times (sweep rate 20ns max.)  
Accuracy:  $\pm 3\%$  ( $\pm 5\%$  if x10 magnification)  
Trigger system: Modes: Auto, Norm, TV vertical, TV horizontal

Source: Ch1, Ch2, Line, External  
Coupling: AC  
Slope: + or -

Normal: 0.5V/cm @ 20Hz to 2MHz (1.5V/cm @ 2MHz to 40MHz) internal, 0.2V pk-pk @ 20Hz to 2MHz (0.8V pk-pk @ 2MHz to 40MHz) external  
At least 1cm or 1V pk-pk external

TV field and line: External trigger input impedance: 1M $\Omega$ /30pF  
Maximum input voltage: 250V DC + peak AC  
X-Y operation: X-axis: As Ch1 except accuracy,  $\pm 6\%$ ; frequency response, DC to 500kHz (-3dB)  
Same as Ch2

Y-axis: X-Y phase error: <3 $^\circ$  @ DC to 50kHz  
Read-out function: Voltage reference  $fV$ :  $f$ -reference;  $fT$ :  $f$ -REF/frequency reference;  $1/fT$ :  $f$ -REF. Note  $fV$ ,  $fT$  changed to  $fX$ ,  $fT$  when in X-Y mode

Panel setting displays: Vertical axis (Ch1, Ch2): V/DIV, UNCAL, MAG (converted value). Note displayed when vertical mode is Ch1, Ch2 or Dual, not displayed in ADD or B modes. Horizontal axis: S/DIV, UNCAL, MAG (converted value).

Effective cursor range from centre of graticule: Vertical: within  $\pm 3$ cm; horizontal: within  $\pm 4$ cm  
Resolution: 1/25cm  
Calibrator: 1kHz approx., 0.5V ( $\pm 3\%$ ) square wave, 50% duty cycle

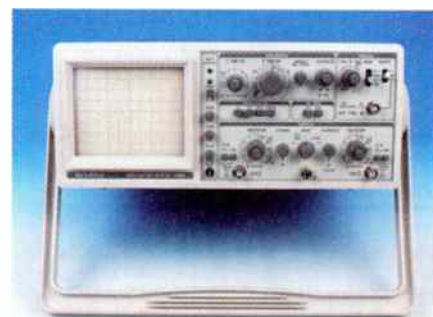
Power supply: Line voltage: 240V AC  $\pm 10\%$   
Line frequency: 50/60Hz  
Power consumption: 45W  
Dimensions: 320(W) x 140(H) x 430(L)mm  
Weight: 7.5kg  
Supplied with operating manual, mains lead, spare fuse. Case fitted with stand. Probes not included. Refer to oscilloscope accessories for suitable probes. A comprehensive service manual is also available (AP95D).

### Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW06GJ5	Scope OS-904RD	£509.780	£494.750
AL34M	20.GW06 Std Calib	£598.200	£702.890
AL35Q	20.GW06 NAMAS Calib	£618.200	£726.390
AP95D	Manual Fr GW030406	£15.990	£15.990

## 100MHz 2-Channel Oscilloscope OS-9100P

LG Goldstar



A high quality 2-channel oscilloscope capable of displaying waveforms from DC up to 100MHz and capable of up to 4 traces. The wide bandwidth and magnification controls allow complex waveforms to be measured quickly and accurately. A full screen delayed timebase allows a portion of a trace to be delayed and then magnified. When used in conjunction with the dual trace function this allows the original and delayed trace to be displayed simultaneously - invaluable when trying to examine short duration events in real-time. The front panel layout follows a simple and logical format, with which the new user will quickly become familiar. A fluorescent scale allows photographs of traces and waveforms to be taken. Ideal for any application where fast, accurate results are demanded.

### Features

15cm square CRT with internal fluorescent scale  
Algebraic addition of Ch1 and Ch2  
Alternate and chop trace switching modes  
Auto focusing, responding to changes in screen image intensity  
Delayed sweep function  
Divided TV trigger signal  
Fast rise-time of 3.5ns with low overshoot  
High vertical sensitivity of 2mV  
High input impedance of 1M $\Omega$   
High bandwidth  
Low input capacitance, less than 22pF  
Two timebase generators  
Z-axis or brightness modulation from an external input

### Specification

CRT: 15cm square CRT with internal graticule and an effective area of 8 x 10cm  
Screen: 9kV

Acceleration: 9kV  
Z-axis input (intensity modulation): Positive going for decreasing intensity, effective from 3V pk-pk at normal brightness  
DC to 3.5MHz ( $\pm 3$ dB)

Bandwidth: DC  
Coupling: DC  
Input impedance: 17 - 22k $\Omega$   
Maximum i/p voltage: 20V (DC + peak AC)Vertical deflection (Ch1 and Ch2): DC ( $\pm 3$ dB at 10Hz) - 100MHz (20MHz if x5 magnification is on)

Modes: Ch1, Ch2, Add, Alt, Chop  
Sensitivity: 2mV to 5V/div in 11 calibrated steps of a 1-2-5 sequence  
Accuracy:  $\pm 3\%$   
Input impedance: 1M $\Omega$  in parallel with 25pF  
Maximum i/p voltage: 250V (DC + peak AC)  
Input coupling: AC - DC, GND  
Rise time: 3.5ns or less (17.5ns or less : 2mV/div)

Ch1 out: 20mV/div into 50 $\Omega$  : 50Hz to 30MHz ( $\pm 3$ dB)  
Polarity inversion: Ch2 only  
Horizontal deflection: Input impedance: 1M $\Omega$  in parallel with 22pF  
Maximum i/p voltage: Direct connection 250V (DC + peak AC)

Display modes: A, A INT, B, X-Y, B Triggered  
Timebase A: 0.1 $\mu$ s/div to 0.5s/div in 21 calibrated steps in 1-2-5 sequence  
Timebase B: 0.1 $\mu$ s/div to 10 $\mu$ s/div in calibrated steps

Delayed sweep: 1 div or less 10 div or more  
Accuracy:  $\pm 3\%$ ,  $\pm 5\%$  (x10)  
Trigger system:



Modes: Auto, Norm, TV-V, TV-H  
Source: Int, Line, Ext  
Slope: + or 2  
Sensitivity and frequency: Auto, Norm, TV-V, TV-H

Freq.	Internal	External
30Hz-10MHz	0.48 div	200mV
10MHz-100MHz	1.5 div	600mV
TV-V, TV-H	1.0 div	0.2V
30Hz-10MHz	1.5 div	-
10Hz-100MHz	3.0 div	-

X-Y operation:  
Frequency bandwidth: DC coupling (DC-2MHz), AC coupling (10Hz-2MHz)  
X-Y phase difference: Within 3° (up to 100kHz at DC)

Electrical specification:  
Power supply: 230V 50Hz fixed  
Weight: 8.5kg ± 1kg  
Dimensions: 320 x 140 x 430mm (W x H x L)

Supplied with operating manual and mains cable. Please note that probes are not included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS81C.17	Oscilloscope OS9100P	£594.890	£699.000

## 100MHz 3-Channel Oscilloscope OS-9100D

LG Goldstar



An excellent oscilloscope capable of displaying waveforms or events at frequencies from DC up to greater than 100MHz, with three input channels showing up to six traces. This bandwidth, along with the increased magnification, makes for displaying complex signals with precision and accuracy. It incorporates a full scale delayed sweep function, where any portion of the signal displayed with the main timebase can be magnified, and both the magnified portion and the original display can be shown simultaneously. This is invaluable for examining short duration events. The front panel layout follows a simple and logical format with which the new user will quickly become familiar. Ideal for exacting laboratory tasks, examining RF signals and high speed logic.

### Features

- Wider than specified frequency response.
- Fast risetime, less than 3.5ns with low overshoot.
- Dynamic range up to 100MHz without waveform distortion.
- Low input capacitance of less than 22pF.
- Three input channels offering six separate traces with alternate sweep function convenient for observation of multiple signals.
- High vertical sensitivity down to 1mV/cm.
- High brightness, domed-mesh CRT.
- Signal delay line useful for observing fast leading edges.
- Auto focusing responding to screen intensity changes.
- Alternate and chop trace switching modes.
- Algebraic summing of Ch1 and Ch2 possible.
- Polarity inversion of Ch2 possible.
- Z-axis or brightness modulation from external input.
- Drift compensated vertical amplifier.
- Maximum sweep rate of 5ns/cm.
- Delayed sweep function.
- High sensitivity and jitterless triggering.
- TV sync separator and hold-off.
- X-Y phase difference measurement up to 100kHz.

### Specification

CRT:  
Screen: 150mm (6in.) rectangular with internal graticule, effective area 8 x 10cm  
Acceleration: 16.5kV  
Z-axis input (intensity modulation):

Input signal: Positive going for decreasing intensity, effective from 5V pk-pk at normal brightness  
Bandwidth: DC to 3.5MHz (-3dB)  
Coupling: DC  
Input impedance: 15kΩ  
Maximum input voltage: 20V DC + peak AC  
Vertical deflection (Ch1 & Ch2):  
Bandwidth: DC (-3dB @ 10Hz) to 100MHz (20MHz if x5 X magnification on)  
Modes: Ch1, Ch2, Add, Dual, Chop, Alt.  
Sensitivity: 5mV/cm to 5V/cm in 10 calibrated steps in 1-2-5 sequence ±3% (1mV/cm to 1V/cm if x5 magnification on, ±5%)

Accuracy: ±3% (±5% if x5 magnification on)  
Input impedance: 1MΩ/25pF  
Maximum input voltage: 250V DC + peak AC or 400V pk-pk at 1kHz or less DC/AC/Gnd ref.  
Input coupling: DC/AC/Gnd ref.  
Risettime: <3.5ns (<17.5ns if x5 magnification on)

Ch1 out: 20mV/cm into 50Ω, DC to 30MHz (-3dB)

Polarity: Ch2 invert option  
Channel 3 vertical deflection:  
Sensitivity: 0.1V/cm to 1V/cm  
Bandwidth: DC (-3dB @ 10Hz) to 50MHz  
Risettime: <7ns  
Accuracy: ±5%  
Input impedance: 1MΩ/25pF

Maximum input voltage: 250V DC + peak AC  
Horizontal deflection:  
Sweep modes: A, Alt., B, B triggered, X-Y  
Timebase A: 50ns/cm to 0.5s/cm in 22 calibrated steps in 1-2-5 sequence  
Hold-off time: Variable  
Timebase B: 50ns/cm to 50ms/cm in 19 calibrated steps in 1-2-5 sequence

Delayed sweep start: <1cm to >10cm  
Delay time jitter: Better than 1/20,000  
Sweep magnification: 10 times (5ns/cm max.)  
Accuracy: ±3% (add 2% for magnifier)

Triggering:  
Modes: Auto, Norm, TV vertical, TV horizontal  
Source: Ch1, Ch2, Line, External (Ch3)  
Coupling: AC, LF reject, HF reject, DC  
Slope: + or -  
Sensitivity, Auto, Norm: 0.5cm @ DC to 10MHz internal, 0.1V pk-pk external  
1.5cm @ DC to 100MHz internal, 0.3V pk-pk external  
TV field or line: At least 1cm internal or 1V pk-pk external

External trigger input impedance: 1MΩ/30pF  
Maximum input voltage: 250V DC + peak AC

X-Y operation:  
Sensitivity: Same as vertical deflection for both Ch1 = X and Ch2 = Y  
X-axis bandwidth: DC to 2MHz (-3dB)  
X-Y phase error: 3Ω or less (@ DC to 100kHz)  
Calibrator: 1kHz square wave, 0.5V pk-pk ±1%, 50% duty cycle

Power supply:  
Line voltage: 240V AC ±10%  
Line frequency: 50/60Hz  
Power consumption: 60W  
Dimensions: 320(W) x 140(H) x 420(L)mm  
Weight: 8.5kg

Supplied with operating manual, mains lead, spare fuse. Case is fitted with a multi-position stand/carrying handle.

A service manual (AP96E) is available separately. Probes not included. Refer to oscilloscope accessories for suitable probes.

Retail Unit Price each (inc. VAT).

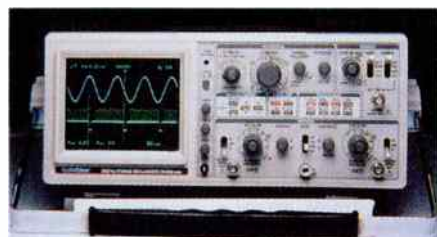
Order Code	Type	Price each exc. VAT	inc. VAT each
GW05FJ7	Scope OS-9100D	£580.000	£699.000
AL32K.20	GW05 Std Calib	£785.490	£922.960
AL33L.20	GW05 NAMAS Calib	£815.490	£958.210
AP96E.	Manual for GW05	£13.990	£13.990

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Tel: 01702 554000  
Fax: 01702 554001  
e-mail: Sales@maplin.co.uk

## 20/40/60MHz 2-Channel Digital Storage Oscilloscopes OS-3020/40/60

LG Goldstar



A range of superb 2-channel, dual trace oscilloscopes with digital storage capabilities for 'freezing' and continuously displaying fast, complex or non-repeatable events. 'Equivalent sampling' is possible for very high frequencies. This is a useful function for digitising and observing high speed repetitive signals. In this method one data item is sampled for every high speed sweep, and the sampling point is shifted to the right with every sweep. A useful function for digitising and observing high speed repetitive signals up to the bandwidth of the oscilloscope. Another procedure called 'averaging' is used to improve the signal to noise ratio of a signal, i.e. to reduce the noise components from the constantly displayed repetitive waveform shown on the screen which has too much noise. In general, after 'averaging' has been performed a number of times, the noise can be reduced to  $1/\sqrt{N}$ , where N = the number of times. The 'pre-trigger' function is also provided to allow the operator to observe what happens prior to the trigger point of a stored waveform. The trigger point may be set from 0.00cm up to 10.00cm. 'Roll mode' provides continuous observation of slow waveforms, whilst linear and sine interpolation functions allow for accurate representation of sampled waveforms (e.g. high speed waveforms) with as little as 2.5 data points per cycle. A RS232 interface is also provided so that stored waveforms can be printed out on paper with a suitable X-Y plotter.

In addition there is an on-screen generated, character read-out capability showing voltage and timing information about the trace if required. The on-waveform potential difference measurement, displays the potential difference between two points of the waveform where the moveable cursors intersect. This is helpful for measuring peak to peak voltages of a signal, for example. The measured value is displayed in the top left corner of the screen while the time difference, as measured between the two cursors, is shown at top right. The two cursors are shown as 'X' and '+' symbols, and can be positioned horizontally anywhere on the trace. The input channel number, attenuation level (vertical sensitivity per cm) and horizontal timebase sweep per cm are shown at the bottom of the screen.

Finally, the read-out can also show the frequency of the waveform, or that part of it that lies between the two cursors. This is most useful for finding the frequency of a harmonic or some other superimposed signal over the fundamental waveform. This display appears at top right in place of the time difference reading in this mode; all other parts of the read-out are as before. The read-out also shows the general operating mode of the oscilloscope including active sampling functions. The CRT includes automatic focusing responding to screen intensity changes, variable graticule illumination and a rotatable trace.

At the rear of the unit is 'Ch1 Out Connector' which provides an amplified part of the input signal on Ch1 for a frequency counter or any other monitoring/ measuring device.

Full scale delayed sweep, trace magnification and comprehensive triggering modes are also provided.

### Features

- Maximum 2-channel simultaneous sampling rates of 20MS/s.
- Digitised repetitive signal in equivalent mode 60MHz (OS-3060), 40MHz (OS-3040), 20MHz (OS-3020).
- 2-kilowords memory capacity per channel.
- One-touch switching between real and storage modes.
- Two save memories.
- Pre-triggering enables observation of waveform

portions before the trigger point. Direct copy of screen display using HP-GL commands with RS232C interface. Roll mode provides continuous observation of slow waveforms. Averaging functions provides summation averaging of up to 256 times. Linear and sine interpolation function for optimum pulse or sinusoidal signals. Magnification function simplifies detailed waveform observation. CRT read-out for displaying set values along with measured values of voltage, time and frequency using the cursor function.

### Specifications for models OS-3020; 3040; 3060.

- CRT:
- Configuration: 150mm (6in.) with internal 8 x 10cm graticule also marked for rise time with 2mm divisions along central axes
  - Accelerating potential:
    - OS-3020: 1.9kV
    - OS-3040: 11.5kV
    - OS-3060: 10.0kV
  - Phosphor: P31 (standard)
  - Z-axis (intensity modulation):
  - Input signal: Negative going for increase in intensity, 5V pk-pk for discernable change in brightness at normal settings
  - Bandwidth:
    - OS-3020; OS-3040 DC to 2MHz (-3dB)
    - OS-3060 DC to 3.5MHz (-3dB)
  - Coupling: DC
  - Input impedance: 20kΩ to 30kΩ typical
  - Maximum input voltage: 30V DC + peak AC
  - Vertical deflection:
    - Bandwidth:
      - OS-3020 DC (-3dB @ 10Hz AC) to 20MHz (7MHz if magnified)
      - OS-3040 DC (-3dB @ 10Hz AC) to 40MHz (7MHz if magnified)
      - OS-3060 DC (-3dB @ 10Hz AC) to 60MHz (10MHz if magnified)
    - Modes: Ch1, Ch2, Add, Dual, Chop
      - (0.2s - 5ms/cm), Alt (2ms - 0.2μs/cm); (2ms - 0.1μs for OS-3060 only)
    - Sensitivity: 5mV/cm to 5V/cm in 10 calibrated steps in 1-2-5 sequence (1mV/cm to 1V/cm if x5 magnification on)
      - Accuracy: ±3% (±5% if x5 magnification)
      - Input impedance: 1MΩ/25pF ±3pF
      - Maximum input voltage: 250V DC + peak AC
      - Input coupling: DC-Gnd-AC.
      - Rise time:
        - OS-3020 <17.5ns (<50ns if x5 magnification on)
        - OS-3040 <8.8ns (50ns if x5 magnification on)
        - OS-3060 <5.8ns (35ns if x5 magnification on)
      - Ch1 out: 20mV/cm into 50Ω, DC to 10MHz (-3dB)
      - Ch2 only
    - Polarity inversion: OS-3040, OS-3060 only.
    - Signal Delay: OS-3040, OS-3060 only.
    - Delay: Cable supplied
    - Horizontal deflection: A, A int B, B, B triggered, X-Y (OS-3060 push button operation only)
    - Display modes: A, A int B, B, B triggered, X-Y (OS-3060 push button operation only)
    - Timebase A:
      - OS-3020; OS-3040 0.2μs/cm to 0.2s/cm in 19 calibrated steps in 1-2-5 sequence
      - OS-3060 0.1μs/cm to 0.2s/cm in 20 calibrated steps in 1-2-5 sequence
    - Hold-off: Variable
    - Timebase B: OS-3020, OS-3040 0.2μs/cm to 20μs/cm in 7 calibrated steps in 1-2-5 sequence
    - OS-3060 0.1μs/cm to 10μs/cm in 7 calibrated steps in 1-2-5 sequence.
    - Delayed sweep start: <1cm to >10cm
    - Delayed sweep jitter: >1/20,000
    - Sweep magnification:
      - OS-3020; OS-3040: 10 times (sweep rate 20ns max.)
      - OS-3060: 10 times (sweep rate 10ns max.)

- Accuracy: ±3% (±2% additional error for magnifier)
- Trigger system:
  - Modes: Auto, Norm, TV vertical, TV horizontal
  - Ch1, Ch2, Line, External AC
  - Coupling: AC
  - Slope: + or -
  - Sensitivity, Auto, Normal:
    - OS-3020: Internal = 0.5V/cm @ 20Hz to 2MHz (1.5V/cm @ 2MHz to 20MHz)
    - OS-3040: Internal = 0.5V/cm @ 20Hz to 2MHz (1.5V/cm @ 2MHz to 40MHz) External = 0.2V pk-pk @ 20Hz to 2MHz (0.8V pk-pk @ 2MHz to 20MHz)
    - OS-3060: Internal = 0.5V/cm @ 20Hz to 2MHz (1.5V/cm @ 2MHz to 60MHz) External = 0.15V pk-pk @ 20Hz to 2MHz (0.3V pk-pk @ 2MHz to 60MHz)
  - TV field and line: At least 1cm or 1V pk-pk external, composite sync
  - External trigger input impedance: 1MΩ/30pF
  - Maximum input voltage: 250V (DC + peak AC)
  - X-Y operation:
    - X-axis: As Ch1 except accuracy, ±5%; frequency response, DC to 500kHz (-3dB)
    - Y-axis: Same as Ch2
    - X-Y phase error: <3° @ DC to 50kHz
  - Read-out function:
    - Cursor read-out: Voltage reference fV; f-REF/time reference; fT; f-REF/frequency reference; 1/fT; f-REF
  - Panel setting displays:
    - Vertical axis (Ch1, Ch2): V/DIV, UNCAL, MAG (converted value). Note displayed when vertical mode is Ch1, Ch2 or Dual, not displayed in B mode.
    - Horizontal axis: S/DIV, UNCAL, MAG (converted value).
  - Effective cursor range from centre of graticule:
    - Vertical: within ±3cm;
    - Horizontal: within ±4cm
  - Resolution:
    - Digital storage function: 1000 words per channel
    - Display memory: 1000 words per channel x 2
    - Acquisition memory:
      - OS-3020; OS-3040: 5μs/cm ~ 20s/cm: 2000 words per channel
      - 0.2μs/cm ~ 2μs/cm: 1000 words per channel
      - OS-3060 0.5μs/cm ~ 20s/cm: 2000 words per channel
      - 0.1μs/cm ~ 2μs/cm: 1000 words per channel
    - Vertical resolution: 25 points/cm
    - Horizontal resolution: 100 points/cm
    - Maximum sampling rate: 20MS/s
    - Single-shot event bandwidth: 5MHz
    - Repetitive event bandwidth:
      - OS-3020: 20MHz
      - OS-3040: 40MHz
      - OS-3060: 60MHz
  - Data acquisition method:
    - NORM mode: store whole screen each sweep
    - Averaging mode: store the average from 4 to 25 times
    - Roll mode: continuously read and store and re-display on screen at higher rate
    - Hold mode: data is held for NORM, AVG and ROLL
    - Single shot: waveform is held after one sweep is stored
    - Up to two screens can be saved and recalled on screen at any time
  - Data saving: Variable by 0.4cm per step
  - Pre-trigger: Variable by 0.4cm per step

Paper plotting: Via RS232 interface  
Magnifier: 10 times by time/cm switch or MAG switch

X-Y operation: Single trace X-Y mode, X-axis = Ch1, Y-axis = Ch2 or X-axis = storage A, Y-axis = storage B; Dual trace mode, X-axis = Ch1, Y-axis = Ch2. Sensitivity, both: 1mV to 5V/cm±5%. Phase error = <3° from DC to 50kHz

Sweep time: OS-3020; OS-3040 0.2µs/cm to 20s/cm. Repetitive mode: 0.2µs/cm to 2µs/cm. Roll mode: 0.5µs/cm to 20s/cm. Alternate: 0.2µs/cm to 0.5ms/cm

Chop: 1ms/cm to 20s/cm. OS-3060 0.1µs/cm to 20s/cm. Repetitive mode: 0.1µs/cm to 2µs/cm. Roll mode: 0.5s/cm to 20s/cm. Alternate: 0.1µs/cm to 0.5ms/cm. Chop: 1ms/cm to 20s/cm

Read-out function: Voltage reference ΔV;  
Cursor read-out: Δ-REF/time reference; ΔT; Δ-REF/frequency reference; 1/ΔT: Δ-REF

Panel setting displays V/DIV, UNCAL, MAG. S/DIV, UNCAL, MAG. X-Y trigger point, number of averaging roll mode, smoothing, interpolation method, save memory information, probe setting 1kHz approx., 0.5V (±3%) square wave, 50% duty cycle

Calibrator: square wave, 50% duty cycle

Power supply: 240V AC ±10%  
Line voltage: 50/60Hz  
Line frequency: 65W  
Power consumption: 320(W) x 140(H) x 430(L)mm  
Dimensions: 8.5kg  
Weight: Supplied with operating manual, mains lead and two spare fuses. Case is fitted with multi-position stand/carrying handle. Probes, not included, see accessories. Calibration service available please contact the sales line for details.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GW07H7	Scope OS-3020	£765.100	£759.900	£734.400	£599.000
JX40T	20 Digital Scope 3040	£986.380	£943.500	£902.700	£7158.000
JV08J	Digital Scope 3060	£977.870			£7149.000

## METRIX

### 20MHz Dual Channel Oscilloscope - OX520



The OX520 is an entry level 20MHz dual channel scope that is ideal for students and general purpose repair and monitoring applications. The stylish front panel is simple and well laid out making it easy for the beginner to use and understand. This affordable scope is built to the highest standards and safety, and will provide years of trouble-free service.

#### Specification Vertical amplifiers

No. of channels: 2  
Sensitivity: 5mV to 5V/division ±5%  
1mV/division ±10%  
Bandwidth: 20MHz  
Rise time: <17.5ns  
I/P impedance: 1MΩ ±5%  
I/P capacitance: 30pF  
Operating modes: CH1, CH2, CHOP, ALT, ADD  
Max. i/p voltage: 400V pk-pk

#### Timebase

Sweep time: 0.2µs/division - 0.2s/division  
Expansion: 20ns/division ±10% max sweep

**Triggering**  
Modes: TRIG, AUTO  
Sources: INT (CH1, CH2), LINE, EXT  
Coupling: AC, TV-V, TV-H  
+ or -  
Slope: Sensitivity  
10Hz-10MHz: <1 division (Ext. 0.5V)  
10MHz-20MHz: <1.5 division (Ext. 0.5V)

**XY Mode**  
Input X: CH2  
Y: CH1  
Bandwidth: 500kHz  
Phase difference: <±3° (50kHz)

**CRT**  
Type: rectangular screen with internal graticule (80 x 100mm  
Power supply: 230V/110V ±10% 50/60Hz  
Dimensions: 340 x 155 x 450mm  
Weight: 6.5kg  
Safety: IEC 1010 Cat II, degree of pollution 2

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GS60Q	OX520 DI 20MHz Sc	£390.630	£385.000	£370.000	£459.000

### 20MHz Dual Channel Oscilloscope with Component Tester OX800



- ★ Microprocessor controlled
- ★ SMD technology
- ★ Autoranging sweep
- ★ Alternate and peak-to-peak trigger modes
- ★ Component tester
- ★ Supplied with Certificate of Conformity

This 20MHz microprocessor controlled analogue scope features 'Alternate' and 'Peak-to-Peak' trigger modes to simplify the synchronisation and display of waveforms. Its Autoranging sweep delay is unique for a 20MHz bandwidth real time scope. The latest design and manufacturing techniques are used to produce this quality scope which includes microprocessor control and SMD assembly technology. This has resulted in the virtual elimination of complex switching of sensitive high frequency signals from the front panel controls. Additionally, the CRT is fully mu-metal shielded against the influence of magnetic fields. This Metrix scope complies with the IEC 1010 (EN 61010) standards, and is designed to give precise and repeatable measurements throughout its service life. As a result the calibration of every instrument is traceable to national and international standards and a Certificate of Conformance is supplied with all scopes.

#### Specification Vertical amplifiers

Bandwidth (-3dB)  
AC coupled: 10Hz to 20MHz  
DC coupled: 0 to 20MHz  
Sensitivity: 1MΩ ±1%/25pF  
Rise time: <17.5ns  
Operating modes: CH1; ±CH2; CH1 and ±CH2 alternate or chopped;  
Add/Subtract  
Max. i/p voltage: ±400V (DC or AC peak at 1kHz); Cat. II

#### X-Y operation

Mode: CH1 in X-axis; CH2 in Y-axis  
Sensitivity: 1mV/div to 20V/div  
Bandwidth ch. X: 0 to 20MHz (-3dB)  
I/P impedance: 1MΩ/25pF  
Phase difference: <3° at 120kHz

**Timebase**  
Sweep time: 0.5µs/div to 0.2s/div ±3%  
Fine adjustment: 1 to 2.5 (with UNCAL LED) up to 0.2µs/div  
max. sweep 20ns/div ±5%  
variable 1 - 10 division

Expansion x10:  
Hold off: max. sweep 20ns/div ±5%  
variable 1 - 10 division

**Triggering**  
Trigger indication: 'TRIG' LED  
Source: CH1, CH2, ALT (CH1 and CH2 alternate), EXT, LINE

Sensitivity on CH1, CH2, ALT EXT  
0-10MHz 0.5 div 50mV eff  
10MHz to 20MHz 1 div 100mV eff  
20MHz to 30MHz 2 div 200mV eff  
30MHz to 40MHz 3 div 300mV eff

Modes: normal; pk-pk; triggered; delayed  
Coupling: DC, AC, filters LF, HF (10kHz); TV-V, TV-H  
positive, negative

Slope: square wave  
Waveform: 2V ±1%  
Amplitude: 1kHz ±1%  
Frequency: 1kHz ±1%

**CRT (with beam finder & trace rotation)**  
Screen: 80 x 100mm internal graticule  
Acc voltage: 2kV approx.

**Z-Modulation**  
I/P rear panel: BNC  
Sensitivity: TTL level (±20V DC max.)  
I/P impedance: 2kΩ  
I/P frequency: 4MHz max.

**Component tester**  
O/P: 12V rms (15mA rms max.)  
at 50Hz via 4mm safety sockets

**Safety**  
IEC 1010-1 overvoltage CAT II; degree of pollution 2. EMC to IEC 801, Level 3; EN55011 and VDE 871cl. B

**General**  
Power supply: 110V to 230V/240V ±10%  
50/60Hz; 50W max.  
Dimensions: 450 x 340 x 155mm  
Weight: 6.3kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GS61R	OX800 20MHz Scope	£495.000	£480.000	£465.000	£581.630

**RS12750**  
BS EN ISO 9002  
Stockholding and Supply  
Please note that items described in this catalogue may not necessarily be manufactured under a registered ISO 9000 Management System

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## Dual Channel 20MHz Analogue/Digital Oscilloscope OX8020

Metrix

RECENTLY INTRODUCED



- ★ Combined analogue and programmable digital storage oscilloscope
- ★ 40M samples/second
- ★ 17 automatic and cursor measurement modes
- ★ 'AUTOSET' automatic match to input signal
- ★ RS232 interface
- ★ Comprehensive trigger modes
- ★ Envelope mode
- ★ Three acquisition modes

A superb, combined analogue and programmable digital storage oscilloscope with a host of features to make measurements simple and easy. By pressing the auto measurement button, 17 different amplitude and time related functions are available. This will make automatic calculations on digitised stored waveforms in either analogue or digital display modes. As well as comprehensive trigger mode options, the OX8020 also offers an 'AUTOSET' facility that selects the optimum trigger, timebase and attenuation settings to match the input signal. Envelope mode allows variations in repetitive signals to be displayed in screen. Each sweep of a repetitive signal accumulates on the screen, building up an envelope view of the signal variations.

Three acquisition modes are available - roll for slowly changing phenomena; single-shot for single events; refresh for repetitive signals. These modes can be combined with the pre-trigger function, which is selectable in 1k word steps, to view waveforms before and after the trigger point. Two horizontal and vertical cursors allow a choice of measurements on real time and stored waveforms.

The OX8020 can be externally programmed (listener-talker) in analogue or digital modes. Functions such as sensitivity; timebase; trigger mode; display mode; input coupling; trigger delay; acquisition mode (single, roll, refresh), pre-trigger, etc., can be set up remotely via the RS232 interface.

Microprocessor control and SMD assembly technology eliminates totally any complex switching of sensitive high frequency signals from the front panel controls. The CRT is fully mu-metal shielded against the influence of magnetic fields. The calibration of every instrument manufactured by Metrix is traceable to national and international standards and a certificate of compliance is supplied with every OX8020.

### Specification

#### Vertical amplifiers

Bandwidth (-3dB) 10Hz to 20MHz  
 AC coupled: 10Hz to 20MHz  
 DC coupled: 0 to 20MHz  
 Sensitivity: 1MΩ ±1%/25pF  
 Rise time: <17.5ns  
 Operating modes: CH1; ±CH2; CH1 and ±CH2 alternate or chopped; Add/Subtract  
 Max. i/p voltage: ±400V (DC or AC peak at 1kHz); Cat. II

#### X-Y operation

Mode: CH1 in X-axis; CH2 in Y-axis  
 Sensitivity: 1mV/div to 20V/div  
 Bandwidth ch. X: 0 to 20MHz (-3dB)  
 I/P impedance: 1MΩ/25pF  
 Phase difference: <3° at 120kHz

#### Timebase

Sweep time: 0.5µs/div to 0.2s/div ±3%  
 Fine adjustment: 1 to 2.5 (with UNCAL LED) up to 0.2µs/div  
 Expansion x10: max. sweep 20ns/div ±5%  
 Hold off: variable 1 - 10 division

#### Triggering

Trigger indication: 'TRIG' LED  
 Source: CH1, CH2, ALT (CH1 and CH2 alternate), EXT, LINE

Sensitivity on CH1, CH2, ALT EXT  
 0-10MHz 0.5 div 50mV eff  
 10MHz to 20MHz 1 div 100mV eff  
 20MHz to 30MHz 2 div 200mV eff  
 30MHz to 40MHz 3 div 300mV eff

Modes: normal; pk-pk; triggered; delayed

Coupling: DC, AC, filters LF, HF (10kHz); TV-V, TV-H

Slope: positive, negative

#### Autoset

Automatic vertical and horizontal configuration of the instrument to match the signals on inputs CH1 and CH2

#### Acquisition

A/D conversion  
 Vertical resolution: 8-bit (256 levels) individual converter for each channel

Accuracy: ±3% overall

Sampling rate: 40M samples/second

Memory sizes: 2 x 4k word buffers

#### Acquisition modes

roll: 500ms to 200s/div  
 refresh: 0.1µs to 200s/div  
 single shot: 0.1µs to 200s/div  
 Pre-trigger: 0 to 4k in 1k word steps

#### Display

Readout: applicable in analogue and digital modes

Trace selection: depends on the vertical mode (CH1 - ALT - CHOP - CH2 - XY - ADD - MULT)

#### Waveform analysis

Bargraph indication of the expansion and position of the displayed window; Linear and sinusoidal interpolation; Analogue smoothing ('Dot Join')

#### Vertical shift

Display of the vertical shift position (during and after acquisition).

#### Measurements

By cursors - ΔV, Δt, F, φ (in analogue and digital modes), Reference selection (CH1 or CH2) Automatic measurements - tr, tf, F, T, W+, W-, Vrms, Vamp, Vlow, Vh, Vpp, Vmax, Vmin, DC+, DC-, φ (phase) on digitised stored waveforms.

NOTE: The measured values are displayed at the bottom of the screen in analogue and digital modes.

#### Calibrator

Waveform: square wave  
 Amplitude: 2V ±1%  
 Frequency: 1kHz ±1%

#### CRT (with beam finder & trace rotation)

Screen: 80 x 100mm internal graticule  
 Acc. voltage: 2kV approx.

#### Z-Modulation

I/P rear panel: BNC  
 Sensitivity: TTL level (±20V DC max.)  
 I/P impedance: 2kΩ  
 I/P frequency: 4MHz max.

#### Interface

RS232 serial interface 25-way male D-connector

#### Safety

IEC 1010-1 overvoltage CAT II; degree of pollution 2. EMC to IEC 801, Level 3; EN55011 and VDE 871cl. B

#### General

Power supply: 110V to 230V/240V ±10%  
 50/60Hz; 80W max.  
 Dimensions: 450 x 340 x 155mm  
 Weight: 7.2kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS63T	OX8020 20MHz An/Dig	£1,258.72	£1,210.00
		1+	5+
		10+	1+
		£1,170.00	£1,479.00

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## 100MHz Dual Channel Oscilloscope - OX860

Metrix

RECENTLY INTRODUCED



- ★ 100MHz Bandwidth
- ★ Microprocessor controlled
- ★ Trigger up to 180MHz
- ★ Bandwidth limit gives users high degree of control
- ★ Dual time base with one single knob
- ★ LEDs for ease of use

A superb 100MHz dual channel oscilloscope with a microprocessor controlled digital front end that saves you time and simplifies testing procedures. Just press the AUTOSET button and the scope automatically sets both the vertical and time scale for optimum measurements. Through its built-in data and setup memory feature, the scope will retain your setup in non-volatile RAM. The ergonomically designed front panel with LEDs for selection make this scope a joy to use.

The European Low Voltage Directive requires all new laboratory measuring equipment to meet the IEC1010 safety standards. The OX860 fully complies with the safety and specifies overvoltage CATII and degree of pollution 2. To ensure that every instrument is traceable to national and International standards, Metrix maintain an accredited calibration laboratory. All OX860 scopes are supplied with a declaration of conformity. The OX860 can be used in the most demanding applications - education, R & D laboratories, production testing, quality assurance etc. - and will provide years of trouble-free, reliable operation. Supplied with two 250MHz probes.

### Specification

#### Vertical amplifiers

Bandwidth (-3dB, 2mV to 5V/div)  
 AC coupled: 10Hz to 100MHz  
 DC coupled: 0Hz to 100MHz  
 Sensitivity: 2mV to 5mV/div ±3% (1-2-5)  
 Fine adjustment: 1 to 1/2.5 (with UNCAL LED)  
 I/P impedance: 1MΩ/15pF  
 Rise time: <3.5ns (2mV to 5V/div)  
 Operating modes: CH1; ±CH2; CH1 and ±CH2 alternate or chopped; add/subtract

Max. i/p voltage: ±400V (DC/AC at 1kHz); CATII  
 Bandwidth limit: 20MHz

#### X-Y operation

Mode: CH1 in X axis; CH2 in Y axis  
 Sensitivity: 2mV/div to 5V/div  
 Bandwidth Ch. X: 0 to 4MHz (-3dB points)  
 I/P impedance: 1MΩ/15pF  
 Phase difference: <3° to 120kHz

#### Main Timebase TB1

Sweep time: 50ns/div to 0.1s/div ±3% (1-2-5 sequence)  
 Fine adjustment: 1 to 2.5 (with 'UNCAL' LED) up to 0.25s/div

Expansion x10: max. sweep 5ns/div ±5%  
 Hold-off: variable 1 - 10

#### Delayed Timebase TB2

Seep time: 50ns/div to 0.1s/div ±3% (1-2-5 sequence)  
 Horizontal modes: intensified alternate; delayed run-after-delay; trig-after-delay

#### Triggering

Trigger indication: 'TRIG' LED  
 Sources: CH1, CH2, ALT (CH1 & CH2 alternate), EXT, LINE (net)

Freq. Range CH1, CH2, ALT EXT  
 1kHz 0.5 div 100mV/rms  
 100MHz 1 div 200mV/rms  
 160MHz 2 div 300mV/rms

Sensitivity: CH1, CH2, ALT, EXT  
 Modes: normal - pk-pk triggered - delayed

Coupling: DC, AC, filters LFR, HFR (10kHz), TV-V, TV-H

Slope: pos, neg  
 Apparent delay: 20ns  
 Trigger delay: TB2 with intensified trace  
 Variable delay: 1 to 10 div, TB2 triggered on the same signal

**Z-Modulation**  
 Input: rear panel BNC  
 Zin: 10kΩ  
 Sensitivity: TTL level (max ±50V DC)  
 I/P frequency: 20MHz max.

**Calibrator**  
 Waveform: square wave  
 Amplitude: 0.5V ±1%  
 Frequency: 10Hz to 50kHz - according to sweep time

**Autoset**  
 Automatic vertical and horizontal configuration of the instrument to match the signals on inputs CH1 and CH2

**CRT**  
 Screen: 80 x 100mm  
 Accelerating: 15.5kV approx. plus trace rotation

**General**  
 Safety: IEC1010 -1 class 1; overlapping cat II; pollution degree 2  
 EMC: IEC, level 2; EN55011 class B  
 Power: 94V to 264V (48/440Hz) < 50W max  
 Dimensions: 450 x 340 x 155mm  
 Weight: 5.5kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GS62S	DX860 DI 100MHz Sc	1+ 5+ 10+ 1+	£1,050.00 £1,020.00 £990.00 £1,233.75

## DIGITAL OSCILLOSCOPES

### TEKTRONIX

#### Tektronix Digital Storage Oscilloscopes

An oscilloscope's display has been the final judge of electronic circuit performance. For decades, a key tool in acquiring the most challenging of waveform events has been digital sampling, and more recently the digital storage oscilloscope (DSO).

DSOs now dominate most scope applications because they offer crucial advantages over analogue oscilloscopes. Digital scopes document, analyse, and compare waveforms far more efficiently. They present stable, clear images of complex waveforms. Even so, several limitations of conventional DSOs have hampered their acceptance in some applications. Capturing Digital Real Time (DRT) waveforms eliminates distortion and aliasing sometimes found in conventional Digital Storage Oscilloscopes, while achieving full bandwidth for both repetitive and single-any time/division setting without having to wait through the multiple acquisitions needed to build a full display with equivalent-time methods.

When it comes to seeing the realities of a waveform, nothing beats DRT acquisition. Because the waveform is sampled and acquired in real time, as it actually occurs, the actual waveform is displayed in all its detail. This includes depiction of waveform noise and other random or nonsynchronous aberrations. With Tektronix digital real-time, if you can trigger on the waveform, you can see it! DRT acquisition technology has provided a platform for high-performance digital scopes at all price points. It overcomes the traditional limitations of digital storage scopes, and therefore is ideally suited for applications in the manufacturing, education, and service fields-applications traditionally claimed by analogue scopes. The TDS 210 and TDS 220 are low-cost DRT-based oscilloscopes optimised for these applications. Real-world users will find the scopes' performance better than analogue scopes. Moreover, the TDS 210 (KV56L) and TDS 220 (KV57M) provide a host of automated digital functions that will enhance productivity wherever they are used. These new products will hasten the final transition to digital scopes.

**Business Account Holders**  
**No Delivery Charges for any order**

#### TDS210 Digital Real-time Oscilloscopes

Tektronix



The TDS 210 features an unbeatable combination of performance, price, and functionality, making it easy for analog users to choose and use digital scopes. In fact, no other digital scope offers as much bandwidth and sample rate in one affordable package. By sampling at 10 and 16 times their bandwidths on both channels, the TDS210 Series scopes provide accurate real-time acquisition to the full bandwidth. The AC220 carrying case shown is an optional extra. Waveform storage makes it easy to save waveforms for later analysis, comparison, or printing. Features:

- ★ Affordable, high-performance scope that minimises aliasing and provides higher resolution waveforms
- ★ Available in 60 MHz and 100 MHz models, (KV57M) both featuring cursors with readout, 2 reference waveforms, 5 setup memories, 5 automatic measurements, and autoset
- ★ Small, light-weight footprint fits anywhere
- ★ Hardcopy extension module makes it easy to add screen hardcopy capability
- ★ Full 3-year warranty

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV56L	TDS210 60MHz	1+ 2+	£720,000 £684,000
KV61R	AC220 Case	£54,990	£64,620

#### TDS 220 Digital Real-time Oscilloscope

Tektronix



Featuring an unbeatable combination of performance, price and functionality, the TDS 220 makes it easy for analogue users to choose and use digital scopes. In fact, no other digital scope offers as much bandwidth and sample rate in one affordable package. By sampling at 10 and 16 times their bandwidths on both channels, the TDS 220 Series scopes provide accurate real-time acquisition to the full bandwidth. Waveform storage makes it easy to save waveforms for later analysis, comparison, or printing. The AC220 carrying case shown is an optional extra.

- Features:
- ★ 100 MHz bandwidth
  - ★ 2 Channels
  - ★ 1 GS/s max sample rate on each channel
  - ★ 5 ns/div to 5 s/div sweep speeds
  - ★ 2500 points/channel record length
  - ★ 3-year warranty

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV57M	TDS220	1+ 2+	£1,060.00 £1,009.52
KV61R	AC220 Case	£54,990	£64,620

#### TDS2CM - Centronics, GPIB, RS-232 Interface Modules

Tektronix

Easy to plug-in printing, communications and control modules. Includes Wavestar Lite - a trial version of the Wavestar software for RS232, Centronics and GPIB connection (PC interconnection and printing). Other modules available please ring for details.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV58N	TDS2CM	1+ 2+	£194,990 £185,710

#### TDS340A Digital Real-Time Oscilloscopes

Tektronix

When you need to capture real-life signals on each and every sweep, you can rely on TDS 300 Series Digital Real-time scopes. Featuring twice the bandwidth and twice the sample rate of previous TDS 300 models, the 300 series is ready to help you get the job done - no matter what your application. All models come with Fast Fourier Transform (FFT) to display harmonic content of waveforms. TDS340A features:

- ★ 100 MHz bandwidth
- ★ 500 MS/s/channel max sample rate
- ★ 2 channels
- ★ 5 ns/div to 5 s/div sweep speeds
- ★ 2 mV to 10 V vertical sensitivity
- ★ 8 bits vertical resolution
- ★ 1 K/channel record length
- ★ FFT, TV Line and Field Trigger
- ★ Roll Mode
- ★ Autoset
- ★ 21 Automatic Measurements
- ★ Peak Detect
- ★ 3-year warranty

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV62S	TDS340A	1+ 2+	£2,154.99 £2,047.00

#### TDS 360 Benchtop Oscilloscope

Tektronix

The TDS 300 Digital Real Time (DRT) oscilloscopes offer a wide range of circuit design and test utilities including FFT analysis and an internal floppy disk. Store waveforms and setups in a wide range of formats (TIFF, PCX, BMP, PostScript, Lotus 1-2-3, Excel, MathCAD) transferring files to your PC via the internal floppy disk drive or optional communications interface.

- TDS360 Specifications:**
- ★ 200 MHz Bandwidth
  - ★ 1 GS/s Sample rate per channel
  - ★ 2.5ns - 5s/div timebase range
  - ★ 21 automatic measurements
  - ★ Floppy disk drive
  - ★ FFT
  - ★ Optional GPIB/Centronics/RS232

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV64U	TDS360	1+ 2+	£2,814.99 £2,674.00

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## TDS380 Benchtop Oscilloscope

**Tektronix**

TDS380 features:

- ★ 400 MHz Bandwidth
- ★ 2 GS/s Sample rate per channel
- ★ 2.5ns - 5s/div Timebase range
- ★ 21 Automatic measurements
- ★ Floppy disk drive
- ★ FFT
- ★ Optional GPIB/Centronics/RS232



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV65V 1	TDS380	£3,960.00	£4,653.00

## WAVESTAR

## WSTR31 - WaveStar 1.1 Waveform Capture/Documentation Software

**Tektronix**

Windows based WaveStar 1.1 software makes it easy to import and export waveforms, transforming your PC into an electronic lab notebook. Now scientists, engineers and technicians can record measurements made with a broad range of Tektronix DSO's, including all related screen shots, scope settings and notes. This powerful software package provides a link to current spreadsheet and documentation software, allowing users to analyze measurements and incorporate them into reports and other documents.

Features:

- ★ Capture, organise, annotate, and archive all scope-related waveforms and settings
- ★ Analyze waveforms with Windows-based spreadsheet
- ★ Define unique notebook as one save file
- ★ Windows 95 and Windows Clipboard compatible
- ★ Display 22 measurements
- ★ Compute a 51 harmonic analysis
- ★ Dead bitmap and waveform files imported from TDS floppies
- ★ Export spreadsheets in .csv and .xlsx format.

Supports 2200 Series, 2400 Series, THS700A Series, TDS 200, 300, 400, 500, 600, 700, 800, 11401/02/03

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
NP11M 1	WSTR31	£244.990	£287.870

## PORTABLE OSCILLOSCOPES

### THS700 SERIES

## THS710A Handheld Oscilloscope

**Tektronix**



For Digital Real-Time (DRT) technology in a powerful, handheld scope, take a look at the industry's market leader: the THS700 Series

scopes. Combining a full-featured DRT scope with a powerful digital multimeter, the THS700 Series makes it easy to take full advantage of feature-packed instrumentation. Cursors, video trigger, voltage, resistance measurements and Waveform storage. Everything you need to test high-speed electronic circuitry. For maximum flexibility, scope and meter modes operate simultaneously and independently - on the same or separate channels. With the THS700 Series scopes, you won't find higher performance at a greater value. Case not included

THS710A Features:

- ★ Affordable DRT handheld scope and multimeter in a powerful package
- ★ Independently floating IsolatedChannel architecture for safe and accurate measurements
- ★ 21 Automatic measurements
- ★ High Resolution, backlit display, and pop-up menus
- ★ 60 MHz Bandwidth
- ★ 250 MS/s Sample Rate (each channel)
- ★ Time/Div Ranges 10 ns/div to 50 s/div

Accessories:

- THS7CHG Quick charge battery charger
- THS7BAT Rechargeable NiCad battery
- THS7HCA Transport Case
- TXMDXPB Deluxe probe set

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV66W 1	THS710A	£1,444.99	£1,697.87
NP07H 1	THS7CHG	£140.00	£164.50
NP08J 1	THS7BAT	£44.99	£52.87
NP09K 1	THS7HCA	£105.31	£123.75
NP10L 1	TXMDXPB	£80.000	£94.00

## THS720A Handheld Oscilloscope

**Tektronix**

THS720A Features:

- ★ Affordable dRT handheld scope and multimeter in a powerful package
- ★ Independently floating IsolatedChannel architecture for safe and accurate measurements
- ★ 21 automatic measurements
- ★ High resolution, backlit display and pop-up menus
- ★ 100 MHz Bandwidth
- ★ 500 MS/s Sample rate (each channel)
- ★ Time/Div range 5ns/div to 50s/div
- Case not included

Accessories:

- THS7CHG Quick charge battery charger
- THS7BAT Rechargeable NiCad battery pack
- THS7HCA Transport case
- TXMDXPB Deluxe probe set

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV67X 1	THS720A	£1,774.99	£2,086.62
NP07H 1	THS7CHG	£140.000	£164.500
NP08J 1	THS7BAT	£44.990	£52.870
NP09K 1	THS7HCA	£105.310	£123.750
NP10L 1	TXMDXPB	£80.000	£94.000

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## THS720P Handheld Digital Scope and Multimeter

**Tektronix**



The THS720P handheld digital scope and multimeter is the only safe measurement solution for powerful electronics. Featuring automatic power measurement with statistics, as well as independently floating isolated scope and DMM channels for safety, the THS720P scope offers what today's marketplace demands. From cursors to video trigger; voltage and resistance measurements; and waveform, data, and instrument setup storage - the THS720P scope provides 600 Vrms measurement capability with IsolatedChannel architecture, 100 MHz DRT bandwidth, and power measurements for safe and accurate performance. A truly powerful combination that can't be beat.

Features:

- ★ Designed specifically for electric/power applications
- ★ Powerful scope and DMM combination for maximum flexibility
- ★ Measures harmonics up to 31st (50/60 Hz)
- ★ High resolution, backlit display, and pop-up menus
- ★ 100 MHz bandwidth
- ★ 500 MS/s sample rate (each channel)
- ★ Time/Div range 5ns/div to 50 s/div
- Case not included.

Accessories:

- THS7CHG Quick charge battery charger
- THS7BAT Rechargeable NiCad battery pack
- THS7HCA Transport case
- TXMDXPB Deluxe probe set

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV68Y 1	THS720P	£2,240.00	£2,632.00
NP07H 1	THS7CHG	£140.000	£164.500
NP08J 1	THS7BAT	£44.990	£52.870
NP09K 1	THS7HCA	£105.310	£123.750
NP10L 1	TXMDXPB	£80.000	£94.000

## THS730A Handheld Oscilloscope

**Tektronix**

Features:

- ★ Affordable DRT handheld scope and multimeter in a powerful package
- ★ Independently floating IsolatedChannel architecture for safe and accurate measurements
- ★ 21 automatic measurements
- ★ High resolution, backlit display, and pop-up menus
- ★ 200 MHz Bandwidth
- ★ 1 GS/s Sample Rate (each channel)
- ★ Time/Div range 2 ns/div to 50 s/div
- Case not included.

- ★ 200 MHz Bandwidth
- ★ 1 GS/s Sample Rate (each channel)
- ★ Time/Div range 2 ns/div to 50 s/div
- Case not included.

Accessories:

- THS7CHG Quick charge battery charger
- THS7BAT Rechargeable NiCad battery pack
- THS7HCA Transport case
- TXMDXPB Deluxe probe set

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KV69A 1	THS730A	£2,390.00	£2,808.25
NP07H 1	THS7CHG	£140.000	£164.500
NP08J 1	THS7BAT	£44.990	£52.870
NP09K 1	THS7HCA	£105.310	£123.750
NP10L 1	TXMDXPB	£80.000	£94.000

**VECTOR SCOPE**

**WFM91 PAL Handheld  
Waveform/Vector/Audio/  
Picture Monitor**

**Tektronix**

A handheld, waveform/vector/audio monitor with an integrated colour picture display. This new monitor features low cost and ease of operation, in a rugged, self-contained package suitable for field production and system maintenance applications. The WFM 91 provides, for the first time, the utility of several discrete instruments in one handheld package. Field production can now realise the benefits of composite waveform, vector, and colour picture monitoring for camera setup and timing, and use the same instrument to supervise the program segment. Field service and troubleshooting can be quick, with a complete monitoring instrument easily hand carried to the site. Behind the rack, the studio engineer can have a full service monitoring system where separate monitors would be impractical. Battery operation makes the WFM 91 ideal for portable operation where ac power may not be available. This comprehensive monitor operates from an optional accessory NiCad battery pack or six alkaline C-cells. Where external power is available, the WFM91 operates from either 12 Vdc system power or a supplied ac adaptor, which also charges the optional NiCad pack. The WFM91 is a natural complement to the popular Tektronix TSG900 series Handheld Test Signal Generators. Together, this generator/monitor set provides a complete, portable system test package.



**NEW**

Features:

- ★ Video waveform, with 1H, 2H, 2F and magnified displays
- ★ Composite vector display, with x5 magnification
- ★ Audio waveform voltage/time display
- ★ High quality TFT colour picture display
- ★ Waveform or vector displays cut into picture\*
- ★ Bright line select display for VITS testing
- ★ Output to external picture monitor
- ★ Battery or ac operation with adaptor
- ★ Headphone output for audio identification and microphone checks
- ★ Rugged package for field operation.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	2+	
KV51F 1	WFM91	£1,784.99	£1,670.00	£2,097.37

**SIGNAL GENERATOR**

**TSG 95 PAL/NTSC Signal Generator**

**Tektronix**

The TSG 95 is a handheld PAL/NTSC Signal Generator designed for use in installation and maintenance of analog composite video systems. The TSG 95 supports both PAL and NTSC standards. It is a great companion for those verifying microwave links, installing studio or outside broadcast systems, or servicing in the field. Special signals are included for testing FCC baseband video parameters in cable television systems and for verifying television transmitter automatic correction systems. The TSG 95 Signal Generator provides a powerful combination of test signals, ID capabilities, and other features making it a must for the TV engineer's toolbox or workbench. The TSG 95 generator provides 20 user-selected test signals in PAL, 20 in NTSC, and 21 in zero setup Japan



**NEW**

NTSC.

PAL:

- ★ 75% Colour Bars
- ★ 100% Colour Bars
- ★ 75% Bars over Red
- ★ 100% Bars over Red
- ★ Convergence
- ★ Pluge
- ★ Safe Area
- ★ Green Field
- ★ Blue Field
- ★ Red Field
- ★ 100% Flat Field
- ★ 50% Flat Field
- ★ 0% Flat Field
- ★ Multiburst
- ★ 60% Reduced Line Sweep
- ★ 5 Step Gray Scale
- ★ 4.43 MHz Modulated 5 Step
- ★ Matrix of CCIR 17, CCIR 18, CCIR 330, CCIR 331, Sin(x)/x, 15 kHz Square Wave, Shallow Ramp, UK ITS 1, UK ITS 2
- ★ Field Square Wave
- ★ Bounce

NTSC and Japan NTSC

- ★ SMPTE Bars
- ★ 75% Colour Bars
- ★ SNG Colour Bars (Japan NTSC only)
- ★ Convergence
- ★ Safe Title/Safe Area
- ★ Red Field
- ★ 100 IRE Flat Field
- ★ 50 IRE Flat Field
- ★ Black Burst
- ★ 5 Step Gray Scale
- ★ Multiburst
- ★ NTC7 Composite

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	2+	
KV50E 1	TSG95	£804.990	£754.000	£945.870

**ACCESSORIES**

**146-0107-00**

**Tektronix**

NiCad battery pack for WFM90 Series Monitors.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	2+	
KV52G 1	146-0107-00	£138.000	£129.000	£162.150

**NEW**

**016-1344-00**

**Tektronix**

Carrying case with space for (1) WFM 90 Series monitor and (1) TSG90 Series generator.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	2+	
KV53H 1	016-1344-00	£160.990	£150.000	£189.170

**NEW**

**386-6787-00**

**Tektronix**

Desk stand for WFM 90 Series Monitors.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	2+	
KV55K	386-6787	£24.000	£22.000	£28.200

**NEW**

**SPECTRUM ANALYSER**

**TSA250 250MHz Spectrum  
Analyser Adaptor**

**TTI (Thurby-Thandar)**



This adaptor will convert virtually any conventional oscilloscope into a highly cost-effective spectrum analyser. Bandwidth is unimportant and the only requirement is that the oscilloscope has an X-Y mode. The frequency range of the device is 400kHz to 250MHz and the bandwidth (selectivity) is 250kHz. The centre frequency can be adjusted over the full frequency range with direct frequency readout on

a large LCD display. Both scan width and scan rate are fully adjustable.

The amplitude range is -70dBm to 0dBm with good accuracy over the whole amplitude and frequency range. A front panel 'CAL' button allows a calibrated -30dBm 50MHz marker signal to be superimposed for precise amplitude and frequency checks.

Connection to an oscilloscope is via standard BNC cables, with the BNC input of the adaptor a true 50Ω for low VSWR.

This mains powered adaptor is housed in a robust ABS case with full internal screening to meet EMC requirements.

**Specification**

Power requirements: 220/240V or 110/120V AC 50/60Hz

Power consumption: 8VA

Oscilloscope requirements

modes: X-Y mode, DC coupling; bandwidth not critical

X-input sensitivity: 0.5V/div

Y-input sensitivity: 0.5V/div

**Frequency**

Frequency range: At least 400kHz to 250MHz

Centre frequency

adjust: 0MHz to 250MHz

Bandwidth: 250kHz (-6dB)

Meter accuracy: Typically 2% of full range

Calibration marker: 50MHz fundamental, harmonics at

100MHz, 150MHz, 200MHz, 250MHz

Frequency scan width: 10MHz to 250MHz continuously variable (1MHz/div to 25MHz/div)

Scan speed: 0.5ms/div to 5ms/div, variable

**Amplitude**

Input impedance: 50Ω

Amplitude range: -70dBm to 0dBm nominal

Amplitude scale: Logarithmic, 10dB/div

Amplitude linearity: Typically ±1.5dB

Amplitude flatness: Typically ±1.5dB, 1MHz to 250MHz

Maximum input level: +10dBm

Calibration marker: -30dBm ±1dB at 50MHz, harmonics uncalibrated

Dimensions: 260 x 88 x 235mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DE94C	TSA250 Spect Adaptor	£305.530	£264.180	£262.140	£358.000
AL06G	DE94 Std Calib	£338.810			£388.110
AL07H	DE94 NAMAS Calib	£358.810			£421.610

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## ACCESSORIES

### 60MHz Oscilloscope Probe HP-2060



The HP-2060 is a high-quality passive oscilloscope probe for use with scopes up to 60MHz. The probe is suited to equipment with an input impedance of 1M $\Omega$  shunted by 25pF. However, it is possible to compensate for equipment with an input capacitance in the range 10-35pF. The probe also features a switchable attenuator with X1 and X10 settings as well as a 1.4m flexible screened cable. The probe head can be detached from the cable assembly by unplugging the push-fit BNC connector. Compensation adjustment is available so that the probe does not distort sampled waveforms. Simply apply a 1kHz square waveform to the probe tip and adjust the recessed trimmer concealed in the probe head.

#### Specification

Attenuation Ratio: 1:1, 10:1 switchable  
 Bandwidth: DC to 15MHz (1:1), DC to 60MHz (10:1)  
 Rise time: 27ns (1:1), 5.5ns (10:1)  
 Input resistance: 1M $\Omega$  (i.e. oscilloscope input)  
 1:1 attenuation: 10M $\Omega$  (when used with 1M $\Omega$  input oscilloscopes)  
 Input capacitance: 46pF plus oscilloscope capacitance  
 1:1 attenuation:  $\approx$ 18pF  
 10:1 attenuation:  $\approx$ 18pF  
 Working voltage: 600V DC including peak AC  
 The probe is supplied with two channel identifier clips, a sprung loaded hook, ground lead, insulating tip, IC test tip, operating manual and an adjustment tool for the internal trimmer.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
AG58N	60MHz Scope Probe	£16,260	£7,850	£7,490	£19,110

### Oscilloscope Probe



A very high quality probe suitable for use with almost any oscilloscope. Probe has a slide switch on body for immediate selection of either times 10 or times 1.

#### Specification

Position x1  
 Attenuation: 1:1  
 Bandwidth: DC to 25MHz  
 Rise time: 14ns  
 Input resistance: 1M $\Omega$  (oscilloscope input)  
 Input capacitance: 90pF (+ oscilloscope input)  
 Working voltage: 200V DC including peak AC derating with frequency

#### Position Ref

Probe tip grounded via 9M $\Omega$  resistor

#### Position x10

Attenuation: 10:1  
 Bandwidth: DC to >250MHz  
 Rise time: <1.4ns  
 Compensation range: 10 to 50pF  
 Input resistance: 9M $\Omega$   $\pm$ 1% (10M $\Omega$  when

connected to oscilloscopes with 1M $\Omega$  input)  
 Input capacitance: 16pF  
 Working voltage: 500V DC including peak AC derating with frequency  
 Cable length: 1.2m terminated in BNC plug  
 Working temperature: -25°C to +70°C  
 The probe is supplied with a 1.2m flexible screened lead and 20cm earth lead with crocodile clip. Supplied in a plastic storage wallet with the following accessories: sprung loaded test hook, IC test tip, probe tip, BNC adaptor, insulating tip and compensating tool.

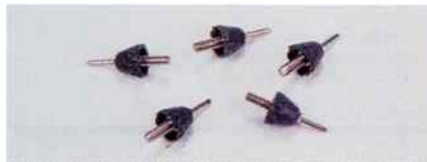
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BW05F	Scope Probe BNC	£20,060	£18,200	£14,540	£23,570

### Oscilloscope Probe Accessories



A pack of three spring-loaded test hooks and a pack of five probe tips for use with the oscilloscope probe (BW05F).



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KR21X	3 Pk Test Hooks	£5,520	£4,740	£4,590	£6,490
KR22Y	5 Pk Probe Tips	£3,820	£2,960	£2,550	£4,490

### HCK Isoprobe 10:1 Scope Probe

Multi-Contact



A superbly-made high-bandwidth 10:1 oscilloscope probe, which is fully insulated for safety. The 1.5m lead is terminated in a BNC plug, which also accommodates a trimmer. This is adjusted to match the capacitance of the probe with that of the scope. Full instructions are supplied, together with adjustment tool. If a ground connection is required, the spring-loaded probe shield is pushed upwards to reveal a metal ring. The optional shield grip, which terminates in a crocodile clip, clips onto this. Finished in blue colour.

#### Specification

Frequency range: DC to 250MHz -3dB (with optional shield grip)  
 Input impedance: 10M $\Omega$  (at 1M $\Omega$  scope input)  
 Input capacitance: 15pF (at 25pF scope input)  
 Rise time: 1ms  
 Dielectric strength: 1000V AC/DC (between

screen and outer insulation)  
 Voltage between tip and shield: 1000V AC/DC (at 1MHz)  
 Cable length: 1.5m

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	10+	
DN36P	11 Scope Probe 1.5m Blu	£52,070		£61,190

### Shield Grip

Multi-Contact



Allows ground connection to be made to the scope probe above, for high bandwidth measurements. Insulated with 6.6 polyamide. 90mm lead, terminated in shrouded crocodile clip. Maximum shield potential: 30V AC (60V DC).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	10+	
DN42V	Shield Grip Probe	£2,540		£2,990

### Isoprobe Plug-On Hook Grip

Multi-Contact

The body of this grip is made from sturdy 6.6 polyamide to provide a high degree of insulation. When the collar is pulled, a spring-loaded copper-beryllium hook is revealed. This will grip wires and pins of up to 1.5mm in diameter. The grip is readily attached or removed, and a special click mechanism prevents accidental detachment.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	10+	
DN38R	Plug-On Grip Probe A	£3,990		£4,690

### Isoprobe Long-Reach Grip

Multi-Contact

This Isoprobe plug-on grip has a pair of steel wire clamps that open and spread when the collar is pulled back. The shaft, which is 50mm long, is insulated with silicone rubber. Difficult-to-access conductors of up to 5mm in diameter can be gripped. The device is readily attached or removed, and a special click mechanism prevents accidental detachment.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	10+	
DN39N	Plug-On Grip Probe B	£5,350		£6,290



### Isoprobe Plug-On Hook Grip with Shield Grip

Multi-Contact



Intended for use with the Isoprobe, this grip has a spring-loaded copper-beryllium hook of the type fitted to DN38R above. When attached to the scope probe, the inner-shield sleeve of the grip and the shield sleeve of the probe come into contact, so that a very short connection to a ground point can be made, for a large bandwidth. The grip is readily attached or removed, and a special click mechanism prevents accidental detachment. 90mm lead, terminated in shrouded crocodile clip. Maximum shield potential: 30V AC (60V DC)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN41U	Plug-On Hook Probe	£4.410	£5.190

### Isoprobe Plug-On Probe

Multi-Contact

This probe has been designed for the Isoprobe, so that contact can be made with awkward-to-access test points. The body of the probe covers the whole area between the protection collar and the Isoprobe's tip, for touch protection up to 1000V. The tip is 19mm long, 2mm in diameter and made from turned nickel-plated brass.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN37S	Plug-On Probe Blue	£2.710	£3.190

### Isoprobe Plug-On Jaw Grip

Multi-Contact

Recommended for attaching Isoprobe to thick conductors, this grip consists of a pair of spring-loaded nickel-plated jaws, which are opened when the collar is pulled back. The grip is readily attached or removed, and a special click mechanism prevents accidental detachment.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN40T	Plug-On Grip Probe C	£5.940	£6.990

### Isoprobe Safety Plug Adaptor

Multi-contact

This adaptor, intended for the Isoprobe, contains a 4mm safety cage spring plug on one side, and a sleeve to accept the tip of the scope probe on the other. With this adaptor, a touch-protected connection of up to 1000V between the probe and safety sockets on experimental boards, etc., is possible.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN43W	Probe Safe Plug Adap	£1.690	£1.990

### BNC Fully Insulated Test Leads

Multi-Contact



Intended for use as extension leads, or for test clips equipped with a BNC plug, these high-quality high-frequency test leads are completely insulated. Even the barrels of the BNC connectors are coated in plastic. Impedance: 50Ω. Length 1m  
Male to Female Black DN35Q  
Male to Female Red DN34M  
Male to Male Red DN32K  
Male to Male Black DN33L

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DN35Q	Frequency Ld M/F Blk	£10.620	£12.490
DN33L	Interconnect Ld Blk	£10.620	£12.490
DN34M	Frequency Ld M/F Red	£10.620	£12.490
DN32K	Interconnect Ld Red	£10.620	£12.490

## LOGIC PC TESTING PC A/D CONVERTERS

### PC Based Virtual Instruments

Pico

A range of high performance virtual instruments that allow your PC to be used as an oscilloscope, spectrum analyser, voltmeter or data logger. They are supplied ready to use with either PicoScope software (scope, spectrum, meter) or PicoLog (datalogger). All units connect to the PC's parallel port so can be used on both desktop and laptop PC's. Each unit is targeted at different application areas :

- ADC-10 Low cost A/D converter. Simple oscilloscope.
- ADC-11 Multi channel data logger.
- ADC-100 Audio spectrum analyser. High Speed data logging.
- ADC-200 Digital Storage Oscilloscope. High Speed Spectrum analyser.

In addition the ADC-100 and ADC-200 are a popular choice for automotive work. All units are also supplied with DOS (C.Pascal) and Windows software drivers for users wanting to develop their own software.

### ADC-10 A/D Converter with Oscilloscope, Voltmeter and Spectrum Analyser Software



The ADC-10 provides your PC with a single channel of analog input. Plugging into the parallel port it is completely self contained, requiring no external power and taking up no expansion slots. Input is via a BNC connector allowing standard (x1) scope probes to be used. Software is supplied which allows the device to be used as a single channel oscilloscope (DSO), spectrum analyser and voltmeter. Displayed waveforms can be saved to disk or printed. For users wishing to develop their own software, C, Pascal, Basic and Windows drivers are supplied. Note: the ADC-10 has a 0 to 5V unipolar input range. For use as a general purpose oscilloscope the ADC-100 and ADC-200 are more suitable.

#### Specification

- Input Range: 0 to 5V
- Resolution: 8 bits
- Max sampling rate: 20ksps on 386/33 PC
- Accuracy: 1%
- Overload protection: ±30V
- Input Connector: BNC
- Input impedance: 200kΩ
- Output Connector: 25 Way male D type to PC printer port
- Power Requirements: No power supply required

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
KP40T	ADC 10 Converter	£50.200	£58.990

† This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**



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## ADC-11 Multichannel PC-Based Datalogger

Pico



The ADC-11 together with the supplied software is the ideal solution to multichannel data-logging tasks without spending a fortune. All the electronics necessary to monitor 11 analogue channels has been squeezed into this tiny 65 x 55mm (l x w) unit. Connection to the PC is through the parallel port which also supplies all the power required. The ADC-11 is ideal a wide variety of data logging tasks, such as temperature monitoring, pressure monitoring and plotting battery discharge curves. The supplied PicoLog software is a powerful and flexible data logging package, it allows data to be collected, stored and printed (from 1 sample/ms to 1/day). Scaling options include linear, equation and table lookup. Reports (text or graphs) can be displayed during and after data collection, alarms can be set to indicate if a signal is out of range. Simple setup and operation mean you can be up and running in minutes.

### Specification

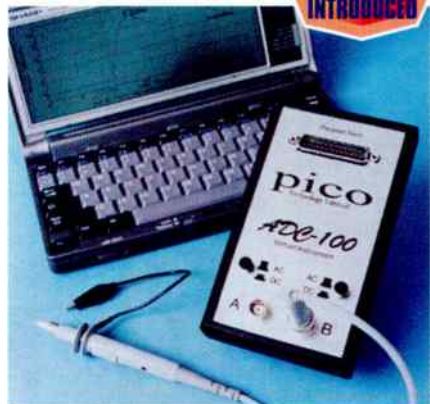
Number of i/p channels: 11  
 Number of outputs: 1 (Digital)  
 Input range: 0 to 2.5V  
 Resolution: 10 bits  
 Max sampling rate: 18ksp/s on 386/33 PC  
 Accuracy: 1%  
 Overload protection:  $\pm 30V$   
 Input connector: 25 Way female D type  
 Output connector: 25 Way male D type to PC printer port  
 Power requirements: No power supply required

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AS41U 1	Digital Converter	£79.140	£92.990

## ADC-100 PC based Digital Storage Oscilloscope/Data Logger

Pico



The ADC-100 is a high speed data acquisition system for use with an IBM compatible computer. Its high speed (100ksp/s) and high resolution (12 bits) make it ideal for both audio work and as a general purpose test instrument. Its 9 voltage input ranges ( $\pm 50mV$  to  $\pm 20V$ ) enable the unit to connect directly to a wide range of signals. The PicoScope software

(Windows and DOS versions supplied) converts the unit into an oscilloscope, spectrum analyser, voltmeter and frequency meter. PicoLog software (see ADC-11 entry for details) extends the capabilities of the ADC-100 to a high speed data logger. Features include:

**Oscilloscope:** 100 $\mu$ s/div to 50s/div adjustable timebase. Dual trace with X and Y zoom. Advanced triggering; rulers for measurement.

**Spectrum Analyser:** Real time display of amplitude against frequency. Both axis can be linear or log. Signal averaging to reduce noise. Meter displays AC or DC Voltage (autoranging), Frequency and dB. DataLogger see ADC-11 for details

**Meter:** Displays AC or DC voltage (autoranging), frequency and dB.

**DataLogger:** see ADC-11 for details

### Specification

No of i/p channels: 2  
 Resolution: 12 bits  
 Input ranges:  $\pm 20V$ ,  $\pm 10V$ ,  $\pm 5V$ ,  $\pm 2V$ ,  $\pm 1V$ ,  $\pm 500mV$ ,  $\pm 200mV$ ,  $100mV$ ,  $\pm 50mV$   
 AC/DC  
 Input impedance: 1M $\Omega$   
 Max sampling rate: 100ksp/s on 386/33 PC  
 120ksp/s on 486/66 PC  
 Accuracy: 1%  
 Overload protection:  $\pm 100V$   
 Input connectors: BNC  
 Output connector: 25-Way male D-type to PC printer port  
 Power requirements: no power supply required

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
G571N	ADC-100 Di Ch12Bit	£199.000	£233.830

## ADC-200 PC Based Digital Storage Oscilloscope

Pico



- 50MSPS dual channel storage scope
- 25MHz spectrum analyser
- Multi meter
- Lower cost 20MSPS also available
- Windows and DOS software supplied
- Easy to install and use

The Pico ADC-200 is a high speed virtual instrument designed for use with your PC. Together with PicoScope Software your computer can be used as a 50MSPS Dual channel Digital Storage Oscilloscope (DSO), a spectrum analyser or multimeter. The external trigger connector also doubles up as a simple signal generator.

The ADC-200 simply plugs into the parallel port of your PC, and requires no complicated setting up procedure - just run the software and start measuring. Connection to the parallel port means the ADC-200 can be used with either desktops in the lab, or notebooks in the field. Controlled using the standard Windows user interface (3.1x or Win 95) the software is easy to use with full on line help.

The ADC-200 offers all the usual advantages that storage oscilloscopes have over analogue scopes, but takes thing one step further. By making full use of the Windows environment it is possible to view a signal in several ways simultaneously. The screen shot shows 4 different views of the same input signal. The scope shows the actual waveform, the spectrum and frequency components, and the two meters shows

its AC voltage and frequency. Never before has it been so easy to capture so much information about a signal.

Being a PC based instrument means that the ADC-200 has features as standard that are normally only found on DSO's costing many times the price, such as:

1. FFT Spectrum analyser included
2. Oversampling for noise reduction/resolution enhancement
3. Advanced triggering modes
4. Autorange voltage selection
5. Rulers for amplitude / time measurement
6. Unlimited storage of traces to disk
7. Print to any Windows compatible printer

The spectrum analyser trace shows several features of the software. Button bars provide quick access to the most commonly used features, whilst less often used options are kept out of the way to allow maximum use of the screen for the trace. This is of particular use to people who need to view the screen from a distance, or when several people want to view the signal at once.

The ADC-200 has a much larger memory (8K per channel) than most DSO's. This allows large amounts of data to be collected at high speed. The large amount of memory also allows oversampling which is useful for eliminating aliasing and boosts the resolution when viewing small signals.

As well as its uses as a virtual instrument, the ADC-200 can also be used as a high speed data acquisition / data logging device. C, Pascal and Windows (Visual Basic, Delphi, and Excel) drivers are supplied as standard, so you can easily develop software to automate measurement, test and diagnosis activities.

Two versions are available. The ADC200-50 capable to 50MSPS samples and spectrum analysis of 25MHz, and the ADC200-20 capable to 20MSPS and spectrum analysis to 10MHz. Both units are supplied with cables, power supply and manuals.

### Specification

	ADC 200-20	ADC200-50
Sampling		
1 channel:	20MSPS	50MSPS
2 channel	20MSPS	25MSPS
Buffer size:	2 x 8k	1 x 16k, 2 x 8k
Resolution:	8-bit	8-bit
Connections		
analog:	2 channels, 1M $\Omega$ i/p impedance, AC/DC coupling via switch	
digital:	1 channel, ext. trigger/signal generator >100k $\Omega$ i/p impedance	
Voltage ranges:	$\pm 20V$ , $\pm 10V$ , $\pm 5V$ , $\pm 2V$ , $\pm 1V$ , $\pm 500mV$ , $\pm 200mV$ , $\pm 100mV$ , $\pm 50mV$	
Accuracy		
voltage:	$\pm 3%$	$\pm 3%$
time:	$\pm 100ppm$	$\pm 100ppm$
Trigger modes		
event:	none/rising/falling	
source:	ch. A/ch. B/	
digital timing:	pre/post/1% increments	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
G569A	ADC-200 20MSPS	£359.000	£421.830
G570M	ADC-200 50MSPS	£499.000	£586.330

## PCS32 Mk II Dual Channel Digital Storage PC 'Scope

Velleman



Use your IBM compatible computer as an oscilloscope. This fully aligned and tested unit presents a very good, and economical, way to

convert your computer into a comprehensive piece of test equipment.

The PCS32 Mk II is a digital memory oscilloscope that can be used on an IBM compatible computer. It is operated from the computer using the computer screen as the oscilloscope display. All standard oscilloscope functions are available, as well as a Transient recorder and FFT analysis, from the DQS program supplied. Operation seems like a normal oscilloscope, with the one difference that most operations are performed using the mouse. Connection is via the parallel port of the computer. The PC oscilloscope uses a sampling frequency of 32MHz and can drive up to two completely independent channels. Any waveform on screen can be stored in TIFF format so that it may be later retrieved for use in documentation or for comparison to other waveforms.

This latest version is supplied with manual, PC connecting cable and software. Requires +9V to +12V DC @ 700mA supply to operate. Power supply and probes are not included.

**Demo Disk**

A Digital PC 'Scope Demonstration Disk is available (VF78K), the demonstration software is also downloadable free of charge from the Maplin website, the following URL will take you directly to the correct page of the site:

<http://www.maplin.co.uk/velleman/k7103.htm>

**Software**

Software supplied is DOS-based (requires '86 or better PC) and provides Scope, Spectrum Analyser (FFT) & Transient Recorder functions (software is compatible with Windows™ 3.x and Windows™ 95)

**Windows 95 Software**

Dedicated software for Windows™ 95 is also available (VF87U), as an upgrade, which provides oscilloscope and spectrum analyser functions in an integrated Windows™ 95 environment.

**Oscilloscope Specifications**

Minimum system requirements

- IBM compatible PC
- VGA display
- Free Printer port LPT1
- Mouse
- 400Kb free conventional memory

Technical data

Vertical deflection	
Sensitivity:	10mV to 5V/DIV
Frequency range:	DC to 16MHz
Input impedance:	1MΩ // 30pF
Input coupling:	DC - AC - Gnd
Input voltage:	100V max (DC + peak AC)
Horizontal deflection	
Timebase:	100ns to 100ms/DIV
Triggering	
Trigger mode:	single, automatic or free running
Slope:	positive or negative
Level:	adjustable in steps of 1/2 division
Trigger channel:	channel 1 or channel 2
Digital storage	
Resolution:	8-bit
Sampling rate:	32MHz (max)
Memory size:	4Kb/channel
Interpolation:	linear or smoothed

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	4+	
VF85G	1 PCS32-II 2Ch PCScope	£238.280	£214.460	£193.010	£279.990
VF86T	OPTRS232 for LCDScope	£10.200	£9.180	£8.260	£11.990
VF78K	Dig PCScope DemoDisk	£2.540			£2.990

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## LOGIC PROBES & ANALYSERS

### Logic Pulser



A handy and simple to use logic pulser designed to inject pulses directly into logic circuits for powered-up circuit tests and fault finding, suitable for use with TTL, DTL, CMOS and various other kinds of ICs. Using the logic pulser you will not only find wiring errors but other component faults. The pulser is simply powered by direct connection to the circuit's own supply rails using the red and black probe clips attached to the pulser's 580mm long supply cable. The probe generates alternate and very short duration (10µs) positive and negative pulses which can source or sink up to 100mA. As a result the probe can inject pulses into any part of a digital circuit and overcome the output impedance of the previous stage to produce a result, whether the potential at this point is logic high or low, but because of the extremely short duration of the pulse there is only absolute minimum risk of the preceding stage.

Used in conjunction with a logic probe, oscilloscope or similar monitoring instrument, the pulser can be used to 'trace' through a logic system. In order that results can be observed by the human eye using a monostable driven LED indicator or similar the pulse train can be as slow as 0.5 pps (positive or negative), or the rate can be switched to a faster 400 pps. In addition three pins are provided on the outside of the case to which crocodile clips can be attached, providing a square wave output with 50% duty cycle, and a sync pulse input for synchronisation with oscilloscope, signal generator etc. A third pin serves as a common ground for these if required.

**Specification**

Supply voltage max:	20V DC
Nominal supply range:	3 to 15V DC
Sync input impedance:	1MΩ
Pulse repetition rate:	0.5 or 400 pps
Pulse width, 100mA load:	10µs
Pulse polarity:	both 1 positive and 1 negative each cycle
Output current capability:	100mA source or sink, pulse o/p 5mA source or sink, square o/p
Dimensions:	212 x 26.5 x 18mm
Weight:	65g
Supply input overload protected to:	±25V for 15s, pulse output to ±35V for 15s, sync input to ±120V for 15s.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YU5RL	Logic Pulser	£14.450	£10.990	£9.950	£16.980

### Logic Probe



A high quality logic probe for use with TTL, DTL and CMOS ICs. The probe has a memory function which can detect the occurrence of single pulses or logic

level. One shot and low repeat rate narrow pulses which are nearly impossible to see even with a fast scope, are easily detectable and visible. The probe has three LEDs, red for high logic level, green for low logic level and yellow for pulse. The intensity of the pulse LED is directly proportional to the duty cycle of the signal observed. All single pulses or pulse trains are recognised from 30ns up to 500ms. The probe is supplied with approx. 500mm lead terminated in a red and black probe clip. In use the red clip should be connected to the positive of the circuit under test, and the black to the negative. When making the connection, the yellow LED may blink once or twice, but if it continues to blink, the power supply has excessive ripple. With the switch in TTL position a +5V supply must be used, but in CMOS position voltage may be between +3V and +18V DC.

**Pulse Detector:** High speed pulse train or single events (+ or - transitions) activate 500ms pulse stretcher. In memory position, first transition lights and latches LED.

**Detection Levels**

Logic Lights LED	DTL/TTL	CMOS
1 Red (Hi)	>2.3V ±0.2V	>70% of V <sub>CC</sub> ±10%
0 Green (Lo)	<0.8V ±0.2V	<30% of V <sub>CC</sub> ±10%
Bad No indication	0.8V to 2.3V	30% to 70% of V <sub>CC</sub>
Detectable Pulse Width:	30ns min	
Input Impedance:	>1MΩ	
Input Signal Frequency:	>17MHz	
Input Overload Protection:	±220V DC/AC for <15s	
Probe Power:	25mA to 40mA at 5V to 15V DC	
Probe Power Protection:	±20V max with lead reversal protection	
Dimensions:	212 x 26.5 x 18mm	
Weight:	65g	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
FY73Q	Logic Probe	£14.450	£10.990	£9.940	£16.980

### Accessories for Logic Probe



An inset plug on the side of the Logic Probe described above permits the connection of one of two accessories. Approximately 250mm of wire terminated in a socket which connects to plug on side of Logic Probe. A red wire terminated at the other end in a red Probe Clip extends the probe. Or a black wire terminated at the other end with a crocodile clip in a black vinyl sleeve extends the ground connection. Sold separately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
FD34M	Logic Probe Clip Extn	£1.520	£1.190	£1.130	£1.790
FD35Q	Logic Probe Grnd Extn	£1.260	£0.887	£0.836	£1.490

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## 32-Channel Logic Analyser

Black Star



Not supplied with board and ribbon cable.

- ★ 32-channels
- ★ 2k x 32-bit word memory
- ★ Non-volatile acquisition and reference memory
- ★ 33MHz internal or external clocks
- ★ Hex, octal, binary formats
- ★ Fully menu driven

An easy-to-use, full function 32-channel Logic Analyser that is operated using menus and function keys with full context sensitive help readily available. 32-channel acquisition is available (33MHz maximum external clock rate) with data capture in single, repeat or condition repeat mode. Single mode will do just one acquisition while repeat mode will keep doing single acquisitions until a comparison between acquisition and reference memories fails (failure parameters are selectable). Two main display modes are available. 'Timing display' allows 8-channels of timing data with selectable resolution from 2048 to 16 locations. This mode will also show cursor and timing bar and one state line in the chosen format. 'State mode' allows six locations to be displayed in 16 selectable formats in combinations of HEX, OCTAL or ASCII. Additionally, this mode has a cursor bar to show the position in memory. It is possible to select a 'compare' mode where difference between the acquisition and reference memory are highlighted. In both modes it is possible to display either the acquisition memory or the reference memory. Triggering is by two full 32-bit trigger words with trigger on either word, and set in either HEX, OCTAL or BINARY. The trigger may be held off so that two clocks are required to recognise any trigger. Also, the trigger may be delayed until the memory is full. A RS232 serial output at a 4800 baud rate is provided for printouts (Epson compatible printer) of timing diagram for 32-channels and 32-bit state.

### Specification

**Display:** 128 x 64 graphics LCD with up to 20 x 8 characters

**Memory:** Full 2k deep non-volatile memory for both acquisition and reference memory on all 32-channels

**Clocks**  
 internal: 100Hz to 33MHz  
 external: 2, DC to 33MHz +/- edge

**Trace:** Full 32-bit trace word, set in either HEX, OCTAL or BINARY

**Inputs:** TTL levels (1.4V) or HC levels (2.5V), 100kΩ input impedance

**Outputs:** Trigger output goes high whenever the first 32-bit trigger word is recognised

**Power:** 110/120V AC or 220/240V AC 12VA

**Size:** 219 x 240 x 98mm

**Weight:** 1.8kg

Supplied with instruction manual, IEC mains lead and spare fuse.

### Optional accessories

The Personality Module provides convenient connection between 5V logic or microprocessor systems and the Logic Analyser via a 0.5m 40-way ribbon cable. Wire wrap pins provide user-configurable inputs. A 40-way IC socket is provided for optional mounting of the target system microprocessor. All inputs are buffered. Solder-on configuration boards are provided for users of 6502 and Z80 microprocessors.

The Communications Pod simplifies monitoring of Centronics, GPIB and RS232 communication buses by the Logic Analyser. RS232, 9-way, 25-way male and female D connectors, two 36-way Centronics connectors, and a 24-way GPIB connector are provided on a single PCB with 0.5m 40-way ribbon cable connection to the Logic Analyser.

A kit of nine (eight channels, one ground) leads approximately 0.3m long with sprung loaded miniature hooks is available. The leads are designed for use with the Logic Analyser and the Personality Module.

Retail Unit Price each (inc. VAT).

Order Code	Type 11974	Price each exc. VAT	inc. VAT each
DT86T 1	32 Ch Logic Analyser	£498.720	£586.000
DT87U 1	Personality Module	£65.090	£76.490
DT88V 1	Communications Pod	£48.920	£57.490
DT89W	9-Way Grabber Set	£16.920	£19.890

## TV/ MONITOR TESTERS

### WFM91 PAL Handheld Waveform/Vector/Audio/Picture Monitor

Tektronix

A handheld, waveform/vector/audio monitor with an integrated colour picture display. This new monitor features low cost and ease of operation, in a rugged, self-contained package suitable for field production and system maintenance applications. The WFM 91 provides, for the first time, the utility of several discrete instruments in one handheld package. Field production can now realise the benefits of composite waveform, vector, and colour picture monitoring for camera setup and timing, and use the same instrument to supervise the program segment. Field service and troubleshooting can be quick, with a complete monitoring instrument easily hand carried to the site. Behind the rack, the studio engineer can have a full service monitoring system where separate monitors would be impractical. Battery operation makes the WFM 91 ideal for portable operation where ac power may not be available. This comprehensive monitor operates from an optional accessory NiCad battery pack or six alkaline C-cells. Where external power is available, the WFM91 operates from either 12 Vdc system power or a supplied ac adaptor, which also charges the optional NiCad pack. The WFM91 is a natural complement to the popular Tektronix TSG900 series Handheld Test Signal Generators. Together, this generator/monitor set provides a complete, portable system test package.



Features:

- ★ Video waveform, with 1H, 2H, 2F and magnified displays
- ★ Composite vector display, with x5 magnification
- ★ Audio waveform voltage/time display
- ★ High quality TFT colour picture display
- ★ Waveform or vector displays cut into picture\*
- ★ Bright line select display for VITS testing
- ★ Output to external picture monitor
- ★ Battery or ac operation with adaptor
- ★ Headphone output for audio identification and microphone checks
- ★ Rugged package for field operation.

Retail Unit Price each (inc. VAT).

Order Code	Type 17944	Price each exc. VAT	inc. VAT each
KV51F 1	WFM91	£1,784.99	£2,097.37

### TSG 95 PAL/NTSC Signal Generator

Tektronix

The TSG 95 is a handheld PAL/NTSC Signal Generator designed for use in installation and maintenance of analog composite video systems. The TSG 95 supports both PAL and NTSC standards. It is a great companion for those verifying microwave links, installing studio or outside broadcast systems, or servicing in the field. Special signals are included for testing FCC baseband video parameters in cable television systems and for verifying television transmitter automatic correction systems. The TSG 95 Signal Generator provides a powerful combination of test signals, ID capabilities, and other features making it a must for the TV engineer's toolbox or workbench. The TSG 95 generator provides 20 user-selected test signals in PAL, 20 in NTSC, and 21 in zero setup Japan NTSC.



PAL:

- ★ 75% Colour Bars
- ★ 100% Colour Bars
- ★ 75% Bars over Red
- ★ 100% Bars over Red
- ★ Convergence
- ★ Plug
- ★ Safe Area
- ★ Green Field
- ★ Blue Field
- ★ Red Field
- ★ 100% Flat Field
- ★ 50% Flat Field
- ★ 0% Flat Field
- ★ Multiburst
- ★ 60% Reduced Line Sweep
- ★ 5 Step Gray Scale
- ★ 4.43 MHz Modulated 5 Step
- ★ Matrix of CCIR 17, CCIR 18, CCIR 330, CCIR 331, Sin(x)/x, 15 kHz Square Wave, Shallow Ramp, UK ITS 1, UK ITS 2
- ★ Field Square Wave
- ★ Bounce

NTSC and Japan NTSC

- ★ SMPTE Bars
- ★ 75% Colour Bars
- ★ SNG Colour Bars (Japan NTSC only)
- ★ Convergence
- ★ Safe Title/Safe Area
- ★ Red Field
- ★ 100 IRE Flat Field
- ★ 50 IRE Flat Field
- ★ Black Burst
- ★ 5 Step Gray Scale
- ★ Multiburst
- ★ NTC7 Composite

Retail Unit Price each (inc. VAT).

Order Code	Type 17976	Price each exc. VAT	inc. VAT each
KV50E 1	TSG95	£804.990	£945.870

## TELETEST 2 Test Pattern Generator

Ozan



This compact, hand-held, battery powered test pattern generator provides the most essential audio/video test signals on line and RF outputs. It is suitable for comprehensive testing and servicing of consumer and video equipment, such as TVs, VCRs, camcorders, satellite receivers, Hi-Fi etc. The generator produces six test patterns and a 1kHz test tone, with outputs via standard sockets, so no non-standard cables are required. Housed in a tough plastic box. An optional mains power supply and handy carry case are available separately.

### Specification

Video test patterns: colour bars (75% EBU 100.0.75.0 spec) grey scale; crosshatch with edge castellations; red purity; white purity; black and burst

Video outputs  
composite video: 1V pk-pk 75Ω phono socket  
S-video: 1V pk-pk (Y) 75Ω.  
0.3V pk-pk (C) 75Ω via 4-pin DIN socket

UHF: tuneable chs 32-42, 75Ω co-axial socket  
1kHz pure sine wave

Audio test:  
Audio outputs  
line level: 1V pk-pk, 1kΩ phono socket  
Note: UHF PAL I = 6MHz subcarrier to CCIR specification

Synchronisation: fully interlaced

Line frequency: 15.625kHz  
Sync amplitude: 300mV ±2%

Video reference  
luminance level: 700mV ±2%  
s/c frequency: 4.433619MHz ±4Hz  
burst level: 300mV ±2%  
Power: 9V PP3 alkaline battery or 9V to 12V DC mains adaptor  
Dimensions: 80 x 160 x 135mm  
Weight: 250gms

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GS64U	Teletest II Pat Gen	£149.940	£140.000	£135.000	£176.190

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## TELETEST Tone

Ozan



The TELETEST Tone generates the most essential audio test signals at line output, and is ideal for professional, semi-professional, disco and similar audio equipment. There are four selectable test frequencies available via standard balanced XLR and unbalanced phono sockets. There are three standard reference levels available on the balanced output, each channel being independently adjustable. A stereo ident mode is provided. This rugged, battery powered handheld unit fits into a toolkit or pocket. An optional mains adaptor and carry case are available separately.

### Specification

Sine wave frequencies: 150Hz, 1kHz, 6kHz, 12kHz  
Balanced o/p levels: +4dBu, 0dBu, -50dBu.  
Unbalanced o/p level: 1V pk-pk  
Connectors:  
balanced: 2 x male XLR skts, 600Ω  
unbalanced: 2 x phono skts 1kΩ  
Stereo ident: Left ch. interrupt - ITC spec  
Power requirements: 9V PP3 or mains adaptor  
Dimensions: 80 x 160 x 135mm  
Weight: 250gms

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GS68Y	Teletest Tone Gen	£124.940	£122.000	£117.000	£152.690

## TELETEST Carry Case

Ozan



A tough, black, splash-proof nylon carry case with accessory pouch and shoulder strap, suitable for all TELETEST products.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GS66W	Teletest Carry Case	£9.940	£8.900	£8.500	£11.690

## TELETEST Mains PSU

Ozan



A 230V AC 50Hz mains to DC adaptor suitable for use with any TELETEST battery powered product. The adaptor provides a 9V 300mA output, and is supplied with a 3-pin UK mains plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GS65V	Teletest PSU	£9.940	£8.900	£8.500	£11.690

## TELETEST PC

Ozan



The TELETEST PC provides the most essential computer video and sync test signals needed for full servicing and comprehensive testing of personal computer monitors. Six video test signals are available for testing VGA or S-VGA type monitors. The output connector is the same as found on modern computer graphics cards. The PC monitor cable plugs straight into the TELETEST PC without the need for adaptors. This compact and robust unit fits easily into a pocket or toolkit and is ideal for field use. Powered by a 9V PP3 battery - optional mains adaptor and carry case are available separately.

### Specification

Test signals: 100% colour bars; grey-scale; crosshatch; red purity; white purity; black & sync.

Synchronisation  
VGA: 640 x 480 lines, 31.5kHz, 60Hz  
S-VGA: 800 x 600 lines, 32.5kHz, 56Hz  
O/P connector: high density 15-W, D-type

Analogue video outputs  
red: 1V pk-pk 75Ω  
green: 1V pk-pk 75Ω  
blue: 1V pk-pk 75Ω

Sync outputs  
horizontal: TTL 10kΩ  
vertical: TTL, 10kΩ  
Dimensions: 80 x 160 x 135mm  
Weight: 250gms

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GS67X	Teletest PC Pat Gen	£149.940	£140.000	£135.000	£176.190

## Video Monitor Tester 1410

Black Star



The 1410 is a microprocessor controlled versatile video monitor tester for aligning and testing computer and TV monitors as well as video projectors. The tester has a comprehensive range of line and field frequencies, and together with a wide range of rear panel outputs, ensures compatibility with the majority of commonly used computer monitors.

A wide range of test patterns can be selected with the selected pattern, system, sync polarity and line/field frequencies detailed on the LCD display.

### Specification

Systems	Line Rate	Field Rate
TV	15.625kHz	50Hz
TV 250 lines	15.625kHz	50Hz
CGA	15.75kHz	60Hz
CGA border	15.75kHz	60Hz
MDA Hercules	18.432kHz	60Hz
EGA	21.85kHz	60Hz
PGA 400 lines	30.5kHz	60Hz
PGA 480 lines	30.5kHz	60Hz
VGA 350 lines	31.5kHz	70Hz
VGA 400 lines	31.5kHz	70Hz
VGA 480 lines	31.5kHz	60Hz
SVGA 600 lines	35.2kHz	56Hz
8514A/XGA 384 lines	35.5kHz	87Hz
SVGA 768 lines	48.5kHz	60Hz

### Test Patterns

Testcard, raster, vertical lines, grating, colour bars, border, checker board, horizontal lines, dots, focus.

### Connections

Digital o/p and syncs:	9-pin D
Analog o/p, mode and syncs:	9-pin D
Analog o/p and syncs:	15-pin D
Analog RGB:	BNCs
Field sync:	BNC
Composite sync:	BNC

### General

Display:	LCD 16 x 2 character
Power:	220/240V or 110/120V AC, 9VA, selectable
Size:	100 x 212 x 228mm
Weight:	2.8kg

EMC: Complies with EN50081-1 and EN50082-1

Supplied with mains lead, instruction manual and spare fuse.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DT90X 1	Monitor Tester	£449.000 1+ £440.000 3+ £429.000 5+ £527.580 1+	

## COMPONENTS & CIRCUIT TESTERS

### Capacitance Meter PG015



An accurate capacitance meter providing measurements over a very wide range. The desired capacitance range is selected by a single rotary switch which also has an 'off' position. A separate rotary control marked '0-ADJ' provides limited adjustment for the more sensitive ranges to counteract stray capacitance. Two jack sockets and a pair of wire lead sockets, marked (+) and (-), are provided for connection to the component being measured. A 3 1/2-digit LCD screen displays the reading, the polarity indicator and the range selected. Also shown is the battery low and range overload indicators. Readings on all ranges are sampled at a rate of two per second. The meter is protected by a quick-blow fuse. Supplied with a pair of test leads, battery and full instruction manual.

### Specification

Test voltage: <3.5V  
Input protection: 0.25A/250V quick-blow fuse  
Zero adjust range: =20pF approx.

(for values of <200nF)  
151 x 70 x 38mm  
200g including battery  
9V PP3 type

Capacitance Range	Resolution	Test Frequency	Accuracy
200pF	0.1pF	820Hz	±(0.5% rdg + 1dgt + 0.5pF)
2000pF	1pF	820Hz	±(0.5% rdg + 1dgt)
20nF	10pF	820Hz	±(0.5% rdg + 1dgt)
200nF	100pF	820Hz	±(0.5% rdg + 1dgt)
2µF	1nF	820Hz	±(0.5% rdg + 1dgt)
20µF	10nF	82Hz	±(0.5% rdg + 1dgt)
200µF	100nF	8.2Hz	±(0.5% rdg + 1dgt)
2000µF	1µF	8.2Hz	±(2% rdg + 1dgt)
20mF	10µF	8.2Hz	±(4% rdg + 1dgt)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW23A 1	Model PG015 MM	£45.710 1+ £27.490 5+ £24.990 10+	£55.720 1+
AL68Y 1	GW23 Std Calib	£63.830	£75.010
AL68A 1	GW23 NAMAS Calib	£63.830	£75.510

## LCR Bridge

This instrument will determine the value of resistance, capacitance or inductance of any device connected to it, using a bridge nulling technique. It is fully built and tested. It has six ranges for each function allowing readings to be made (assuming one can read to a tenth of a large division) of 0.1Ω to 1MΩ, 10pF to 100µF, 1µH to 10H.

### Ranges:

Resistance	10Ω, 100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ.
Capacitance	1000pF, 0.01µF, 0.1µF, 1µF, 10µF, 100µF.
Inductance	100µH, 1mH, 10mH, 100mH, 1H, 10H.
Accuracy:	±2%
Requires one PP3 battery (not supplied).	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YB82D 1	LCR Bridge	£40.840 1+ £34.430 5+ £30.090 10+	£47.990 1+
AK74R	YB82 Std Calib	£84.050	£98.760

## M195 LCR Meter

An immensely useful inductance, resistance, and capacitance meter which will provide accurate measurements of component values. The value of each component can be read from a 12.7mm (1/2in.) high, 3 1/2-digit LCD display, which includes over-range and low battery indicators. Two sets of red and black test leads are provided; a short set terminates in crocodile clips and a pair of conventional test probes. In addition a two terminal socket on the front panel allows direct connection of a component to the meter. A battery is also supplied, replacement type PP3.

### Specification

**Capacitance Ranges:** 200pF, 2nF, 20nF, 200nF, 2µF, 20µF, 200µF  
**Accuracy:** £0.5µF ±2% ±1 digit  
>0.5µF ±3% ±1 digit  
<5pF  
**Zero error:**  
**Resistance Ranges:** 20Ω, 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ  
**Accuracy:** <1M ±1% ±1 digit  
>1M ±5% ±1 digit  
<100mΩ  
**Zero error:**  
**Inductance Ranges:** 2mH, 20mH, 200mH, 2H, 20H, 200H  
**Accuracy:** <2mH to 2H ±3%  
>2H to 200H ±5%  
<10µH  
The meter is protected up to 250V AC or DC, instantly or from charged capacitors, to any input terminal.

### Specification

**Capacitance Ranges:** 200pF, 2nF, 20nF, 200nF, 2µF, 20µF, 200µF  
**Accuracy:** £0.5µF ±2% ±1 digit  
>0.5µF ±3% ±1 digit  
<5pF  
**Zero error:**

### Resistance

**Ranges:** 20Ω, 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ  
**Accuracy:** <1M ±1% ±1 digit  
>1M ±5% ±1 digit  
<100mΩ  
**Zero error:**

### Inductance

**Ranges:** 2mH, 20mH, 200mH, 2H, 20H, 200H  
**Accuracy:** <2mH to 2H ±3%  
>2H to 200H ±5%  
<10µH  
The meter is protected up to 250V AC or DC, instantly or from charged capacitors, to any input terminal.

The meter is protected up to 250V AC or DC, instantly or from charged capacitors, to any input terminal.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZC54J 1	LCR Meter M195	£80.840 1+ £59.160 5+ £53.040 10+	£94.990 1+
AK75S 1	ZC54 Std Calib	£114.430	£134.460

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**Hand Held Transistor Test**



A transistor tester that will indicate the condition of a PN or NP junction of a semiconductor device whether it be in or out of a circuit. Provided that the circuit equivalent parallel resistance is greater than 330Ω, or the shunt capacitance is less than 47μF, then the tester will determine the integrity of the semiconductor under test. As well as all transistors, diodes, rectifiers, LEDs and SCRs can be tested. The tester uses only two probes, and a flashing LED indicates an operational, open or short circuit junction as well as the polarity. Uses one PP3 style battery (not supplied). Size 120 x 61 x 20mm. Fitted with red and black test leads 850mm long, terminated with probes.

Retail Unit Price each (inc. VAT).

Order Code	Type 4076	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FK50E 1	Handheld Trans Testr	£32.110	£26.520	£24.590	£37.730

**Resistance Box**



A six decade resistance box ideal for schools, laboratories and industry. The box can simulate resistances from 1Ω to 999, 999Ω in 1Ω steps very accurately. The resistance is set using push-buttons and the value is displayed in ohms. An additional 1kΩ resistor is provided connected between one of the terminals of the internal resistance and a third terminal so that the box can be used as a very accurate potential divider (but ensure that power rating of resistors is not exceeded). A fourth terminal marked 'Screen' enables the metal box to be connected to earth. Outputs are on terminal posts with 4mm top sockets.

**Specification**

Decade 1Ω to 9Ω: 1W, ±1% tolerance  
 Decade 10Ω to 99Ω: 1W, ±0.5% tolerance  
 Decades 100Ω to 999kΩ: 0.5W, ±0.1% tolerance  
 Max switching current: 75mA  
 Max carrying current: 1A  
 Stability: 100ppm/°C  
 The unit is housed in a black and yellow metal box with non-slip feet.  
 Box size: 113 x 71 x 50mm high  
 Overall height: 75mm

Retail Unit Price each (inc. VAT).

Order Code	Type 4439	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JL63T 1	Resistance Box	£96.410	£50.490	£46.410	£66.290
AK70M 1	JL63 Std Calib	£91.410			£107.410
AK71N 1	JL63 NAMAS Calib	£111.410			£130.910

**SIGNAL GENERATORS/FREQUENCY COUNTERS**

**Sine/Square Wave Oscillator**



A Wien bridge oscillator fully built and tested giving high purity sine or square wave outputs with frequency and amplitude adjustable. Robust, lightweight, simple to use, yet its specification is better than many instruments of far higher price.

**Specification**

	Sine wave	Square wave
Output voltage (max)	1V rms	9V peak-to-peak
Frequency range	15Hz to 200kHz	15Hz to 100kHz (then to 200kHz non-linear with scale)

Total harmonic distortion: 0.5%.  
 Output via 4mm terminas. Size: 127 x 102 x 51mm.  
 Requires one PP3 battery (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type 4447	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YB81C 1	Signal Generator	£52.076	£45.900	£40.290	£61.190

**500kHz Function Generator Jupiter 500**

Black Star



0.1Hz to 500kHz  
 Sine, square, triangle TTL

**Variable DC offset**

A low-cost, stable 500kHz function generator with selectable sine, square, triangle and TTL output waveform, that features variable DC offset and external AM and sweep facilities.

**Specification**

Frequency range:	0.1Hz to 500kHz (0.02Hz to >700kHz typ.)
Frequency selection:	by 7 switched decade ranges with fine control
O/P impedance:	600Ω±2%
O/p amplitude:	0 to 30V pk-pk min (low o/p -20dB)
O/P DC offset:	-15V to +15V fully variable
O/P waveforms purity	
sine distortion:	<2% (typ 0.5%) ≤100kHz <3% up to 500kHz typ 1% up to 100kHz
triangle lin:	m/s ratio 50% ±1%, with rise & fall times 200ns max, slew rate 170V/μs typ.
square:	m/s ratio 50% ±2% with rise & fall times 25ns (120pF/225Ω load), 30 standard TTL i/p max
TTL:	
Frequency stability:	1% typ.
Frequency stability:	typ. better than 0.1%
External amplitude modulation	
i/p impedance:	6.8kΩ typ.
sensitivity:	100% mod from 6V pk-pk
linearity:	2% up to 95% mod
freq response:	200kHz (-3dB)
i/p voltage:	±35V peak
External frequency sweep	
i/p impedance:	18kΩ
sensitivity:	0 to 4V for full range sweep up to 120kHz 0 to 1.7V for full range sweep on 500kHz range
sweep linearity:	8% for 1000:1, 2% for 10:1 sweep with in range 0.1Hz to 100kHz
I/P voltage:	±70V peak
Power requirements:	240V/220V/110V 50/60Hz
Size:	219 x 240 x 98mm
Weight:	1.9kg

Retail Unit Price each (inc. VAT).

Order Code	Type 13700	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GS54J	500kHz Funct Gen	£125.000	£121.000	£117.000	£146.880

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## TG200 Series 2MHz Function Generators

**TTI (Thurby-Thandar)**

A range of high quality versatile function generators that will generate a variety of precision waveforms from less than 1Hz to 2MHz. The generators can provide a wide range of controlled amplitudes from a low-impedance source, and maintain a constant amplitude as the frequency is varied. Output levels can be varied from 60mV pk to 20V pk to pk. A variable DC offset of  $\pm 10V$  is available via a centre detent control. An auxiliary output provides a fixed 0V to +5V level that is suitable for driving TTL and CMOS loads. All the generators have an external sweep input. The TG220 and TG230 feature an internal sweep generator with linear and log sweep, variable sweep rate and sweep output socket. Additionally, the TG230 has a digital display for frequency, amplitude and offset.

The generators will provide three very high quality waveforms under all conditions, e.g., a low distortion sinewave, low aberration triangle waveform and fast-edged square waves with low overshoot. Other features include bidirectional variable symmetry, variable DC offset and an external sweep input.

Housed in a heavy-duty ABS case that features an integral multi-position handle which acts as an adjustable tilt stand.

### Specification

Power requirements: 110V/120V or 220V/240V AC  
50/60Hz

Power consumption: 25VA

Frequency range: 0.002Hz to 2MHz in 7 overlapping decade ranges with fine adjustment by a vernier

Vernier range: 1000:1 on each range

Vernier accuracy: Typically  $\pm 5\%$  of full scale. See meter accuracy for TG230

Sinewave distortion: <0.5% on 200, 2k and 20k ranges; less than 1% on 2, 20 and 200k ranges; all harmonics >25dB below fundamental on 2M range.  $\pm 0.2dB$  to 200kHz;  $\pm 1dB$  to 2MHz. Better than 99% to 200kHz

Amplitude flatness: Triangle linearity: Square wave rise and fall times: <100ns

Mark/space ratio: 1:1  $\pm 1\%$  to 100kHz

DC range:  $\pm 10V$  from 50 $\Omega$

Symmetry range: Variable between 1:9 to 9:1 (on top decade of each range), frequency divided by 10

External sweep mode 10k $\Omega$

input impedance: 0 to 3V for 1000:1 sweep

input sensitivity:  $\pm 10V$  maximum

input voltage: Better than 1%

sweep linearity: Slew rate of sweep 0.1V/ $\mu s$  maximum

voltage: Outputs

50 $\Omega$ : Two switch-selectable ranges with 30dB vernier control within each attenuator range

0.6V to 20V pk-pk (0.3V to 10V into 50 $\Omega$ )

0dB range: 60mV to 2V pk-pk (30mV to 1V into 50 $\Omega$ )

-20dB range:  $\pm 10V$  from 50 $\Omega$ . DC offset plus signal

DC offset: Peak limited to  $\pm 10V$  ( $\pm 5V$  into 50 $\Omega$ ) DC offset plus waveform attenuated proportionally in -20dB position

Control range: Fixed 0 to +5V output capable of driving CMOS and 2 standard TTL loads

TTL:

## Model TG210

The TG210 offers all the basic generator functions plus variable DC offset, variable symmetry and external sweep input. Styling is similar to the TG230 but without the digital display.

Retail Unit Price each (inc. VAT).

Order Code	Type 4451	Price each exc. VAT	inc. VAT each
DE99W	TG210 Generator	£161.460	£157.590
AK84F	DE89 Std Calib	£196.450	£230.840
AK85G	DE89 NAMAS Calib	£216.450	£254.340

## Model TG230



The top of the range TG230 includes all the internal sweep functions plus amplitude modulation and a digital display for frequency, amplitude and offset. The modulation can be external or internal (via a 400Hz internal generator) with modulation levels fully variable between 0% to 100%. For the four higher frequency ranges the auto-ranging meter displays frequency to an accuracy of  $\pm 1$  digit. For the three lower frequency ranges the meter changes mode to maintain fast update. This has several advantages, namely that high resolution is provided at all points on the dial within a given range, and a fast update rate is maintained at all times. Additionally, good accuracy is achieved for frequencies as low as 0.1Hz.

### Additional specification

Internal sweep mode

Sweep range: 1000:1 within each range  
Sweep rate: Adjustable, typically 20ms to 20s

Sweep mode: Linear or logarithmic  
Sweep output: 6V ramp from 600 $\Omega$

Amplitude modulation depth: Variable 0 to 100%  
frequency: 400Hz (internal). DC to 100kHz (external)

external sensitivity: Approx. 2V pk-pk for 50% modulation

Meter accuracy frequency:  $\pm 1$  digit on 2k to 2M ranges; better than 1% of full scale on 2 to 200

amplitude: Typically 5% of full scale  
DC offset: Typically 2%

resolution: 0.05% maximum on all ranges (1 in 2000)

update rate: 2 updates per second minimum

Retail Unit Price each (inc. VAT).

Order Code	Type 4454	Price each exc. VAT	inc. VAT each
DE91Y	TG230 Generator	£253.480	£246.840
AK88V	DE91 Std Calib	£266.470	£308.960
AK89W	DE91 NAMAS Calib	£308.470	£362.460

## TF830 8-Digit 1-3GHz Universal Counter

**TTI (Thurby-Thandar)**



A universal counter that incorporates a microcontroller and, in addition to frequency measurement, offers period measurement, frequency ratio, pulse width measurement and event counting.

Pulse width measurements can be made from rising to falling edge or vice versa. A reciprocal frequency counting technique is used to achieve high resolutions at all frequencies, and eliminate the  $\pm 1$  input cycle errors that are found on conventional frequency counters.

The counter can be operated from alkaline batteries, rechargeable batteries or AC mains. Low power circuitry is combined with an LCD display to give up to 200 hours of operation from alkaline batteries. The heavy-duty ABS case features an integral multi-position handle which acts as an adjustable tilt stand. Internal metal screening provides excellent shielding against RF interference and ensures compliance with

EMC regulations.

### Specification

Power requirements

AC input: 110/120V AC or 220/240V AC

Power consumption: 8VA

Battery type: 6 'C' size disposable or rechargeable cells 100mA from internal AC or external DC input

Charge current:

Frequency Range Input Socket A

Frequency range: 5Hz to 25MHz

Resolution: 0.001mHz to 100Hz

Frequency Range Input Socket B

Frequency range: 20MHz to 1.3GHz

Resolution: 1Hz to 10kHz

Period Input Socket A

Frequency range: 5Hz to 25MHz

Resolution: 10<sup>-7</sup>ns to 1 $\mu s$

Count Input Socket A

Counter range: 1 to 268435456 (2<sup>28</sup>) only the least significant 8 digits shown with overflow indication past 99999999 pulses

1Hz to at least 14MHz

Minimum pulse width: 20ns

Ratio A/B

Frequency range: A - 5Hz to 25MHz

B - 20MHz to 1.3GHz

The answer is displayed with 8 significant digits irrespective of actual input frequencies and measurement time

Resolution:

Pulse Width Input Socket A

Mode: Falling to rising edge or rising to falling edge

Pulse width range: 1 $\mu s$  to 26s

Resolution: 100ns

Measurement time: 0.1s and 1s ranges determine the inter-measurement time. 10s range will hold until reset

Input impedance

A input: 1M $\Omega$ /25pF

B input: 50 $\Omega$  nominal

Frequency range

A input: 5Hz to 25MHz

B input: 20MHz to 1.3GHz

Sensitivity

A input: Sinewave 15mV rms

10Hz to 20MHz: pulse

40mV pk-pk 0Hz to 14MHz

10mV rms 20MHz to 700MHz; 2mV rms to 1.3GHz

B input:

Trigger level

A input: Continuously adjustable

Maximum input voltage

A input: 200V DC; 250V rms

50/60Hz reducing to 1V rms above 1MHz

250V DC; 250V rms

50/60Hz; 1V rms 20MHz to 1.3GHz

B input:

Low pass filter

A input: Switchable 50kHz low pass noise filter

Coupling: AC

External Standard Socket

Frequency: 10MHz

Selection: Automatic detection and change-over

Sensitivity: TTL/CMOS compatible, AC coupled

Maximum input voltage: 5V rms, 50V DC

Timebase

Oscillator frequency: 10MHz

Initial adjustment error:  $\leq 1$ ppm at 23°C

Temperature coefficient

18°C to 28°C: Typically  $\leq \pm 0.3$ ppm/°C

-20°C to +70°C: 10ppm

Ageing rate:  $\leq 5$ ppm/year

Dimensions: 257 x 224 x 88mm

Weight: 1.55kg (excluding

batteries)

Retail Unit Price each (inc. VAT).

Order Code	Type 5895	Price each exc. VAT	inc. VAT each
DE92A	TF830 1.3GHz Counter	£202.260	£189.720
AL00A	DE92 Std Calib	£237.250	£278.780
AL01B	DE92 NAMAS Calib	£257.250	£302.280



## 2MHz Function Generator Jupiter 2010

Black Star

RECENTLY  
INTRODUCED



- ★ 0.2Hz to 2MHz
- ★ Sine, square, triangle, TTL
- ★ Variable DC offset
- ★ 50Ω, 600Ω o/p's
- ★ 20MHz frequency counter
- ★ 4-digit LED readout

A 2MHz full-featured function generator with a microprocessor controlled reciprocal frequency counter that gives 4-digit resolution at all frequencies. At low frequencies the display updates every input signal period, and the high accuracy of 0.01% is maintained at all frequencies.

### Specification

Waveforms: sine, square, triangle TTL  
Frequency: <0.2Hz to >2MHz

Accuracy: <±0.1% determined by frequency counter

Sine distortion: 0.2Hz to 200kHz <1% to 2MHz all harmonics >30dB below fundamentals >90% to 200kHz <80ns

Triangle linearity: >90% to 200kHz  
Square rise time: <80ns  
Square m/s ratio: 1:1 ±1% to 200kHz

TTL: 20 standard TTL loads  
Symmetry range: nom 8:1 on all waveforms  
O/Ps 50Ω/600Ω: 0dB, -20dB, -40dB

switchable attenuation with >30dB vernier control

### O/P level (open circuit)

0 to 20V pk-pk: 0dB  
0 to 2V pk-pk: -20dB  
0 to 0.2V pk-pk: -40dB

DC offset: ±10v from both outputs  
TTL: will drive up to 20 standard TTL loads

### Sweep i/p range

>1000:1: 1k, 10k, 100k, 1M  
>100:1: 100Hz  
>20:1: 10Hz, 1Hz  
>2000:1: with reduced linearity & distortion to 4MHz

### I/P impedance:

9kΩ  
Approx. sweep i/p sensitivity  
10:1 sweep: 17.1V pk-pk  
100:1 sweep: 18.8V pk-pk  
1000:1 sweep: 19V pk-pk  
2000:1 sweep: 19.1V pk-pk

Sweep linearity: <±1%  
Sweep i/p voltage: ±50V max  
Sweep i/p slew rate: 0.1V/μs max

### Frequency counter internal

measurement type: reciprocal, single cycle and multiple period average auto, 1s or 1 period, whichever greater

accuracy: 0.01% ±1 count  
stability: 50ppm -10°C to 50°C

### Frequency counter external

i/p impedance: 1MΩ AC coupled  
-3dB @ 5Hz  
max. input: 100V DC, 250V AC 50Hz derating with frequency

sensitivity AC rms: 25mV <10MHz;  
50mV <25MHz  
frequency: >20MHz

Power requirements: 220V/240V/110V AC 50/60Hz  
Dimensions: 219 x 240 x 98mm  
Weight: 1.9kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GS55K	2MHz Sig Gen/Counter	£199,000	£191,000	£187,000	£233,830

## 1.3GHz Hand-Held Frequency Counter

TTI (Thurby-Thandar)



RECENTLY  
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A compact, battery-powered, hand-held frequency counter with a performance that exceeds many higher priced bench top counters. Despite its compact size it features a large 8-digit LCD display with a full range of annunciators providing indication of measurement function, measurement time, overflow, trigger activity, low battery and the measurement units.

Operation is simplicity itself with all functions and ranges being selected using just five large buttons. The counter can measure frequencies from 5Hz to 1.3GHz, with high sensitivity across the whole frequency range with no dead spots. A low-pass filter can be selected to reduce high frequency signal noise and ensure stable readings at lower frequencies. Reciprocal frequency counting techniques are used which involves multiple period measurements followed by computation of the reciprocal. This system yields at least 7-digits of resolution per second of measurement time and can measure low frequencies to a resolution of 0.0001MHz. Signals can be displayed in terms of period as an alternative to frequency up to 25MHz. Readings can be 'frozen' for measuring non-continuous signals or recording results later.

**Specification**

	Input A	Input B
Input impedance:	1MΩ/25pF	50Ω
Frequency range:	5Hz to 25MHz	20MHz to 1.3GHz
Resolution:	10-7Hz-10Hz	1Hz-1kHz
Accuracy:	±(1 digit + timebase error)	
Sensitivity:	15mV rms 10Hz-20MHz	10mV rms 20MHz-700MHz 50mV rms above

Max input: 200V DC/250V AC 50Hz-400Hz down to 1V rms above 1MHz  
5Hz to 25MHz

Period: 5Hz to 25MHz  
Accuracy: ±(1 digit + timebase error)  
Timebase initial error: ±2ppm (10MHz crystal)  
temp coeff: <±0.3ppm/°C for 18°C to 28°C  
±10ppm/°C for -20°C to 70°C

Power: 9V PP3 alkaline, 12 hours continuous, or 3000 press-to-measure operations - 6V to 12V DC external.

Size: 81 x 178 x 30mm  
Weight: 190g excluding battery

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GS72P	Hand-Held 1.3GHz Freq Ct	£99,990	£95,000	£91,000	£117,490

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## 1.3GHz Frequency Counter

Black Star

RECENTLY  
INTRODUCED



- ★ 5Hz to 1.3GHz measurement range
- ★ 7-digit/second resolution
- ★ Bright 8-digit LED display
- ★ 0.1s to 10s measurement time
- ★ Display hold
- ★ Min/max facility

The Black Star model 1325 frequency counter will measure frequencies and period from 5Hz to 1.3GHz. The microprocessor controlled measurement technique gives a fast response and high resolution at all frequencies. The counter can be powered from the mains or internal batteries and is ideal for bench or field use. The bright 8-digit LED display provides excellent visibility in poor light conditions. The low power consumption gives extended battery, typically 200 hours from alkaline batteries (not included - 6 x 'C' cells order code JY47B). Other functions include display hold, min/max and HF reject.

### Specification

	Input A	Input B
Frequency:	5Hz to 25MHz	20MHz to 1.3GHz
Period A:	200ms to 40ns	-----
Sensitivity:	<30mV to 20MHz <35mV to 25MHz	<15mV to 1.3GHz <50mV to 1.3GHz
Impedance:	1M/25pF, AC coup.	50Ω nom.
Input:	30V DC or AC pk	30V DC or AC pk 50/60Hz decreasing to 1V rms >1MHz

### Resolution

Input A Frequency	Digits of resolution vs gate time		
	0.1s	1s	10s
5Hz to 25MHz:	5	6	7
1MHz to 10MHz:	6	7	8
10MHz to 25MHz:	7	8	9

### Input B

20MHz to 100MHz:	5	6	7
100MHz to 1GHz:	6	7	8
1GHz to 1.3GHz:	7	8	9

Note hysteresis is added to all ranges to prevent display flicker.

### Timebase

Frequency: 10MHz  
Stability: ±1ppm  
Temp coeff: ±10ppm from -10°C to +70°C  
Ageing: <5ppm/year  
Int. frequency: 10MHz  
Temp coeff: ±1ppm 0°C to +50°C  
Stability: ±0.2ppm  
Ageing: <1ppm/year

### General

Power requirements: 220/240V AC 50/60Hz  
Battery: 6 x 'C' cells (not supplied)  
Dimensions: 219 x 240 x 98mm  
Weight: 1.4kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GS53H	1.3GHz Freq Counter	£149,000	£144,000	£139,000	£175,080

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## Counter Module



An electronic Counter Module with 5-digit LCD display. The display increases by 1 every time a positive-going edge is applied to pin 3. A reset is available, and a tone output which can drive a piezo sounder directly and beeps on every count and on reset. Square wave outputs at 512Hz and 32768Hz are also provided.

### Specification

Working voltage: 1.5V DC  
 Current: 2µA standby  
 8µA average when counting  
 Count range: 00000 to 99999 (resets to 00000 after count 99999)  
 Max. input frequency: 7Hz  
 Input voltage range: 1V to 1.5V  
 Min. duration pulse: <100µs  
 Overall size: 68 x 35 x 24mm  
 A plastic bezel (FE35Q) is available for use with this module, size 68 x 35mm and increases the overall depth of the module to 27mm. The module requires a 1.5V AA cell (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FS13P	Counter Module	£8.500	£9.990

## BENCH POWER SUPPLIES

### HOBBYISTS

## 30V 2A



A good quality regulated power supply ideal for the hobbyist's work bench. The unit will supply up to 2A at up to 30V, and has a separate ammeter and voltmeter. The ammeter reads 0 to 2.5A and the voltmeter reads 0 to 30V. A rotary control sets the output voltage from 0 to 15V with voltage range switch to the left and 15 to 30V with switch to the right. The output current can be limited to between about 300mA and 2.2A by the rotary control marked 'current'. Three output terminal posts are provided marked '-', 'ground' and '+'. The 'ground' terminal is connected to the chassis and mains earth.

### Specification

Input: 210 to 250V AC  
 Output: 0 to 30V DC in two ranges  
 Current: 0 to 2A  
 Voltage regulation:  
 Load: <0.1% (30mV) for a no load to full load change  
 Line: <0.15% (45mV) for a 10% line voltage change  
 Current regulation:  
 Load: 0.2% max for a 30V DC load voltage change  
 Line: 0.2% max + 3mA for a 10% line voltage change  
 Ripple and noise: <250µV rms  
 Output mode: Automatic crossover between constant voltage and constant current operation  
 Overload protection: By an adjustable electronic current limiting circuit and fuse in AC input

Current limiting: Adjustable from 1% to 110% of rated load current  
 Dimensions: 205 x 100 x 195mm deep

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XG89W	Bench PSU 2A 30V	£93.600	£109.990

## Triple Power Supply



A cost-effective quality power supply, in a strong galvanized steel case, with two fixed outputs and a 0 to 30V DC output up to 2.5A max. The fixed outputs are of 5 and 12V DC, each with a 0.5A max. rating. Overload and short circuit protection is provided. A separate analogue voltmeter and ammeter display the output settings for the adjustable supply; the voltmeter reading 0 to 30V and the ammeter reading 0 to 2.5A. The output voltage is continuously variable over the range using the 'voltage' control, whilst the current can be limited from 0 to 2.5A using the 'current' control. The two fixed outputs are fed out through 'snap-on' terminals and the variable supply is available at a pair of terminal posts. The various terminals are marked '+', '-' and '-' and coloured red and black respectively.

### Specification

Power requirements: 230V AC/50Hz  
 Variable output: 0 to 30V DC  
 Maximum current: 2.5A  
 Fixed output 1: 5V DC/0.5A max.  
 Fixed output 2: 12V DC/0.5A max.  
 Ripple & noise: 5mV  
 Line regulation: 0.05% + 10mV  
 Load regulation: 0.05% + 10mV  
 Dimensions: 200 x 150 x 145mm  
 Weight: 2.8kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW02C	Bench PSU 30V/12V/5V	£85.090	£99.990
AL26D	GW02 Std Calib	£115.090	£135.230
AL27E	GW02 NAMAS Calib	£140.090	£164.600

## PROFESSIONAL

## Single 60V 1A DC Power Supply

Instek



A high quality DC power supply with an output of 0 to 60V DC at up to 1A max. A separate voltmeter and ammeter are provided for monitoring the output. Voltage output is continuously variable over the range with one 'coarse' rotary control, and is accompanied by an additional 'fine' control which can vary output over 10% of the set value. In addition the voltage level can be remote controlled from an external source and the output can be switched to handle continuous or dynamic loads. Current limiting is provided by further 'coarse' and 'fine' rotary controls, and with these the power supply can be forced to leave 'constant voltage' mode and enter 'constant current' mode. Here the output current is maintained for a given setting of the current control by the output voltage being varied to keep the current constant. Power consumption and dissipation is reduced by a multiple level power saving system which selects lower ratios of the main supply transformer secondary automatically if the output falls below the relevant threshold. The output is provided via three (+), (-) and chassis ground front panel screw terminal posts which accept 4mm wander plugs, spade terminals or stripped wires. Includes overload and reverse polarity protection.

### Specification

	CV Mode	CC Mode
Input:	230V AC ±10% 50/60Hz	
Output:	0 to 60V DC	0 to 1A DC
Load regulation:	0.01% +3 to 5mV	0.02% +3mA
Line regulation:	0.01% +3mV	0.02% +3mA
Ripple & noise:	0.5mV rms	3mA rms
Dimensions:	128 x 145 x 285mm	
Weight:	5kg	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GW08J	PSU 60V 1A	£119.140	£139.990
AL38R	GW08 Std Calib	£149.140	£175.240
AL39N	GW08 NAMAS Calib	£174.140	£204.610

## Single 30V 3A DC Power Supply

Instek



A high quality DC power supply providing 0 to 30V DC at up to 3A max. A separate voltmeter and ammeter are provided for monitoring the output. Voltage output is continuously variable over the range with one 'coarse' rotary control, and is



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accompanied by an additional 'fine' control which can vary output over 10% of the set value. In addition the voltage level can be remote controlled from an external source and the output can be switched to handle continuous or dynamic loads. Current limiting is provided by further 'coarse' and 'fine' rotary controls, and with these the power supply can be forced to leave 'constant voltage' mode and enter 'constant current' mode. Here the output current is maintained for a given setting of the current control by the output voltage being varied to keep the current constant. A novel feature is a power saving device which selects a lower ratio of the main supply transformer secondary automatically if the output falls below 15V. The output is provided via three (+), (-) and chassis ground front panel screw terminal posts which accept 4mm wander plugs, spade terminals or stripped wires. Includes overload and reverse polarity protection.

**Specification**

	CV Mode	CC Mode
Input:	230V AC ±10%	50/60Hz
Output:	0 to 30V DC	0 to 3A DC
Load regulation:	0.01% +5mV	0.02% +3mA
Line regulation:	0.01% +3mV	0.02% +3mA
Ripple & noise:	0.5mV rms	3mA rms
Dimensions:	128 x 145 x 285mm	
Weight:	5kg	

Retail Unit Price each (inc. VAT).

Order Code	Type 5930	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GW09L6	PSU 30V 3A Digital	£127.650	£119.000	£112.000	£149.990
AL42V	GW09 Std Calib	£157.650			£185.230
AL41U	GW09 NAMAS Calib	£182.650			£214.610

**Digital Single 30V 3A DC Power Supply**

Instek



A high quality DC power supply providing 0 to 30V DC at up to 3A max. The instrument includes an auto-ranging digital voltmeter (DVM) with front panel LCD display, and which can also function as a digital ammeter, for monitoring voltage or current output as required according to the setting of the front panel VOLTS/AMPS selector switch. Voltage output is continuously variable over the whole range with one 'coarse' rotary control, accompanied by an additional 'fine' control which can vary output over >5% of the set value. In addition the voltage level can be remote controlled from an external source and the output can be switched to handle continuous or dynamic loads. Current limiting is provided by further 'coarse' and 'fine' rotary controls, and with these the power supply can be forced to leave 'constant voltage' mode and enter 'constant current' mode. Here the output current is maintained for a given setting of the current control by the output voltage being varied to keep the current constant. As an aid, green and red front panel LEDs signal either 'CV' (constant voltage) or 'CC' (constant current) mode as active. Power consumption and dissipation is reduced by a multiple level power saving device which selects lower ratios of the main supply transformer secondary automatically if the output falls below the relevant threshold. The output is provided via three (+), (-) and chassis ground front panel screw terminal posts which accept 4mm wander plugs, spade terminals or stripped wires. Includes overload and reverse polarity protection.

**Specification**

	CV Mode	CC Mode
Input:	230V AC ±10%	50/60Hz
Output:	0 to 30V DC	0 to 3A DC
Load regulation:	0.01% +3mV	0.02% +3mA
Line regulation:	0.01% +3mV	0.02% +3mA
Ripple & noise:	0.5mV rms	3mA rms
Dimensions:	128 x 145 x 285mm	
Weight:	4kg	

Retail Unit Price each (inc. VAT).

Order Code	Type 5931	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GW09L6	PSU 30V 3A Digital	£178.710	£170.000	£162.000	£209.990
AL42V	GW10 Std Calib	£208.710			£245.230
AL43W	GW10 NAMAS Calib	£233.710			£274.600

**Single 30V 6A DC Power Supply**

Instek



A high quality DC power supply providing 0 to 30V DC at up to 6A max. Separate volt and ammeters are provided for monitoring the output. Voltage output is continuously variable over the range with 'coarse' and 'fine' rotary controls. In addition the output can be switched to handle continuous or dynamic loads. Current limiting is provided by further 'coarse' and 'fine' rotary controls, and with these the power supply can be forced to leave 'constant voltage' mode and enter 'constant current' mode. Here the output current is maintained for a given setting of the current control by the output voltage being varied to keep the current constant. As an aid red and green front panel LEDs signal either 'CV' (constant voltage) or 'CC' (constant current) mode as active. Power consumption and dissipation is kept to a minimum by a multiple level power saving device, which selects lower ratios of the main supply transformer secondary automatically if the output falls below the relevant thresholds. The output is via two front panel screw terminal posts which accept 4mm wander plugs, spade terminals or stripped wires. A similar chassis earth terminal post is also provided. Includes overload and reverse polarity protection.

**Specification**

	CV Mode	CC Mode
Input:	230V AC ±10%	50/60Hz
Output:	0 to 30V DC	0 to 6A DC
Load regulation:	0.01% +5mV	0.02% +3mA
Line regulation:	0.01% +3mV	0.02% +3mA
Ripple & noise:	<1mV rms	<3mA rms
Dimensions:	255 x 145 x 335mm	
Weight:	11.5kg	

Retail Unit Price each (inc. VAT).

Order Code	Type 5938	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GW14Q	PSU 30V 6A	£255.310	£238.000	£220.000	£299.990
AL50E	GW14 Std Calib	£285.310			£335.230
AL51F	GW14 NAMAS Calib	£310.310			£364.610

**Dual Tracking 30V 3A DC Power Supply**

Instek



A high quality DC power supply featuring two 0 to 30V DC outputs, which can operate either as two entirely independent single ended supplies, or be combined in tracking mode to produce equal dual (+) and (-) supply rails, both continuously variable from one single control, with a central commoned rail. Each supply can deliver up to 3A max. in either mode. Separate voltmeters and ammeters are provided for monitoring each output. Voltage output for each independent supply is continuously variable over the range with one rotary control. In addition the output can be switched to handle continuous or dynamic loads. Similarly, current limiting is provided for each by a further rotary control, and with this either supply can be forced to leave 'constant voltage' mode and enter 'constant current' mode. Here the output current is maintained for a given setting of the current control by the output voltage being varied to keep the current constant. As an aid, red and green front panel LEDs for each channel signal either 'CV' (constant voltage) or 'CC' (constant current) mode as active. Power consumption and dissipation is conserved by a dual level power saving device which selects lower ratios of the main supply transformers' secondaries automatically if the outputs fall below the relevant thresholds. Outputs are presented via two pairs of front panel screw terminal posts which accept 4mm wander plugs, spade terminals or stripped wires and include two chassis earth terminal posts. Also provided is one fixed, 5V DC 3A maximum output, regulated supply to TTL logic circuit standard. It is overload and reverse polarity protected and has an overload LED, and the output is available on a pair of 4mm terminal posts on the front panel.

**Specification**

	CV Mode	CC Mode
Input:	230V AC ±10%	50/60Hz
Outputs, each:	0 to 30V DC	0 to 3A DC
Load regulation:	0.01% +3-5mV	0.02% +3mA
Line regulation:	0.01% +3mV	0.02% +3mA
Ripple & noise:	<1mV rms	<3mA rms

**5V DC supply**

Deviation limits:	5V ±250mV
Load regulation:	<10mV
Line regulation:	<5mV
Output current:	3A DC ±10% max.
Dimensions:	255 x 145 x 335mm
Weight:	11.5kg

Retail Unit Price each (inc. VAT).

Order Code	Type 5932	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GW11M11	PSU 30 3A Dual	£280.840	£262.000	£250.000	£329.990
AL44X	GW11 Std Calib	£310.840			£365.230
AL45Y	GW11 NAMAS Calib	£335.840			£394.610



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## TEMPERATURE / HUMIDITY METERS

### Portable Digital Thermocouple Thermometer

#### Thermal Measurement Systems

A portable digital thermometer for HVAC applications, laboratory temperature control and industrial uses. It has a large 3 1/2-digit LCD display, which can show °C or °F by a push-button selector. Sampling rate is 2 times per second with data-hold function (display shows 'HD' when data held). A variety of remote thermocouple probes can be plugged into the 2-pin input socket. Temperature measuring range is -50°C to +700°C (-60°F to +1300°F), with a resolution of 1°C or °F and cold junction compensation. The case is splashproof and a carrying pouch is included. Powered by two AAA size batteries Probes are not included.



Dimensions: 170(L) x 70(W) x 29.5(H)mm.  
Weight including batteries: 270g.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RD33L 1	TT338 Thermometer	£63.480	£55.590	£53.040	£74.590

### Food Thermometer

#### Thermal Measurement Systems



A quality instrument with probe specifically intended for measurement of the internal temperature of foodstuffs. In use, the stainless steel probe, with 1.3m of lead attached, is plugged into the top of the instrument (a miniature DIN connector is used) before switching on. If the probe is not plugged in, an error display 'LLL' will appear on the 17mm high LCD. The temperature sensing interval is selectable between 1 second or 10 seconds; normally 10 seconds is the default at power up for continuous measurement to preserve battery life. However 1 second sampling is active by holding down the '1/10 sec' button. A range button alternately selects a

display in °C or °F at each push.

An audible high or low temperature limit alarm can also be set. The alarm is disabled upon power up and both high and low thresholds default to -55°C (-67°F). When the alarm is enabled and the current temperature display increases or falls to reach either limit the alarm will sound for up to 1 minute and the relevant 'HI' or 'LO' symbol will flash in the display. The alarm can be stopped and normal temperature display is resumed by pressing any of the 'ADVANCE', 'ALARM', 'HI' or 'LO' buttons.

#### Specification

Measuring temperature range: -55°C to +148.8°C (-67°F to +299.8°F)

Sensor type: Thermistor

Resolution:  
0.2°C (0.3°F) from -55°C to -49°C (-67°F to -56.2°F)  
0.1°C (0.2°F) from -49°C to 105°C (-56.2°F to 221°F)  
0.2°C (0.3°F) from 105°C to 120°C (221°F to 429.8°F)  
0.3°C (0.5°F) from 129°C to 140°C (264.2°F to 234°F)  
0.4°C (0.7°F) from 140°C to 148.8°C (284°F to 299.8°F)

Accuracy:  
±0.5°C (±1°F) 0°C to 65°C (32°F to 160°F)  
±1°C (±2°F) all other ranges

#### Operating temperature

range of main unit: 0°C to 40°C

Batteries: 2 x AAA size or equivalent.

Battery life:  
3 years approx. if alkaline types used,  
1 1/2 years approx. if heavy duty types used.

Dimensions: 70mm wide x 170mm high x 29.5mm deep

Length of probe: 124mm

Length of handle: 85mm

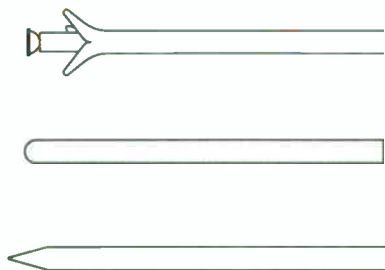
Accessories supplied include PVC pouch, heavy duty batteries, external sensor probe and instruction manual.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RD35Q	BIC338 Food Therm	£63.480	£55.590	£53.040	£74.590

### Hand-Held Thermocouple Probes

#### Thermal Measurement Systems



A range of optional thermocouple probes for various applications and heat ranges. The probes are fitted with lead and connector suitable for use with the digital thermometer RD34M.

HH1 is for surface temperature measurement, having a spring-loaded copper sensing disc and tripod tip to ensure correct alignment. Maximum temperature range is 850°C.

HH4 is a general-purpose mineral insulated immersion probe for use in air, other gases and liquids. Maximum temperature range is 1100°C.

HH6 is a swaged tip probe specifically suitable for food. Maximum temperature, 350°C.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RD37S	HH1 Thermometer Prob	£23.910	£20.910	£19.360	£28.100
RD38R	HH4 Thermometer Prob	£34.950	£30.090	£27.030	£41.070
RD38N	HH6 Thermometer Prob	£29.420	£25.500	£22.950	£34.580

### Digital Thermo-Hygrometer

#### Thermal Measurement Systems



A portable digital thermo-hygrometer for HVAC applications, laboratory temperature control and industrial uses, including clean rooms, semiconductor and electronics assembly plants, paper and textile industries, drying rooms and greenhouses. The remote sensor probe has a lead 1m long for easy access into difficult to reach places. The display can simultaneously show both temperature and relative humidity readings, and there is a memory function for recording minimum and maximum readings of both temperature and humidity. Selection of °C or °F display is by push button, and the instrument includes temperature compensation of relative humidity measurement. Measuring range of temperature is -20°C to +50°C (-4°F to +122°F), while the humidity measuring range is 2% to 98% RH with resolutions of 0.1°C (0.1°F) for temperature, and 1% RH for humidity. The unit is powered by two AAA size batteries, and a pouch is included.

Dimensions: 170(H) x 80(W) x 29.5(D)mm.  
Weight including batteries: 250g.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RD36P 1	THG338 Thermo-Hygro	£73.140	£67.520	£65.790	£85.940



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## TIMERS

### MOTOR DRIVEN

#### Run Back Timers

Crouzet



Motor driven run back timers designed for panel mounting applications. These timers feature a graduated setting knob allowing for quick setting and easy identification of remaining run time

#### Features

- ★ Available in single or double pole versions
- ★ 60 minute or 5 hour versions available
- ★ Operating voltage selectable between 115Vac and 230Vac

#### Specification

Operating voltage 115Vac or 230Vac  
 Contact rating 16A (Res), 4A (Inductive)  
 Power consumption 3.1VA  
 Mechanical life >10<sup>7</sup> operations  
 Operating temp -5°C to +70°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17932	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MG31J	S/P R/Back 60min	£29.510	£28.040	£26.560	£34.680
MG32K	S/P R/Back 5 Hrs	£29.510	£28.040	£26.560	£34.680
MG33L	D/P R/Back 60min	£41.520	£39.450	£37.370	£48.790
MG34M	D/P R/Back 5 Hrs	£41.520	£39.450	£37.370	£48.790

### 4 POLE PLUG IN

#### Miniature On Delay Timers

Crouzet



H. 27mm W. 21mm D. 69mm

On Delay timers with 4 SPDT contacts housed in a compact housing. These timers are designed for mounting into a 14 pin base and are easily set utilising a front mounted analogue dial.

#### Features

- ★ On Delay (Delay on energisation) function
- ★ Simple setting by analogue dial
- ★ Multiple Time Ranges:  
0.1s to 1s, 1s to 10s, 0.1min to 1min, 1min to 10min, 0.1h to 1h, 1h to 10h
- ★ Available in four voltage versions:  
24Vac, 24Vdc, 115Vac & 230Vac
- ★ LED indication of power and relay status

#### Specification

★ UL and CSA approved  
 Operating voltage 24Vdc  
 or 24Vac, 50/60Hz  
 or 115Vac, 50/60Hz  
 or 230Vac, 50/60Hz  
 Contact rating 3A, 250Vac (Res)  
 Reset time (max) 100ms  
 Mechanical life 10<sup>7</sup> operations  
 Operating temperature -20°C to +60°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17935	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MG27E	4 Pole Timer 24Vac	£26.260	£24.950	£23.640	£30.860
MG28F	4 Pole Timer 24Vdc	£26.260	£24.950	£23.640	£30.860
MG29G	4 Pole Timer 115vac	£26.260	£24.950	£23.640	£30.860
MG30H	4 Pole Timer 230Vac	£26.260	£24.950	£23.640	£30.860

### DIN RAIL MOUNTING

#### DIN Rail Mounting Timers

Crouzet



H. 78.5mm W. 22.5mm D. 103.5mm

Electronic timers in a standard 22.5mm wide case for mounting onto 35mm symmetric DIN rail to EN50022 (DIN 46277-3).

#### Features

#### ★ Four types available

- TRA - On Delay (Delay on energisation)
- TRL - Asymmetrical recycler (Cyclic), pulse or pause start
- TRQ - Star Delta
- TRU - Four function timer, including:  
On Delay, On Pulse (Timing on impulse), Off Delay (Timing after impulse) and On Pulse (Timing on energisation or Interval Timer - one shot)

- ★ Multi time range : 1s, 10s, 1m, 10m, 1h & 10h  
For Star Delta (TRQ): 2 sub ranges - 20s & 160s

- ★ Time ranges easily set by a front mounted switch (Two in the case of the TRL, one for pulse and one for pause)

- ★ Multi voltage: 24Vac/dc and 115 to 230Vac
- ★ LED indication of power & relay status
- ★ UL and CSA approved

#### Specification

Operating voltage 24Vac/dc & 115-230Vac, 50/60Hz  
 Contact rating 8A, 250Vac (res)  
 Contact type SPDT, AgCdO  
 Mechanical life >5x10<sup>6</sup> operations  
 Operating temperature -20°C to +60°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17935	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
MG23A	DIN Timer TRU	£34.970	£33.220	£31.470	£41.090
MG24B	DIN Timer TRA	£24.810	£23.570	£22.330	£29.160
MG25C	DIN Timer TRL	£42.800	£40.660	£38.520	£50.290
MG26D	DIN Timer TRQ	£40.230	£38.220	£36.210	£47.280

† = While Stocks Last

## TIMESWITCHES

### PLUG IN

#### 24-Hour Plug-In Timer

Smiths



Plugging this timer into your existing 13A socket outlet gives automatic control over a 24-hour period to any electrical appliance. Simply plug the appliance that you wish to be controlled, up to 13A resistive or 2A inductive loading, into the 13A socket outlet of the unit and set the time interval. The unit is switchable in 15-minute intervals with a minimum time between settings of 30 minutes. Available singly (RZ81C), or as a twin pack (RZ83E).

Retail Unit Price each (inc. VAT).

Order Code	Type 4437	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
RZ81C	24h Plug-In Timer	£12.750	£11.970	£11.060	£14.990
RZ83E	Twin Pk 24h Timer	£23.820	£20.200	£19.140	£27.990

#### 7-Day Plug-In Timer

This timer can be plugged into your existing 13A socket outlet and gives automatic control of an electrical appliance over a 7-day period. The time controller can switch up to 13A resistive or 2A inductive loads. The minimum time interval is 2 hours with a minimum time between settings of 4 hours. The timer can be extremely useful as a security device turning on such appliances as radios and table lamps to give a potential intruder an impression that your home is occupied.



Retail Unit Price each (inc. VAT).

Order Code	Type 4438	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
RZ82D	7 Day Plug In Timer	£14.450	£12.470	£11.720	£16.990

#### 24-Hour Segment Timeswitch

Smiths-Timeguard

- ★ Simple to program & operate
- ★ Plug in control for all 13A appliances and lamps
- ★ Switches on and off at preset times.
- ★ Manual override.



Easily set by its captive segment dial this 24Hour plug in time controller will automatically switch appliances On and Off at preset times during the day over a 24-hour cycle. With a minimum On/Off switching of 15 minutes the unit can switch up to 96 times per day. You can switch your appliance On and Off at any time by using the self cancelling switching rider on the top left of the unit. Rated at 240V AC 50Hz.

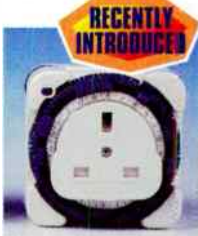
Retail Unit Price each (inc. VAT).

Order Code	Type 12819	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
VJ58N	24Hr Segment Timer	£12.750	£12.130	£11.400	£14.990

## 7-Day Segment Time Switch

Smiths-Timeguard

- ★ Simple to program and operate.
- ★ Plug in Control for all 13amp appliances and lamps.
- ★ Switches on and off at preset times up to 12 times each day.
- ★ Manual override.



This 7-day Segment Timeswitch has all the benefits and features of the 24-hour Timeswitch (VJ58) but has a minimum On/Off switching time of 2 hours and can switch a maximum of 12 times a day. Rated at 240V AC 50Hz.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VJ58P	7Day Segment Timer	£14.450	£13.560	£12.670	£16.990

## 24-Hour Slimline Digital Timer



This timer is a slimline digital controller that can be plugged straight into your existing 13A socket outlet and can be programmed to switch loads of up to 13A resistive or 2A inductive. The timer can switch up to 4 ON/OFF programmes per day, with a minimum of 1 minute between switch settings, each of which can be manually overridden. The override function is cancelled at the next automatic ON or OFF switching time. The unit has a back up battery in order that timing is kept accurately, even during a power cut.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RZ84F	24h Digital Timer	£17.430	£15.150	£14.390	£20.490

## 7-Day Slimline Digital Timer

Smiths-Timeguard



This 7 Day Slimline Digital Timer has all the benefits and features of the 24Hour version - RZ84F- plus individual day, everyday, weekday or weekend programme selections.

Six programmes are available which if selected to operate over all 7 days give a total of 42 switchings per week.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
VJ63T	7Day Digital Timer	£19.560	£18.800	£17.750	£22.990

## SURFACE MOUNT

## Single Gang Fused Spur Timeswitch

Smiths Timeguard



A fused spur timeswitch with double pole contacts that is built in to a single gang surface mount housing. The timeswitch is ideal for controlling combination boilers, storage heaters, convector heaters, water heaters and lighting. Conforms to 73/23/EEC and 89/336/EEC directives. Available in two versions.

**MB01B** is a 24 hour model with 4 ON/OFF programmes per day.

**MB02C** is a 7 day model with 6 ON/OFF programmes per day. Additionally, there is individual day, everyday or weekend programme selections. This allows up to 42 settings per week.

- ★ Switched and switched timed outputs
- ★ Integral BEAB approved double pole switch and replaceable BS1362 fuse
- ★ Simple two button programming - one recessed
- ★ Front button override facility
- ★ 1000 hours memory back-up from fitted rechargeable battery in case of supply loss or fuse blow

- ★ Minimum switching period of one minute
- ★ Voltage free contacts

### Specification

Operating voltage: 220/240V AC 50Hz  
 Switch rating (240V AC): 6A inductive  
 13A resistive (3kW)  
 Operating temperature: -10°C to +40°C  
 Dimensions: 85 x 85 x 38mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MB01B	Supply Master-24 Hr	£35.980	£34.180	£32.380	£42.280
MB02C	Supply Master-7Day	£39.350	£37.380	£35.410	£46.240

## Central Heating Mini Programmer

Smiths Timeguard



This electronic mini programmer is suitable for fully pumped or gravity fed central heating systems, and conveniently fits onto a single gang 25mm deep wall box. Conforms to 73/23/EEC and 89/336/EEC directives. Available in two versions.

**MB03D** is a 24 hour model with up to 4 ON/OFF programmes per day.

**MB04E** is a 7 day model with individual day, everyday, every weekday or weekend programme selection with a total of 6 programmes.

- ★ Integral BEAB approved double pole switch and replaceable BS1362 fuse
- ★ Front button override facility
- ★ 1000 hours memory back-up from fitted rechargeable battery in case of supply loss or fuse blow

- ★ Minimum switching period of one minute

### Specification

Operating voltage: 220/240V AC 50Hz  
 Switch rating (240V AC): 3A inductive  
 Operating temperature: -10°C to +40°C  
 Dimensions: 85 x 85 x 38mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MB03D	Supply Master-24 Hr	£41.070	£39.020	£36.970	£48.260
MB04E	Supply Master-7Day	£44.420	£42.200	£39.960	£52.200

See Industrial Control Section for our range of Counters and Timeswitches

## 24-Hour 20A Electro-Mechanical Time Controller

Smiths Timeguard



This plug-in base surface mount electro-mechanical timer has an 'analogue' type time display, and will control all electrical equipment up to 20A (resistive). Easily set by the captive segment setting dial, the unit has a maximum of 96 switchings per day. Conforms to 73/23/EEC and 89/336/EEC directives.

- ★ Synchronous motor driven
- ★ Manual override
- ★ Permanent ON/OFF
- ★ 15 minute minimum switching interval which can be increased in 15 minute steps

- ★ 12A inductive rating
- ★ Controls electrical appliances up to 4.8kW
- ★ 72 x 72mm plug-in base surface mount
- ★ Tamper proof transparent cover

### Specification

Operating voltage: 230V ac 50Hz  
 Contact rating: 20A resistive  
 12A inductive  
 Operating temperature: -10°C to +40°C  
 Dimensions: 104 x 72 x 69mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MB07H	24Hr E/Mech T/Sw	£35.860	£34.070	£32.270	£42.140

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## 7-Day Electronic Time Controller

Smiths Timeguard



**NEW**

This versatile digital time controller features 7-day programme selections plus holiday suspension of programmes. Easy to use 6-button programming and 1000 hours rechargeable memory back-up allow ultimate control of electrical and electronic appliances. The controller is supplied with a transparent cover to discourage tamper and reduce dust ingress. Conforms to 73/23/EEC and 89/336/EEC directives.

- ★ 72 x 72mm plug-in base surface mount
- ★ 21 ON/OFF commands per week
- ★ Shortest switching time 1 minute
- ★ Manual override and permanently ON/OFF
- ★ ON/OFF times may be repeated over a number of days without using extra memory locations

★ Voltage free contacts

### Specification

Operating voltage: 230V ac 50Hz  
 Contact rating: 16A resistive (3.8kW)  
 6A inductive  
 Operating temperature: -10°C to +40°C  
 Dimensions: 104 x 72 x 69mm

Retail Unit Price each (inc. VAT).

Order Code	Type 17211	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB09K	24 Hour Timeswitch	£15.430	£14.670	£13.900	£18.140
MB10L	7 Day Timeswitch	£15.910	£15.120	£14.330	£18.700
MB11M	Power & Relay PCB	£11.960	£11.360	£10.760	£14.060

## PANEL MOUNT

## Electronic Timer Module and Power/Relay PCB

Smiths Timeguard



**NEW**

An electronic timer module for applications in equipment and appliances requiring accurate cost effective time control. The module is housed in an easy fit 72 x 72mm panel mount case giving permanent ON/permanent OFF/ timed selection. It can be mounted in an enclosure or cubicle, and the module can, if required, be built directly in to equipment. The module has a factory fitted rechargeable battery for memory back-up (1000 hours), and requires a 24V DC supply for charging. Available in two versions. MB09K is a 24-hour version. MB10L is a 7-day version with individual day, everyday, every weekday or weekend programme selection.

- ★ 24-hour model has up to 4 ON/OFF programmes per day
- ★ 7-day model has up to 6 ON/OFF programmes per day
- ★ Simple two button programming
- ★ Shortest switch time 1 minute
- ★ Self-cancelling override
- ★ Power/relay PCB will switch up to 16A resistive load

A power supply and relay PCB (MB11M) designed for use with MB09K and MB10L is available separately. It operates from the 230V ac mains and produces the required charge current for the module battery. In addition, it provides single-pole changeover, voltage free contacts. All connections are via 6.35mm/0.25in blades.

### Specification

Operating voltage  
 timer module: 24V dc and above  
 power/relay PCB: 230V ac 50Hz  
 Switch rating of power/relay PCB  
 resistive: 16A  
 inductive: 6A  
 Operating temperature  
 timer module: -10°C to 55°C  
 power/relay PCB: -10°C to 40°C  
 Dimensions  
 timer module: 39 x 55 x 33mm  
 housing: 72 x 72 x 34mm  
 power/relay PCB: 54 x 54 x 14mm  
 Modules and power/relay PCB conform to 72/23/EEC and 89/336/EEC directives.

Retail Unit Price each (inc. VAT).

Order Code	Type 17211	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB09K	24 Hour Timeswitch	£15.430	£14.670	£13.900	£18.140
MB10L	7 Day Timeswitch	£15.910	£15.120	£14.330	£18.700
MB11M	Power & Relay PCB	£11.960	£11.360	£10.760	£14.060

## DIN RAIL MOUNT

## Staircase Timeswitch For DIN Rail Mounting

Theben



**NEW**

A 16A delay timeswitch for staircase lighting that has an ON time adjustable from 1 to 7 minutes in 15 second steps. The timer comes in a standard one module wide housing (45 x 17.5 x 68mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).

- ★ Can switch up to 2000W of incandescent or fluorescent lighting
- ★ Permanent ON switching
- ★ Very reliable synchronous motor drive
- ★ Simple to set with direct indication of delay time

### Specification

Operating voltage: 230V ac 50Hz  
 Switching capacity: 16A  
 2000W for incandescent, fluorescent lamps  
 resettable after 30s approx.  
 Switching: Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17217	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB12N1	EMech Stcase T/Sw	£26.580	£25.260	£23.930	£31.240

## 7-Day Tappet Timeswitch With Power Reserve For DIN Rail Mounting

Theben



**NEW**

This 16A, 7-day tappet dial timeswitch comes with a 150 hour power reserve, and a summer/winter changeover switch. Additionally, there is a manual override switch to the next programme. The timer comes in a standard three module wide housing (45 x 52.5 x 60mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).

- ★ 4 hour switching minimum interval which can be increased in 1 hour steps.
- ★ Manual override switch to next programme
- ★ Permanent ON/OFF switching
- ★ Summer/winter changeover switch

### Specification

Operating voltage: 230V ac 50Hz  
 Switch rating  
 cosφ=1: 16A  
 cosφ=0.6: 2A  
 Accuracy: ±1 sec/day at 20°C  
 Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17243	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB18U1	DIN Rail T/Sw 7Day	£56.130	£53.330	£50.520	£65.960

## 24-Hour Segment Timeswitch For DIN Rail Mounting - 1 Module Wide

Theben



**NEW**

- ★ Easy to programme with captive segment setting
- ★ 24-hour with up to 96 ON/OFF's per day
- ★ 15 minute minimum switching interval which can be increased in 15 minute steps
- ★ Switching status indicator
- ★ Permanent ON switching

### Specification

Operating voltage: 230V ac 50Hz  
 Switch rating  
 cosφ=1: 16A  
 cos φ=0.6: 4A  
 Accuracy: ±1 sec/day at 20°C  
 Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type 17220	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
MB16S1	DIN Rail T/Sw 17.5mm	£29.730	£28.250	£26.760	£34.940

**All Customers**  
 No additional freight  
 charges for heavy items



See Industrial Control Section  
for DIN Rail and Terminals

**24-Hour 16A Segment  
Timeswitch For DIN Rail  
Mounting - 3 Module Wide**

Theben



A 16A timeswitch with 24-hour segment dial that has a transparent tamper proof cover to protect against undesired programming intervention. Additionally, there is a summer/winter changeover switch and early manual override switching for ON/OFF without affecting the programme sequence. The timer comes in a standard three module wide housing (45 x 52.5 x 60mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).

- ★ Easy to programme with captive segment setting
- ★ 24-hour with up to 48 ON/OFF's per day
- ★ 30 minute minimum switching interval which can be increased in 30 minute steps
- ★ Manual override switch to next programme
- ★ Permanent ON/OFF switching
- ★ Summer/winter changeover switch

**Specification**  
Operating voltage: 230V ac 50Hz  
Switch rating  
cos φ=1: 16A  
cos φ=0.6: 2A  
Accuracy: ±1 sec/day at 20°C  
Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MB17T 1	DIN Rail T/Sw 52.5mm	£29.380	£27.840	£26.380	£34.440

**24-Hour/7-Day 10A  
Timeswitch For DIN Rail  
Mounting**

Theben

A one channel, 10A, digital timeswitch with 8 memories for 4 ON and 4 OFF switching times. The timer features a built-in gold capacitor that provides approximately 78 hours of power reserve, and a holiday control that can interrupt the programmes for up to 45 days. The timer comes in a standard one module wide housing (45 x 17.5 x 60mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).



- ★ Easy to programme
- ★ 4 ON/OFF programmes
- ★ Minimum switching time 1 minute
- ★ 78 hours power reserve
- ★ 24 hour/7 day or several day 'free block' programming
- ★ Permanent ON/OFF switching
- ★ Override to next programme

**Specification**  
Operating voltage: 230V ac 50Hz  
Switch rating  
cos φ=1: 10A  
cos φ=0.6: 4A  
Accuracy: ±1 sec/day at 20°C  
Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MB13P 1	DIN Rail T/Sw-17.5mm	£82.580	£78.460	£74.330	£97.040

**24-Hour/7-Day 16A  
Timeswitch For DIN Rail  
Mounting**

Theben



A 16A, digital timeswitch with preset UK time and automatic summer/winter changeover that is suitable for UK, European and USA standards. The timer features an integral Lithium cell power reserve with a 6 year life, and a holiday control that can interrupt the programmes for up to 99 days. The timer comes in a standard two module wide housing (45 x 35 x 60mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).

Available in two versions  
**MB14Q** is a single channel version with 7 ON/OFF programmes  
**MB15R** is a two channel version with 18 ON/OFF programmes which can be distributed as required over the two channels.

- ★ Easy to programme
- ★ Single channel version has 7 ON/OFF programmes
- ★ Dual channel version has 18 ON/OFF programmes
- ★ Minimum switching time 1 minute
- ★ Integral Lithium cell power reserve with 6 years life
- ★ 24 hour/7 day or several day 'free block' programming
- ★ Permanent ON/OFF switching
- ★ Override to next programme

**Specification**  
Operating voltage: 230V ac 50Hz  
Switch rating  
cos φ=1: 16A  
cos φ=0.6: 10A  
Accuracy: ±1 sec/day at 20°C  
Operating temperature: -10°C to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MB14Q 1	DIN Rail T/Sw 35mm	£65.940	£62.640	£59.350	£77.480
MB15R 1	DIN Rail T/Sw 35mm	£84.020	£79.820	£75.620	£98.730

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

**Dusk-to-Dawn Switch For DIN  
Rail Mounting**

Theben



This dusk-to-dawn switch is ideal for the control of display lighting systems and external lighting systems i.e streets, car parks, drives etc. Supplied with a separate surface mount light sensor. The switch comes in a standard two module wide housing (45 x 35 x 60mm), and is designed to snap-on fit a standard 35mm 'top-hat' rail (DIN EN50022).

- ★ Adjustable brightness between 2 and 200 Lux
- ★ 40 second built-in delay to prevent nuisance switching
- ★ 10A switching capacity

**Specification**  
Operating voltage: 230V ac 50Hz  
Switch rating  
cos φ=1: 10A  
cos φ=0.6: 6A  
Incandescent lamp: 1000W load  
Halogen lamps: 1000W  
Fluorescent lamps un-compensated: 800W  
series compensated: 800W  
parallel compensated: 200W  
lead-lag (duo): 800W  
Operating temperature control unit: -10°C to +50°C  
light sensor: -40°C to +70°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MB19V 1	Dusk to Dawn T/Sw	£81.890	£77.800	£73.710	£96.230

**IMMERSION HEATER**

**24-Hour Segment Immersion  
Heater Timer Controller**

Smiths Timeguard

Economical and convenient to use, this controller has been specially designed for easy installation with both new and existing immersion heater systems. The controller has a captive segment setting dial with a 15 minute minimum switching interval which can be increased in 15 minute steps. Conforms to 73/23/EEC and 89/336/EEC directives.  
★ Switches ON and OFF at preset times  
★ Easy setting captive segment dial  
★ 15 minute minimum switching interval  
★ Integral thermal fuse for extra protection  
★ Manual override



**Specification**  
Operating voltage: 230Vac 50Hz  
Switch rating  
13A resistive (3kW)  
5A inductive  
Operating temperature: 0 to +50°C

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
MB06G	24Hr S/ment Imm Htr	£19.890	£18.900	£17.910	£23.380

## Electronic Immersion Heater Time Controller'

Smiths-Timeguard



This timer has the facility to be used permanently on, permanently off or with timed programmes. Its 24 hour digital clock/timer display enables a shortest switching time of 1 minute. An integral memory back up battery retains programmes in the event of a power failure. Two versions available.

VJ61R - is a 24 - hour version  
MB05F - is a 7- day version with individual day, everyday, every weekday or weekend programme selections for six programmes  
Conforms to 73/23/EEC and 89/336/EEC directives.

- ★ **Easily Programmable - 2 button system.**
- ★ **24-hour model has 4 ON/OFF**
- ★ **7-day model has up to 6 ON/OFF switching programmes every 24 Hours.**
- ★ **Shortest switching time of 1 minute**
- ★ **24-hour model has 1 or 2 hour boost facility**
- ★ **Integral thermal fuse for extra protection**
- ★ **Self cancelling override for instant ON/OFF control**

### Specification

Operating voltage: 230V ac 50Hz  
Switch rating: 230V ac 13A resistive or 6A inductive  
Operating temperature: -10°C to +50°C  
Dimensions: 115 x 74 x 50mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
VJ61R	7Day Immersion Timer	£28.070	£32.990
MB05F	24 Hr Imm Heater	£22.620	£26.580

## CLOCKS

### ANALOGUE

## 12/24Hr Analogue Wall Clock

Smiths-Timeguard



This smartly styled analogue wall clock is ideal for home or office and features dual 12/24 hour 224mm (approx. 9in.) diameter white dial with contrasting red/black numerals and hands. Movement is powered by a single alkaline 'AA' cell (JY48C, not included) and is quartz crystal controlled for accuracy. This quality brand-name product, manufactured by the respected Smiths company, has a three-year guarantee.

Overall diameter: 252mm  
Thickness: 35mm  
Colour: White

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK26D	Lge Analg Wall Clock	£17.010	£19.990

## Radio Controlled Wall Clock



A Radio Controlled Wall Clock in an attractive white ABS case.

The clock has a quartz controlled movement updated hourly by means of a constantly broadcast long wave radio signal which can be received over the whole of the the UK and most of Western Europe.

- ★ **Exceptional accuracy and automatic summer/winter time adjustment**

- ★ **Powered by one AA battery (supplied)**

For replacement batteries see Batteries, Torches & Accessories section.

Diameter: 275mm (10.75")  
Depth on wall 40mm (1.5")

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MB71N	Radio Cont Wall Clk	£25.520	£29.990

## Illuminator Analogue Travel Alarm Clock

Casio



### Features

- Electroluminescent (EL) back-lit dial
  - Beeper alarm
  - Compact design
- This travel alarm clock with easy to read dial has an electroluminescent back-light and features a beeper alarm. Powered by 1 x AA cell (JY48C, not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK21X	Analogue Illum Clock	£12.750	£14.990

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Electronics Magazine

## DIGITAL

## Digital Clock with MSF Decoder



An ingenious, very accurate, digital alarm clock that incorporates a radio receiver tuned to the MSF time-code transmitter at Rugby. An internal quartz oscillator keeps the clock running should the MSF reception be lost, or goes out of range. The clock has an alarm with 'snooze', and a backlight which is operated by a switch on the side.

Setting the clock is very simple. A thumb-wheel on the rear of the clock is used to set the hour and minute hand to the top of the current hour (e.g., if the current time is 7:45, then the hour hand is set to 7 and the minute hand to 12). Two 'AA' batteries (not supplied) are inserted and the 'SNOOZE' button is pressed until the seconds hand reaches the top of the minute. After approximately 2 minutes the clock hands will automatically adjust to the correct time.

Housed in an attractive black case measuring 88 x 98 x 56mm, the clock requires two 'AA' batteries (JY48C) to operate.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BM77J	Digital MSF Att. Clk	£24.290	£28.850
JY48C	Duracell AA	£0.757	£0.850

## Illuminator LCD Alarm Clock

Casio



### Features

- Electroluminescent (EL) back-lit display
- Easy to use alarm setting 'dial'
- Beeper alarm

This smartly styled, modern, lightweight bedside/desktop LCD alarm clock with snooze features an electroluminescent back-lit display.

Powered by 2 x AA cells (JY48C, supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK20W	Digital Illum Clock	£17.010	£19.990

**Car Clock/Calendar**



A car clock with hour/min/sec and month/date display in jumbo easy-to-read figures. The display can be swivelled through 360° horizontally and 90° vertically for the best viewing angle. Supplied with double sided tape for fixing. Powered by watch type battery (supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DR60Q	Car Clock/Calendar	£4.240	£4.999

**MOVEMENTS & MODULES**

**Wireless Clock Module**



A compact analogue clock movement that incorporates a miniature radio receiver to decode the Rugby MSF time-code transmissions. Once locked to the transmission, the module is extremely accurate. Supplied with hour, minute and second hands. Finished in black. Requires one 'AA' battery (not supplied). Dimensions of module (not including hands) 55 x 55 x 17.5mm.

Overall length of hands  
hour: 77mm  
minutes: 120mm  
seconds: 120mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ69W	Wireless Clock Module	£21.290 £16.580 £15.300	£24.990

**Quartz Clock Movement**



A standard basic quartz clock movement as described above. The movement is supplied without hands but uses the separate hands shown on the next page. Time is set with a knob on the back. Movement is attached to face with a threaded brass boss having a shouldered brass collar nut.

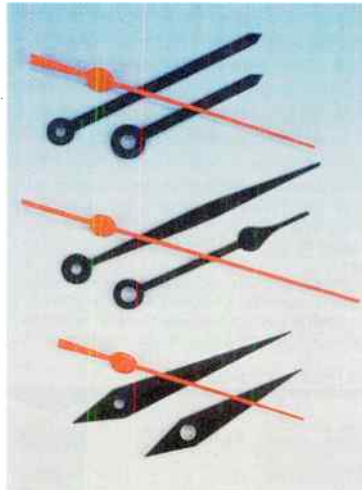
**Specification**

Crystal freq: 32.768kHz  
Accuracy @ 22°C: ±0.45 ±0.55s/day  
Operating voltage: 1.3 - 1.65V DC  
Operating temperature: -10°C to +60°C  
Average current: <150µA @ 1.5V  
Battery life: ≥1 year  
Dimensions: 55 x 55 x 17mm not including mounting boss and hand pivots.  
Mounting boss: 8mm dia. clear  
Hole dia. for collar: 10mm dia. clear

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU43D	Clock Module	£3.990 £2.500 £1.990	£4.690

**Analogue Clock Hand Sets**



Three sets of plastic hands of different designs which can be used with both the standard quartz movement and the chimes movement overleaf. The hours and minutes hands are black, the second hand is red for each set.

Length from centre pivot (mm):

	Hour	Minute	Second
Type 1	53.75	80.0	80.0
Type 2	70.0	94.0	94.0
Type 3	45.0	66.0	66.0

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU74R	Clock Hands Type 1	£0.255 £0.163 £0.143	£0.300
YU75S	Clock Hands Type 2	£0.255 £0.163 £0.143	£0.300
YU76H	Clock Hands Type 3	£0.255 £0.163 £0.143	£0.300

**Table Alarm Clock Movement**



As standard quartz movement above but including an alarm function, and a special set of four hands, one of which is a set alarm time indicator. The alarm sounds where the hour hand aligns with the alarm set hand. Separate set time and set alarm knobs are provided on the back with an alarm on/off switch. The separate hands below will not fit this movement as the mounting pivots are of different diameter. Also unlike standard movement, alarm version has no central mounting boss and instead is provided with two mounting holes through the case; fixing centres 49mm x 8BA/M2 clear.

**Specification**

As those for standard movement except -  
Operating voltage: 1.3 to 1.7V DC  
Operating current: <85µA @ 1.5V  
Alarm current: <8mA @ 1.5V  
Alarm volume: >80dB @ 10cm  
Alarm duration: 35 min. ±20 min.  
Alarm time accuracy: ±5 min.  
Operating temperature: -10°C to +50°C  
Dimensions: 52 x 55 x 23mm not including hand pivots.

Lengths and colours of hands, measured from centre pivot:  
Hour (black with a luminous stripe): 19mm  
Minute (black with a luminous stripe): 26mm  
Second (red): 26mm  
Alarm set (yellow): 20mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU67X	Alarm Clock Module	£4.240	£4.990

**Small Clock Module FM-882**

A compact digital clock module that uses a quartz crystal to provide an accuracy of ±15 seconds per month. Four digits show hours and minutes for a 12 hour period with AM and PM indicators. Operates from one GE-13 silver oxide button cell (FM28F) and draws a maximum of 5.5µA, which results in a battery life of approximately one year. The clock has an integral flanged bezel and can be snapped into a panel cut-out of 50 x 25mm. Makes an ideal small, low-cost and accurate digital clock suitable for a wide range of applications.



**Specification**  
Digit height: 10mm  
Oscillator frequency: 32.768kHz  
Accuracy: 15s/month  
Operating voltage range: 1.2V to 1.8V  
Battery life: 1 year approx.  
Dimensions  
panel cut-out (body): 45 x 25mm  
depth: 15mm  
bezel: 49 x 29mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU05F	Small Clock Module	£7.650 £6.580 £5.810	£8.990

**DECORATIVE**

**Instrument Plinths**



To enhance the appearance of the instruments (not included) described above, a choice of two plinths with cutouts is offered. The plinths are made from MDF board and finished in a satin light oak veneer, and designed for wall mounting by two slots on the back of the plinth. Two or four hole cutouts available.

**Dimensions**  
2 holes: 200 x 105 x 20mm  
4 holes: 410 x 115 x 20mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZZ00A	Dual Plinth	£8.670	£10.190
AQ79L	Quad Plinth	£9.540	£11.210

## Circular Analogue Clock



A circular battery operated analogue clock with an attractive Roman numeral style face and three black hands. The clock is powered by a 1.5V 'N' size battery. The clock is designed to be inserted into a hole that has a diameter of 60mm and a depth of 18mm. A rubber sleeving ensures the clock is held firmly. Overall dimensions: 70 x 40mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZF30H	Circular Analog Clk	£11.270	£13.250

## Barometer



A circular mechanical barometer which is designed to be inserted into a hole that has a diameter of 60mm and a depth of 18mm. A rubber sleeving ensures the clock is held firmly. The barometer will measure from 960hpa to 1065hpa and is also marked 720mm to 800mm. A secondary pointer needle, set in the clear plastic cover, is used for comparing the previous days pressure against the present days pressure. Overall dimensions: 70 x 40mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZF37S	Barometer	£17.350	£20.390

## Hygrometer



An attractive, circular mechanical hygrometer with a brass finish that measures from 0% to 100% REL humidity. The hygrometer is inserted in a 60mm

diameter hole that ideally should be 18mm in depth. A rubber sleeving ensures the hygrometer is held firmly. Overall dimensions: 70 x 40mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZF22Y	Hygrometer	£9.540	£11.210

## Thermometer



An attractive, circular mechanical thermometer with a brass finish that measures Celsius (-20°C to +50°C), and Fahrenheit (0°F to 120°F). A pointer needle is used to show the present ambient temperature.

The thermometer is designed to be inserted into a hole that has a diameter of 60mm and a depth of 18mm. A rubber sleeving ensures the thermometer is held firmly. Overall dimensions: 70 x 40mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZF23A	Circular Thermometer	£9.540	£11.210

## STOPWATCHES

### HAND HELD

## Professional Stopwatch



- ★ 1/100 second stopwatch with lap
- ★ 12/24 hour display, date, month, day
- ★ Alarm feature

A light, ergonomically designed stopwatch that fits nicely in the hand, with three large push buttons and large clear display. Very easy to use, and supplied with a convenient neck strap. Overall dimensions of stopwatch: 62 x 53 x 15mm approximately.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MG07H	Stopwatch	£8.500	£10.190

## Digital Quartz Stopwatch



- ★ High accuracy quartz design
- ★ Large three row display
- ★ Memory function - stores 30 measurements
- ★ Split time/Lap time measurement
- ★ Count-down/up timer - 9 hrs/59 mins/59 secs
- ★ Pacer function - adjustable 5 to 240 counts/min
- ★ Water resistant

A full function, quartz controlled, stopwatch with a highly visible three row display that fits comfortably in the hand and is water resistant. The stopwatch can measure up to 10 hours in 1/100 seconds and up to 999 split/lap times. Total elapsed time, split time and lap time can be displayed simultaneously in the three row display, and they can be measured successively without releasing split or lap time measurement. The memory function can store up to 30 split times, 30 lap times and the total elapsed time, and in addition, the slowest lap and the average lap can be recalled. When not in stopwatch mode the display will show year, month, date, hour, minutes and seconds. Supplied with neck strap. Overall dimensions of stopwatch: 82 x 62 x 22mm approx.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MG06J	Stopwatch 30 Laps	£20.410	£23.950

## BENCH MOUNTED

## Count-Down Timer



A simple count-down liquid crystal display (LCD) timer that counts in minutes and seconds. Three buttons below the LCD provide control of the 'Minutes', 'Seconds', 'Clear', 'Start/Stop' and 'Memory'. During count-down, the two legends 'M' and 'S' flash 'on' and 'off'. Completion of the count-down is indicated by an alarm that starts when the count-down has finished and the display reads zero. The alarm, which can last as long as 30 seconds, is stopped by pressing the 'Start/Stop' button. This will also cause the display to show the original time setting. The count-down can be repeated again using the original setting or either be cleared or a new time set in. Simultaneously pressing the 'Min' and 'Sec' buttons clears the display and the memory. A short bleep is emitted when any button is pressed and when the digits are scrolled up in fast mode. A spring loaded

belt clip, which incorporates a magnet, is fixed to the back of the timer. The instructions for standing the product upright appear on the back of the packaging.

**Specification**

Digits - minutes: 19mm  
seconds: 14mm  
Unit dimensions: 62 x 62 x 26mm  
Operational current: 4µA while counting (no alarm sounding)  
99 mins 59 secs  
Set time (max): 99 mins 59 secs  
Power supply: One 'AAA' battery

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJR2D	Count Down Timer	£6.930	£8.150

**Bench Stopwatch with Remote Facility**



- ★ Large visible display
- ★ Solid construction for laboratory/bench use
- ★ 4mm sockets for remote operation

This solidly constructed stopwatch has a large visible angled display for laboratory/bench use and will measure up to 9 hours, 59 mins, 59secs with a 1/100 sec accuracy. Three large colour-coded push-buttons are used to operate the stopwatch. Alternatively, the functions can be remotely operated using three 4mm sockets - the red socket mirrors the split/lap/reset button and the green socket mirrors the start/stop button. The black socket provides the neutral/return path. The stopwatch requires 1 x 'AA' alkaline battery, and measures approximately 120 x 95 x 48mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
MG09K	LCD Stopwatch	£21.260 £20.200 £19.140	£24.990

**WATCHES**

**Learning TV & VCR Remote Control Watch**

Casio



**Features**

- TV & VCR remote control:  
TV - Power On/Off, Volume, Channel +/-  
VCR - Power On/Off, Play, Stop, Rewind,

F/Forward, Channel +/-

- Pre-programmed with major manufacturers codes
- Learns codes from other infra-red remote controls
- 5 metre effective operating distance
- 8-digit calculator
- Daily alarm and hourly time signal
- 1/100<sup>TH</sup> Second stopwatch

The Learning TV & VCR Remote Control Watch from Casio is the world's first wrist-watch that actually 'learns' how to control your TV, VCR and many other devices that use an infra-red remote control. It will control the majority of remote control televisions and video cassette recorders that are currently available.

This watch can also, in most cases, 'learn' the codes of other manufacturers equipment not listed below and also those codes for satellite and audio equipment which have infra-red remote control.

Compatible with the following manufacturer's TV/VCR products:

Akai, Ferguson, Goldstar, Grundig, Hitachi, JVC, Mitsubishi, NEC, Nokia, Panasonic, Philips, Pioneer, Samsung, Sanyo, Sharp, Sony, Telefunken, Toshiba.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK53H 1	TV&Vid IR Rem Watch	£42.540	£49.990

**Telememo 50 World-Time Data-Bank Watch**

Casio



**Features**

- Electroluminescent (EL) display back-light
- 50 Telememo/schedule pages with 8 letters and 12 numerals capacity per page
- Memo page with 22 letters capacity
- World time - 24 time-zones
- Multi-function alarm
- Count-down timer - 1 second to 24 hours
- 1/100<sup>TH</sup> Second stop-watch
- Water-resistant to 50 metres

The Telememo 50 from Casio has a built-in telephone directory, keeping those important telephone numbers at your fingertips, whilst also being able to store appointments on a diary basis.

A handy reminder feature can display a message on the display or can advise you of an event when an alarm time is reached.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK51F 1	Telememo 50 Watch	£34.030	£39.990

**Telememo 150 Data-Bank World-Time Watch**

Casio



**Features**

- 150-page telememo
- 177-page schedule memo
- E<sup>2</sup>PROM data storage retains telememo and schedule even if battery goes flat
- Electroluminescent (EL) back-lit display
- Illuminated keypad
- 8-Digit calculator
- Daily alarm
- World time - 24 time zones
- 1/100<sup>TH</sup> Second stopwatch
- Count-down alarm

The Telememo 150 from Casio has memory protected against power failure so you can be sure that important data will not be lost! The watch features calculator and world-time together with telememo and schedule memo functions. You can even store separate phone and fax numbers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK52G 1	Telememo 150 Watch	£51.050	£59.990

**Twincept 50 Memo Dual Display Watch**

Casio



**Features**

- 50 Telememo pages - 8 letters/12 numerals per page
- World time - 26 time zones
- 1/100<sup>TH</sup> Second stopwatch
- Daily alarm
- Water resistant to 50m

The Twincept 50 Telememo Dual Display Watch from Casio combines traditional analogue timekeeping with a 'floating' liquid crystal display. The floating display shows world time, telephone numbers, appointment data and stopwatch. Digital data appears along with the analogue time at the touch of a button.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK54J 1	Twincept50Memo Watch	£42.540	£49.990

## Pro-Trek Triple Sensor Watch

Casio



### Features

- Compass, altimeter, thermometer and watch all in one!
  - Electroluminescent (EL) backlit display with auto light switch
  - 16-Point digital compass
  - 5 Measurement data memories
  - Abnormal magnetic field detect function
  - Bi-directional calibration & northerly calibration functions
  - Altimeter - up to 4,000m
  - Auto memory function - up to 50 sets of measurements with altitude, temperature, month, date and time
  - Target altitude alarm
  - Altitude frequency graph
  - Display in metres and feet
  - Barometer - 610Hpa to 1,100Hpa
  - Barometric pressure graph
  - Display in Hpa and inHg
  - Thermometer -10°C to +60°C
  - Display in °C and °F
  - Daily alarm
  - 1/100<sup>TH</sup> Second stopwatch
  - Water resistant to 100m
- The incredible Pro-Trek Triple Sensor watch from Casio features an electronic direction sensor, barometric pressure sensor and temperature sensor, making this the ultimate outdoor watch. The electroluminescent backlight features an Auto Light mode, which turns the backlight on whenever you turn the watch towards your face - without pressing any buttons - great for night-time walking.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK55K 1	TripleSensor ELWatch	£136.160	£159.990

## G-Shock Altimeter Watch

Casio



### Features

- Shock resistant
- Altimeter - up to 4,000m with maximum relative altitude memory
- Altitude alarm
- Display in metres and feet
- Barometer - 600Hpa to 1,050Hpa

- Atmospheric pressure graph - last 18 hours in 3 hour intervals
  - 3 Multifunction alarms
  - 1/100<sup>TH</sup> Second stopwatch
  - Water resistant up to 200 metres
- The G-Shock Altimeter Watch from Casio has altimeter and barometer functions built into a rugged case. It has become *the* choice for people everywhere whose work or leisure takes them into rough terrain.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK56L 1	Altimeter Watch	£76.580	£89.990

## G-Shock Thermo-Sensor Watch

Casio



### Features

- Shock resistant
  - Thermometer -20°C to +60°C
  - Memory for 30 sets of measurement data
  - Temperature graph display
  - Display in °C and F
  - Sunrise/sunset data
  - Daylight graph display
  - Daily alarm
  - 1/100<sup>TH</sup> Second stopwatch
  - 200m water resistant
- The durable G-Shock Thermo-Sensor Watch from Casio incorporates temperature sensor technology to give you instant temperature readings no matter where you happen to be. Additionally a sunrise/sunset mode calculates daylight hours for any time of the year.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK57M 1	Thermosensor Watch	£55.310	£64.990

## Jog and Walk Watch

Casio



### Features

- Electroluminescent (EL) back-lit display
- Pedometer function measures number of steps, calories burned, distance covered and exercise

time

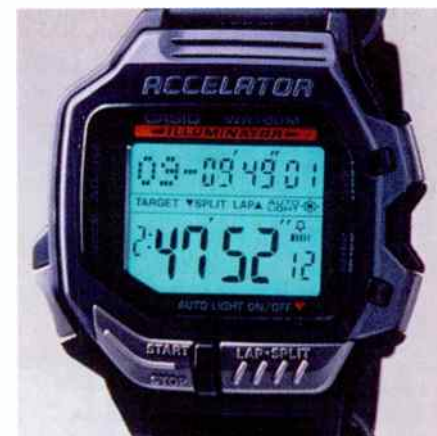
- 1/100<sup>TH</sup> Second stopwatch
  - Pacer signal function
  - Countdown alarm
  - Water resistant to 100m
- The Jog and Walk Watch from Casio has a built in pedometer that counts the number of steps you take, it keeps track of the number of calories burned, distance covered and total exercise time. An audible pacer signal (optional) helps keep you exercising at optimum levels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK58N	Jog & Walk Watch	£25.520	£29.990

## 50 Lap Memory Runners' Watch

Casio



### Features

- Electroluminescent (EL) back-lit display
  - Auto back-light option
  - 1/100<sup>TH</sup> Second stopwatch
  - 50 Lap/split-time memories with lap/split number
  - 10 Target split time alarms
  - Lap time differential
  - Target lap/split-time differential
  - Marathon simulator
  - Countdown alarm timer 1 - 1s to 10hrs
  - Countdown alarm timer 2 - 1s to 60mins
  - Daily alarm
  - Sweat-guard watch-back attachment
  - Water resistant to 100m
- The 50 Lap Memory Runners' Watch from Casio is packed with features and functions for the distance runner. A marathon simulator automatically estimates your full marathon time based on your 5km and 10km times. Storage of up to 50 lap or split times, plus target lap times and lap time differentials enable you to check your performance even when running. A unique sweat-guard watch-back attachment keeps the back of the watch separated from your wrist, so as to prevent sweat build-up behind the watch, thus increasing comfort when running.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CK59P 1	50 Lap Runners Watch	£42.540	£49.990

## Important Health Warning

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If you have any cause for concern with regard to

your health, you should seek advice from a qualified medical practitioner as a matter of urgency. Persons suffering, or believed to be suffering, from any medical condition, that may be due to or affected by blood pressure or heart rate, must not rely on items, which make reference to this warning, for health guidance.

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## Exercise Pulse Monitor

Casio



### Features

- Pulse measurement mode - 2 minute consecutive pulse measurements - range 30 to 199 bpm
- 3 Data memories for storing pulse, pulse measurement data, measurement start time, measurement time, aerobic zone and intensity level
- Intensity gauge
- 1/100<sup>th</sup> Second stopwatch
- Daily alarm
- Countdown alarm - 1s to 10hrs
- Water resistant to 50m

This superb Exercise Pulse Monitor Watch from Casio is designed for those who are serious about fitness.

By simply programming the watch with the relevant data, i.e. age, the watch measures your pulse, and displays your optimal aerobic range. An 'intensity' gauge even indicates the intensity of the activity you are performing. Additionally, there are three sets of 7 measurement data memories.

The watch has the usual timekeeping functions, i.e. hours, minutes, seconds, month, date and day, and automatically determines and sets the number of odd or even days in the month. The time display can be set to show the time in either the 12 or 24-hour format.

A daily alarm can be set to provide a gentle reminder at the same time every day, and time signals can be set to 'beep' on the hour.

**Note: Please read Important Health Warning before purchasing or using this product.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DM95D1	Exercise Pulse Mon	£42.540	£49.990

## VHR Alpha Heart Rate Wrist Watch

Vetta



- ★ Simple and accurate
- ★ Programmable with upper and lower limits
- ★ Large, clear display

- ★ Real-time clock
- ★ Stopwatch
- ★ Training zone limit indicators

The VHR Alpha Heart Rate wrist watch is a sophisticated, user friendly training tool with a large, high contrast two line LCD displaying heart rate at all times. The transmitter straps across the chest for accurate measurement of heart rate, then a signal relays this information to the wrist watch. Allows you to program your Training Target Zone, and continually monitor your progress. Accuracy is assured with the ECG accurate Integrated Processing Circuit, which eliminates background muscle noise with a sophisticated mathematical algorithm. Supplied with full operating instructions and batteries.

**Note: Please read Important Health Warning before purchasing or using this product.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC34M1	Vetta VHR-Alpha	£65.090	£76.490

## VHR 50 - Cross Trainer Heart Rate Cycling Computer and Wrist Watch

Vetta



- ★ Pulse rate display
- ★ Training limit programmable
- ★ Training zone memory and alert
- ★ Speed/average speed/maximum speed display
- ★ Auto timer stopwatch
- ★ Trip distance
- ★ Odometer
- ★ Real-time clock
- ★ Cycle mounting bracket supplied

The ideal cross training tool for the multi-sport athlete, combining a Heart Rate Cycling Computer and Heart Rate Wrist Watch. Two distinct modes of operation exist, the Cycling Modes and Wrist Watch Modes, selected by pressing a single button. When in cycling mode, the display can be scrolled through Speed, Pulse, Distance and Automatic Timer Stopwatch, while in Wrist Watch mode the display can be scrolled through Pulse, Clock and Stopwatch functions. Fully programmable with Training Limits, wheel diameter and clock settings, etc. An electronic sensor is supplied, for fixing to a cycle frame, and is used for sensing wheel rotation to operate the Odometer, Speed Indication and Distance Trip. Supplied with full operating instructions and a pamphlet covering Getting Started with Heart Training.

**Note: Please read Important Health Warning before purchasing or using this product.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC33L1	Vetta VHR-50 Lumina	£95.480	£112.190

**24** HR  
ORDER SERVICE  
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## THERMOMETERS, HYGROMETERS & BAROMETERS

### Outdoor Temperature/Humidity Meter with Memory



A highly specified thermo-hygrometer with an external temperature probe that allows the unit to monitor the temperature at a distance of 3m or less from the unit, for example outdoors or in a refrigerator. A memory is incorporated which will store the lowest and highest external temperature readings. These figures can be shown, or the memory reset, at any time. An additional independent display shows the temperature as measured by a sensor integral to the unit. Indoor RH expressed as a percentage is also shown.  
Temp range: 0° to 50° (+32°F to +122°F)  
External temp range: 50°C to 70°C (-58°F to +158°F)  
Temp. resolution: 0.1°C/0.1°F  
RH range: 32° to 95° (at 25°C/77°F)  
RH resolution: 1%  
Supplied with instructions. Batteries (2 'AA' size alkaline recommended, JY48C) not included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZA43W	Dual Thermo/Hygro	£30.370 25+ £23.970 100+ £22.390	£35.690 1+

### Thermo-Hygrometer with Memory

This meter has a large clear LCD panel which shows relative humidity (RH - as a percentage), and temperature (which is user-selectable to read in either celsius or fahrenheit).

A memory is incorporated which will store the lowest and highest RH and temperature readings. These figures can be shown, or the memory reset, at any time. Indicators on the display show if it is 'wet' (RH over 65%), 'dry' (RH below 45%) or 'comfortable' (RH between 45% and 65%). The unit is attractively finished in white and two-tone grey, and can be table or wall mounted.

Size: 99 x 70.5 x 20.5mm  
Weight: 70g (less batteries)  
Temp. range: 0°C to 50°C (+32°C to 122°F)  
Temp. resolution: 1°C/1°F  
RH range: 25% to 95% (at 23°C/77°F)  
RH resolution: 1%  
Supplied with instructions and wall mounting bracket. Batteries (2 x AAA size - alkaline recommended, JY50E) not included.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZA41U	Pocket Thermo/Hygro	£23.420 25+ £21.370 100+ £19.940	£27.530 1+

## Electronic Rain Gauge



An ideal way of measuring the amount of rainfall from the comfort of your own home. An external rain collector measures how much rain has been collected over a period of time and displays the total on an indoor display unit, which can be wall mounted or free standing. The liquid crystal display shows the amount of rainfall in millimetres, this reading can be reset at any time. The display unit is powered by a single AAA cell and is supplied with 10m of cable, to which the external collector unit is attached. Rain collector unit size, 100 x 50 x 100mm. Display unit size, 93 x 62mm x 22mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YZ48C 1	Rain Gauge	£39.050 6+ £33.810 12+ £31.370	£45.890 1+

## Digital Clinical Thermometer



This compact, accurate and easy to use digital clinical thermometer is essential for every family's 'medicine cupboard' or travel bag and is great value for money. Whilst used in the same manner as a conventional mercury thermometer, it has none of the disadvantages.

This thermometer:

- Does not have to be 'shaken down' prior to use - simply switch on and use
- Has a beeper which sounds after the correct measurement time has elapsed
- Has a clear, easy to read display
- Much safer to use children - no glass breakage/mercury spillage worry
- Simple to clean - simply dip end in Milton™ or other similar sterilising fluid.

Supplied complete with battery and handy storage case.

Temperature is displayed in degrees celsius. As with all medical matters, if you are concerned or unsure about symptoms, contact a qualified medical practitioner.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FJ96D	Dig Clinical Therm	£4.240 1+ £4.030 10+ £3.830 25+	£4.990 1+

## Digital Alarm Thermometer with Steel Probe



A slimline, portable LCD thermometer with a stainless steel probe that is suitable for industrial or domestic use. The unit features a wide temperature range, and a programmable maximum and minimum alarm, making it ideal for measuring and monitoring temperatures in the electronics, heating and ventilation, refrigeration, laboratory, and food processing industries. The 100mm long stainless steel probe is attached to the unit by 1m of sensing wire, and for convenience, the probe can be clipped to the side of the unit. The sensing wire is stored in the battery compartment. Beneath the display the unit has two exposed slide switches that are the alarm on/off and temperature sensing speed of either 1 sec. or 10 secs.: the slow sensing speed reduces battery use, to prolong battery life. The front cover slides down to reveal buttons for adjusting high and low temperature alarms and slide switches for setting and locking the alarm and selecting either °C or °F display functions. The light-cream case has a flip-out stand for placing on a table and a spring-loaded clip for fixing to a belt, etc. Supplied with battery and instructions.

### Specification

Temperature range: -55°C to +148.8°C (-67°F to +299.8°F)  
 Accuracy at 0°C to 60°C: ±1°C  
 Accuracy over full range: ±1.5°C  
 Resolution from -49°C to 105°C: 0.1°C  
 Resolution from -55°C to -49°C: 0.2°C  
 Resolution from 105°C to 129°C: 0.2°C  
 Resolution from 129°C to 140°C: 0.3°C  
 Resolution from 140°C to 148.8°C: 0.4°C  
 Battery type: 'AAA' 1.5V  
 Size: 106 x 58 x 20mm  
 Weight: 100g (incl. battery)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RT20W	WideRing Probe Thermo	£26.030 1+	£30.590 1+

## Digital Alarm Thermometer with Warning Alarm



A slimline, portable digital LCD thermometer and clock with a stainless steel probe that is suitable for industrial or domestic use. The unit features a programmable maximum and minimum alarm, making it ideal for measuring and monitoring refrigeration, food processing, heating and ventilation, particularly in the food industry. The 100mm long stainless steel probe is attached to the unit by 1m of sensing wire, and for convenience, the probe can be clipped to the side of the unit. The sensing wire is stored inside the battery compartment. The unit has two exposed slide

switches which are the alarm on/off and temperature sensing speed, either 1 sec or 10 secs. The slow sensing speed saves battery energy, prolonging battery life. The front cover slides down to reveal the buttons to adjust and set the time, high and low temperature alarms, and slide switches to select either °C or °F display or clock function. The light-cream case has a flip out stand and a spring loaded clip, for fixing to a belt etc.

### Specification

Temperature range: -10°C to +110°C (+14°F to +230°F)  
 Resolution: 0.1°C (0.1°F)  
 Temperature sensing speed: 1sec. or 10sec.  
 Battery type: Single 'AAA' 1.5V type  
 Size: 107 x 59 x 20mm  
 Weight: 100g (incl. battery)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BU78K	Probe Thermometer	£21.690 1+ £18.310 25+ £15.250 100+	£25.490 1+

## Indoor Thermometer



Ideal for indoor use in bedrooms, garages, greenhouses, etc. Accurate to a resolution of 0.2°, with Centigrade scale in the range 0 to 49.8°C. Suitable for wall, desk or car dash mounting. Operation is from a single 1.5V button cell, provided.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE50E	Indoor Thermo	£6.060 1+	£7.130 1+

## Dual Display Indoor/Outdoor Thermometer



A compact, attractive, dual LCD digital thermometer that displays indoor and outdoor temperatures in °C at the same time. The meter has an internal and an external probe that is attached to a thin 3m cable. Each display has a memory that stores the maximum and minimum temperature reached since last reset, and the reading can be recalled by pressing the relevant buttons. The thermometer is housed in a distinctive white and grey plastic case with a built-in plastic stand for table standing. The thermometer can be wall-mounted if preferred, and a wire holder is supplied for fixing the sensing probe to a wall. Powered by one 'AA' battery.



**Specification**

Temperature range indoor: -5°C to +50°C  
outdoor: -40°C to +50°C

Resolution: 0.1°C  
Probe length: 20mm  
Probe diameter: 7mm at base, 4mm at tip

Probe wire length: 3m approx.  
Size: 110 x 70 x 20mm  
Weight: 85g (excl. battery)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BU81C	Dual Display Thermo	£14.740	£14.030	£11.420	£17.330

**Digital Time Display and Thermometer**



This compact unit is ideal for children's bedrooms, greenhouses, car, office and home use. Displays either the local time and a programmable world time, or the maximum and minimum indoor and outdoor temperature. The temperature range is -50 to +70°C, and with a resolution accurate to 0.1° the large LCD panel is easy to read in almost all lighting conditions. Maximum and minimum temperature memories allow temperature extremes to be recorded - invaluable when used in a greenhouse for checking frost conditions - safeguarding your plants and hard work. Supplied with full operating instructions and external self-adhesive temperature sensor.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
WE71N	DD In/Out Min/Max	£13.010			£15.290

**Thermometer/Clock Module**



A versatile indoor/outdoor thermometer that can be easily wall mounted or placed flat. Outdoor temperatures are sensed by a temperature probe attached to the end of a 3m cord, allowing you to

place the unit almost anywhere without the worry that the cable length will be too short. A large, clear LCD readout allows easy reading of the current time and either the indoor or outdoor temperatures (selected with a separate switch). Displays temperature in °C. Supplied with full operating instructions and 1 x 'AAA' cell. A back-light is operated by a push-button. Wall mounting fixings are also supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
WE55K	Dual Disp Therm Clock	£14.740			£17.330

**Digital Thermometer and Clock**



An attractive, compact thermometer and clock, with an outdoor temperature probe, that can display either °C or °F. The LCD display alternates between time and temperature readings at three second intervals. A small slide switch on the front selects either the indoor or outdoor temperature probe, which is attached to the module by 2m of black twin flex. Time settings and the °C/°F slide switch are mounted on the back of the module. The module has a flip-out stand on the back for desk or table top use, or it can be wall-mounted using the matching wall bracket (supplied). Finished in dark grey and silver.

**Specification**

Temperature range  
indoor: -5°C to +50°C (-23°F to +122°F)  
outdoor: -50°C to +70°C (-58°F to +158°F)  
Resolution: 0.1°C (0.1°F)  
Battery type: Single G-13 type 1.5V (LR44)  
Probe length: 22mm  
Probe diameter: 5mm at base, 4mm at tip  
Size: 68 x 52 x 16mm (incl. bracket)  
Weight: 51g (incl. battery)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BU77J	Small Thermometer	£8.670	£7.090	£5.870	£10.190

**Thermometer/Clock**



A very compact, low-cost inside/outside LCD thermometer and clock that is ideally suited for use in the car, the office or home. Also suitable for greenhouse or workshop. This thermometer has a wide temperature range, measuring from -50°C to +70°C. The unit has a built-in internal sensor and an external sensor that takes the form of a flat plastic probe attached to a 3m length of wire. This external sensor is attached to the inside of a non-moving window or, in a car, somewhere unaffected by engine heat, e.g., behind the front bumper, not directly in the wind stream. Controls to set up the clock and select °C or °F are on the rear, with a temperature selector slide switch at one end. On the face is a clock button and a light button.

The unit is provided with 'velcro' mounting pads for attaching to any smooth surface. Colour black. Dimensions: 114 x 24 x 17mm. Supplied with type 'AAA' battery and instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GW57M	ThermoClock	£7.800			£9.170

**Thermometer Clock**



An attractive white LCD dual-purpose clock that displays the time as well as the ambient temperature in either °C or °F. On the front of the unit is a single push-button labelled 'Clock' which, when the display is reading temperature, will show the time when pressed. The time can be altered even when displaying temperature. The front 'Clock' button is held 'on' and the 'HR' and 'MIN' buttons pressed. The temperature sensor is positioned at the top left-hand side of the unit's face.

**Specification**

Display dimensions: 48 x 20mm  
Digit height: 18mm  
Unit dimensions: 63 x 45 x 15mm  
Weight: 32g  
Power supply: One 'AAA' battery

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
RZ53H	Thermometer Clock	£6.060	£4.850	£4.280	£7.130

**Indoor/Outdoor Thermometer**



This versatile and easy to use digital thermometer will give you an accurate reading of the internal or external temperature of your home or car at the flick of a switch.

The thermometer features an integral sensor for internal temperature and a separate sensor at the end of approx 3m of cable that can be mounted outside your home or car to test the outside temperature.

Either temperature can be displayed in °C or °F, again at the flick of a switch, and there's an integral back-light that'll ensure you can even read the temperature at night.

Powered by a single 'AAA' type battery (not supplied). The thermometer has an extra wide temperature range (-30°C to +50°C, -58°F to +122°F) and is supplied with double-sided adhesive pads for easy installation.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
CN82D	Thermometer/Light	£8.500	£6.500	£5.750	£9.990

## Aquarium Thermometer



This LCD thermometer is primarily intended for use with an aquarium, but it also doubles up as a room thermometer. A sliding switch, at the bottom right-hand side, selects either the water temperature or the room temperature. The water temperature sensor is housed in a sealed metal cylinder connected to the thermometer by approximately 1m of lead. A suction cap attached to the sensor holds it in position within the tank. The room temperature sensor is housed inside the actual thermometer body on the left-hand side of the thermometer. The thermometer has an operational range of between -20°C to +70°C.

### Specification

Dimension: 60 x 40 x 14mm  
 Temperature range: -20°C to 70°C  
 Power supply: One LR44 (SR44) battery

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ79L	Aquarium Thermometer	£6.930 25+ £4.850 100+ £4.280	£8.150

## Aquarium Thermometer



The ideal safety device to guard against under and over temperature in aquaria. Simple setting allows a band of temperatures to be selected and constantly monitored. The current temperature is displayed on the large LCD readout, a flashing LED signal and buzzer warn you when over or under temperature conditions prevail. The warning limits can be disabled should you wish to use the unit as a simple thermometer. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE59P †	Aquarium Thermometer	£13.010	£15.290

## Ice-Box Alert



A compact dual display thermometer ideal for use with refrigerators and freezers. Simply insert the temperature sensor into the ice-box, etc., and the thermometer will register the refrigerator or freezer temperature on the righthand side display. A constant readout of the room temperature is given on the left of the display. In addition to its high accuracy this unit also features an over-temperature warning with a sounder and flashing LEDs, should the temperature in the cooler rise above a predetermined threshold.

Display selectable between °C and °F, with adhesive pads to allow fixture to walls, door frames, refrigerators, etc. Supplied with full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ09K	Freezer Thermometer	£13.010	£15.290

## Freeze Alert



A handy and convenient device that gives a visual and audible warning if the temperature inside your freezer rises above -10°C/14°F. The module is attached to the outside of the freezer door (sticky pad supplied) and the probe is passed through, when the door is opened, and positioned at the rear of the freezer cabinet. An LED will flash and an alarm sounds when the temperature rises above -10°C. There is a small on/off slide switch on the front of the module. Ideal for domestic and commercial freezers, as well as industrial and laboratory freezers.

Requires 1 'AA' size battery (JY48C)  
 Length of cable 2.7m  
 Dimensions: 77 x 46 x 19mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RZ43W †	Freeze Alert	£5.200	£6.110

## BLOOD PRESSURE MONITORS

### Manual Blood Pressure Monitor



- ★ Manual operation
- ★ Large LCD readout
- ★ Measures systolic/diastolic/mean and pulse
- ★ Simple operation

A manually inflated precision blood pressure meter. Ideal for fitness enthusiasts. Simply fit the cuff over an arm, above the elbow and switch on the unit. Now inflate the cuff by pumping the plastic bulb until the pressure reading on the unit reads between 30 and 44mmHg higher than the estimated systolic blood pressure.

The unit will now automatically start to reduce the pressure in the cuff through a special control valve. When a pulse is detected the pressure reading moves to the right and then when the diastolic pressure is measured the display clears and displays both. After a few seconds the display begins to flash between the systolic and diastolic pressures, and mean blood pressure and pulse rate. Full instructions are supplied with the unit, together with blood pressure charts that can be used to plot readings. Requires 4 x 'AA' cells (JY48C), not supplied.  
**Note: Please read Important Health Warning before purchasing or using this product.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE49D †	SemiAuto BP Monitor	£38.280	£44.990

## Automatic Digital Blood Pressure Monitor



- ★ Fully automatic
- ★ Large LCD readout
- ★ Measures systolic/diastolic/mean and pulse
- ★ Simple operation

Measure your blood pressure in the comfort of your own home. Ideal for keep-fit enthusiasts. Simply place the cuff correctly on the arm, switch on the unit and press the 'Start' key. The cuff is inflated by using a small compressor inside the unit and begins the measurement cycle. The cuff now slowly deflates, measuring the pulse, systolic and finally diastolic blood pressure. When the cycle is complete, the large, clear LCD readout flashes between systolic and diastolic blood pressure, and mean blood pressure and pulse rate. Requires 4 x 'AA' cells. (JY48C), not supplied.  
**Note: Please read Important Health Warning before purchasing or using this product.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE48C †	Automatic BP Monitor	£51.050	£59.990

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If you have any cause for concern with regard to your health, you should seek advice from a qualified medical practitioner as a matter of urgency.

Persons suffering, or believed to be suffering, from any medical condition, that may be due to or affected by blood pressure or heart rate, must not rely on items, which make reference to this warning, for health guidance.

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Drafting Aids	1285	Pliers	1263	Vacuum Cleaners	1304
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First Aid Kits	1308	Safety & Protection	1307	Wire & Cable Tools	1270
Hammers	1274			Workbenches	1304
Inspection & Assembly	1306				

## SCREWDRIVERS

### GENERAL PURPOSE

#### Light Duty Screwdrivers



A range of small screwdrivers primarily intended for light duty work and small screws. Blades are made of tempered and hardened tool steel and nickel plated, in 75mm, 100mm and 150mm lengths respectively. Moulded plastic handles.

Retail Unit Price each (inc. VAT).

Order Code	Type 3314	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
BR52G	L/Duty Driver 75mm	£0.587	£0.460	£0.415	£0.690
BR53H	L/Duty Driver 100mm	£0.672	£0.530	£0.480	£0.790
FV46A	L/Duty Driver 150mm	£0.757	£0.595	£0.540	£0.890

#### Standard Screwdrivers



Flat blade screwdrivers with chrome-vanadium shanks and heat-treated fully-hardened tips lightly magnetised to help prevent screws being lost during awkward tasks. On the two larger sizes, the shanks are square section for added strength. The handles are moulded shockproof transparent amber plastic with finger grips.

The following sizes are available:

Type	Blade width	Shaft length	Overall length
3.2/75	3.2mm	75mm	127mm
5/75	5mm	75mm	155mm
5/150	5mm	150mm	230mm

Retail Unit Price each (inc. VAT).

Order Code	Type 3317	Price each exc. VAT			inc. VAT each 1+
		1+	24+	120+	
JG97F	CV Dvr Flat 3.2/75mm	£0.519	£0.406	£0.333	£0.610
JG98G	CV Dvr Flat 5/75mm	£0.587	£0.505	£0.448	£0.690
JH00A	CV Dvr Flat 5/150mm	£0.859	£0.614	£0.530	£1.010

#### Standard Crosspoint Screwdrivers



Crosspoint screwdrivers with chrome-vanadium shanks and heat-treated fully-hardened tips lightly magnetised to help prevent screws being lost during awkward tasks. On the two larger sizes, the shanks

are square section for added strength. The handles are moulded shockproof transparent amber plastic with finger grips.

The following sizes are available:

Type	Point size	Shaft length	Overall length
0/75	No. 0	75mm	127mm
1/75	No. 1	75mm	155mm
2/100	No. 2	100mm	188mm

Retail Unit Price each (inc. VAT).

Order Code	Type 3333	Price each exc. VAT			inc. VAT each 1+
		1+	24+	120+	
JH03D	CV Dvr X-Point 0/75	£0.519	£0.416	£0.333	£0.610
JH04E	CV Dvr X-Point 1/75	£0.587	£0.495	£0.426	£0.690
JH06G	CV Dvr X-Point 2/100	£0.859	£0.676	£0.609	£1.010

#### Electricians Screwdrivers

Crescent



A range of electricians screwdrivers that features a robust, smoke-grey plastic handle and a hardened 4.8mm (3/16in.) tip. Available with a 75mm, 150mm or 200mm blade.

Manufacturer's Code	Blade length	MPS Code
243-3C	75mm	DF92A
243-6C	150mm	DF93B
243-8C	200mm	DF94C

Retail Unit Price each (inc. VAT).

Order Code	Type 3823	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DF92A	Elect/Driver 75	£2.050	£1.948	£1.896	£2.410
DF93B	Elect/Driver 150	£2.050	£1.940	£1.890	£2.410
DF94C	Elect/Driver 200	£2.200	£2.090	£2.030	£2.590

#### Electronic Screwdrivers

Crescent



A range of screwdrivers designed for electronic work, that feature a robust, smoke-grey plastic handle and a 3.2mm (1/8in.) hardened tip. Available with a 100mm, 150mm or 200mm blade.

Manufacturer's Code	Blade length	MPS Code
244-4C	100mm	DF98G
244-6C	150mm	DF99H
244-8C	200mm	DH00A

Retail Unit Price each (inc. VAT).

Order Code	Type 3820	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DF98G	Elect Driver 100	£4.240	£4.030	£3.930	£4.990
DF99H	Elect Driver 150	£1.440	£1.370	£1.340	£1.700
DH00A	Elect Driver 200	£1.750	£1.660	£1.610	£2.060

#### Pozidrive Screwdrivers



Screwdrivers suitable for use with Pozidrive screws. Sizes are (blade length in brackets) No. 0 point (75mm), and No. 1 point (100mm).

Retail Unit Price each (inc. VAT).

Order Code	Type 4406	Price each exc. VAT			inc. VAT each 1+
		1+	25+	100+	
FT54J	Size 0 Pozidriver	£1.590	£1.510	£1.470	£1.870
FY15R	Size 1 Pozidriver	£1.550	£1.230	£1.120	£1.830

#### Torx Head Screwdrivers

Crescent



A range of 'Torx' head screwdrivers that feature a robust, smoke-grey plastic handle and a hardened tip. Available with a No. 15T, 20T or 30T tip.

Manufacturer's Code	Blade length	Tip No.	MPS Code
TXD-15C	75mm	15T	DF95D
TXD-20C	75mm	20T	DF96E
TXD-30C	115mm	30T	DF97F

Retail Unit Price each (inc. VAT).

Order Code	Type 3853	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
DF95D	Torx Head Driver 15T	£3.040	£2.890	£2.820	£3.580
DF96E	Torx Head Driver 20T	£3.940	£3.750	£3.650	£4.640
DF97F	Torx Head Driver 30T	£3.940	£3.750	£3.650	£4.640

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### Key Screwdriver Blade Symbols

Where possible these symbols will be used to indicate the blade or blades supplied with each screwdriver or set of screwdriver blades.

Regular	Phillips	Allen Hex	Internal Line Head	Internal Tamper Proof	External Line Head	Pazi Drive
Spline	Tamper Proof Tarx	Torx	Spanner	Tri-Wing	Security Hex	Scrulox

### C.K. 'Triton' Screwdrivers

The 'Triton' range of screwdrivers from the German manufacturer C.K. have blades made from chrome vanadium steel, hardened throughout the full blade length to 52-60 HRC. They are rust protected with precision machined tips for excellent screw fit and 'no-cam out'.

- ★ Chrome vanadium blades
- ★ Injection moulded polypropylene handle
- ★ Textured, anti-slip grip

The handles are injection moulded polypropylene, and the ergonomic tri-square design ensures ease of use with high torque turning and easy alignment. The lightweight, shatterproof textured grip has excellent anti-slip properties and is resistant to shock, oil, acids and extreme temperatures.

'Triton' screwdrivers are manufactured to the highest standards to all relevant DIN and ISO Standards, so ensuring durability, comfort and a very long working life.

### 'Stubby' Range

C.K.

A range of four 'stubby' handle screwdrivers with slotted or Pozidriv/Supadriv blades.

**Slotted**

Order Code	MC22Y	MC23A
Blade Size	40 x 6.5mm	40 x 9.5mm
Tip:	1.2mm	1.6mm
Overall length:	100mm	100mm
Weight:	34g	45g

**Pozidriv/Supadriv**

Order Code	MC24B	MC25C
Blade Size	Size 1 x 25mm	Size 2 x 25mm
Overall length:	85mm	85mm
Weight:	33g	36g

Retail Unit Price each (inc. VAT).

Order Code	Type 1724E	Price each exc. VAT			inc. VAT each 1+
		1+	3+	6+	
MC22Y	Stubby Slot 40x6.5mm	£2.090	£1.940	£1.780	£2.460
MC23A	Stubby Slot 40x9.5mm	£2.340	£2.160	£1.980	£2.750
MC24B	Stubby Poz Size 1	£2.090	£1.940	£1.780	£2.460
MC25C	Stubby Poz Size 2	£2.250	£2.090	£1.920	£2.650

### Slotted Instrument Screwdrivers

C.K.

A range of precision, slotted instrument screwdrivers.

Size mm	Tip mm	Overall length mm	Weight gms	Order Code
50 x 3	0.5	120	19	MC26D
75 x 3	0.5	145	20	MC27E
100 x 3	0.5	180	29	MC28F
125 x 5	0.8	215	55	MC29G
150 x 5	0.8	240	60	MC30H
200 x 5	0.8	290	66	MC31J
250 x 5	0.8	340	75	MC32K

Retail Unit Price each (inc. VAT).

Order Code	Type 1725D	Price each exc. VAT			inc. VAT each 1+
		1+	3+	6+	
MC26D	Slotted	£1.330	£1.240	£1.130	£1.570
MC27E	Slotted 75x3mm	£1.410	£1.310	£1.200	£1.660
MC28F	Slotted 100x3mm	£1.470	£1.360	£1.250	£1.730
MC29G	Slotted 125x5mm	£1.940	£1.790	£1.640	£2.280
MC30H	Slotted 150x5mm	£1.940	£1.790	£1.640	£2.280
MC31J	Slotted 200x5mm	£2.170	£2.010	£1.850	£2.560
MC32K	Slotted 250x5mm	£2.410	£2.230	£2.050	£2.840

### Pozidriv/Supadriv Screwdrivers

C.K.

A range of Pozidriv/Supadriv Screwdrivers available in three sizes

Size x mm	Blade dia. mm	Overall length mm	Weight gms	Order Code
size 0 x 60	3.0	130	20	MC33L
size 1 x 80	5.0	170	48	MC34M
size 2 x 100	6.0	200	74	MC35Q

Retail Unit Price each (inc. VAT).

Order Code	Type 1725J	Price each exc. VAT			inc. VAT each 1+
		1+	3+	6+	
MC33L	Pozidriv 0x60mm	£1.940	£1.790	£1.640	£2.280
MC34M	Pozidriv 1x80mm	£2.250	£2.090	£1.920	£2.650
MC35Q	Pozidriv 2x 100mm	£2.410	£2.230	£2.050	£2.840

### Ball-Ended Hexagon Drivers

C.K.



A range of four ball-ended hexagon drivers.

Size mm	Shaft dia. mm	Overall length mm	Weight gms	Order Code
3 x 100	4.0	180	34	MC36P
4 x 100	5.0	180	42	MC37S
5 x 100	6.0	190	62	MC38R
6 x 125	7.0	215	80	MC39N

Retail Unit Price each (inc. VAT).

Order Code	Type 1725B	Price each exc. VAT			inc. VAT each 1+
		1+	3+	6+	
MC36P	Ballended Hex 3mm	£2.990	£2.770	£2.550	£3.520
MC37S	Ballended Hex 4mm	£3.150	£2.920	£2.680	£3.710
MC38R	Ballended Hex 5mm	£3.540	£3.270	£3.000	£4.160
MC39N	Ballended Hex 6mm	£4.050	£3.750	£3.450	£4.770

### Torx Screwdrivers

C.K.



A range of 8 Torx screwdrivers.

Torx Size x shaft length mm	Shaft dia. mm	Overall length mm	Weight gms	Order Code
TX06 x 70	3.0	150	26	MC41U
TX07 x 70	3.0	150	27	MC42V
TX08 x 70	3.0	150	27	MC43W
TX09 x 70	3.0	150	27	MC44X
TX10 x 80	3.0	170	37	MC45Y
TX15 x 80	3.5	170	40	MC46A
TX20 x 90	4.0	180	43	MC47B
TX25 x 90	4.5	180	46	MC48C

Retail Unit Price each (inc. VAT).

Order Code	Type 1725E	Price each exc. VAT			inc. VAT each 1+
		1+	3+	6+	
MC41U	Triton TORX TX6	£3.910	£3.620	£3.330	£4.600
MC42V	Triton TORX TX7	£3.910	£3.620	£3.330	£4.600
MC43W	Triton TORX TX8	£3.540	£3.270	£3.000	£4.160
MC44X	Triton TORX TX9	£3.540	£3.270	£3.000	£4.160
MC45Y	Triton TORX TX10	£3.710	£3.440	£3.160	£4.370
MC46A	Triton TORX TX15	£3.710	£3.440	£3.160	£4.370
MC47B	Triton TORX TX20	£4.110	£3.810	£3.500	£4.840
MC48C	Triton TORX TX25	£4.110	£3.810	£3.500	£4.840

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A range of Pozidriv/Supadriv Screwdrivers available in three sizes

Size x mm	Blade dia. mm	Overall length mm	Weight gms	Order Code
size 0 x 60	3.0	130	20	MC33L
size 1 x 80	5.0	170	48	MC34M
size 2 x 100	6.0	200	74	MC35Q

Retail Unit Price each (inc. VAT).

Order Code	Type 1725J	Price each exc. VAT			inc. VAT each 1+
		1+	3+	6+	
MC33L	Pozidriv 0x60mm	£1.940	£1.790	£1.640	£2.280
MC34M	Pozidriv 1x80mm	£2.250	£2.090	£1.920	£2.650
MC35Q	Pozidriv 2x 100mm	£2.410	£2.230	£2.050	£2.840

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## Electronic Superslim Screwdrivers

C.K.



This superior range of screwdrivers has been designed for fast, precision work, and made from chrome vanadium to the highest standards. The fully hardened blades (52-60 HRC) are matt chrome plated with gun finished precision machined tips. The handles are manufactured from shatterproof cellulose acetate with ribbed turning grooves, and colour-coded centred heads.

- ★ Chrome vanadium blades
- ★ Precision machined tips to exact sizes
- ★ Shatterproof colour-coded handles

Available with slotted or Phillips tips.

Slotted size x shaft length mm	Tip mm	Overall length mm	Weight gms	Order Code
2.5 x 75	0.4	160	10	MC73Q
3 x 100	0.5	185	15	MC74R
4 x 100	0.6	185	22	MC75S

Phillips size x shaft length mm	Shaft dia. mm	Overall length mm	Weight gms	Order Code
0 x 60	3.0	145	11	MC76H
00 x 60	2.5	145	11	MC77J

Retail Unit Price each (inc. VAT).

Order Code	Type 17287	Price each exc. VAT			inc. VAT each
		1+	3+	6+	
MC73Q	Slim Slot 2.5x75mm	£3.230	£2.990	£2.750	£3.800
MC74R	Slim Slot 3x100mm	£3.070	£2.840	£2.610	£3.610
MC75S	Slim Slot 4x100mm	£3.370	£3.120	£2.870	£3.970
MC76H	Slim Phillips 0x60mm	£2.810	£2.600	£2.390	£3.310
MC77J	Slim Phillips 00x60mm	£4.370	£4.050	£3.720	£5.140

## Flexible Screwdriver



A flexible shaft screwdriver for use where a direct straight approach to the screw is impossible. The flexible shaft can be bent through >90°. Overall length 230mm. Length of shaft and blade 135mm. Width of blade tip 4mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3828	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BK36P	Flex Driver	£4.330	£3.400	£3.060	£5.090

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## Screw Grip Driver



A long bladed screwdriver with sprung jaws for gripping the head of the screw whilst reaching into difficult places. The clamp can be slid back up to the handle if not required. Overall length 230mm. Blade length 154mm. Width at tip 4mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3830	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BK35Q	Screw Grip Driver	£2.160	£1.830	£1.600	£2.540

## Crosspoint Driver with Screw Grip



Long bladed crosspoint screwdriver with sprung jaws for holding screws. All other specifications as BK35Q.

Retail Unit Price each (inc. VAT).

Order Code	Type 3835	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BK37S	Crosspoint Grip Dvr	£2.160	£1.830	£1.600	£2.540

## Angle Screwdrivers



Manufactured from chrome vanadium steel for maximum strength, and bright nickel plated for rust protection. The tips are set at 90 degrees to the shaft, which makes these screwdrivers ideal for use in confined areas. Two types are available, the first with a 5mm plain blade on one end and a no. 1 cross slot on the other, and the second with a 6mm plain blade on one end and a no. 2 cross slot on the other. Overall length of the first is 125mm, and the second is 135mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3885	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
FG03D	5mm x No1 Angle Dvr	£1.320	£1.250	£1.230	£1.560
FG04E	6mm x No2 Angle Dvr	£1.410	£1.340	£1.300	£1.560

## ESD

### C.K. 'Triton' ESD Screwdrivers

The 'Triton' ESD range of high quality screwdrivers is specifically designed for electrostatic dissipative areas and is manufactured in Germany to all the relevant DIN and ISO standards.

- ★ Chrome vanadium blade
- ★ Injection moulded handle has excellent blade/handle integrity
- ★ Textured anti-slip grip

The special dissipative material used in the handle, is injection moulded around extra large 'tang's' to ensure excellent blade to handle integrity. The ergonomic, tri-square design combines easy of use with high torque turning. The slightly textured grip offers excellent anti-slip characteristics, yet is lightweight, shatterproof and resistant to shock, oil and extreme temperatures.

The blades are manufactured from chrome vanadium, hardened throughout the full blade length to 52-60 HRC. The tip is precision machine for excellent screw fit and the blade has a matt black, anti-peel finish.

### Slotted ESD Instrument Screwdrivers

C.K.



A range of precision, ESD, slotted instrument screw-drivers.

Size mm	Tip mm	Overall length mm	Weight gms	Order Code
75 x 3	0.5	145	20	MC59P
100 x 3	0.5	180	29	MC60Q
125 x 5	0.8	215	55	MC61R
150 x 5	0.8	240	60	MC62S
200 x 5	0.8	290	66	MC63T
250 x 5	0.8	340	75	MC64U

Retail Unit Price each (inc. VAT).

Order Code	Type 17284	Price each exc. VAT			inc. VAT each
		1+	3+	6+	
MC59P	ESD Slotted 75x3mm	£1.610	£1.490	£1.370	£1.900
MC60Q	ESD Slotted 100x3mm	£1.770	£1.640	£1.510	£2.090
MC61R	ESD Slotted 125x5mm	£2.170	£2.010	£1.850	£2.560
MC62S	ESD Slotted 150x5mm	£2.250	£2.090	£1.920	£2.650
MC63T	ESD Slotted 200x5mm	£2.570	£2.380	£2.190	£3.030
MC64U	ESD Slotted 250x5mm	£2.910	£2.700	£2.480	£3.430

### Pozidriv/Supadriv ESD Screwdrivers

C.K.



A range of Pozidriv/Supadriv ESD screwdrivers available in three sizes

Size x mm	Blade dia. mm	Overall length mm	Weight gms	Order Code
size 0 x 60	3.0	130	20	MC65V
size 1 x 80	5.0	170	48	MC66U
size 2 x 100	6.0	200	74	MC67X

Retail Unit Price each (inc. VAT).

Order Code	Type 17255	Price each exc. VAT			inc. VAT each
		1+	3+	6+	
MC65V	ESD Pozidriv 0x60mm	£2.170	£2.010	£1.850	£2.560
MC66W	ESD Pozidriv 1x80mm	£2.490	£2.310	£2.120	£2.930
MC67X	ESD Pozidriv 2x100mm	£3.070	£2.840	£2.610	£3.610

## Torx Tamper-Proof ESD Screwdrivers

C.K.



A range of five Torx, tamper-proof, ESD screwdrivers.

Torx Size x shaft length mm	Shaft dia. mm	Overall length mm	Weight gms	Order Code
TX08 x 70	3.0	150	27	MC68Y
TX09 x 70	3.0	150	27	MC69A
TX10 x 80	3.0	170	37	MC70M
TX15 x 80	3.5	170	40	MC71N
TX20 x 90	4.0	180	43	MC72P

Retail Unit Price each (inc. VAT).

Order Code	Type 17266	Price each exc. VAT			inc. VAT each
		1+	3+	6+	
MC68Y	ESD TORX TX08	£4.770	£4.420	£4.060	£5.610
MC69A	ESD TORX TX09	£4.770	£4.420	£4.060	£5.610
MC70M	ESD TORX TX10	£5.090	£4.710	£4.330	£5.990
MC71N	ESD TORX TX15	£5.090	£4.710	£4.330	£5.990
MC72P	ESD TORX TX20	£5.090	£4.710	£4.330	£5.990

## Triton 6-Piece ESD Screwdriver Set

C.K.

A quality set of six 'Triton' ESD screwdrivers with blades made from chrome vanadium steel. The handles are made from a special dissipative material that is injection moulded around extra large tangs to provide greater blade to handle integrity. The lightweight, shatterproof handles are slightly textured to prevent slip and are resistant to shock, oil, acid and extreme temperatures.

- ★ Chrome vanadium blades
- ★ Set includes slotted and Pozidriv tips
- ★ Shatterproof handles
- ★ Precision machined tips

Contents		Slotted Instrument	Tip	Overall	Weight
Shaft length	Tip				



x size mm	mm	length mm	gms
75 x 3	0.5	145	20
100 x 3	0.5	180	29
125 x 5	0.8	215	55

Pozidriv/Supadriv Size x shaft length mm	Shaft dia. mm	Overall length mm	Weight gms
size0 x 60	3.0	130	20
size1 x 80	5.0	170	48
size2 x 100	6.0	200	74

Retail Unit Price each (inc. VAT).

Order Code	Type 17275	Price each exc. VAT			inc. VAT each
		1+	2+	4+	
MC80B	ESD 6 Piece Set	£15.450	£14.300	£13.140	£18.160

## INSULATED

### Electricians Terminal Screwdriver

Insulated Tools



A high quality 150mm terminal screwdriver with handle and blade insulated with bright orange 'nylon 11' that complies to ESI Standard 26-3 issue 2, and is therefore suitable for 'live' line working. The screwdriver has a fluted handle and a parallel blade to allow the best sight line for locating recessed or countersunk screw heads.

Dimensions

handle:	75 x 13mm
basic blade:	75 x 3mm
insulation diameter:	5mm
Weight:	19g

Retail Unit Price each (inc. VAT).

Order Code	Type 3001	Price each exc. VAT			inc. VAT each
		1+	4+	20+	
DH04E	Elect Term Driver	£2.590	£2.280	£2.030	£3.050

### Electricians Screwdriver

Insulated Tools



A high quality 227mm electricians screwdriver with handle and blade insulated with bright orange 'nylon 11', that complies to ESI Standard 26-3 issue 2, and is therefore suitable for 'live' line working. The screwdriver has a fluted handle and a parallel blade to allow the best sight line for locating recessed or countersunk screw heads.

Dimensions

handle:	75 x 19mm
basic blade:	150 x 5mm
insulation diameter:	7mm
Weight:	55g

Retail Unit Price each (inc. VAT).

Order Code	Type 3004	Price each exc. VAT			inc. VAT each
		1+	4+	20+	
DH05F	Elect Screwdriver	£5.890	£5.200	£4.540	£6.930

### Electricians Pozidriv Screwdriver

Insulated Tools



A very high quality 203mm electricians Pozidriv screwdriver with handle and blade insulated with bright orange 'nylon 11' that complies to ESI Standard 26-3 issue 2, and is therefore suitable for 'live' line working. The screwdriver has a fluted handle and a parallel blade to allow the best sight line for locating recessed or countersunk screw

heads.  
Dimensions  
handle: 103 x 25mm  
basic blade: 100 x 6mm  
(No. 2 point)  
insulation diameter: 8mm  
Weight: 85g

Retail Unit Price each (inc. VAT).

Order Code	Type 3754	Price each exc. VAT			inc. VAT each
		1+	4+	20+	
DH06G	Elect Pozidriv	£9.230	£7.330	£5.400	£9.680

## C.K. 'Triton' VDE Screwdrivers

The 'Triton' range of VDE screwdrivers from C.K. are produced to the exacting standards laid down by the VDE0680/201 and IEC 900 specifications, and exceed all other relevant standards including DIN and ISO.

- ★ Meets VDE 0680/201 and IEC 900 standards
- ★ Suitable for working around live circuits up to 1000V ac and 1500V dc.

★ Machined gun finished tips  
These top quality screwdrivers are manufactured in high alloy steels, correctly hardened throughout the full blade length to 52-60 HRC. Precision machined gun finished tips give a perfect screw fit with no 'cam-out'.

The blade insulation is moulded onto the blade, and the handle is then injection moulded around the insulating sheath, so maintaining blade to handle integrity. The insulation and handle are both made from polypropylene to ensure a very long life under extreme working environments.

Each screwdriver is tested to a voltage of 10,000V ac to ensure that they are safe to use around electrical equipment up to 1000V ac or 1500V dc

**WARNING - DO NOT use on live circuits - for use around circuits NOT exceeding 1000V ac.**

DO NOT touch non-insulated areas of Triton VDE screwdrivers when in use.

DO NOT use Triton VDE screwdriver if insulation appears damaged in any way e.g. voids, cracks or breaks. Visually inspect Triton VDE screwdriver before use.

To ensure a long life, Triton VDE screwdrivers must be kept clean and dry to maintain insulation properties.

## Slotted Insulated Screwdrivers

C.K.



A range of slotted insulated screwdrivers with chrome vanadium shafts.

Size mm	Tip mm	Overall length mm	Weight gms	Order Code
75 x 2.8	0.6	145	21	MC52G
100 x 4	0.6	180	37	MC53H
125 x 4.5	1.0	215	54	MC54J
150 x 6.5	1.2	250	96	MC55K

Retail Unit Price each (inc. VAT).

Order Code	Type 17259	Price each exc. VAT			inc. VAT each
		1+	3+	6+	
MC52G	VDE Slotted 75x2.8mm	£2.090	£1.940	£1.780	£2.460
MC53H	VDE Slotted 100x4mm	£2.340	£2.160	£1.980	£2.750
MC54J	VDE Slot 125x4.5mm	£2.570	£2.380	£2.190	£3.030
MC55K	VDE Slot 150x6.5mm	£3.230	£2.990	£2.750	£3.800

## Pozidriv/Supadriv Insulated Screwdrivers

C.K.



A range of Pozidriv/Supadriv chrome vanadium insulated screwdrivers.

Size x mm	Blade dia. mm	Overall length mm	Weight gms	Order Code
size 0 x 60	3.0	130	23	MC56L
size 1 x 80	5.0	170	51	MC57M
size 2 x 100	6.0	200	76	MC58N

Retail Unit Price each (inc. VAT).

Order Code	Type 11272	Price each exc. VAT			inc. VAT each
		1+	3+	6+	
MC56L	VDE Pozidriv 0x60mm	£2.340	£2.160	£1.980	£2.750
MC57M	VDE Pozidriv 1x80mm	£2.650	£2.460	£2.260	£3.120
MC58N	VDE Pozidriv 2x100mm	£3.370	£3.120	£2.870	£3.970

## Triton 7-Piece Insulated VDE Screwdriver Set and Mains Tester

C.K.



A quality set of seven 'Triton' insulated VDE screwdrivers and one mainstester. All blades are made from chrome vanadium steel. The mainstester is suitable for testing ac voltages in the range 100V up to a maximum of 250V with respect to earth.

- ★ Chrome vanadium blades
- ★ Insulated VDE screwdrivers suitable for use around live circuits up to 1000V ac and 1500V dc
- ★ Mainstester suitable for 100V to 250V ac with respect to earth

Contents

Insulated VDE Slotted				
Shaft length x size mm	Tip mm	Overall length mm	Weight gms	
75 x 2.8	0.6	145	21	
100 x 4	0.6	180	37	
125 x 4.5	0.6	215	54	
150 x 6.5	1.2	250	96	

Insulated VDE Pozidriv/Supadriv				
Size x shaft length mm	Shaft dia. mm	Overall length mm	Weight gms	
size 0 x 60	3.0	130	23	
size 1 x 80	5.0	170	51	

size	2 x 100	6.0	200	76
Mainstester				
Shaft length x size mm	64 x 3	Tip mm	Overall length mm	Weight gms
		0.5	142	16

Retail Unit Price each (inc. VAT).

Order Code	Type 11272	Price each exc. VAT			inc. VAT each
		1+	2+	4+	
MC79L	VDE 7 Piece Set	£23.050	£21.330	£19.600	£27.090

## RATCHETS

### Ratchet Screwdrivers



A range of quality screwdrivers with a left, right and neutral setting ratchet in the moulded plastic handle. The blade is manufactured from a high alloy chrome vanadium steel and is supplied with either a flat tip or a pozidriv tip.

#### Specification

Overall length:	225mm
Blade length:	100mm
Flared flat tip:	6mm wide
Pozidriv tip:	6mm across (No. 2 point size)

Retail Unit Price each (inc. VAT).

Order Code	Type 3890	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RD95D	Ratchet Flat Driver	£3.460	£3.020	£2.750	£4.070
RD96E	Ratchet Poz Driver	£3.460	£3.020	£2.750	£4.070

## Stepless Ratchet Driver With 8-Bits

C.K.



This unique, stepless, cam-drive 'ratchet' driver uses friction instead of the usual teeth to provide a smooth, continuous positive action. The chunky handle features an easy-to-use drive direction adjustment, and comes with a 1/4in. magnetic hexagon drive bit holder. The handle has a convenient bit storage facility. Supplied with a clip of eight assorted bits.

- ★ Unique stepless design
- ★ 1/4in. magnetic hexagon drive
- ★ Chunky handle with storage facility

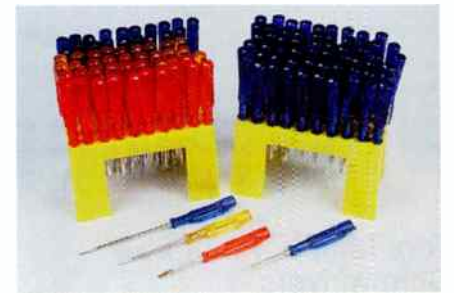
Specification	
Blade length:	100mm
Handle length:	120mm
Overall length:	220mm
Weight:	220g

Retail Unit Price each (inc. VAT).

Order Code	Type 11282	Price each exc. VAT			inc. VAT each
		1+	2+	4+	
MC82D	S/less Ratchet Driver	£12.070	£11.170	£10.260	£14.190

## SETS

### 60-Piece Screwdriver Set with Display Stand



A high quality set of screwdrivers with stand, ideal for displaying on counters, shelves or in display cabinets. The set is available in two versions. One set consists of 60 small, blue handled screwdrivers 100mm in overall length, with a Phillips blade 3mm across. The other set is more comprehensive and consists of 60 small screwdrivers with flat blades 3mm across, in three lengths each identified by a different handle colour. The three lengths are 100mm (red handle), 120mm (yellow handle), and 140mm (blue handle). Overall dimensions of either display are: 138 x 126 x 76mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3888	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
AP93B	60 Philips S/Drivers	£10.630	£8.840	£7.800	£12.500
AP94C	60 Flat S/Drivers	£10.630	£8.840	£7.800	£12.500

### Miniature Screwdriver Set



Five precision miniature screwdrivers in a plastic wallet. Screwdrivers are chromed and have a swivel cap. Blade widths (overall length of screwdriver in brackets): 1.2mm (85mm); 1.4mm (85mm); 1.6mm (85mm); 1.8mm (92mm); 2.0mm (92mm).

Retail Unit Price each (inc. VAT).

Order Code	Type 3817	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FY07H	Min Screwdriver Set	£1.290	£1.090	£0.988	£1.520

### Precision Screwdriver Set

Six precision instrument screwdrivers in a hinged plastic box with transparent cover. Each consists of a specially hardened, nickel chrome molybdenum steel blade set into a heavily chromed, knurled brass holder with swivel cap. Blade widths (overall length of screwdriver in brackets): 1.0mm (74mm); 1.4mm (85mm); 2mm (92mm); 2.4mm (103mm); 3mm (114mm); 3.8mm (126mm).



Retail Unit Price each (inc. VAT).

Order Code	Type 3818	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BRS8N	Jewellers Screwdriver Set	£2.160	£1.930	£1.460	£2.540



### 11-Piece Precision Screwdriver Set



Eleven high quality precision screwdrivers with fully hardened tool steel blades, plated brass bodies and freely revolving heads. Set comes in a hinged plastic box, and consists of six plain slot screwdrivers 1.0, 1.2, 1.4, 1.8, 2.4, and 3mm; three crosspoint screwdrivers blade sizes 00, 0, and 1; an awl and a pair of tweezers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BK44X	11 Pcs S/Driver Set	£3.190	£2.500	£2.250	£3.750

### 3-Piece Screwdriver Set



A three-piece screwdriver set with 2 flat blade and 1 crosspoint screwdriver. The screwdrivers have long shafts and are ideal for reaching recessed screws in electronic equipment. Handles are made from moulded plastic, and incorporate finger grips. Shafts are made from nickel chrome molybdenum steel. Flat blade screwdriver sizes: 2.4 x 75mm, 3.0 x 100mm. Crosspoint screwdriver sizes: (No.0) 2.0 x 75mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JM31J	3pc Screwdriver Set	£3.200	£2.450	£2.230	£3.760

### 6-Piece Screwdriver Set



A 6-piece screwdriver set with 3 flat blade and 3 crosspoint screwdrivers. The screwdrivers have long shafts and are ideal for reaching recessed screws in electronic equipment. Handles are made from moulded plastic, and incorporate finger grips. Shafts are made from nickel chrome molybdenum steel.

Flat blade screwdriver sizes: 2.4 x 75mm,

3.0 x 100mm, 4.0 x 150mm. Crosspoint screwdriver sizes: (No.0) 2.0 x 75mm, (No.1) 3.0 x 100mm, (No.1) 3.8 x 150mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JM30H	6pc Screwdriver Set	£5.940	£5.000	£4.250	£6.990

### 12-Piece Screwdriver Set



A superb set of twelve screwdrivers supplied in a range of sizes in flat blade and Phillips crosspoint blade. The set includes one flat bladed screwdriver fitted with a screwholding attachment. The handles, supplied in four sizes, are of a tough shatterproof plastic and the shafts, which are of various lengths, are of steel with a bright chrome finish. The set comprises eight flat blade and four crosspoint blade screwdrivers.

#### Flat Blade Types

Blade Width	Shaft Length	Overall Length
9mm	203mm	300mm
7mm	152mm	250mm
6mm	152mm	250mm
6mm	102mm	200mm
4mm	102mm	172mm
4mm*	102mm*	172mm*
3mm	76mm	140mm
7mm	38mm	82mm

\*With screwholder

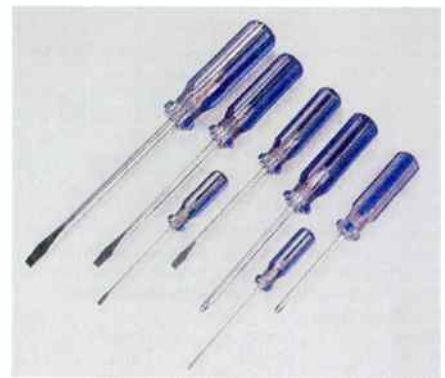
#### Crosspoint Blade Types

Blade Width	Shaft Length	Overall Length
No. 2	102mm	200mm
No. 1	76mm	152mm
No. 0	76mm	140mm
No. 2	38mm	82mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GW47B1	12-Piece S/Drv Set	£7.800	£6.510	£5.880	£9.170

### 7-Piece Screwdriver Set



A superb set of seven screwdrivers supplied in a range of sizes in flat blade and Phillips crosspoint blade.

The handles, supplied in four sizes, are of a tough shatterproof plastic and the shafts, which are of various lengths, are of steel with a bright chrome finish. The set comprises four flat blade and three crosspoint blade screwdrivers.

#### Flat Blade Types

Blade Width	Shaft Length	Overall Length
8mm	200mm	300mm
6mm	150mm	250mm
5mm	100mm	200mm
3mm	76mm	140mm

#### Crosspoint Blade Types

Blade Width	Shaft Length	Overall Length
No. 2	100mm	200mm
No. 1	76mm	150mm
No. 0	76mm	140mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
Y244X1	7pc Screwdriver Set	£5.200	£4.160	£3.710	£6.110

### Mini-Driver Kit

Xcelite



A mini-screwdriver kit that consists of slotted jeweller's type and Phillips screwdriver blades with moulded colour-coded plastic handles. The chrome vanadium steel screwdrivers are finished in bright nickel-chrome and are designed for precise, detailed work. The kit includes a 'torque' handle and is complete with a clear plastic case.

Screwdrivers included: No. 00 Phillips - blue handle  
 (1 of each)  
 1.02mm - amber handle  
 1.40mm - orange handle  
 1.78mm - brown handle  
 2.03mm - red handle  
 2.54mm - green handle

Overall length of each screwdriver: 54mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DF88V	Mini-Driver Kit	£13.490	£12.820	£12.480	£15.860

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## 7-Piece Insulated Screwdriver Set

A set of seven screwdrivers which includes four flat blade and three Phillips crosspoint screwdrivers, all protected by an insulating sleeve. The handles and sleeves, supplied in three sizes, are of a tough shatterproof red plastic and the shafts, which are in four lengths, are of chrome vanadium steel with a chemically black finish.



### Flat Blade Types

Blade Width	Shaft Length	Overall Length
6mm	150mm	250mm
5mm	125mm	205mm
4mm	100mm	185mm
2.5mm	75mm	155mm

### Crosspoint Blade Types

Blade Width	Shaft Length	Overall Length
No. 2	150mm	250mm
No. 1	100mm	190mm
No. 0	75mm	155mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GW40T	7p Ins Driver Set	£6.060	£4.780	£4.260	£7.130

## 5-Piece Insulated Screwdriver Set with Screw Retainer



A superb set of five screwdrivers which includes three flat blade and two Phillips crosspoint screwdrivers, all protected with a sliding spring-loaded, insulating sleeve on the blade. A 'gripper' on the end of the sleeve acts like an extra hand by holding the screw onto the blade while it is being inserted. The handles and sleeves, supplied in three sizes, are of a tough shatterproof red plastic and the shafts, which are in three lengths, are of chrome vanadium steel with a chemically black finish.

### Flat Blade Types

Blade Width	Shaft Length	Overall Length
5mm	150mm	255mm
4mm	125mm	220mm
3mm	125mm	220mm

### Crosspoint Blade Types

Blade Width	Shaft Length	Overall Length
No. 2	175mm	280mm
No. 1	125mm	223mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GW41U	Elect Screw/Dr Set 2	£7.800	£6.510	£5.880	£9.170

## Triton 7-Piece Screwdriver Set and Mains Tester

C.K.

A quality set of seven 'Triton' screwdrivers and one mainstester. All blades are made from chrome vanadium steel. The mainstester is suitable for testing ac voltages in the range 100V up to a maximum of 250V with respect to earth.

- ★ Chrome vanadium blades
- ★ Includes slotted, Pozidriv and insulated VDE
- ★ Mainstester suitable for 100V to 250V ac with respect to earth

### Contents

Engineers Slotted Shaft length x size mm	Tip mm	Overall length mm	Weight gms
100 x 6	1.0	100	73
150 x 8	1.2	110	114

Insulated VDE Slotted Shaft length x size mm	Tip mm	Overall length mm	Weight gms
75 x 2.8	0.6	145	21
125 x 4.5	1.0	215	54

Pozidriv/Supadriv Size x shaft length mm	Shaft dia.	Overall length mm	Weight gms
size0 x 60	3.0	130	20
size1 x 80	5.0	170	48
size2 x 100	6.0	200	74

Mainstester Shaft length x size mm	Tip mm	Overall length mm	Weight gms
64 x 3	0.5	142	16

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	4+	1+
MC78K	7 Piece Combi Set	£21.730	£20.110	£18.470	£25.540

## Triton 6-Piece ESD Screwdriver Set

C.K.

A quality set of six 'Triton' ESD screwdrivers with blades made from chrome vanadium steel. The handles are made from a special dissipative material that is injection moulded around extra large tangs to provide greater blade to handle integrity. The lightweight, shatterproof handles are slightly textured to prevent slip and are resistant to shock, oil, acid and extreme temperatures.

- ★ Chrome vanadium blades
- ★ Set includes slotted and Pozidriv tips
- ★ Shatterproof handles
- ★ Precision machined tips

Slotted Instrument Shaft length x size mm	Tip mm	Overall length mm	Weight gms
75 x 3	0.5	145	20
100 x 3	0.5	180	29
125 x 5	0.8	215	55

Pozidriv/Supadriv Size x shaft length mm	Shaft dia.	Overall length mm	Weight gms
size0 x 60	3.0	130	20

size1 x 80	5.0	170	48
size2 x 100	6.0	200	74

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	4+	1+
MC80B	ESD 6 Piece Set	£15.450	£14.300	£13.140	£18.160

## Triton 7-Piece Insulated VDE Screwdriver Set and Mains Tester

C.K.



A quality set of seven 'Triton' insulated VDE screwdrivers and one mainstester. All blades are made from chrome vanadium steel. The mainstester is suitable for testing ac voltages in the range 100V up to a maximum of 250V with respect to earth.

- ★ Chrome vanadium blades
- ★ Insulated VDE screwdrivers suitable for use around live circuits up to 1000V ac and 1500V dc
- ★ Mainstester suitable for 100V to 250V ac with respect to earth

### Contents

Insulated VDE Slotted Shaft length x size mm	Tip mm	Overall length mm	Weight gms
75 x 2.8	0.6	145	21
100 x 4	0.6	180	37
125 x 4.5	0.6	215	54
150 x 6.5	1.2	250	96

Insulated VDE Pozidriv/Supadriv Size x shaft length mm	Shaft dia.	Overall length mm	Weight gms
size0 x 60	3.0	130	23
size1 x 80	5.0	170	51
size2 x 100	6.0	200	76

Mainstester Shaft length x size mm	Tip mm	Overall length mm	Weight gms
64 x 3	0.5	142	16

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	2+	4+	1+
MC79L	VDE 7 Piece Set	£23.050	£21.330	£19.600	£27.090

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**T-Handle Screwdriver Set**



A precision screwdriver system based on a high quality range of 6.35mm (1/4 in.) hex blades and a T-handle screwdriver. The eleven, 25mm long, blades are manufactured from chrome vanadium steel and hardened. The T-handle is manufactured from tough impact resistant plastic and the shaft from chrome plated steel. The 6.35mm (1/4 in.) hex socket, on the end of the shaft, is magnetised to retain the blade in use.

The 11 blades comprise:

- ★ Five flat bits: 3, 4, 5, 6, 7mm.
- ★ Three Posidriv/Supadriv crosspoint bits: Nos. 1, 2, 3.
- ★ Three Phillips crosspoint bits: Nos. 1, 2, 3.

Retail Unit Price each (inc. VAT).

Order Code	Type 3033	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RD84F	T-Handle & 11pcs	£3.460	£2.700	£2.450	£4.070

**Sixpac Screwdriver Set**

Picquic



Provides the quality and reliability of a single premium screwdriver with the convenience of six different tip types being instantly available. Features a solid Cellulosic Butyrate handle, spring-lock stainless steel bit holder complete with six 3" long 1/4" Hex drive power bits.

Drill bits lock into the handle using a unique 'feed-through' system that needs each bit to be pushed out using the one previously in use.

- Included bits:
- Two flat blade: 3/16, 1/4"
  - Two Phillips: Nos. 1, 2
  - Two Pozidriv: Nos. 1, 2

Retail Unit Price each (inc. VAT).

Order Code	Type 1224	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YC05F	Picquic Sixpac	£12.680	£11.450	£10.450	£15.140

**24-Piece Ratchet Screwdriver Set**



A high quality ratchet screwdriver socket and bit set in chrome vanadium. The screwdriver ratchet is controlled by a small spring loaded knob that is rotated to select forward or reverse. This versatile screwdriver is fitted with a latched pivoting mechanism that allows the handle to be bent at any

angle, up to a right angle from the straight line, to increase the leverage. The handle is of tough plastic and provided with a pliable, comfortable grip. The screwdriver is designed to accept the 6.35mm (1/4 in.) hex bits and an adaptor is supplied to accept the 6.35mm (1/4 in.) square sockets.

**6.35mm (1/4 in.) hex bits:**

3, 4, 5 and 6mm flat blade. Nos. 1, 2 and 3 Posidriv blade. Nos. 1, 2 and 3 Phillips blade.

**6.35mm (1/4 in.) sockets:**

5, 6, 7, 8, 9 and 10mm  
1/4, 5/16, 11/32, 3/8, 7/16 and 1/2 in. A/F.

Retail Unit Price each (inc. VAT).

Order Code	Type 3005	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GW44X1	24-Piece Ratchet Set	£8.670	£7.030	£6.240	£10.190

**23-Piece Screwdriver and Socket Set**



A 23-piece ratchet screwdriver and socket set in a hinged two part presentation box.

Contents (1x of each item)

- Phillips bits: N° 1, 2, 3
- Flat blade bits: N° 4, 5, 6
- Posidrive bits: N° 1, 2, 3
- Hex bits: M4, 5, 6
- Sockets 6.35mm (1/4 in.): M5, 5.5, 6, 7, 8, 9, 10, 11
- Socket adaptor
- Magnetic bit holder
- Ratchet handle with removable end cap for storage of small screws.

Retail Unit Price each (inc. VAT).

Order Code	Type 3025	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
ZC63T 1	23pc S'Drivr-Skt Set	£6.500	£5.300	£4.780	£7.640

**53-Piece Screwdriver and Socket Set**



A 53-piece (including case) 1/4 in. ratchet screwdriver & socket set in a grey moulded plastic carry case.

Contents (1x each item)

- Flat blade bits: 5/32, 3/16, 1/4, 9/32
- Phillips bits: N° 1, 2, 3
- Square bits: S1, S2, S3
- Hex bits: 1/16, 5/64, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4
- Torx bits: T10, 15, 20, 25, 27, 30, 40, 45
- 4in. bit extension
- Sockets:
- AF: 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8, 13/32, 7/16, 1/2

Metric: 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 11, 13  
Socket adaptor 1/4 in.  
Ratchet driver with 180° knuckle.

Retail Unit Price each (inc. VAT).

Order Code	Type 3025	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
ZC64U 3	53pc S'Drivr-Skt Set	£13.880	£11.860	£11.030	£16.310

**23-Piece Magnetic Ratchet Screwdriver Set**

C.K



This high quality 23-piece ratchet screwdriver set comes with assorted bits and metric sockets. The screwdriver style driver has a 1/4 in. magnetised hexagonal shaft with knurled grip for positive handling. The set is housed in a strong durable acrylic case with transparent lid and carrying handle.

- ★ Slotted, ball-ended and Pozidriv/Supadriv bits
- ★ 9 Metric sockets
- ★ Driver has 1/4 in. magnetised hexagonal shaft
- ★ Strong acrylic carry case

Contents

- 4 x Slotted bits: 3, 4, 7, 6.3, 8mm
- 3 x Pozidriv/Supadriv: Size 1, 2, 3
- 5 x ball-ended: 2.5, 3, 4, 5, 6mm
- 9 x 1/4 in. sockets: 5.5, 6, 7, 8, 9, 10, 11, 12, 13mm
- 1 x adaptor: 1/4 in. hexagonal to square driver adaptor
- 1 x driver: 1/4 in. magnetised hexagonal shaft

Retail Unit Price each (inc. VAT).

Order Code	Type 17281	Price each exc. VAT			inc. VAT each
		1+	2+	4+	
MC81C	23-Piece Set	£24.170	£22.360	£20.550	£28.410

**BITS**

**3-Piece Long Screwdriver Blade Set**



A high quality set of precision 150mm long single-ended blades for use with 6.35mm (1/4 in.) hex screwdrivers. The three blades are manufactured from chrome vanadium steel and hardened.

The set comprises:

- ★ One flat blade of 6mm.
- ★ One Posidriv/Supadriv blade at No. 2.
- ★ One Phillips blade at No. 2.

Retail Unit Price each (inc. VAT).

Order Code	Type 3006	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RD88V	3pc Long Set	£2.420	£1.680	£1.650	£2.850

## 3-Piece Screwdriver Blade Set



A high quality set of precision 65mm long double-ended blades for use with 6.35mm (1/4in.) hex screwdrivers. The 3 blades are manufactured from chrome vanadium steel and hardened.



- The set comprises:
- ★ One flat blade of 6mm.
  - ★ One Posidriv/Supadriv blade at No. 2.
  - ★ One Phillips blade at No. 2.

Retail Unit Price each (inc. VAT).

Order Code	Type 3907	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD89W	3pc Hex Blade Set	£1.720	£1.410	£1.240	£2.030

## Hex Bit Set

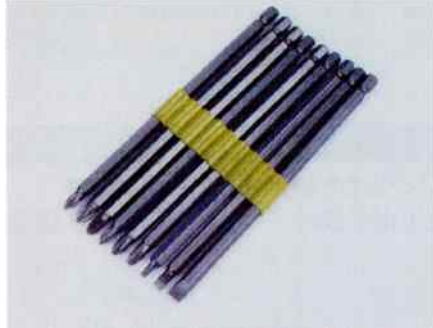


A 7-piece set of Phillips, Pozzi/Supadriv and flat ended chrome-vanadium steel bits to fit standard 6.35mm (1/4in.) hex screwdriver/drill holders. The bits are supplied in a plastic dispenser. The set comprises: Phillips No. 1 and 2, Pozzi/Supadriv No. 1 and 2, Flat end 4.5 and 7mm, and an adaptor.

Retail Unit Price each (inc. VAT).

Order Code	Type 3908	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD83E	Hex Bits	£2.150	£1.880	£1.710	£2.530

## 9-Piece Screwdriver Blade Set



A high quality set of precision 150mm long blades for use with 6.35mm (1/4in.) hex screwdrivers. The 9 blades are manufactured from chrome vanadium steel and hardened.

- The set comprises:
- ★ Three flat blades: 3, 5, 7mm.
  - ★ Three Posidriv/Supadriv blades: Nos. 1, 2, 3.
  - ★ Three Phillips blades: Nos. 1, 2, 3.

Retail Unit Price each (inc. VAT).

Order Code	Type 3905	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD82D	9pc Lg Hex Blade Set	£4.760	£4.010	£3.590	£5.600

**Business Account Holders**  
No Delivery Charges for any order

## 9-Piece Screwdriver Blade Set with Holster



A high quality set of precision 65mm long double-ended blades for use with 6.35mm (1/4in.) hex screwdrivers. The 9 blades are manufactured from chrome vanadium steel and hardened. Supplied with a useful, rubberised plastic holster that can be threaded onto most belts. The set comprises:

- ★ Three flat blades: 4, 6, 7mm.
- ★ Three Posidriv/Supadriv blades: Nos. 1, 2, 3.
- ★ Three Phillips blades: Nos. 1, 2, 3.

Retail Unit Price each (inc. VAT).

Order Code	Type 3910	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD86T	9pc Set & Holder	£3.460	£3.020	£2.750	£4.070

## 10-Piece Screwdriver Blade Set



A high quality set of precision 50mm long blades for use with 6.35mm (1/4in.) hex screwdrivers. The 9 blades and holder are manufactured from chrome vanadium steel and hardened.

- The set comprises:
- ★ Three flat blades: 4, 6, 8mm.
  - ★ Three Posidriv/Supadriv blades: Nos. 1, 2, 3.
  - ★ Three Phillips blades: Nos. 1, 2, 3.
  - ★ One 60mm long magnetised blade holder.

Retail Unit Price each (inc. VAT).

Order Code	Type 3911	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD85G	10pc Hex Blade Set	£3.460	£3.020	£2.750	£4.070

## 12-Piece Screwdriver Blade Set



A high quality set of precision blades for use with 6.35mm (1/4in.) hex screwdrivers. The 12 blades, in three heads and four different lengths, are manufactured from chrome vanadium steel and hardened. The 65mm blades are double ended.

- The set comprises:
- ★ At 150mm: 6mm flat, No. 2 Phillips, No. 2 Posidriv.
  - ★ At 65mm: 6mm flat, No. 2 Phillips, No. 2 Posidriv.
  - ★ At 50mm: 6mm flat, No. 2 Phillips,

- ★ At 25mm: No. 2 Posidriv, 6mm flat, No. 2 Phillips, No. 2 Posidriv.

Retail Unit Price each (inc. VAT).

Order Code	Type 3912	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD87U	12pc Hex Blade Set	£4.330	£3.790	£3.490	£5.090

## Torx Bit Set



An 8-piece Star Bit Set for use with a 6.35mm (1/4in.) hex screwdriver socket. The tool bits are approximately 50mm in length. Sizes are as follows: T8, T10, T15, T20, T25, T27, T30 and T40.

Retail Unit Price each (inc. VAT).

Order Code	Type 3900	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JR60Q	Torx Bit Set	£3.460	£2.970	£2.500	£4.070

## 33-Piece Screwdriver Blade Set



A high quality set of precision blades for use with 6.35mm (1/4in.) hex screwdrivers. The 33 blades and holder are manufactured from chrome vanadium steel and hardened. Supplied with two blade storage tides made from rubberised plastic. Each tidy will hold 32 by 25mm long blades and a holder.

- The set comprises:
- ★ Five flat blades: 3, 4, 5, 6, 7mm.
  - ★ Seven Posidriv/Supadriv blades: 2 x No. 1, 3 x No. 2, 2 x No. 3.
  - ★ Eight Phillips blades: 1 x No. 0, 2 x No. 1, 3 x No. 2, 2 x No. 3.
  - ★ Six Torx blades: Nos. T10, T15, T20, T25, T30, T40.
  - ★ Six hexagonal blades: 2, 2.5, 3, 4, 5, 6mm.
  - ★ One 60mm long magnetised blade holder.

Retail Unit Price each (inc. VAT).

Order Code	Type 3913	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD90X	33pc Hex Blade Set	£6.500	£4.580	£3.960	£7.640

**Businesses and Government Establishments – open a Maplin MPS Account**

Just complete form at back of catalogue

## 2-Piece Adaptor Set



A high quality set of precision adaptors for use with 6.35mm (1/4in.) hex screwdrivers. The adaptors are manufactured from chrome vanadium and hardened.

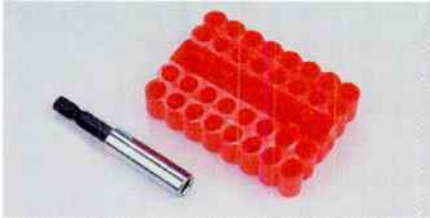
The set comprises:

- ★ One 6.35mm square to 6.35mm hex 65mm long adaptor.
- ★ One 6.35mm hex 60mm magnetised blade holder.

Retail Unit Price each (inc. VAT).

Order Code	Type 3914	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD91Y	2pc Adaptor Set	£2.160	£1.460	£1.310	£2.540

## Screwdriver Blade Tidy



A tough rubberised red plastic blade retainer for storing 32 blades in one handy unit. Dimensions: 66 x 47 x 16mm. Supplied with a 60mm long magnetised blade holder.

Retail Unit Price each (inc. VAT).

Order Code	Type 3915	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD92A	Blade Tidy	£1.990	£1.460	£1.310	£2.340

## 17-Piece Screwdriver Blade Set



A high quality set of precision blades for use with 6.35mm (1/4in.) hex screwdrivers. The 16 blades and holder are manufactured from chrome vanadium steel and hardened. Supplied with two blade storage tides made from rubberised plastic. Each tidy will store 16 by 25mm long blades and a holder.

The set comprises:

- ★ Four flat blades: 4, 5, 6, 7mm.
- ★ Three Posidriv/Supadriv blades: Nos. 1, 2, 3.
- ★ Three Phillips blades: Nos. 1, 2, 3.
- ★ Three Torx blades: Nos. T25, T30, T40.
- ★ Two hexagonal blades: 4 and 6mm.
- ★ One 6.35mm hex to 6.35mm square drive adaptor.
- ★ One 60mm long magnetised blade holder.

Retail Unit Price each (inc. VAT).

Order Code	Type 3916	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD93B	17pc Hex Blade Set	£3.890	£2.970	£2.650	£4.580

## 33-Piece Security Bit Set



This is a worthwhile accessory for the tool box. A high quality 6-35mm hex drive tamper-proof Security Bit Set suitable for use with hand and power tools. It contains 32 bits which can be used on most current tamper-proof fasteners. The bits are housed in a Bit Tidy with a spare that can be used as a lid or as an additional bit storage container. Complete with a 60mm magnetic bit holder.

Consists of:

- ★ T8H, T10H, T15H, T20H, T25H, T27H, T30H, T35H, and T40H Tamper Proof Torx-Type bits
- ★ 5/64, 3/32, 7/64, 1/8, 9/64 and 5/32 Security Hex bits
- ★ No.1, 2, 3 and 4 Tri-Wing bits
- ★ No.4, 6, 8 and 10 Spanner bits
- ★ No.6, 8 and 10 Torq bits
- ★ 4, 5 and 7mm Flat bits
- ★ No.2 Phillips
- ★ No.2 Pozidriv
- ★ 1/4 drive x 1/4 Hex. adaptor

Retail Unit Price each (inc. VAT).

Order Code	Type 11520	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GU60Q	33pc Security Bit Set	£8.080	£7.250	£6.500	£9.500

## PLIERS

### COMBINATION

## Electricians Pliers



A quality pair of lap-jointed electricians pliers with plastic insulated handles at an affordable price. Size: 160mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4220	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BR91Y	Electricians Pliers	£3.020	£2.500	£2.180	£3.560

## Miniature Combination Pliers



Affordable miniature pliers manufactured from high grade drop forged tool steel with smooth ground heads, serrated jaws and side cutter. The spring-loaded bow handles are protected with a PVC grip. Size 127mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4214	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD99H	Mini Combo Plier	£3.020	£2.080	£1.760	£3.560

## Combination Pliers



Manufactured from a special high quality tool steel, with smooth ground heads and specially hardened cutting edges, suitable for cutting hard and soft wires. Cushion grip handles for extra comfort and safety. Size 180mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4210	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BU71N	Combination Pliers	£14.280	£13.570	£13.220	£16.790

### LONG NOSE

## Miniature Long Nose Pliers

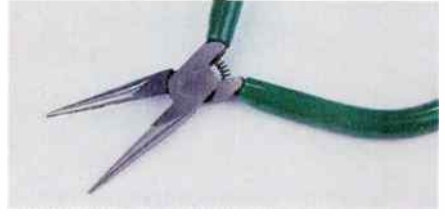


Miniature, spring-loaded, 120mm long-nosed pliers, made from a special polished steel and designed for handling small components. The handles are covered in a green PVC cushion grip, for extra comfort in use. Overall length 120mm. Length of jaws 25mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4211	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GW97F	120mm Long Nose	£3.720	£2.700	£2.350	£4.380

## Miniature Long Nose Pliers



Miniature, spring-loaded, 120mm long nosed pliers, made from a special polished steel. Ideal for use in electronic assembly, the long, tapered half-round jaws have a smooth flat surface to prevent damage to delicate components. The handles are covered in a green PVC cushion grip, for extra comfort in use. Overall length 120mm. Length of jaws 33mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4213	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GW94C	4.75in Long Nose	£3.890	£2.870	£2.550	£4.580

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

## Hooked Flat-Nosed Pliers



Miniature, quality hooked flat nosed pliers at an affordable price. Insulated handles with spring. Size 115mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4225	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BK41U	Mn Hook Nose Pliers	£3.890	£2.700	£2.260	£4.580

## Snipe Nose Pliers



130mm spring-loaded, snipe nosed pliers, made from a special tool steel, heat-treated, polished and finished in a rounded style, with a cutting edge for wire. Ideal for small component assembly work, the long, tapered half-round jaws are serrated for a firm grip of the workpiece. The tips are less than 1.5 x 2mm, when closed. The handles are covered in a green PVC cushion grip for extra comfort in use. Overall length 130mm. Length of jaws 37mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4216	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GW95D	Snipe Nose	£4.040	£3.500	£3.000	£4.750

## Radio Pliers



Manufactured from special high quality tool steel, these pliers have a separately hardened cutting edge suitable for cutting hard and soft wires. The flat-round jaws have serrated gripping surfaces. Complete with cushion grip handles. Size 140mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4224	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BU75S	Radio Pliers	£14.740	£14.050	£13.630	£17.320

## Long Nose Radio Pliers

Draper



Long nose pliers with serrated gripping surfaces that are ideal for small component assembly work. Manufactured from chrome vanadium alloy steel,

these high quality pliers have a smoothly ground head with fine pointed, extra slim, flat-round jaws. Size 160mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4225	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BU72P	Long Nose Radio Pliers	£16.240	£15.430	£15.030	£19.090

## Snipe Nose Pliers

Draper



Snipe nose pliers with a cutting edge suitable for hard and soft wires. The straight, long, flat-round jaws are serrated for easy grip and the handles have a cushion grip for extra comfort. Manufactured from quality vanadium steel. Size 200mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4218	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BU73Q	Snipe Nose Pliers	£19.650	£18.670	£18.180	£23.100

## ESD

## Series 3000 Professional ESD Pliers

Larsson



A professional range of holding and forming pliers for electronics and fine mechanics, manufactured from high quality Swedish steel forged blanks. They are produced by milling in programme-controlled machines and hand grinding. Heat treated and hardened, the tools have a hardness of 48 HRC. They are in box joint design and assembled using a special riveting technique, minimizing the risk of play and are supplied with black ESD handles (dissipative - 106-109 Ω).

### Flat Nose Pliers.



**3011**  
Jaws : Smooth  
Jaw Length: 20 mm  
O/A Length: 116 mm

### Snipe Nose Pliers



**3021**  
Jaws : Smooth  
Jaw Length: 20 mm  
O/A Length: 116 mm

## Long Snipe Nose Pliers



**3023**  
Jaws : Smooth  
Jaw Length: 32 mm  
O/A Length: 128 mm

**3024**  
Jaws : Serrated  
Jaw Length: 32 mm  
O/A Length: 128 mm

### Snipe Nose Pliers - Tip Bent at 60°



**3032**  
Jaws : Smooth  
Jaw Length: 29 mm  
O/A Length: 125 mm

### Round Nose Pliers



**9358**  
Jaws : Smooth  
Jaw Length: 20 mm  
O/A Length: 116 mm

Retail Unit Price each (inc. VAT).

Order Code	Type 1312E	Price each exc. VAT			inc. VAT each
		1+	5+	25+	
DQ10L	Flat Nose Plier 3011	£28.660	£27.230	£26.510	£33.680
DQ19V	Short Snipe 3021	£28.220	£26.820	£26.110	£33.170
DQ11M	Long Snipe 3023	£31.000	£29.450	£28.680	£36.430
DQ12N	Long Snipe 3024	£31.770	£30.190	£29.400	£37.340
DQ13P	Long Snipe Bent 3032	£32.280	£30.670	£29.860	£37.930
DQ18U	Round Nose 3041	£30.620	£29.090	£28.320	£35.980



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**INSULATED**

**Electricians 210mm Pliers**

*Insulated Tools*



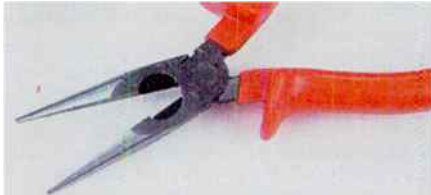
High quality 210mm 'engineers' pliers with handles insulated with bright orange 'nylon 11' that complies to ESI Standard 26-3 issue 2, and are therefore suitable for 'live' line working. The curved finger grip offers positive control of the tool. The jaws have a side cutter and pipe grip. Weight: 400g

*Retail Unit Price each (inc. VAT).*

Order Code	Type 3038	Price each exc. VAT			inc. VAT each
		1+	4+	20+	
DH01B	210mm Pliers	£28.900	£24.130	£21.120	£31.610

**Electricians Chain Nose Pliers**

*Insulated Tools*



High quality 165mm long chain nose pliers with handles insulated with bright orange 'nylon 11' that complies to ESI Standard 26-3 issue 2, and are therefore suitable for 'live' line working. Weight: 150g.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4220	Price each exc. VAT			inc. VAT each
		1+	4+	20+	
DH03D	Elec Chain Plier	£17.010	£15.000	£13.100	£19.990

**CIRCLIP**

**Internal Circlip Pliers**



High quality, internal circlip pliers, manufactured from chrome vanadium alloy steel with 90° tips and cushion grip handles. Size 170mm.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4115	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BU70M	Circlip Pliers	£15.190	£14.430	£14.050	£17.850

**Order £30 or above?**

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

**Internal/External Circlip Pliers**



A versatile pair of circlip pliers that can be used for both internal and external retaining rings. The special handles feature a movable pivot, allowing both types of circlip to be removed by squeezing the handles together. With the pivot point in one position the jaws will move apart, while in the other position they will be forced together. Suitable for circlips with location holes 1mm in diameter and over, and able to cope with circlips up to 15cm in diameter. The handles are covered with a tough PVC coating and fit easily into the hand. Overall length: 150mm. Width closed: 55mm.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 50-2	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RJ75S	Int/Ext Circlip Pliers	£3.020	£2.230	£1.930	£3.560

**Angled Internal/External Circlip Pliers**



An angled pair of circlip pliers that can be used on both internal and external retaining rings. The 45° angled tips allow easy access to concealed or difficult to get at circlips. The special handles feature a movable pivot, allowing both types of circlip to be removed by squeezing the handles together. With the pivot point in one position the jaws will move apart, while in the other position they will be forced together. Suitable for circlips with location holes 1mm in diameter and larger, and able to cope with circlips up to 15cm in diameter. The handles are covered with a tough PVC coating and fit easily into the hand. Overall length: 150mm. Width closed: 55mm.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 5013	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RJ76H	Angled Int/Ext Circlip Pliers	£3.020	£2.230	£1.930	£3.560

**Circlip Plier Set**



A Circlip plier with a combination of heads that will enable the removal of interior and exterior circlips. There are two sets of jaws supplied with 90° and 45° tips and two with straight tips. The changeable jaws are fitted to the pliers by slotting them onto one of two pairs of lugs. The two pairs of

lugs enable the pliers to work with internal and external circlips. The metal handles have a plastic covering to aid gripping. Full instructions are included.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4228	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JR63T	CirclipSet	£6.720	£5.470	£4.780	£7.900

**CUTTERS**

**WIRE**

**5-Piece Plier/Cutter Set**

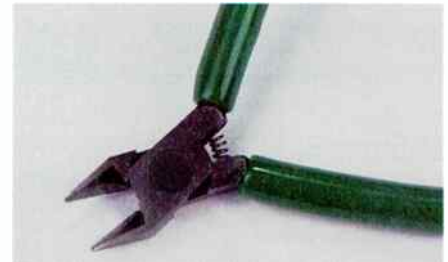


A set of 5 useful pliers and cutters, all of which are lap-jointed and have plastic covered handles. The set is comprised of: a pair of long-nosed pliers with sprung handles and smooth jaws; a pair of flat-nosed pliers with serrated jaws; a pair of pliers with medium-sized smooth tapered jaws; a pair of end cutters with sprung handles; and a pair of side cutters.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4238	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YZ45V	Plier & Cutter Set	£7.650	£6.000	£5.500	£8.990

**100mm Miniature Side Cutters**



Ideal for use in electronic assembly, where larger tools would be cumbersome, this miniature 100mm spring-loaded diagonal cutter is made from steel which has been heat-treated, ground and polished, with hardened cutting edges for cropping hard and soft wire. The handles are protected with a cushion grip in smooth green PVC, for extra comfort in use. Overall length 100mm. Length of cutting edge 12mm.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4239	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GW98G	4in Mini Side	£3.720	£2.920	£2.620	£4.380

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

## Miniature Side Cutters



Miniature spring-loaded diagonal cutters, ideal for use in electronic assembly, made from steel, heat-treated, ground and polished, with hardened cutting edges for hard and soft wire. The handles are protected with a cushion grip made from smooth glossy green PVC, for extra comfort in use. Overall length 125mm. Length of cutting edge 15mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4240	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GW96E	Mini Side	£4.040	£3.250	£3.000	£4.750

## 125mm Side Cutters



125mm diagonal cutters made from tool steel with a smoothly finished head and hardened cutting edge that will cut hard and soft wire. The handles are protected with a cushion grip in smooth glossy black PVC, for extra comfort in use. Overall length: 125mm. Length of cutting edge: 19mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4243	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GX00A †	125mm Side Cutters	£3.020	£2.080	£1.830	£3.560

## 155mm Side Cutters



A 155mm diagonal cutter made from tool steel with a smoothly finished head and hardened cutting edge that will cut hard and soft wire. The handles are in hard black plastic with a matt finish. Overall length 155mm. Length of cutting edge 18mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4245	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GW49D	155mm Side Cutters	£3.020	£2.400	£2.030	£3.560

## Cutting and Bending Tool



A very useful tool designed for trimming wires on PCBs. After placing components on PCB, turn board over and place angled tip of tool on PCB with a component wire in the notch in the head. Now simply squeeze handles of tool. Component wire is cut with a powerful spring action and the remaining tip of wire bent over to lock the component in place. The wire is now also lying tightly on the PCB track and after soldering this will result in a better connection. Overall length 210mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4250	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FD56L	Cut & Bend Tool	£8.230	£7.130	£6.680	£9.680

## Snip Cutter



A pair of cutters designed for cropping leads on PCBs. The head is angled at 45° for use in tight spaces. Insulated sprung handles.

Retail Unit Price each (inc. VAT).

Order Code	Type 4247	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JH20W	Snip Cutter	£3.390	£2.300	£2.000	£3.990

## Diagonal Side Cutters



Manufactured from special quality high grade alloy steel with a smoothly ground head and hardened cutting edge that will cut hard, medium-hard and soft wires. Cushion grip handles for extra comfort. Size 125mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4248	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BU74R	Diagonal Side Cutter	£16.080	£15.280	£14.880	£18.900

## Electricians Diagonal Nippers

Insulated Tools



High quality 165mm diagonal cutting nippers with handles insulated with bright orange 'nylon 11' that complies to ESI Standard 26-3 issue 2, and are therefore suitable for 'live' line working. Weight: 195g.

Retail Unit Price each (inc. VAT).

Order Code	Type 4244	Price each exc. VAT			inc. VAT each
		1+	4+	20+	1+
DH02C	Diagonal Nippers	£21.590	£20.030	£18.210	£25.490

## WIRE - ESD

### Series 3000 Professional ESD Cutters

Larsson



A professional range of cutters for electronics and fine mechanics, manufactured from high quality Swedish steel forged blanks. They are produced by milling in programme-controlled machines and hand grinding. Heat treated and hardened, the tools have a hardness of 48 HRC in the whole tool while the cutting edges are induction heat treated to 60-62 HRC. They are in box joint design and assembled using a special riveting technique, minimizing the risk of play and are supplied with black ESD handles (dissipative - 10<sup>6</sup> - 10<sup>9</sup> Ω).

Diagonal Cutters.



3054

Jaws: Pointed  
Cutting edge: Flush cut  
Cutting capacity: 0.35-1.25 mm copper wire  
Jaw Length: 9.5 mm  
O/A Length: 105 mm

3055

Jaws: Pointed  
Cutting edge: Regular bevel  
Cutting capacity: 0.35-1.25 mm copper wire  
Jaw Length: 9.5 mm  
O/A Length: 105 mm

Oblique End Cutters



3062

Jaws: Oblique head angle - 11°  
Cutting edge: Flush cut  
Cutting capacity: 0.35-1.0 mm copper wire  
Jaw Length: 9.5 mm  
Jaw depth: 15 mm  
O/A Length: 105 mm



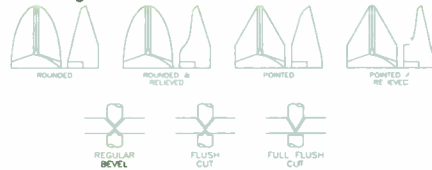
**3063**  
Jaws: Oblique head angle - 11°  
Cutting edge: Regular bevel  
Cutting capacity: 0.35-1.25 mm copper wire  
Jaw Length: 9.5 mm  
Jaw depth: 15 mm  
O/A Length: 105 mm

**3064**  
Jaws: Relieved oblique head angle - 11°  
Cutting edge: Regular bevel  
Cutting capacity: 0.35-1.25 mm copper wire  
Jaw Length: 9.5 mm  
Jaw depth: 8 mm  
O/A Length: 105 mm

**Extra Slim Oblique End Cutters**



**3075**  
Jaws: Extra slim oblique head angle - 45°  
Cutting edge: Flush cut  
Cutting capacity: 0.35-1.0 mm copper wire  
Jaw Length: 20 mm  
Jaw depth: 6 mm  
O/A Length: 116 mm



Retail Unit Price each (inc. VAT).

Order Code	Type 13726	Price each exc. VAT			inc. VAT each 1+
		1+	5+	25+	
D008J	Diag Cut 3054 Flush	£34.060	£32.370	£31.510	£40.030
D009K	Diag Cut 3055 Bevel	£33.690	£32.010	£31.160	£39.590
D014Q	Obliq Cut 3062 Flush	£39.480	£37.510	£36.520	£46.390
D015R	Obliq Cut 3063 Bevel	£39.080	£37.140	£36.160	£45.930
D016S	Obliq Cut 3064 Flush	£40.260	£38.250	£37.240	£47.310
D017T	Obliq Cut 3075 Slim	£43.710	£41.530	£40.440	£51.370

**Series 9000 Professional ESD Diagonal Cutters**

**Larsson**

A professional range of diagonal cutters manufactured from high quality Swedish steel forged blanks. They are produced by advanced grinding techniques in programme-controlled machines. Heat treated and hardened, the tools have a hardness of 48 HRC overall while the cutting edges are induction heat treated to 60-62 HRC. They have an adjustable screw type precision joint and are supplied with black ESD handles (dissipative - 10<sup>6</sup>-10<sup>9</sup> Ω).

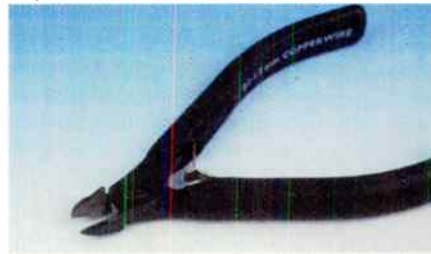
**Rounded Jaws.**



**9151**  
Cutting edge: Flush Cut  
Cutting capacity: 0.1-1.25 mm Copper wire  
Length: 110 mm  
Jaw Length: 9.5 mm

**9351**  
Cutting edge: Flush Cut  
Cutting capacity: 0.2-1.6 mm Copper wire  
Length: 112 mm  
Jaw Length: 12 mm

**Rounded and Relieved Jaws**



**9157**  
Cutting edge: Flush Cut  
Cutting capacity: 0.1-1.0 mm Copper wire  
Length: 110 mm  
Jaw Length: 9.5 mm

**Pointed Jaws**



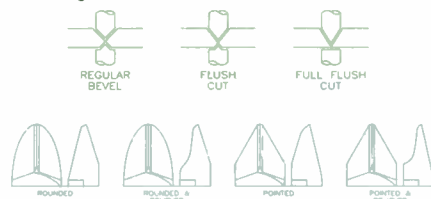
**9354**  
Cutting edge: Flush Cut  
Cutting capacity: 0.2-1.6 mm Copper wire  
Length: 112 mm  
Jaw Length: 12 mm

**Pointed and Relieved Jaws**



**9357**  
Cutting edge: Flush Cut  
Cutting capacity: 0.2-1.25 mm Copper wire  
Length: 112 mm  
Jaw Length: 12 mm

**9358**  
Cutting edge: Full Flush Cut  
Cutting capacity: 0.2-1.0 mm Copper wire  
Length: 112 mm  
Jaw Length: 12 mm



Retail Unit Price each (inc. VAT).

Order Code	Type 13722	Price each exc. VAT			inc. VAT each 1+
		1+	5+	25+	
DQ24B	Round Jaw Flush 9151	£31.620	£30.240	£29.440	£37.400
DQ25C	Round Jaw Flush 9351	£33.610	£31.940	£31.100	£39.500
DQ22Y	Rlvd Jaw Flush 9157	£33.020	£31.370	£30.540	£38.800
DQ20W	Point Jaw Flush 9354	£35.420	£33.650	£32.760	£41.620
DQ23A	Rlvd Jaw Flush 9357	£37.060	£35.210	£34.280	£43.550
DQ21X	Rlvd Jaw FFlush 9358	£40.400	£38.380	£37.370	£47.470

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**HEAVY DUTY**

**Slant Edge Cutters**



155mm slant-edge cutter/nippers made from steel, heat-treated, ground and polished, with hardened cutting edges for hard and soft wire, with two nipping holes. The handles are protected with a cushion grip in smooth glossy green PVC, for extra comfort in use. Overall length 155mm. Length of cutting edge 22mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4248	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
GW39N	Slant Cuts	£3.720	£2.920	£2.650	£4.380

**230mm Cable Cutters**



A high quality 230mm heavy duty pair of cutters suitable for cutting up to 17mm cable. Construction is drop forged chrome vanadium steel - oil hardened. Jaws are chrome plated and polished. The handles are covered with a heavy insulating PVC grip to provide comfort when cutting heavy cables and wires. A lock is also provided on the handle of the cutters to allow them to be locked in the closed position for storage and safety.

Retail Unit Price each (inc. VAT).

Order Code	Type 12258	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
YB99H	230mm Cable Cutter	£16.150	£14.150	£12.850	£16.980

**Heavy Duty Cable Croppers**



A heavy duty pair of 'crab claw' cutters suitable for cutting even the heaviest of copper power cables. Construction is from anodised 4mm pressed steel. The spring-loaded action allows these cutters to be used in one hand while the handles are covered with a PVC air-cushioned grip to provide comfort when cutting heavy cables and wires. A lock is also provided on the handle of the cutters to allow them to be locked in the closed position for storage and safety. The jaws pivot on a 12mm metric bolt which may be easily tightened. Overall length: 220mm, width closed 60mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5610	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
UK96E	Heavy Duty Cutters	£6.380	£5.500	£4.750	£7.500

## Cable Croppers



A compact pair of light/medium gauge wire 'crab claw' cutters suitable for copper conductors up to 5mm diameter. The handles are covered with an insulating PVC material affording protection to the user and providing comfort during operation. The spring-loaded jaws simplify the use of these cutters by returning the jaws to the 'ready' position for the next cut. A locking clasp on the handle allow the cutters to be stored in the closed position for safety. Construction is from 3mm anodised pressed steel with insulating grips. Overall length: 160mm, width closed 55mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5611	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
RJ72P	Cable Croppers	£3.020	£2.700	£2.500	£3.560

## Copper Sheet and Ribbon Cable Cutters



A sturdy pair of cutters for thin copper sheet and ribbon cable, with deep scissor action jaws to allow effective and clean cutting. A lock is provided to allow the cutters to be locked for storage and for safety. The handles are covered with a PVC material to both insulate and provide cushioning when the cutters are gripped. A strong spring ensures that the jaws return to the open position after use to allow for the next cut to take place. A serrated grip at the tip of the cutters allows these cutters to be also used as a holding and bending tool. Construction is from 3mm pressed steel, and provides an overall cutter length of 30mm. Total length including handles is 155mm, width closed 50mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5608	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
UK94C	Ribbon/Sheet Cutters	£3.020	£2.330	£2.100	£3.560

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e-mail: [Sales@maplin.co.uk](mailto:Sales@maplin.co.uk)

## Aviation Snips



A pair of tin snips with yellow handles incorporating stops to prevent the fingers from slipping into the cutters. The cutters have an internal spring to ensure that they will return to the open position when pressure is released. Includes a manual safety catch that keeps the cutters closed when not in use.

Retail Unit Price each (inc. VAT).

Order Code	Type 4251	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
GX19V	Tin Snips	£5.730	£4.530	£3.790	£6.740

## Low Cost Type



A useful low-cost combination tool with cushioned plastic handles. Tool has bolt cutters for M2.5, M3, M3.5, M4 and M5 bolts, strippers for wires of conductor area 0.75, 1.0, 1.5, 2.5, 4.0 and 6.0mm<sup>2</sup>, a crimping tool for red, blue and yellow insulated crimp connectors and 1.5, 2.5 and 4.6mm<sup>2</sup> non-insulated crimp connectors, and a wire cutter. Overall length 232mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4236	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
FY31J	Crimp Tool	£3.020	£2.230	£1.830	£3.560

## Heavy Duty Crimping Tool



A crimping tool for use with red, yellow and blue insulated crimp terminals. Simply place the connector to be crimped in the appropriate die in the jaws and squeeze the handles together, until the tool re-opens. A ratchet prevents the tool opening until the crimp is complete. A latch is provided so that the tool can be opened manually after the ratchet has engaged and before the crimp is complete if necessary. Manufactured from 3mm steel plate with plastic handles. Overall length 225mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4231	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
JH19V 1	Crimp Tool Ratchet	£23.820	£16.540	£14.570	£27.990

## Telecom Impact Tool



This handy tool is ideal for inserting BT IPC cable into the connectors in master and secondary jack units. It features a reversible blade, one end of which is used to force the four wires of the line cord into the Insulation Piercing connectors of the jack unit and the other does the same job but also includes a blade to cut off any excess wire once connection is made. The impact tool's durable handle is made from a tough resin, reinforced with fibre glass.

Retail Unit Price each (inc. VAT).

Order Code	Type 10338	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BP42V	Punch Down Tool	£12.750	£10.290	£9.500	£14.990

## Crimping Tools for Modular FCC68 Connectors



Crimping tools for use with FCC68 modular connectors which are used on computers and American telephones. Simply place the plug with the cable in the tool and squeeze the grips together, thus causing the plug to bite into the cable. The handles are spring loaded for automatic opening. Wire can be cut with blades built into the handle. All made from toughened plastic. Overall length 190mm.

The following types are available:

### Plastic Crimp 4C4P

This model is used on plugs with 4 contacts in a 4 position shell

### Plastic Crimp 4C6P

This model is used on plugs with 4 contacts in a 6 position shell.

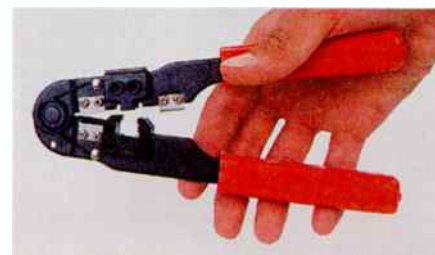
### Plastic Crimp 6C6P

This model is used on plugs with 6 contacts in a 6 position shell.

Retail Unit Price each (inc. VAT).

Order Code	Type 4232	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JWS1F	Plas FCC68 Crmp 4C4P	£5.190	£2.800	£2.550	£6.100
JWS0E	Plas FCC68 Crmp 4C6P	£5.190	£3.650	£3.200	£6.100
JW49D	Plas FCC68 Crmp 6C6P	£6.110	£4.290	£3.780	£7.190

## Heavy Duty Crimping Tool for Modular FCC68 Connectors



A crimping tool for use with FCC68 modular connectors which are used on computers and American telephones. This model crimps 8 position modular plugs. Simply place the plug with the cable in the tool and squeeze the grips together, thus

causing the plug to bite into the cable. The handles are spring loaded for automatic opening. Wire can be stripped and cut with two separate blades built into the handle. Made from 2.5mm steel with comfortable plastic grip. Overall length 200mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 4033	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
JW52G	HD FCC68 Crmp 8C8P	£14.710	£11.650	£10.850	£17.290

## F Connector Crimping Tool



This low cost crimping tool with hexagonal shaped jaws is designed for use with F connectors and RG-59, RG-62 and RG-6 co-axial cable. Simple action – just place the cable into the connector, locate the connector between the jaws of the crimping tool and squeeze the tool's two handles together. Maximum extension on the lever-action jaws is 24mm. Overall length: 205mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 10328	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP46A	F Type Crimp Tool	£3.390	£2.450	£2.250	£3.990

## Coax Connector Crimping Tool



A coax crimping tool that has five separate sections to accept 1-72, 2-5, 5-4, 6-48 and 8-2mm connectors for crimping. The pressure necessary for crimping can be adjusted for individual requirements, and is made easy with the aid of long contoured, plastic covered handles.

Retail Unit Price each (inc. VAT).

Order Code	Type 4034	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
ZF41U 1	Coax Crimper	£19.080	£16.650	£15.140	£22.430

## Co-axial RG Cable Crimp Tool Set



This quality set provides everything you need to crimp RG type cable in a smart and durable plastic carry case – a heavy duty crimping tool with 5 removable dies, a coax stripper and a cable cutter. To use the crimping tool simply screw the appropriate die into place (see table), locate the connector to be crimped in the jaws and squeeze the handles together until the tool re-opens (a ratchet prevents the tool from re-opening until the correct pressure has been exerted and the crimp is complete).

The 165mm cable cutter has jaws that open to a maximum of 35mm and is fitted with a strong spring that automatically opens the jaws after each cut. A simple latch holds the jaws safely closed when the cutters are not in use.

The stripper removes the inner and outer sheath of co-axial cables simultaneously and is provided with an allen key to set the blades to suit your cable. It features a simple push out adaptor with four positions to suit different types of cable.

### Crimping Tool Dies

Die type Suitable for cable:

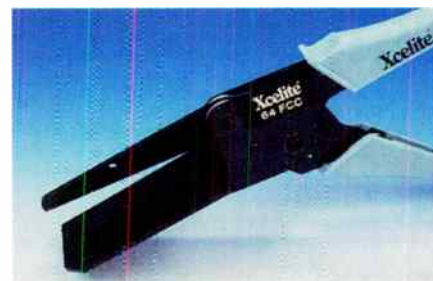
- A 55, 58, 59, 62, 140, 141, 142, 174, 210, 223, 303, 400, fibre optic, Belden 8279
- C 6, 55, 58, 59, 62, 140, 141, 142, 174, 210, 223, 303, 400, fibre optic, Belden 8279
- G 55, 58, 59, 62, 8X, 140, 141, 142, 174, 210, 223, 303, 400, fibre optic, Belden 8279
- J 122, 174, 178, 179, 180, 187, 188, 195, 316, fibre optic, Belden 8218
- K 8, 9, 11, 87A, 149, 165, 174, 179, 187, 188, 213, 214, 216, 225, 316, 393, Belden 9913

Retail Unit Price each (inc. VAT).

Order Code	Type 10337	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
EM07H 1	CoAx Crimp Tool Set	£47.650	£37.300	£34.090	£55.990

## Flat Cable Cutter

Xcelite



A handy cutting tool for flat cables, that gives an even, undistorted cut across all conductors (up to 64 conductors). A built-in guide guarantees a

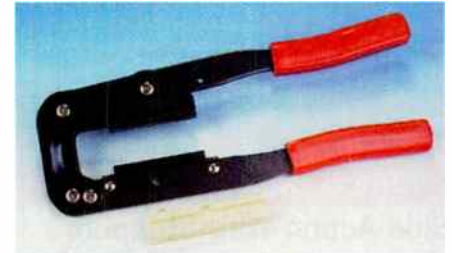
square cut, reefered to the edge of the cable. The cutter has a one-piece solid blade for increased durability and accuracy. The cutter is capable of cutting under- carpet electrical cable (up to 4 conductors).

Length of cut: 81mm  
Overall length: 255mm

Retail Unit Price each (inc. VAT).

Order Code	Type 4036	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DF91Y	Flat Cable Cutter	£64.500	£56.620	£53.050	£75.790

## Crimping Tool for IDC Connectors



A crimping tool designed for assembling IDC connectors onto flat cable. The crimping distance is capable of accepting connectors from 6 to 27.5mm in height, between the fixed and moving jaws. A plastic adaptor is supplied with 6mm and 10mm slots to cater for different connector types. Simply place the cable into the connector, load the connector into the tool and squeeze the grips together. The tool is 240mm long by 77mm wide and manufactured from 2mm and 3.5mm carbon steel with comfortable cushioned plastic grips. Black oxide finish.

Retail Unit Price each (inc. VAT).

Order Code	Type 4038	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GW34M	Crimper IDC	£8.670	£7.230	£6.510	£10.190

## D-Connector Crimp Tool



A high-quality D type connector contact crimp tool for use on 18 to 30 AWG wire/pin combinations. These crimpers incorporate a ratchet action, with adjustable crimp pressure (can be locked), and plastic handle grips. Construction is from heavy duty, high-quality steel.

Retail Unit Price each (inc. VAT).

Order Code	Type 5585	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
AQ72P	D-Type Crimp Tool	£17.350	£15.190	£13.270	£20.390

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## Crimp Tool for Uninsulated Terminals



A high-quality crimp tool for cable/tab combinations. Suitable for 0.5 to 1mm<sup>2</sup> and 1.1 to 2.5mm<sup>2</sup> cable/tabs. The crimp pressure is adjusted by a wheel and locking screw. Constructed from high-quality steel, with moulded plastic handle grips.

Retail Unit Price each (inc. VAT).

Order Code	Type 5536	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AQ73Q	Tab Crimp Tool	£17.350	£15.190	£13.270	£20.390

## WIRE & CABLE STRIPPERS

### Side-Action Wire Strippers

A range of wire strippers all of which strip insulation quickly and easily from flex and cable without cutting the wire and are easily adjustable to most wire sizes. They also have cutting blades for cutting wire easily and splitting plastic twin flex.



#### Model 8B

Model 8B: Fitted with a unique 7-gauge selector. Spring incorporated for automatic opening. Easy-grip plastic covered handles.



#### Model 9

Model 9: Easily adjusts for most sizes of flex and cable. Fitted with extra strong spring for automatic opening after each stripping operation. Ideal for repetitive work. Easy-grip plastic handles.

Retail Unit Price each (inc. VAT).

Order Code	Type 4252	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BR94C	Wire Strippers 8B	£2.970	£2.250	£1.800	£3.500
BR95D	Wire Strippers 9	£2.970	£2.250	£1.800	£3.500

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## Precision Wire Stripper

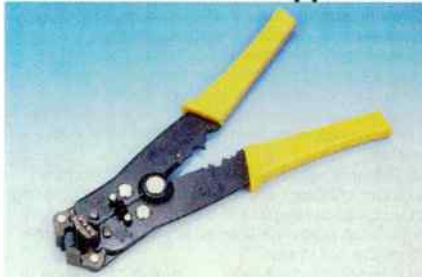


A wire stripper made from precision ground, hardened steel, that strips and cuts wire. The wire stripper has six holes that are used to cut and remove the insulation from the wire. The holes are marked in AWG (American wire gauge) sizes, but are suitable for 18 to 27 SWG sizes. At the base of the jaws is the cutting area which will cut copper or aluminium wire. A convenient flat design allows the wire stripper to be used in tight locations and to fit easily in a pocket or tool kit.

Retail Unit Price each (inc. VAT).

Order Code	Type 4253	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
KC16S	Stripper	£10.200	£9.700	£9.200	£11.990

## Universal Cable Stripper



This is a general-purpose universal cable stripper that will strip cables with a minimum diameter of 7/0.2 up to 6mm<sup>2</sup>. The cable is placed within the jaws and the handles squeezed. The jaws automatically hold the cable and cut the outer sheathing. The tool is also used for crimping.

Retail Unit Price each (inc. VAT).

Order Code	Type 11835	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
MCS1F	Univsl Cable Strip	£6.800	£6.000	£5.250	£7.990

## Wire Cutter/Stripper Tool



A quick and very easy to use wire stripping tool, which has jaws to grip the wire sheath, whilst a pair of blades strip off the insulation by simply squeezing the handles. The blades do not have to be set for a specific wire thickness, but are internally sprung in order to apply just the pressure required to bite through the insulation before moving backwards taking the insulation with them. The blades can however be adjusted by a simple thumb screw so as to operate effectively for a range of different insulation plastics. It is even possible to strip two or more wires, inserted side by side, simultaneously.

Retail Unit Price each (inc. VAT).

Order Code	Type 4254	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FT44X	Cutter/Stripper Tool	£5.940	£4.000	£3.250	£5.990

## High Quality Wire Cutter/Stripper Tool



A quick and very easy to use low-cost wire stripping tool, which has jaws to grip the wire sheath, whilst a pair of blades strip off the insulation by simply squeezing the handles. The blades do not have to be set for a specific wire thickness, but are internally sprung in order to apply the correct pressure required to bite through the insulation before moving backwards taking the insulation with them. The blades can be adjusted by a simple thumb screw so as to operate effectively for a range of different insulation plastics. It is possible to strip two or more wires, inserted side by side, simultaneously. A depth of cut adjustment allows precise lengths of insulation to be stripped accurately, and consistently.

Retail Unit Price each (inc. VAT).

Order Code	Type 5537	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AQ74R	Quality Cutter/Strip	£7.650	£5.500	£5.050	£8.990

## Cable Strippers

Abeco



This cable stripper has a capacity of handling 0.25mm<sup>2</sup> to 6.0mm<sup>2</sup> PVC coated wire. The powerstrip is fully self-adjusting with a rapid adjustment for the ratio between gripping and cutting jaws. This is to accommodate the difference between 'tough' and 'soft' insulations. An easily adjusted wire stop is fitted in the jaws and an integrated wire cutter allows for trimming as well as stripping.

Retail Unit Price each (inc. VAT).

Order Code	Type 11830	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KE70M 1	Powerstripper	£36.110	£34.300	£32.560	£42.440

## Self-Adjusting Wire Stripper

TTI (Thurlby-Thander)



A self-adjusting wire cutter, stripper, bender and crimping tool that has been designed for the professional electrician. The tool can be used with twin and earth, three core and earth, flat twin and flat three core cables in sizes from 1.0mm<sup>2</sup> to

6-0mm2. The automatic stripper removes the outer and inner insulation on twin and earth from 1mm up to 4mm, but up to 6mm on conduit. The unique bender folds and crimps the conductor for secure screw terminations.

**Manufacturer's Code 00030**

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4255	Price each exc. VAT			inc. VAT each
		1+	4+	20+	1+
CW32K1	SelfAdjust Stripper	£31.160	£28.660	£26.430	£36.620

## Single-Action Wire Strippers



For precise rapid wire-stripping without risk of damage to the wire or insulation. Simply place the wire to be stripped between the jaws and squeeze the handles. The tool automatically grips the wire, cuts the insulation, and strips it from the wire in one operation. The tool is manufactured in die cast aluminium and fitted with hardened steel cutting blades. The tool comes complete with blade fitted and is available with a choice of two blades to suit most common wires.

Blade A has holes to strip wires of 0.5, 1.2, 1.6 and 2.0mm diameter. Blade B has holes to strip wires of 1.0mm, 1.6mm, 2.0mm, 2.6mm and 3.2mm.

Size: 180mm.  
Length of strip: 22mm max.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4258	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BR96E	Singl Action Strippr	£6.800	£5.500	£5.000	£7.990
YT24B	Singl Action Strip B	£6.800	£5.500	£5.000	£7.990

## Low Cost Coax Cable Stripper



A simple, quick to use, coax cable stripper for cables from 4-8 to 7.5mm outer diameter, i.e. most RF, radio and TV aerial cables. At one end, the blades are set for removing the outer sheath, and at the other end, the blades are set for removing the dielectric. The cable is inserted to the desired length, the stripper is closed, a quick twist to the left and right and the sheath/dielectric is removed. The coax cable stripper is spring-loaded for ease of use. Overall size 98 x 25mm.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4257	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
B219V	Coax Stripper	£3.890	£3.120	£2.600	£4.580

## Co-axial Cable Stripper



A stripper which removes the inner and outer sheath of co-axial cables simultaneously. An allen key is provided to set the blades to suit your cable. Cables from 4mm to 7mm outside diameter can be accommodated. The tool is set at the factory to suit RG58 and RG59 cable. To change from one to the other the die is reversed in the tool. To operate, squeeze to open the jaws, then place the cable on the cable guide and close the jaws. Insert a finger in the loop on the tool and revolve the tool around the cable four to five times. Then holding the tool, pull the cable firmly out of the tool. Both the inner and outer will be neatly trimmed away leaving the cable ready for connection.

Overall size: 104 x 34 x 22mm.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4258	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JH18U	Co-Ax Stripper	£8.930	£7.500	£6.500	£10.500

## Flex and Wire Stripper

**TTI (Thurby-Thandar)**

A unique, compact, self-adjusting cable stripper capable of preparing both the inner and outer insulations of round cables, up to 8.5mm diameter.

**Manufacturer's Code 00020**



*Retail Unit Price each (inc. VAT).*

Order Code	Type 4259	Price each exc. VAT			inc. VAT each
		1+	4+	20+	1+
CW33L	Flex & Wire Stripper	£6.060	£5.670	£5.150	£7.130

## Sheath Stripper

**TTI (Thurby-Thandar)**

A self-adjusting sheath stripper that is designed for removing the outer insulation from data/signal cables up to 11mm diameter, e.g., twisted pairs (UTP and STP), 'Belden' cables, multicore cables (screened and unshielded), instrumentation and telephone cables. The device is easy to use and has no open blades. It adjusts automatically to sever PVC or low smoke (plenum) insulation without damaging the braid, foil or conductors.

**Manufacturer's Code 20020**



*Retail Unit Price each (inc. VAT).*

Order Code	Type 4260	Price each exc. VAT			inc. VAT each
		1+	4+	20+	1+
CW34M	Sheath Stripper	£8.670	£8.170	£7.600	£10.190

**We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers**

## Coaxial Cable Stripping Tools

**TTI (Thurby-Thandar)**

A range of dedicated coaxial cable preparation tools capable of performing 2- and 3-level strips on the dielectric, braid and outer insulations. The tools require no adjustment, and incorporate a unique measuring device to determine the correct strip length to suit a particular connector.



Suitable tool for each cable type is shown below.

Manufacturer's Code	Cable Type	MPS Code
10030	RG58 (MPS XS51F)	CW36P
10090	URM67 (MPS XR63T)	CW37S
10040	RG59 (MPS XS52G)	CW38R
10100	URM70 (MPS XS32K)	CW39N

*Retail Unit Price each (inc. VAT).*

Order Code	Type 4261	Price each exc. VAT			inc. VAT each
		1+	4+	20+	1+
CW36P	Stripper RG58	£10.030	£9.750	£9.400	£11.790
CW37S	Stripper URM67	£11.370	£10.400	£9.780	£13.370
CW38R	Stripper RG59	£11.880	£11.600	£10.980	£13.960
CW39N	Stripper URM70	£11.370	£10.400	£9.780	£13.370

## Hand Cable Stripper

**Abeco**



The hand cable stripper allows the removal of insulation from round cables between 4.5 and 28.5mm diameter. The handle contains a spring-loaded gripping arm and an adjustable cutting blade. The blade can penetrate to a depth of 3mm. Rotate the cutter round the circumference of the cable and then turn the blade through 90° by depressing the side button. This results in the blade cutting along the length that is to be removed. Also the tool incorporates a spring-loaded ripping tool to remove insulation.

*Retail Unit Price each (inc. VAT).*

Order Code	Type 11893	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KE71N	Cablestripper	£17.260	£14.230	£13.950	£20.290

## CABLE TOOLS

### F-Connector Tool

A T-bar tool primarily intended to screw twist on F-connectors to cables.



*Retail Unit Price each (inc. VAT).*

Order Code	Type 10390	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BP45Y	Twist On F Con Tool	£1.690	£1.250	£1.150	£1.990

## Call and Collect

Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

**† = While Stocks Last**

**Sales Tel: 01702 554000 • Fax: 01702 554001 • Technical Helpline: 01702 556001**

Export carriage charges (1,2 etc.) and price information see back of catalogue. † symbol in price block indicates While Stocks Last.

## Sleeve Fitting Tool

Hellermann



A tool for stretching sleeving to fit over cable ends. It is recommended that sleeve oil be used as a lubricant when slipping the sleeve over the cable end. The tool is available in two sizes, type SS (CC80B) for sleeving up to 2mm and type S (CJ02C) for sleeving up to 5mm diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
CC80B	Sleeve Fit Tool 2mm	£17.650	£16.500	£15.750	£20.750
CJ02C	Sleeve Fit Tool 5mm	£17.650	£16.500	£15.750	£20.750

## Professional Tie-Wrap Gun



This metal based tie-wrap gun will tension and cut plastic cable ties. To use the tool the cable tie should be placed in position and the tail of the cable tie inserted into the mouth of the tool. The tool is operated by squeezing the lever; this tensions and removes any excess cable tie. It is important that the tension is adjusted correctly, otherwise a clean cut will not be achieved; this often results in an unwanted sharp edge being left at the end of the cable tie. The tension at which the cutting edge operates can be adjusted using a rotary control on the handle of the tool. The cutting edge is 7mm wide and is suitable for cable tie sizes from 2.2mm to 4.8mm. A hard wearing and long-lasting tool suitable for production environments where quick, accurate assembly is essential.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AP99H 1	Metal Tie Gun	£32.630	£26.500	£23.250	£38.350

## Economy Cable Tie Gun



A cable tie-wrap gun that tensions and cuts cable ties. The cable tie is simply placed around the cables in the normal way and the 'tail' is inserted into the cable tie gun. Operating the trigger tensions

the cable tie and automatically cuts the tail off, all in one fast, simple, action. Ideal for production environments where quick, accurate assembly is important.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JU29G	Cable Tie Gun	£5.890	£5.100	£4.710	£6.930

## Electricians Draw Tape



This tool is designed to pull electrical wiring and cable through conduits and ducting. The spring steel tape is 15m long and has a spring with a brass knob at one end to avoid snagging, and a 10mm diameter ring for attaching the cable at the other. Supplied with a holding frame.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FC90X	Elctm Draw Tape	£4.620	£4.400	£4.280	£5.440

## Cable Tacker Gun

Rapesco



This professional quality cable tacker gun features a new technology recoilless action, safety lock and supercomfort handle. The shaped nose of the gun staples the cables neatly into corners. The gun is available in a choice of two sizes, the CT-45 model (KE19V) designed to tack 4.5mm diameter low voltage (50V max) cable or the CT-60 model (KE20W) for 6mm diameter low voltage cable. Supplied with instructions and a belt clip.

Gun	Staple Code
CT45	10mm natural KE21X
CT45	10mm white KE22Y
CT60	10mm natural KE23A
CT60	12mm natural KE24B

Sold in packs of 5000.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KE19V	Cable Tacker Gun 4.5	£33.010	£29.390	£26.850	£38.790
KE20W	Cable Tacker Gun 6.0	£35.580	£32.150	£29.400	£41.810
KE21X	CT45 10mm Natrl	£9.010	£7.340	£6.680	£10.590
KE22Y	CT45 10mm White	£10.670	£9.930	£9.210	£12.540
KE23A	CT60 10mm Natrl	£10.670	£9.930	£9.210	£12.540
KE24B	CT60 12mm Natrl	£11.970	£11.150	£10.350	£14.070

See Stock Code Index For More Price Breaks

## GENERAL HAND TOOLS

### TRIMMING TOOLS

#### Hexagon Type



Tool moulded in blue acetal for adjusting 6mm cores with 2.54mm (0.1in.) a/f hexagon centre hole. Hexagon at each end with screwdriver extension at one end only. Length: 127mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BR48C	Hex Trimmer	£0.348	£0.333	£0.324	£0.410

#### Pot Core Type

Deltron



Moulded tool, with a phosphor bronze blade at each end. Designed to fit 4mm and 6mm cores. Suitable for use with our pot cores. Length: 46mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BR51F	Trim Tool	£0.859	£0.703	£0.645	£1.010

#### Preset Type

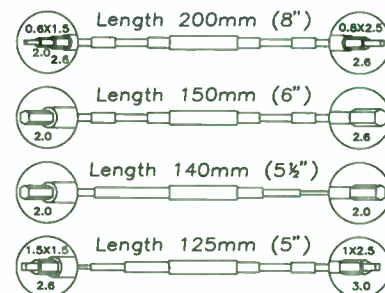


A trim tool for preset potentiometers. Double-ended with protruding blade for single turn presets etc., and recessed blade for our 15-turn cerrets etc. Recess prevents blade slipping out during adjustment. Length: 130mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BR49D	Preset Trimmer	£0.859	£0.770	£0.686	£1.010

## Alignment Tool Set



A set of moulded plastic tools for alignment of colour TV, Hi-Fi, Radio Amateur, CB and AM and FM radio. This set should enable you to align any combination of cores that require flat-bladed, hex, or square trimming tools.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BK34M	Trim Tool Set	£3.460	£2.870	£2.640	£4.070

**TWEEZERS**

**Nylon**



A pair of nylon tweezers with serrated tips. Overall length 128mm. Max. jaw opening 25mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YW67X	Nylon Tweezers	£0.689	£0.567	£0.500	£0.810

**Stainless Steel**



A pair of stainless steel tweezers with serrated jaws and finger grips. Overall length 115mm. Max. jaw opening 16mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FAG6V	Steel Tweezers	£0.842	£0.750	£0.600	£0.990

**Set of Tweezers**



A set of 4 stainless steel tweezers – angled, fine, offset flat and reverse action point. They are contained in a presentation wallet.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GU92A	Tweezer Set	£4.290	£3.850	£3.590	£5.050

**Tweezer AA**



Anti-magnetic, stainless steel AA tweezers – Length 120mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GUS3B	Tweezer AA	£2.590	£2.470	£2.370	£3.050

**Tweezers No. 7**



Anti-magnetic, stainless steel 'precision' tweezers with curved fine points. Length 115mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GU94C	Tweezers No7	£3.020	£2.880	£2.740	£3.580

**Forceps**



Suitable for use by model builders, jewellers, miniaturists and electronic hobbyists. The forceps are available with straight (GU90X) or curved blades (GU91Y) and can be clamped shut. They can be used as a super slim needle nose plier, clamp, heatsink and vice. The length is 150mm (6in.) and manufactured in stainless steel.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GU90X	Seizers Straight	£2.590	£2.330	£2.180	£3.050
GU91Y	Seizers Curved	£2.590	£2.330	£2.180	£3.050

**PICK UP TOOLS**

**Pearl Catcher**



A spring-loaded 3-pronged tweezers for reaching into those difficult places to retrieve the smallest screw.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BK43W	Pearl Catcher	£0.859	£0.676	£0.604	£1.010

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BN88G	Pick Up Tool	£2.110	£1.860	£1.780	£2.490

**Vacuum Pick-up Pencil**



A clever device for picking up, holding and positioning delicate electronic components, especially surface mounted devices, on printed

circuit boards. The silicon rubber cup is placed on the component and the button pressed and held, the component will now be held by vacuum against the cup. The device can now be moved, positioned, and soldered in place. The button is then released to free the device. The body is made from nickel-plated aluminium for a long trouble-free life, and the probes are made from stainless steel. Supplied with two probes, straight and angled, and three silicon cups 4mm, 6mm and 9mm. Overall length 150mm and 14mm diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
BA21X	Vacuum Pencil	£40.620	£38.600	£36.560	£47.740

**Magnetic Retrieving Tool**



A powerful pocket-sized magnetic retrieving tool for picking up ferrous components from inaccessible areas. This chrome-plated, telescopic, tool is capable of lifting objects weighing up to 0.68kg. Length closed 149mm. Length extended 649mm. Supplied with a pocket clip.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD61R	MRetriever	£6.930	£6.510	£5.300	£8.150

**Magnetic Pick-up**



A magnetic extendable tool for capturing small metallic objects that are in inaccessible places. The tool has a telescopic rod which is attached to a plastic screwdriver handle. The rod extends from 167mm to 537mm with a small magnet fixed to the end of the rod. Care must be exercised when working round electrical equipment as the telescopic rod is conductive.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JM89W	Magnetic Pick Up	£3.650	£2.630	£2.400	£4.290

## STAPLING TOOLS

### Budget Staple Gun

Rapesco



This lightweight and comfortable staple gun is constructed from high quality plastic and is ideal for repetitive work.

Very quick and easy to load, it is ideal for a wide range of tasks including upholstery. For added safety, the power lever can be locked into place with the built-in safety clip to avoid accidental firing when not in use.

The staple gun accepts standard 6mm or 8mm staples available in packs of 5000 as codes YC40T(6mm) or YC41U(8mm).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC33L	Tacker Gun 851	£8.300	£7.380	£6.880	£9.760
YC40T	Rapid 53/6 Staples	£3.200	£2.850	£2.650	£3.770
YC41U	Rapid 53/8 Staples	£3.600	£3.150	£2.950	£4.240

### Professional Staple Gun Z1-P

Rapesco



This professional quality staple gun features a new technology recoilless action, safety lock, high impact ABS casing and supercomfort handle. Supplied with instructions.

Accepts staples 13/4-8mm and 53/4-8mm (see above). Sold in packs of 5000.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC38R	Rapid 13/6 Staples	£3.600	£3.150	£2.950	£4.240

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YC37S	Staple Gun Z1-P	£14.800	£13.450	£12.600	£17.400

Order £30 or above?

Account holder or not, your order will be sent carriage paid.

(Guaranteed next day delivery charges as stated in our Terms & Conditions in the back of the catalogue)

### Hammer Tacker A11

Rapesco



For professional use with extended hand grip for added safety. Perfectly balanced for trouble free stapling. For fastening of carpet underlay, insulating paper foil, roof felt and many other applications about the home and business premises.

Uses staples 140/8mm(YC39N) but will accept staples 140/6-10mm. Sold in packs of 5000.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC39N	Rapid 140/8Staples	£4.050	£3.500	£3.250	£4.760

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YC35Q	Hammer Tacker A11	£25.450	£23.350	£21.980	£29.910

### Staple Remover

Rapesco



A special vice grip ensures the safe and easy removal of both staple legs at one time. Ideal for removing all types of tacker and hammer tacker staples from wood, etc.

Steel construction with cushion grip handle.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YC43W	Staple Remover No.3	£7.050	£6.150	£5.750	£8.290

## BOLSTER CHISELS

### Electricians Bolster Chisel



The 56mm blade electricians chisel has been especially designed for cutting the tongue of 'tongue and groove' boarding and lifting floorboards. The chisel has been hardened and the blade tempered to give a keen cutting edge to make it easier to remove floorboards.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RJ05F	Bolster	£4.510	£3.390	£2.870	£5.300

## HAMMERS

### Tacking Hammer



A small 100g hammer which is ideal for cable clip tacking and other similar light-duty work. The hammer has a steel head, square in cross-section, with bevelled edges and a chisel-shaped cross-pain. The varnished hardwood handle is contoured for good grip. The head is fixed to the shaft with a metal wedge.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YZ43W	Small Hammer	£1.370	£0.968	£0.822	£1.620

### Pin Hammer



A 100g Pin Hammer ideally suited for tacking small nails. The hammer head is secured to a wooden shaft.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GR11M	Pin Hammer	£2.760	£1.930	£1.760	£3.250

### Claw Hammer



A 450g brown varnished wooden shaft claw hammer. A general purpose hammer suitable for light duty work only.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GL25C 1	Wood Shaft Cl/Hammer	£3.460	£2.750	£2.570	£4.070

### Steel Shaft Claw Hammer



The hammer has a standard hammer head and a claw for extracting nails fixed to a solid steel shaft. It is ideal for woodwork and general heavy duty work.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GLO9K	Stl Shaft Cl/Hammer	£11.500	£10.670	£9.880	£13.520



## Fibreglass Shaft Claw Hammer



A hammer with a steel head fitted to a fibreglass shaft which absorbs shocks whilst maintaining strength and reliability. The base of the handle has a grip made from a rubber like material. The hammer has a claw which can be used for removing nails etc. Ideal for general electrical installation work.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
GL08J	Fiberglass Claw Hammer	£8.670	£7.550	£7.060	£10.190

## Rubber Mallet



A hard black rubber mallet head with a wooden varnished handle. Suitable for light duty work. The head has a diameter of 56mm and a length of 95mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GK95D	Rubber Mallet	£2.590	£1.760	£1.480	£3.050

## CUTTING TOOLS

## Professional Scissors 265mm

RapESCO



Finely machined stainless steel blades with sharp serrated edges. 265mm total length (10 1/2"). 135mm blades. Ideal for professional use such as upholstery and decorating.

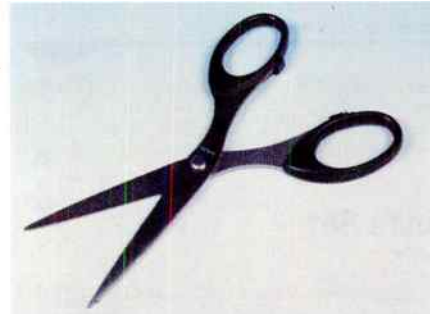
Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YC42V	Prof Scissors 265	£9.650	£7.550	£7.100	£10.170

## Contract Scissors

RapESCO



Excellent value, stainless steel scissors suitable for office and general domestic use. Available in two sizes: 165mm (6") and 205mm (8")

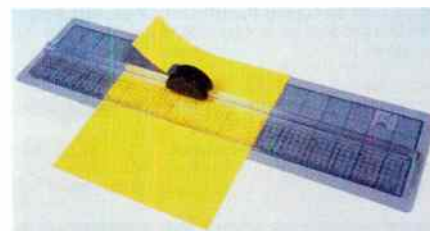
Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YC34M	Contract Scissors 6	£1.160	£1.060	£1.000	£1.370
YC53H	Contract Scissors 8	£1.600	£1.350	£1.260	£1.890

## Ceramic Slide Cutter and Mat

RapESCO



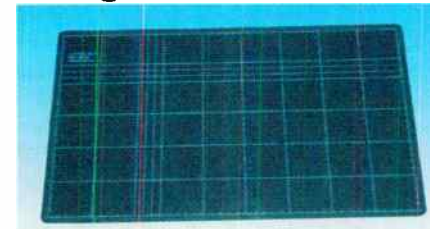
Ideal for all kinds of office and graphic work. Safe and easy to use acrylic cutting ruler with a long-lasting push-button ceramic safety blade. The blade is manufactured from zirconium ceramic which is resistant to acidic chemicals and magnetism and cuts in both directions.

Ruler has 350mm total length allowing a 310mm cutting length. Cutting mat is 380 x 100mm. Both ruler and cutting mat are calibrated for precise cutting.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YC36P	Ceramic Cut & Mat	£18.100	£16.350	£15.250	£21.270

## Cutting Mats



These professional quality cutting mats are the ideal way to protect your desk or worktop when working with scalpels and hobby knives while providing a safe and flat cutting surface. The mat's non-slip surface will make sure that your work stays in place while you make your cut and it's also self-healing. Knife marks completely disappear, leaving no trace behind to influence or divert future cuts. These mats really can be used time and time again for years without needing replacement. Both sides of the mat can be used - one is printed with grid lines to help provide a handy cutting guide

while the other is left plain.

The Cutting Mat is green in colour and available in three sizes:

A2 Cutting Mat:	450 x 600 x 3mm
Large Cutting Mat:	300 x 450 x 3mm
Small Cutting Mat:	220 x 300 x 3mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
CB15R	A3 Cutting Mat	£5.520	£5.100	£4.750	£6.490
CB16S	A4 Cutting Mat	£2.970	£2.750	£2.500	£3.490
GU59P	A2 Cutting Mat	£11.900	£11.280	£10.250	£13.990

## Retractable Blade Knife



A retractable action trimming knife supplied with five blades. Blade retracts right back into the handle when not in use. Overall length 150mm.

Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
FY03D	Retractable Knife	£2.540	£2.170	£1.780	£2.990

## Spare Blades

A pack of five replacement blades for use with retractable knife.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FY04E	Knife Blades	£0.774	£0.572	£0.458	£0.910

## Snap-Off Blade Knife



A compact knife ideal for intricate model making applications. The tough, impact resistant body houses a steel blade made up of 11 'snap-off' segments. When the blade in use is worn, it can be snapped off by placing it into the slot of the pocket clip. The blade is retractable and is held firmly when in use by a blade locking device.

Length: 127mm

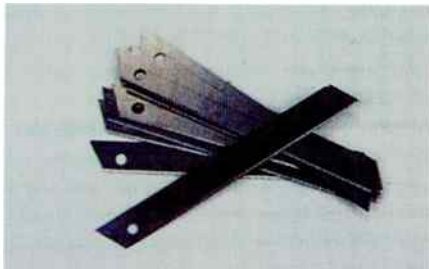
Weight: 11.5g

Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
YW64U	Snap-Off Blade Knife	£0.595	£0.437	£0.292	£0.700

## Spare Blades



A pack of ten spare blades for YW64U. Blades are supplied in a plastic storage box with slide-on cap. **Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.**

Retail Unit Price each (inc. VAT).

Order Code	Type 3756	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JK31J	Snap-Off Blades	£1.200	£0.884	£0.807	£1.420

## Heavy Duty Snap-Off Blade Knife



An all-purpose knife with a retractable blade. The tough, impact resistant contoured plastic body houses a steel blade made up of 7 'snap-off' segments. When the blade in use is worn, it can be snapped off by placing it into the slot provided on the end cap. The blade is held firmly when in use by a blade locking device.

Length: 154mm  
Weight: 38g.

**Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.**

Retail Unit Price each (inc. VAT).

Order Code	Type 3758	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FS98G	HD Snap Blade Knife	£0.859	£0.708	£0.582	£1.010

## Spare Blades

A pack of ten spare blades for FS98G. Blades are supplied in a plastic storage box with slide-on cap.



Retail Unit Price each (inc. VAT).

Order Code	Type 3758	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JH59P	HD Snap-Off Blades	£1.720	£1.240	£1.090	£2.030

## Scalpel



A surgical scalpel which will be found the most suitable tool for making PCB artworks using our tapes etc. They are also suitable for all kinds of accurate and delicate cutting work. The small metal handle and the blades must be ordered separately. The blades are supplied in packs of five and are made from the finest surgical steel.

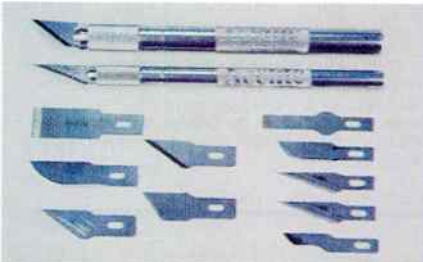
**Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.**

Retail Unit Price each (inc. VAT).

Order Code	Type 3762	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FY05F	Scalpel Handle	£3.890	£3.330	£3.120	£4.580
FY06G	Scalpel Bid Type 11	£0.859	£0.749	£0.686	£1.010

## Knife Set

Xcelite



A set that includes both a light and a medium knife, and 10 assorted blades for the professional and hobbyist. The light duty knife is for cutting on light paper, soft and lightweight materials and wood. The medium duty knife is for heavy paper and medium density materials. The interchangeable blades are firmly held in a precision made, locking four jaw chuck. The 'stay sharp' blades are made from surgical steel and honed to a close, long lasting, cutting edge.

**Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.**

Retail Unit Price each (inc. VAT).

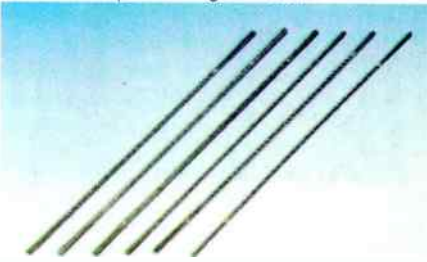
Order Code	Type 3765	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DF90X	Knife Set	£8.850	£8.400	£8.180	£10.400

## SAWS

### Piercing Saw Frame



This is a standard Piercing Saw Frame with a throat depth of 85mm. The saw blades (GU86T) come as a handy assortment of 6 dozen piercing blades. The packet contains 12 of each blade from 3/0-3 (coarse, medium and fine). The blades are secured between clamps with winged screws.



Retail Unit Price each (inc. VAT).

Order Code	Type 11926	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GU85G	Fix Piercing Saw	£5.160	£3.780	£3.390	£6.070
GU86T	Assorted Blades	£4.290	£3.850	£3.590	£5.050

## Junior Hacksaw



A cost-effective, junior sized, adjustable tension hacksaw frame which accepts standard 150mm (6in.) hacksaw blades. The chrome frame, and comfortable black plastic handle is of robust construction and includes a knurled blade-tensioning adjusting nut to provide the means of retaining blade tension.

Retail Unit Price each (inc. VAT).

Order Code	Type 3767	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
GW31J	Junior Saw	£1.290	£0.791	£0.708	£1.520

## Junior



A junior hacksaw with a steel frame and 150mm (6in.) pinned tungsten steel blade. Packs of ten replacement blades are also available.

Retail Unit Price each (inc. VAT).

Order Code	Type 3768	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BR63T	6in Hacksaw	£0.774	£0.500	£0.354	£0.910
BR64U	Hacksaw Blades 150	£1.360	£0.807	£0.728	£1.600

## 150mm Hacksaw



A quality 150mm alloy hacksaw with a plastic padded handle.

Retail Unit Price each (inc. VAT).

Order Code	Type 3773	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RD79L	Alloy Hacksaw 150	£3.460	£3.070	£2.750	£4.070

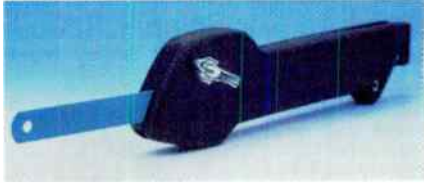
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PHONE BEFORE 5PM FOR SAME DAY DESPATCH

**Tel: 01702 554000**

**Fax: 01702 554001**

**e-mail: Sales@maplin.co.uk**

### Close Quarter Hacksaw



For craftsmen and DIYers, this sturdy, lightweight hacksaw uses standard blades, which can be extended or retracted to suit the job. Even broken blades can be used (minimum length 85mm).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BP60Q	Close Qtr Hacksaw	£2.540	£1.550	£1.320	£2.990

### Standard



A standard hacksaw with a tubular chromed frame adjustable to suit 200mm, 250mm or 300mm blades. The strong metal handle is finished in hammertone blue. Supplied with one blade 250mm x 9.5 teeth per cm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YT12N	Hacksaw	£2.760	£2.490	£2.210	£3.250

### Spare Blades



A pack of six spare blades for the standard hacksaw. Blades are 250mm x 9.5 teeth per cm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JG71N	Hacksaw Blades 250	£1.400	£1.190	£0.980	£1.610

### Tenon Saw



250mm hardpoint tenon saw with a comfortable moulded plastic handle and strengthening steel back. Saw blade length: 250mm  
Max depth of cut: 75mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZC32K	Tenon Saw	£6.060	£5.200	£4.810	£7.130

### Utility Saw and Knife



A multifunction knife and saw for cutting a wide range of materials from paper to steel. The contoured metal handle has a quick release feature for easy interchanging of blades. Accepts standard cutting blades or saw blades and supplied with one coarse, one fine saw blade, and a general purpose blade.

**Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BP62S	Utility Saw & Knife	£2.970	£2.450	£2.270	£3.490

### Plasterboard Saw



A professional quality saw which is purpose made for fast cutting of drywall/plasterboard panels, hardboard, chipboard, etc. The special tapered blade with induction hardened teeth makes the saw particularly suitable for in-situ work in confined areas when cutting curves and circles.

**Please note that under the Offensive Weapons Act 1996 this product cannot be sold to anyone under the age of 16.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BP27E	Plasterboard Saw	£3.490	£3.320	£3.230	£4.110

### Mitre Box and Saw



A quality, precision engineered tool, this mitre box and saw is designed for making accurate joints in wood, plastic and alloys. It is the ideal tool for the enthusiast, useful for making picture frames, door frames, and in fact, all types of mitre work, enabling four, five, six, and eight-sided frames to be made up accurately, using the readily located preset angles. Alternatively, provision is made for those odd angles to be set up. An adjustable clamp is supplied to restrain the workpiece and an end stop or depth guide is supplied to enable identical work to be repeated. A spare saw blade is available.

#### Specification

Maximum width of workpiece 90°:	160mm
Maximum width of workpiece 45°:	110mm
Maximum height of workpiece:	85mm
Table length:	400mm

Blade length:	550mm
Blade width:	45mm
Pre-set angles:	±67.5°, ±60°, ±54°, ±45°, 90°
Overall dimensions (assembled) mitre box with arm at 90°:	487 x 256 x 320mm
saw:	648 x 170 x 52mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RJ06J	10† Mitre Box & Saw	£26.030	£24.920	£23.880	£30.590
RJ09K	3 Saw Blades	£3.780	£3.090	£2.940	£4.450

### DRILLS

### Pistol Grip Hand Drill

Draper



A compact design Hand Drill incorporating a spring loaded three jaw chuck with 8mm capacity. The comfortable polycarbonate pistol grip allows good control on small or intricate work and can be used for storing drill bits when not in use. A 2:1 ratio of the internal gears ensures good performance. Length: 210mm. Weight: 347g.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YP70M	1 Pistol Grip Hnd Drill	£11.600	£11.030	£10.740	£13.640

### Hand Drill



A professional quality double pinion drill with semi-enclosed centre metal frame, lacquered wood side and end handles and plated spring-loaded three-jaw chuck with 8mm capacity. Overall length: 294mm.

Retail Unit Price each (inc. VAT).

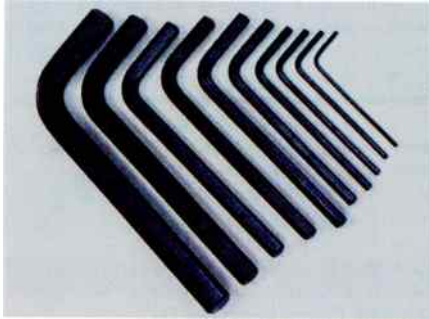
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YNS6L	1 Hand Drill	£9.540	£7.800	£7.180	£11.210

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before  
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## ALLEN KEYS

### Standard Sets

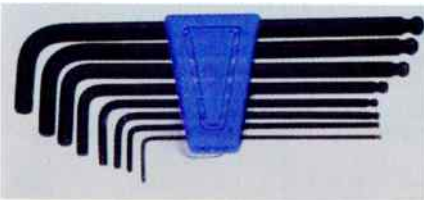


A pack of ten Allen keys available in AF or metric sizes. Both types supplied in a plastic wallet.  
 Sizes: AF - 1/16in., 5/64in., 3/32in., 1/8in., 5/32in., 3/16in., 7/32in., 1/4in., 5/16in. and 3/8in.  
 Metric: - 1.5, 2, 2.5, 3, 4, 5, 5.5, 6, 8 and 10mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3780	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FY34M	Allen Keys AF	£3.020	£2.350	£1.830	£3.560
FY35Q	Allen Keys Metric	£3.020	£2.350	£1.830	£3.560

### Metric Allen Key and Balldriver Sets

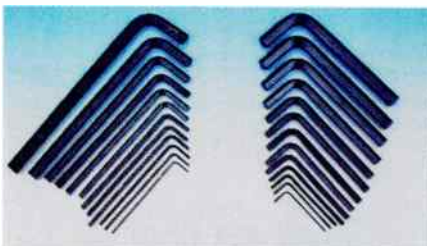


A choice of two sets of Allen Keys that have a balldriver at one end, for all types of socket head screws. The balldriver can be used at an angle up to 25° from the screw centre line, making it easier to access screws in confined places and in equipment with awkward accessibility. Available in sets of eight or ten keys. The eight-key set comprises: 1.5, 2, 2.5, 3, 4, 5, 5.5 and 6mm size keys. The ten-key set comprises: all of the eight-key set plus 8 and 10mm size keys.

Retail Unit Price each (inc. VAT).

Order Code	Type 3781	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
AQ76H	8-Key & Driver Set	£4.330	£3.790	£3.390	£5.090
AQ77J	10-Key & Driver Set	£6.060	£4.950	£4.260	£7.130

### 25-Piece Allen Key Set



A heavy duty Allen key set comprising 13 metric and 12 imperial sizes, that is housed in a convenient plastic tool roll.

Imperial sizes (in.): 3/8, 5/16, 1/4, 7/32, 3/16, 5/32, 9/64, 1/8, 7/64, 3/32, 5/64, 1/16  
 Metric sizes (mm): 10, 9, 8, 7, 6, 5.5, 5, 4.5, 4, 3, 2.5, 2, 1.5

Retail Unit Price each (inc. VAT).

Order Code	Type 3783	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RDR1C 1	25pc Allen Key Set	£4.930	£4.060	£3.690	£5.800

## GorillaGrip Fold Up Tool Sets

### Bondhus

Hexagon, Ballpoint and Torx keys housed in a fibreglass reinforced resin handle which is 40% stronger than steel.

- ★ One piece handle design resistant to heat, cold and chemicals.
- ★ Specially engineered fastening system prevents loosening of the tools.
- ★ Tools manufactured from heat treated high grade chrome vanadium steel.
- ★ Available in 9 variations including:-  
 Metric (hexagon & ballpoint versions)  
 Imperial (hexagon & ballpoint versions)  
 Torx  
 Metric and Imperial combination (hexagon)
- ★ Handles colour coded - red for metric, yellow for imperial, green for Torx and orange for metric + imperial combination.



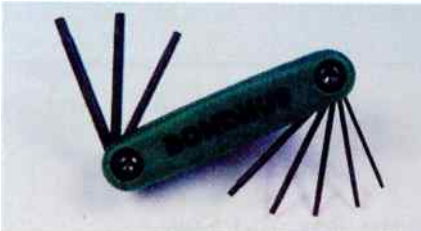
### Metric sizes:

YC03D Hex - 1.5, 2, 2.5, 3, 4, 5 and 6mm.  
 YC00A Hex - 2, 2.5, 3, 4, 5, 6 and 8mm  
 MC12N Ballpoint - 5, 6, 7, 8 and 10mm



### Imperial sizes:

YC02C Hex - 0.050", 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32 and 3/16"  
 YC01B Hex - 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32 and 1/4"  
 MC13P Ballpoint - 3/16, 7/32, 1/4, 5, 16 and 3/8"



### Torx sizes:

YC04E T6, T7, T8, T9, T10, T15, T20 and T25  
 MC14QT9, T10, T15, T20, T25, T27, T30 & T40



### Metric / Imperial Combination:

MC15R 1.5, 2, 2.5, 3, 4 & 5mm  
 5/64, 3/32, 7/64, 1/8, 9/64 & 5/32"

Retail Unit Price each (inc. VAT).

Order Code	Type 12202	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YC03D	GorillaGrip 1.5-6mm	£3.750	£3.560	£3.370	£4.410
YC00A	GorillaGrip 2-8mm	£9.540	£4.270	£4.050	£11.220
MC12N	Bi-point 5.67 8&10mm	£7.790	£7.400	£7.010	£9.160
YC02C	GorillaGrip Imp Sm	£3.750	£3.560	£3.370	£4.410
YC01B	GorillaGrip Imp Lg	£4.350	£4.130	£3.910	£5.120
MC13P	Bi-point - Imperial	£7.790	£7.400	£7.010	£9.160
YC04E	GorillaGrip Torx	£9.500	£9.020	£8.550	£11.170
MC14Q	Torx - T9 - 40	£10.630	£10.110	£9.570	£12.500
MC15R	Metric/Imp Combi	£4.370	£4.720	£4.470	£5.840

## SPANNERS & WRENCHES

### Miniature Nut Spinner Set

Five precision miniature nut spinners in a hinged plastic box with a transparent cover. Handles are chromed and have a swivel cap. Spanners are 3mm, 3.5mm, 4mm, 4.5mm and 5mm. The handles have a hole drilled in them and a bar is supplied which fits in the hole to give extra leverage. All tools are approx. 100mm long.



Retail Unit Price each (inc. VAT).

Order Code	Type 3784	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YW61R	Box Spanner Set	£2.160	£1.400	£1.310	£2.540

### Miniature BA Open-Ended Spanners

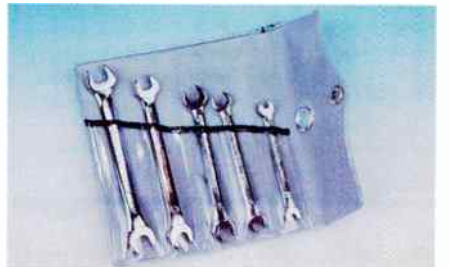


Miniature chrome vanadium open-ended spanners, chrome-plated and polished. Type 24 has 2BA one end, 4BA the other, type 68 has 6BA one end 8BA the other. Overall length: type 24: 79mm; type 68: 79mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3785	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FY36P	Min Spanner 24	£4.340	£4.120	£4.010	£5.100
FY37S	Min Spanner 68	£4.280	£4.060	£3.950	£5.030

### Miniature Metric Open-Ended Spanner Set



A set of five chrome plated open-ended spanners angled at 30° at each end. Sizes are as follows, overall length in brackets. 3.2 x 3.5mm (70mm), 4 x 5mm (80mm), 5.5 x 6mm (90mm), 6.5 x 7mm (100mm), 8 x 9mm (110mm). Packed in a vinyl roll-up wallet.

Retail Unit Price each (inc. VAT).

Order Code	Type 3786	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FA66W	Metric Spanner Set	£10.400	£8.640	£7.960	£12.230



means fast service and best value for money

## Adjustable Spanners



An adjustable spanner in drop-forged steel. Three sizes available.

Overall length:	Max jaw opening:
150mm	19mm
198mm	24mm
250mm	30mm

Retail Unit Price each (inc. VAT).

Order Code	Type 3790	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FY46A	Adjust Spanner 200	£3.020	£1.980	£1.600	£3.560
RJ00A	Adjust Spanner 250	£3.650	£3.020	£2.280	£4.290

Retail Unit Price each (inc. VAT).

Order Code	Type 3790	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FY45Y	Adjust Spanner 150	£2.760	£2.350	£1.940	£3.250

## Self-Gripping Wrench



High quality, 9" standard and 6" long nose wrenches with self-locking, quick-release jaws which are ideal as a third hand when clamping or gripping sheet materials, pipework, nuts, bolts, or other components. Manufactured from chromed alloy steel, with screw adjustment, the standard wrench is 230mm long and the long nosed wrench is 168mm long.

Retail Unit Price each (inc. VAT).

Order Code	Type 3791	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RJ01B	Standard Wrench 230	£3.460	£2.650	£2.280	£4.070
RJ02C	Long Nose Wrench 168	£3.650	£2.650	£2.280	£4.290

## Strap Wrench



Loosens and tightens cylindrical objects such as car oil filters. The strap is fixed around the object, tightened and then leverage applied to the strap in the appropriate direction. The lever length is 205mm with a strap length of 512mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3792	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GK94C	Strap Wrench	£2.590	£2.280	£2.000	£3.050

## Metric Spanner Tool Roll



A set of 11 spanners which have both open and ring ends, the spanners are supplied complete with tool roll for storage. Sizes are 8, 9, 10, 11, 12, 13, 14, 15, 17, 19, 22mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3795	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YZ46A	Open/Ring Span Set	£8.670	£7.550	£6.240	£10.190

## Ratchet Spanner Set



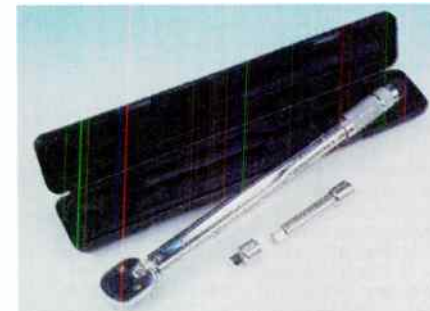
A 5-piece reversible ratchet wrench set contained in a black roll-up wallet. Each tool has two different sized ring spanners at either end. Each spanner has its own ratchet system with its own independent reversing direction lever. Sizes are as follows, overall length in brackets.

- 5.5mm and 7mm heads (113mm)
- 6mm and 8mm heads (140mm)
- 9mm and 10mm heads (173mm)
- 13mm and 14mm heads (204mm)
- 15mm and 17mm heads (233mm).

Retail Unit Price each (inc. VAT).

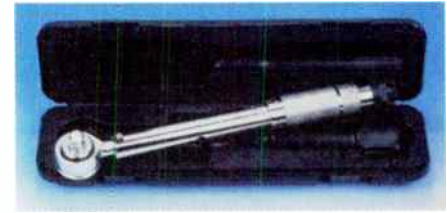
Order Code	Type 3796	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JR18U	Ratchet Spanner Set	£9.440	£7.550	£6.710	£11.100

## Adjustable Torque Wrench



Quality, precision made torque wrenches available with either a 12.7mm (1/2in., code RJ11M) or 10mm (3/8in., code BP83E) square drive. The required torque is set by turning the knurled handle until the

zero mark lines up with the desired setting on the main stem. Both types have a reversible ratchet action and are supplied in a black plastic carry case with instructions and conversion tables.

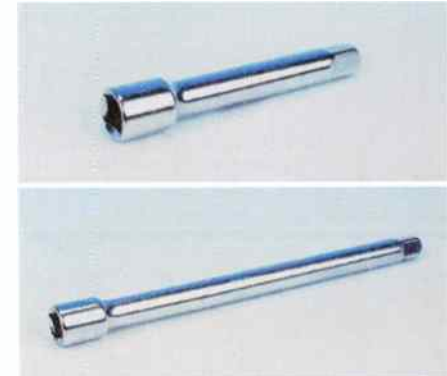


Specification	12.7mm drive (RJ11M)	10mm drive (BP83E)
Torque range:	2.9kg/m to 21.4kg/m	1.4kg/m to 11.1kg/m
Overall length:	470mm	280mm
Supplied extras:	10mm extension	-
	10mm square converter	-

Retail Unit Price each (inc. VAT).

Order Code	Type 11498	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RJ11M	Torque Wrench	£16.990	£16.490	£16.020	£19.900
BP83E	Torque Wrench 3/8	£15.310	£13.790	£13.210	£17.990

## Extension Bars



These extension bars can be used with any wrench or knuckle bar that has a 12.7mm (1/2in.) square drive. Each bar has a 12.7mm (1/2in.) socket at one end of the bar and a 12.7mm (1/2in.) drive at the other. The bars are available in two lengths, 127mm and 240mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3794	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JM41U	127mm Extension	£1.720	£1.480	£1.320	£2.030
JM42V	240mm Extension	£3.020	£2.450	£2.060	£3.560

## Box Spanners

These spanners have a tempered and hardened nickel plated tool steel shaft and good-size plastic handle for a firm grip. Available in four sizes to suit nuts that fit M5, M4, M3 and M2.5 bolts. All types have plastic handles and are 210mm in length.



Retail Unit Price each (inc. VAT).

Order Code	Type 3799	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FV56L	Box Spanner M5	£2.590	£2.130	£1.980	£3.050
FV41U	Box Spanner M4	£2.590	£2.130	£1.980	£3.050
FV57M	Box Spanner M3	£2.590	£2.130	£1.980	£3.050
FY42V	Box Spanner M2.5	£2.590	£2.130	£1.980	£3.050

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## SOCKET SETS

### 7-Piece Star Socket Set



A handy 7-piece star socket set on a convenient wall mounting holder. Set includes E6, E7, E8 (1/4in. drive) and E10, E12, E14, E16 (3/8in. drive).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
FC17T	7pc Star Socket Set	£9.360	£8.250	£7.850	£10.990

### 240mm T-Handle



A tommy bar fitted with a 12.7mm (1/2in.) sliding driver head. End-stops prevent the head from sliding off the bar.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JR62S	Tommy Bar	£2.160	£1.880	£1.620	£2.540

### Universal Joint

A universal joint that can be used in conjunction with a 12.7mm (1/2in.) head knuckle bar or a socket wrench.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JR61R	Unijoint	£1.760	£1.480	£1.320	£2.070

### Deep Socket Set



An 8-piece set of high quality extra deep sockets, for use with 6.35mm (1/4in.) drive, manufactured in chrome-vanadium steel and chrome-plated. The set contains the following sizes: 5.5, 6, 7, 8, 9, 10, 12, 13mm. The set includes a storage rack.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RJ10L	Deep Socket Set	£6.060	£4.960	£4.110	£7.130

### 8-Piece Long Reach Socket Set



An 8-piece 12.7mm (1/2in.) long reach socket set supplied on a storage rail. Sockets are good quality chrome plated vanadium steel.

Sizes: 13, 14, 16, 17, 19, 21, 22, 24mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZC65W	8pc L/R Socket Set	£15.290	£10.870	£9.680	£13.010

### 11-Piece Long Reach Socket Set



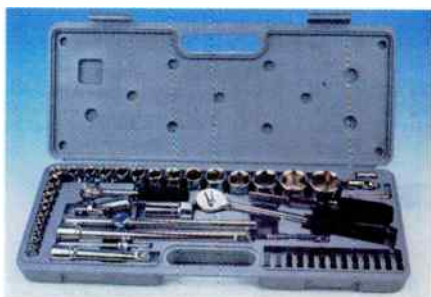
An 11-piece 9.5mm (3/8in.) long reach socket set supplied on a storage rail. Sockets are good quality chrome plated vanadium steel.

Sizes: 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZC68Y 2	11pc L/R Socket Set	£10.400	£9.260	£8.430	£12.230

### 52-Piece Socket Set



A high quality 52-piece 6.35mm (1/4in.) and 12.7mm (1/2in.) square drive socket set containing a large selection of metric sockets and fittings.

Suitable for use in many applications such as maintenance, assembly and service, whether in the field or workshop. Manufactured from chrome vanadium steel and bright chrome-plating, the set includes one 6.35mm (1/4in.) and one 12.7mm (1/2in.) ratchet handle, one 6.35mm (1/4in.) and one 12.7mm (1/2in.) sliding T-bar, one 6.35mm (1/4in.) and two 12.7mm (1/2in.) extension bars, one 6.35mm (1/4in.) and one 12.7mm (1/2in.) universal joint, one spinner ratchet handle for hex driver bits, a hex to 6.35mm (1/4in.) adaptor, and a spark plug socket. Supplied complete in a tough moulded

plastic carrying case. The sockets, hex bits and keys are of standard size as follows:-

**12.7mm (1/2in.) Square Sockets:**

10, 11, 12, 13, 14, 15, 17, 19, 22, 24, 27, 30, 32mm.

**6.35mm (1/4in.) Square Sockets:**

4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 11, 13mm.

**6.35mm (1/4in.) Hex Bits:**

Flat blade: 4.5, 5, 7mm.

Phillips crosspoint: Nos. 1, 2, 3.

Hexagon: 3, 4, 5, 6, 7, 8mm.

**Allen Key Wrenches:**

1.5, 2, 2.5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GW38R0	52-Piece Toolkit	£23.420	£19.510	£17.640	£27.530

### 101-Piece Socket Set



A high quality 101-piece 6.35mm (1/4in.) and 12.7mm (1/2in.) square drive socket set containing an extensive range of metric sockets, hex bits and various fittings. Suitable for use in many different applications including maintenance, assembly and service, whether in the field or workshop.

Manufactured from chrome vanadium steel and bright chrome-plating, the set includes eleven combination spanners, four double-socket spanners, one 6.35mm (1/4in.) and one 12.7mm (1/2in.) ratchet handle, one 6.35mm (1/4in.) and one 12.7mm (1/2in.) sliding T-bar, two 6.35mm (1/4in.) and two 12.7mm (1/2in.) extension bars, one 6.35mm (1/4in.) and one 12.7mm (1/2in.) universal joint, one spinner ratchet handle for hex driver bits, one hex extension bar, .25" flexible EXT bar, a hex to 6.35mm (1/4in.) adaptor, and a spark plug socket. Supplied complete in a tough moulded plastic carrying case. The sockets, hex bits and keys are as follows:-

**12.7mm (1/2in.) Square Sockets:** 10, 12, 13, 14, 15, 16, 17, 18, 20, 21, 23, 24, 27, 32mm.  
3/8, 7/16, 1/2, 9/16, 11/16, 3/4, 13/16, 7/8, 13/16in. A/F.

**6.35mm (1/4in.) Square Standard Sockets:** 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 11, 12, 13mm.

**6.35mm (1/4in.) Square Long Sockets:** 4, 5, 6, 7, 8, 9, 10, 11, 13mm.

**6.35mm (1/4in.) Hex Bits:**

Flatblade: 4.5, 6mm.

Phillips crosspoint: Nos. 1, 2, 3.

Pozidriv/Supadriv crosspoint: Nos. 1, 2, 3.

Hexagonal: 1.5, 2, 2.5, 3, 4, 5, 5.5, 6mm.

Torx: T10, T15, T20, T25, T27, T30, T40.

**Combination Spanners:**

7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19mm.

**Double - Socket Spanners:**

8 x 9, 10 x 11, 12 x 13, 14 x 15mm.

**Allen Key Wrenches:**

1.5, 2, 2.5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3612	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GW36P16	101-Piece Toolkit	£55.310	£45.910	£38.720	£54.990

**TOOL KITS**

**Interchangeable Utility Set**

A very useful set of small tools all of which fit into screwdriver-type body.

19 different tools:

Box spanners 3mm, 3.5mm, 4mm, 4.5mm, 5mm

Open-ended spanners 4mm, 4.5mm, 5mm, 5.5mm, 6mm; Allen keys 1.5mm, 2mm, 2.5mm;

Pozidrive screwdriver size 0 and size 1; Flat blade screwdrivers (blade widths) 1.5mm, 2.5mm, 3.5mm;

and an Awl. These miniature precision tools (all approx. 50mm long; handle 92mm long) are supplied in a hinged plastic case.



Retail Unit Price each (inc. VAT).

Order Code	Type 3610	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FY08J	Utility Set	£4.760	£3.440	£3.070	£5.600

**Universal Driver Set**



A comprehensive 17-piece tool set in a plastic storage case with hinged, perspex lid. The driver set comprises a range of six flat blade screwdrivers in 1.0mm, 1.4mm, 2.0mm, 2.4mm, 3.0mm and 3.8mm sizes, plus a range of four cross-head drivers in 2.0mm diameter and 2.5mm diameter versions of size 0, and 3.0mm and 4.0mm diameter versions of size 1. In addition there are three Allen keys of 1.5, 2.0 and 2.5mm, and three metric nut spinners of 3.0, 4.0 and 5.0mm. There is also a 35mm long steel tommy bar for use with the Allen keys and nut spinners. The case measures 210 x 148 x 22mm. Weight 455g.

Retail Unit Price each (inc. VAT).

Order Code	Type 3618	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YJ26D	Universal Driver Set	£6.060	£4.110	£3.590	£7.130

**Precision Micro Tool Set**



A black plastic box with a transparent slide-on lid containing a selection of useful tools. The set contains a pair of long-nose pliers with serrated jaws, cutter and sprung insulated handles, overall length 130mm; a pair of cutters with sprung insulated handles, overall length 112mm; six flat-blade screwdrivers sizes 1.0mm, 1.4mm, 2.0mm, 2.4mm, 3.0mm and 3.8mm; six Phillips

screwdrivers, a 1.4mm diameter and a 1.6mm diameter version of size 00, a 2.0mm diameter and a 2.4mm diameter version of size 0, and a 3.0mm diameter and a 3.8mm diameter version of size 1; a glass magnifier, a pair of steel tweezers with serrated grip; a small hammer with one plastic and one metal face; and a pearl catcher.

Retail Unit Price each (inc. VAT).

Order Code	Type 3624	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FK52G	Micro Tool Set	£11.270	£8.840	£7.960	£13.250

**Students Tool Kit**



A 15-piece tool kit ideal for electronics courses at schools and colleges, and for electronics hobbyists. The kit includes a 25W soldering iron with two interchangeable bits (flat and pointed), a detachable hook and small fold-up stand, desoldering tool, a supply of solder and a pot of flux. For working on PCBs and delicate equipment, a 'helping hands', a 'scraper' and a wire wrap tool are included. To help in assembly and repair of most work and projects, two crosspoint and two standard screwdrivers are included, a pair of pliers and wire cutters, and for delicate work, a pair of tweezers. Housed in a grey plastic box with handles and two catches, the tools are held in 'cut-outs' to keep them secure during transit.

Retail Unit Price each (inc. VAT).

Order Code	Type 3641	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
EZ60Q 3	Students Tool Kit	£21.690	£15.610	£13.730	£25.490

**Hobbyists Starter Tool Kit**



An easily affordable tool kit for the new electronics hobbyist, packaged to suit the typical needs of the beginner and offering considerable savings over buying the items separately. Presented in a cloth toolroll, the pack contains: side cutters; pair of long-nosed pliers with wire cutter; light-duty flat blade screwdriver 75mm long; No. 1 crosspoint screwdriver 75mm long; desoldering tool; and an Antex soldering kit with a CS iron, stand and 5m pack of 18swg multicore solder. Start as you mean to go on, with the right tools.

Retail Unit Price each (inc. VAT).

Order Code	Type 3643	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
SK01B 1	Starter Tool Kit	£25.160	£21.800	£20.710	£29.570

**Advanced Tool Kit**



Contained in a large, plastic tool box, the advanced tool kit comprises: side cutters; pair of long-nosed pliers with wire-cutter; light-duty, 100mm long flat blade screwdriver; 75mm long chrome-vanadium 5mm wide flat blade screwdriver; No. 0 and No. 1 75mm long crosspoint screwdrivers; No. 2 100mm long crosspoint; easy-to-use, combined wire stripper and cutter tool; and an Antex soldering kit with a CS iron, stand and 5m pack of 18swg multicore solder.

Retail Unit Price each (inc. VAT).

Order Code	Type 3644	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
SK02C 5	Advanced Tool Kit	£33.840	£29.080	£27.420	£39.770

**Engineer's Tool Kit**



Contained in a large, plastic tool box, this comprehensive engineer's tool kit comprises: side cutters; pair of long-nosed pliers with wire-cutter; pair of heavy-duty electricians pliers; 75mm long chrome-vanadium 5mm wide flat blade screwdriver; a set of long shaft screwdrivers (2 flat blade and 1 crosspoint); light-duty, 100mm long flat blade screwdriver; 75mm long No. 1 crosspoint screwdriver; 100mm long No. 2 crosspoint screwdriver; an 11-piece precision screwdriver set, in their own case; a preset trimmer tool; a retractable blade knife; combined wire stripper and cutter tool; a junior hacksaw; needle file set in plastic wallet; a 150mm (6in.) stainless steel rule; desoldering tool; and an Antex soldering kit with an XS iron, stand and 5m pack of 18swg multicore solder.

Retail Unit Price each (inc. VAT).

Order Code	Type 3648	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
SK03D 5	Engineers Tool Kit	£47.730	£39.950	£37.140	£56.090

PHONE/FAX for next day delivery **PHONE: 01702 554000**  
by 5pm **FAX: 01702 554001**

## PC Service Kit

Xcellite



A 12-piece tool kit that is ideal for repairs on PCs, as it contains antistatic tools, so protecting sensitive ICs etc. from ESD damage. All the tools fit securely into a vinyl roll-up pouch.

### Contents

- Handle: 1
- Phillips screwdrivers: 2 (Nos. 0 and 1)
- Slotted screwdriver: 1 (5mm)
- 'Torx' head screwdrivers: 2 (Size T10 and 15 with 75mm blades)
- Nutdrivers: 2 (8mm and 6.35mm)
- Antistatic chip tools: 4 (3-prong chip retriever/extractor, chip tweezers, chip inserter and chip extractor)

Retail Unit Price each (inc. VAT).

Order Code	Type 3848	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
DF85G	12 Piece Service Kit	£42.500	£40.370	£39.310	£49.940

## Multi-Purpose Tool Kit

Xcellite



A 39-piece tool kit containing an assortment of quality screwdriver, nutdriver and other blades which can be fixed into either of the two purpose made handles supplied in the kit. All blades are high carbon steel with highly polished nickel-chrome finish, except the 'Bristol' and 'Allen Hex' types, which are precision formed, cold drawn, case hardened steel. The plastic handles have a patented spring device that holds the blades firmly, yet permits quick, easy insertion and removal. Supplied in a plastic coated canvas case that folds into a compact package which is secured by a permanently attached loop. There are two additional pockets for pliers, snips etc.

### Contents

- Regular handle: 1 (amber)
- Tee handle: 1 (black)
- Reamer: 1 (3.2 x 9.5mm (1/8 x 3/8 in.))
- Extension: 1 (adds 100mm)
- Magnetic nutdriver: 1 (6.35mm (1/4 in.))
- Nutdrivers: 9 (up to 12.7mm (1/2 in.))
- Allen hex screwdrivers: 9 (up to 12.7mm (1/2 in.))
- Bristol multi spline: 9 (up to 12.7mm (1/2 in.))
- Slotted screwdrivers: 4 (3.2, 4.8, 6.35 and 8mm (1/8, 3/16, 1/4 and 5/16 in.))
- Phillips screwdrivers: 3 (Nos. 1, 2 and 3)

Retail Unit Price each (inc. VAT).

Order Code	Type 3815	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
DF89W	39 Piece Tool Kit	£195.000	£185.250	£180.370	£229.130

## Professional Tool Kit

Xcellite



A high quality tool kit in a handy zip-up wallet that will suit most service needs. The kit is available with either the Weller Junior butane gas soldering iron (DF57M) and gas refill (DF70M) or the Weller T400 240V AC soldering iron (DF51F).

### Contents

- Handle: 1
- Flat screwdrivers: 3 (3.2mm, 6.35mm and 8mm)
- Phillips screwdrivers: 2 (No. 0 and 1)
- Adjustable wrench: 1 (150mm)
- Wire stripper: 1
- Needle nose plier: 1
- Midget semi-flush cutter: 1
- Fine point tweezers: 1
- Desolder pump: 1
- Solder: Length of 20swg
- Tape measure: 5m/16ft.
- Notebook: 1

Manufacturer's Code	Soldering Iron supplied	MPS Code
ESK-1	Weller Junior	DF86T
ESK-2	Weller 240V AC	DF87U

Retail Unit Price each (inc. VAT).

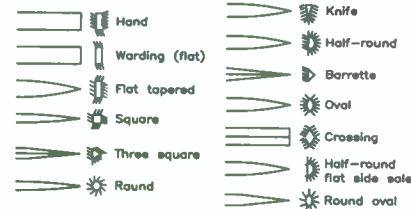
Order Code	Type 3847	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
DF86T	Tool Kit ESK-1	£215.000	£204.250	£198.870	£252.630
DF87U	Tool Kit ESK-2	£180.000	£171.400	£166.500	£211.500

## METALWORKING TOOLS

### Needle File Set 140mm



A plastic wallet containing twelve needle files of various types. All types are 140mm long, cut length: 65mm. A selection of some of the following types are supplied. Hand, flat warding, flat tapered, square, threesquare, round, knife, half-round, half-round flat-sided safe, barrette, oval, and crossing.



Retail Unit Price each (inc. VAT).

Order Code	Type 3852	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YW63T	Needle File Set	£4.330	£2.600	£2.030	£5.090

**Urgent Requirement?**  
Call and collect from your local Maplin store.

## Needle File Set 170mm



A blue plastic wallet containing 6 needle files of various sizes. All types are 170mm long, have an 85mm working surface and are fitted with a tough blue moulded handle. The six files supplied include the following: hand, square, round, half round, medium triangular and coarse triangular.

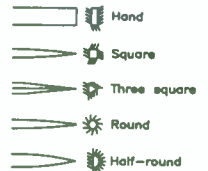
Retail Unit Price each (inc. VAT).

Order Code	Type 3857	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KW26D	Needle File Set 170	£4.330	£2.600	£2.030	£5.090

## Needle File Set 180mm



A plastic wallet containing five needle files of various types. All types are 180mm long, cut length 85mm. Types supplied are hand, square, threesquare, round, and half-round.



Retail Unit Price each (inc. VAT).

Order Code	Type 3858	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JH42V	Warding File Set	£4.330	£2.600	£2.030	£5.090

## Diamond Needle File Set



A set of very high quality, industrial standard, needle files coated with diamond grit enabling them to file materials such as tungsten carbide, ceramics, carbon, glass, hardened steels, etc. The set comprises five of the more popular profiles; flat,



tapered square, tapered round, tapered triangular, tapered half-round. The files are 140mm long. Supplied in a vinyl wallet.

Retail Unit Price each (inc. VAT).

Order Code	Type 3810	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GW32K	Diamond Files	£7.800	£6.190	£5.470	£9.170

## Needle File Handle with Collet



A triangular shaped plastic handle with collet that will accept all regular needle files.

Retail Unit Price each (inc. VAT).

Order Code	Type 11300	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GU89W	Collet File Handle	£2.590	£2.330	£2.180	£3.050

## Automatic Centre Punch



A professional quality automatic centre punch that can be used on iron plate, wood and a variety of other hard materials, and is used to mark or pierce work, particularly prior to drilling holes.

An automatic centre punch does the same task as a conventional centre punch but in a slightly different manner. The tool point is positioned on the required intersection and then pushed down. This automatically releases a striking block which punches the point into the metal. The force can be adjusted by turning the knurled adjuster at the opposite end to the point. Length: 125mm. Weight: 78.5g.

Retail Unit Price each (inc. VAT).

Order Code	Type 3065	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
F536E	HQ Centre Punch	£5.790	£5.510	£5.360	£6.810

## Chassis Punch Set

A set of five punches for thin tin or aluminium sheet up to 1.6mm thick. The punches make it easy to make neat round holes where drills are not practical. Sizes are 16, 18, 20, 25 and 30mm. The set is supplied with a reamer.



Retail Unit Price each (inc. VAT).

Order Code	Type 3866	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YK27E 1	Chassis Punch Set	£28.630	£26.210	£25.070	£33.650

## Sheet Metal Punches

A range of sheet metal punches for cutting perfect holes in stainless and mild steel up to 16swg (1-62mm), sheet copper, brass, and aluminium up to 2-0mm, and many other sheet materials, ductile plastics etc. These sheet metal cutters are ideal for electricians, electronic engineers, plumbers, vehicle mechanics, in fact anywhere that requires clean, accurate and burr-free holes. At the centre of where the hole is to be punched, a hole is drilled large enough to clear the Allen screw of the punch to be used. The punch is assembled with the panel between the two parts of the punch, and the Allen screw is tightened, with a suitable Allen key (not supplied), until the hole is cleanly punched out.



Sizes available (mm)	Allen Key required A/F
12.5	6mm
16	6mm
20	8mm
22.5	8mm
25	8mm
32.5	10mm

Retail Unit Price each (inc. VAT).

Order Code	Type 3868	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KR29G	Metal Punch 12.5	£4.500	£4.000	£3.830	£5.290
BA66W	Metal Punch 16	£4.500	£4.000	£3.830	£5.290
BA67X	Metal Punch 20	£5.520	£4.750	£4.500	£6.490
BA68Y	Metal Punch 22.5	£5.520	£4.750	£4.500	£6.490
BA69A	Metal Punch 25	£5.770	£4.950	£4.700	£6.780
BA70M	Metal Punch 32.5	£6.800	£5.850	£5.550	£7.990

## Reamer

A hand operated, tapered reamer for finishing and deburring panel holes. Made from carbon-chrome alloy steel, it may also be useful in opening holes out to non-preferred diameters. Will cover holes from 3mm up to 12mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 3888	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FG11M	Reamer	£5.200	£4.430	£4.110	£6.110

## Pipe Cutter



A pipe cutting tool that cuts copper, brass, aluminium tubing and thin-wall conduit. It is able to cut tubing of 3mm to 30mm diameter. A spare cutting blade and burr remover is also supplied.

Retail Unit Price each (inc. VAT).

Order Code	Type 3871	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GK33B	Pipe Cutter	£5.200	£4.630	£3.960	£6.110

## Tinmans Shears



These professional quality tinmans shears are ideal for use on soft lightweight sheet metals such as tin, aluminium, zinc, copper, silver, gold, etc. With an overall length of 180mm, these quality shears have straight, drop forged, selected tool steel blades. If after extensive use they become dull, they can be re-sharpened with a file or grinding wheel.

Retail Unit Price each (inc. VAT).

Order Code	Type 10218	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BP00A	Tinmans Shears	£7.680	£7.480	£7.290	£9.260

## Metal Sheet Folding Tool

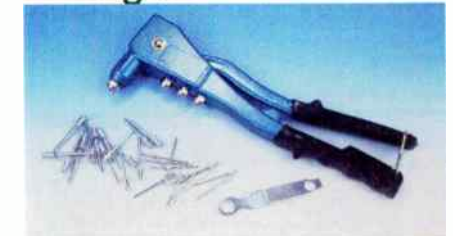


A heavy duty manual sheet metal folding machine made from thick steel plate and angle sections. It is particularly useful for producing metal boxes and brackets. A slotted former bolted to the jig holds the sheet metal to be bent, in place, the slots being occupied by previously bent sections. This arrangement allows 33 different widths of box to be produced, ranging from 10mm to 420mm. The former also has eccentric adjustment screws to allow for different thicknesses of metal. Sheet steel of up to 0.6mm thick, and aluminium to 1.5mm thick or less, can be safely bent. The folder must be bolted down securely at 4 points before use. It is supplied with two steel handle bars (used to operate the pivoted bending mechanism) and full operating instructions.

Retail Unit Price each (inc. VAT).

Order Code	Type 3872	Price each exc. VAT			inc. VAT each
		1+	2+	5+	
GK13P 15	Metal Folder	£78.110	£70.750	£63.460	£91.790

## Riveting Kit



A useful riveting kit comprising a heavy-duty hand riveter with four heads and a spanner, plus an assortment of rivets. The riveter is made from two alloy castings with black plastic handles, one of which has a pocket to store the spanner. The rivet sizes supplied are 2-4, 3-2, 4-0 and 4-8mm. The colour may vary from that shown.

Retail Unit Price each (inc. VAT).

Order Code	Type 0102	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
RJ07H 1	Riveter Kit	£8.500	£6.450	£5.850	£9.990

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This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

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Export carriage charges (1.2 etc.) and price information see back of catalogue. † symbol in price block indicates While Stocks Last.

## Tap Wrench

A general purpose 'T'-type tap wrench with nickel-plated body and jaws and a black barrel. The jaws open from 3mm to 8mm. Supplied with instructions for use.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JK88V	Tap Wrench 1/16-3/16	£3.560	£3.390	£3.300	£4.190

## Taps

A range of hand taps for cutting metric threads. Manufactured in high carbon steel with accurately cut threads. Each set contains a taper and a bottoming plug. The following thread sizes are available: M2, M2.5, M3, M3.5, M4 and M5 to suit our range of bolts (M3.5 is size of thread in electrical boxes).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JK89W	Hand Tap 2mm	£3.390	£3.220	£3.140	£3.990
JK90X	Hand Tap 2.5mm	£3.390	£3.220	£3.140	£3.990
JK91Y	Hand Tap 3mm	£3.390	£3.220	£3.140	£3.990
JK92A	Hand Tap 3.5mm	£3.390	£3.220	£3.140	£3.990
JK93B	Hand Tap 4mm	£3.390	£3.220	£3.140	£3.990
JK94C	Hand Tap 5mm	£3.370	£3.210	£3.120	£3.970

## Die Holder



A die-cast aluminium die holder for use with the dies shown below. Holds dies of 20mm diameter. Overall length: 170mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JK81C	Die Holder 13/16	£4.720	£4.480	£4.370	£5.550

## Dies

Circular dies manufactured from high carbon steel with accurately cut threads. The following thread sizes are available: M2, M2.5, M3, M3.5, M4 and M5 to suit our range of nuts (M3.5 is size of thread in electrical wall plates etc.).



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JK82D	Split Die 2mm	£4.280	£4.070	£3.970	£5.040
JK83E	Split Die 2.5mm	£4.280	£4.070	£3.970	£5.040
JK84F	Split Die 3mm	£4.280	£4.070	£3.970	£5.040
JK85G	Split Die 3.5mm	£4.280	£4.070	£3.970	£5.040
JK86T	Split Die 4mm	£4.280	£4.070	£3.970	£5.040
JK87U	Split Die 5mm	£4.280	£4.070	£3.970	£5.040

## Cutting Compound

A general purpose cutting compound for use with drills, taps, dies and other cutting tools. The cutting compound gives enhanced performance when cutting metals and other hard materials and also prolongs the life of the cutting tool itself. Supplied in a 30cc container with nozzle applicator.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	12+	36+	1+
JU38R	Cutting Compound	£2.590	£2.130	£1.970	£3.050

## MEASURES & LEVELS

### Circular Spirit Level



A compact circular (43mm diameter) spirit level.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BP61R	Surface Spirit Level	£1.090	£0.990	£0.880	£1.290

### Circular Level

A top mounted circular level allowing adjustment in all directions without re-positioning the level. The level is suitable for levelling domestic appliances, hi-fi equipment, caravans and trailers etc. Fixing holes are provided for permanent fixing to the equipment if required. Overall diameter: 30mm. Fixing hole spacing: 21.5mm.

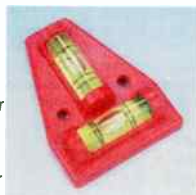


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YP55K	Circular Level	£2.590	£1.960	£1.740	£3.050

### Multi Level

A level with the reading vials set at right angles to each other to allow adjustment in all directions without re-positioning the level. The level is suitable for levelling domestic appliances, hi-fi equipment, caravans and trailers etc. Fixing holes are provided for permanent attachment to the equipment.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
YP56L	Multi Level	£3.890	£3.060	£2.740	£4.580

## Pocket Level



A 250mm spirit level, fitted with ultrasonically sealed acrylic multi-way vials. Accuracy is 1mm per 1m (=0.058°).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KR43W	Pocket Level	£6.060	£5.160	£4.630	£7.130

## 23cm (9in.) Spirit Level



A tough, lightweight plastic non-conductive, non-corrosive, spirit level that will not mark wood surfaces, or scratch paint on household appliances. The level is fitted with three large acrylic vials with etched graduations for improved visibility.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RZ77J	9in Spirit Level	£3.390	£2.510	£2.360	£3.990

## Steel Tape Rule



A metal tape rule marked in inches and metres. It has a smart black plastic case, contoured to fit neatly in the hand. The rule has a coil spring return to retract the tape and a lock mechanism to keep it extended at the required length. The case has a chromed belt clip. The tape rule is available in two lengths, 3m (10ft.) and 5m (16ft.) rule: overall size is 58 x 55 x 23mm (excluding belt clip) and tape is 12.5mm wide. 5m rule: overall size 67 x 65 x 30mm (excluding belt clip) and tape is 18mm wide. Both types have sliding tips for accurate internal and external measurements. Please note appearance of these items may change

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FY59P	Tape Measure 3m	£1.720	£1.310	£1.140	£2.030
JM80X	Tape Measure 5m	£2.850	£2.400	£2.030	£3.360

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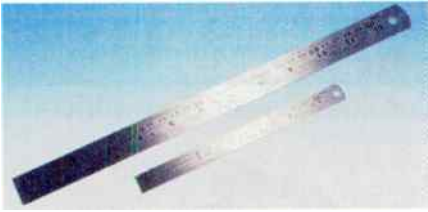
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**Steel Rules**



150mm (6 in.) and 300mm (12 in.) stainless steel rules having both imperial and metric graduations on one side and conversion tables on the reverse side.

Retail Unit Price each (inc. VAT).

Order Code	Type 3038	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FAG9A	6in Strless Stl Rule	£1.720	£1.140	£0.832	£2.030
FT75S	12in Strless Stl Rule	£2.590	£1.980	£1.560	£3.050

**Ultrasonic Tape Measure (Range Finder)**



A precision made, fast and convenient measuring device in matt black ABS with a range from 61cm to 13.72m or 2 feet to 45 feet. A slide switch instantly converts any measurement from metric to imperial or vice versa. The range finder measures from the rear of the case to the target, and is very easy to use.

If you want to measure the area or volume of a space, the range finder has three memories to allow this to be done. The memories are not cleared when the unit is switched off and can be recalled at any time.

A '+' key and '-' key allow you to add to or subtract from measurements stored in memory (providing units are the same, e.g. both metric). If the sonic signal is not cleanly reflected, or the range is over the maximum, the display shows 'error'.

A low battery indicator shows on the display when the batteries need replacing.

**Specification**

- Range: 61cm to 13.72m, 2ft. to 45ft.
- Accuracy: Better than 0.5% reading at 4.21m, 13.81ft. at 25°C
- Resolution: 1cm, 0.1ft.
- LCD: 7-digit, indicates measurement being taken
- Sensor: Polaroid ultrasonic sensor
- Power saving: Automatic shut off after 1 minute
- Memories: 3 non-volatile memories for length, width and height (memory is retained after switch off)
- Volume: Single key calculation
- Area: Three key calculation
- Other features: Allows addition or subtraction of results. Automatic and accurate temperature compensation from 0°C to 40°C. Beep tone indicates measurement is complete. Error tone and LCD indicator if measurement fails. Easy to use 10 key panel.
- Battery life: 1 year in normal use
- Size: 127 x 66 x 27mm (length of unit automatically incorporated in

measurement)  
Weight: 156g with batteries  
The range finder requires four AAA cells to operate (not supplied).

Retail Unit Price each (inc. VAT).

Order Code	Type 3038	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YU01B	Electronic Measure	£26.030	£23.040	£21.850	£30.590

**DRAFTING AIDS**

**Templates**



**Type 116:** A template for circles from 1 to 5mm in 0.5mm steps and circles from 5 to 35mm in 1mm steps. The template is made from transparent tinted plastic and is marked with metric and imperial units, and centre guide lines. Size 240 x 120 x 1.2mm.

**Type 175:** Flowcharting template incorporates 32 of the most commonly used computing/data preparation symbols and is made from transparent tinted plastic. Size: 190 x 100 x 1.2mm.

A range of green-transparent, 1mm thick butyrate, templates with raised bosses on the underside, to prevent ink spread.

**Type 1139S:** Electronic: Containing logic and electronic symbols in two sizes to suit 0-1 or 0-2in. grids. Size 165 x 95mm.

**Type 1173S:** Square: With 34 squares from side length 2 to 35mm, with centre lines. Size 242 x 125mm.

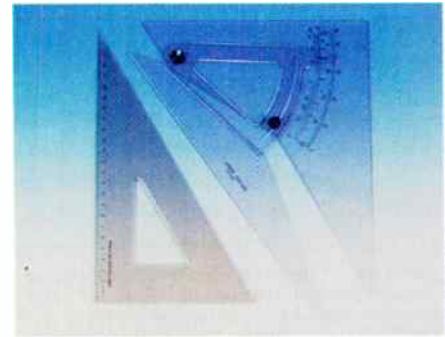
**Type 7857:** Lettering: Upper case, numbers and arrow heads in 3-5, 5 and 7mm heights. Size: 250 x 60mm.

**Type 1170S:** Combination: A useful collection of circles, hexagons, squares, and triangles for layouts. Size: 130 x 87mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 0314	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RC22Y	116 Circle	£3.630	£3.330	£2.920	£4.270
RC23A	175 Flowchart	£3.020	£2.750	£2.400	£3.560
RC36P	1139S Electron	£11.440	£10.400	£9.160	£13.450
RC37S	1173S Square	£11.970	£10.920	£9.630	£14.070
RC38R	7857 Letter	£10.840	£9.930	£8.740	£12.740
RC39N	1170S Combi	£7.450	£6.810	£5.990	£8.760

**Set Squares**



A range of high quality squares made from transparent tinted plastic.

Type	Angle	Rule length (cm)	Thickness (mm)
625	60°	23.5	2.5
628	60°	26.5	2.75
632	60°	30.5	2.75
425	45°	16.5	2.5
428	45°	18.5	2.75
432	45°	21.5	2.75

**Type 216:** A 45° set square with a 7-0-7cm rule and 180° protractor, the central zero position of the rule is coincident with the centre of the protractor. Dimensions: longest side: 160mm, thickness: 1.6mm.

**Type 1120/10B:** An adjustable set square, made from glass-clear Dunilon, with a bevel edge and adjustable from 0 to 45°. The angle can be read from the graduated arch which is precision divided into half-degrees, tangent and secant.

Retail Unit Price each (inc. VAT).

Order Code	Type 3840	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RC26D	Square 625	£1.660	£1.520	£1.440	£1.960
RC27E	Square 628	£1.810	£1.660	£1.580	£2.130
RC28F	Square 632	£1.960	£1.760	£1.670	£2.340
RC29G	Square 425	£1.660	£1.520	£1.440	£1.960
RC30H	Square 428	£1.810	£1.660	£1.580	£2.130
RC31J	Square 432	£1.960	£1.760	£1.670	£2.340
RC25C	Square 216	£1.020	£0.936	£0.895	£1.210
RC40T	1120/10B	£10.400	£9.210	£8.640	£12.230

**Protractor**

Linex



A 180° protractor, made of transparent tinted plastic, with clockwise and anti-clockwise markings and accessible centre point. 100mm diameter.

Price each shown, but sold only in multiples of 1.

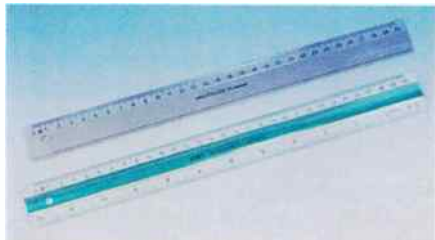
Order Code	Type 3839	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RC24B	Protractor	£0.800	£0.736	£0.697	£0.940

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## Rulers

Linex



**Type 130 and 140:** Transparent tinted plastic rulers with metric scale and hanging hole. Type 130 has a 30cm scale and type 140 has a 40cm scale.  
**Type S30M1:** A 30cm ruler made from crystal-clear acrylic, with metric and imperial scales and a built-in non-slip rubber strip.

Retail Unit Price each (inc. VAT).

Order Code	Type 3842	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RC32K †	Ruler 130	£0.800	£0.738	£0.697	£0.940
RC41U	Rule S30M1	£5.200	£4.680	£4.440	£5.110
RC33L †	Ruler 140	£1.460	£1.310	£1.230	£1.720

## Multipurpose Ruler



A versatile multipurpose ruler with a host of useful features. Convenient for use at school, in the office or the home, for applications that involve the accurate measurement of distances or angles. This ruler is not only for measuring, it enables you to draw perfect straight lines due to its unique roller action. The ruler may be moved up or down a fixed distance which, together with its rectifying lines, allows you to draw perfectly parallel lines of any length and distance apart. The ruler section is marked with both metric and imperial graduations. The fixed circle template allows circles of between 1 and 10mm to be easily and quickly drawn. Larger circles are also possible by use of the compass feature. The many features of this compact ruler include ruler, compass, set square, fixed circle template, protractor and rectifying lines. Various spirograph functions are also possible, which are described in the manual supplied. Overall dimensions of ruler: 150 x 65 x 15mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5607	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RJ74R	Multipurpose Ruler	£4.760	£4.060	£3.590	£5.600

## Pencil Compasses

Linex



**Type 76C:** For circles up to 390mm, fast acting adjustment screw, supply of leads.  
**Type 72:** Strong, good quality, 140mm compass with knee joint and supply of leads. Suitable for 3.5mm diameter inserts.

Retail Unit Price each (inc. VAT).

Order Code	Type 3845	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RC35Q †	72 Compasses	£5.020	£4.560	£4.310	£5.910
RC34M	76C Compasses	£9.670	£7.800	£7.330	£10.190

## Air Brush Kit



This quality airbrush is the ideal gift for the hobbyist, craftsman, artist, modeller and DIY enthusiast. The comprehensive kit comprises an airbrush, 1.5m (5ft.) long air hose, glass paint bottle with attachment, spare paint bottle, propellant cap with air supply valve for setting airflow volume and one canister of propellant. The airbrush is fitted with an adjustable paint nozzle for controlling the spread and a spring-loaded push-button valve for controlling the air flow.

Retail Unit Price each (inc. VAT).

Order Code	Type 3506	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
GW46A †	Airbrush	£14.450	£10.060	£8.950	£16.990

## POWER TOOLS

### CORDLESS DRILLS / DRIVERS

#### Cordless Power Screwdriver

Black & Decker



- ★ 2.4V battery pack
- ★ Reversing
- ★ Shaft lock
- ★ Wall mounting
- ★ Supplied with charger
- ★ Supplied with double-ended screwdriver bit

A compact, yet powerful, cordless screwdriver with numerous applications where screws need to be inserted or removed. Shaft rotational speed 130 rpm. The screwdriver is easy to use; with one switch that selects the direction of rotation by sliding to the left or right and applies power when pressed. With the switch in the centre 'neutral' position power cannot be applied, thus acting as a safety lock against accidental operation. A shaft lock is provided so that screws can still be driven home if for any reason the battery pack runs flat during a job. Supplied with a double-ended screwdriver bit, suitable for Phillips and slotted screws; and a wall mounting bracket/charging receptacle. Recharge time is 12 hours.

Retail Unit Price each (inc. VAT).

Order Code	Type 3854	Price each exc. VAT		inc. VAT each
		1+		1+
XP15R †	Cordless Driver 9018	£18.710		£21.990

#### Cordless Power Screwdriver with Clutch

Black & Decker



- ★ 3.6V battery pack
- ★ Reversing
- ★ Adjustable clutch
- ★ Wall mounting
- ★ Supplied with charger
- ★ Supplied with double-ended screwdriver bit

A compact, yet powerful, cordless screwdriver with numerous applications where screws need to be inserted or removed. Shaft rotational speed 180 rpm. The screwdriver is easy to use; with one switch that selects the direction of rotation by sliding to the left or right and applies power when pressed. With the switch in the centre 'neutral' position power cannot be applied, thus acting as a safety lock against accidental operation. An adjustable clutch is provided so that screws can be tightened by the correct amount. Supplied with a double-ended screwdriver bit, suitable for Phillips and slotted screws; and a wall mounting bracket/charging receptacle. Recharge time is 12 hours.

Retail Unit Price each (inc. VAT).

Order Code	Type 3853	Price each exc. VAT		inc. VAT each
		1+		1+
XP16S †	Cordless Driver 9019	£30.620		£36.990



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## Powerdriver Kit

Black & Decker



A handy, rechargeable, cordless power screwdriver, that drives in and removes screws quickly and easily at the press of a button. The rotational speed is 130 rpm in forward and reverse. A locking feature enables the powerdriver to be used as a standard screwdriver. The powerdriver comes with three double function bits, three 'pozidriv' bits (nos. 1, 2, 3), three 'Phillips' bits (nos. 1, 2, 3), three slotted (4, 6, 7-2mm), a magnetic bit holder to keep the bits tidy and a kit box. The kit includes a wall-mounting bracket and a charger which takes 12 hours to fully charge the powerdriver.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BU28F 3	Powerdriver Kit	£26.070	£32.99*

## Power Screwdriver Kit

Black & Decker



A compact, powerful rechargeable cordless screwdriver that drives and removes screws quickly and easily at the press of a button. The shaft rotational speed is 180 r.p.m. in forward and reverse – the direction being selected by a single switch – with a six position torque control for a wide variety of screwdriving tasks, from the most delicate screws to the more stubborn. For the exceptionally tough screws the neutral position of the direction switch includes an auto locking feature that enables the screwdriver to be used conventionally, like a standard tool. The screwdriver kit comes complete with three double function bits, three pozidriv bits, three Phillips bits, three flat-bladed bits, a magnetic bit holder, wall mounted battery charger and a tough moulded plastic kit box. The battery charging time is 12 hours.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ28F 1	9019 Powerdriver Kit	£37.430	£43.990

## Cordless Screwdriver

Skil



This compact and slim screwdriver is light and as easy to use as a conventional screwdriver. It features a powerful reversing action for driving or removing screws and bolts plus a spindle lock for those jobs where you'll prefer to use it as a manual screwdriver.

It is powered by Skil's 'Flexi-Charge' interchangeable power system (this allows all rechargeable power tools in the range to operate from the same type of battery, even with different voltages). Can be kept fully charged and ready for instant use in the provided wall mounted charging/storage unit. The screwdriver is supplied with a 'Flexi-Charge' power pack, charger/storage unit (with LED to indicate charge status) and two double-ended bits (cross and slotted head). Spare battery power pack is available separately (FC92A).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC40T	Cordless Drill 3.6V	£21.260	£24.990
FC92A	3.6V Battery Pack	£11.900	£13.990

## Keyless Cordless Drill

Skil



This versatile cordless drill features a keyless chuck for faster and easier bit changes and an extra powerful 12V motor. Promising superb handling and performance, it's powered by Skil's 'Flexi-Charge' interchangeable power system. Every charge gives three hours uninterrupted performance. This powerful cordless drill features a 5-position torque setting (4 for screwdriving and 1 for drilling) for precision screwdriving, two selectable speeds and a reversing action that allows you to effortlessly drive home or remove screws and bolts.

The drill is supplied with a 'Flexi-Charge' power pack and a charger/storage unit (with LED to indicate charge status). Spare battery packs are available separately (FC91Y).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FC42V 1	Cordless Drill 12V	£51.050	£59.990
FC91Y 1	12V Battery Pack	£30.620	£36.990

## 2745 Professional 12V Cordless Drill/Driver

Skil



This high performance cordless drill has been designed to deliver superb performance and handling. It features two speeds (0-350/0-1100 rpm) with a variable speed switch, electric brake, reversing action for the effortless driving home or removing of screws and bolts and a 15-position clutch to facilitate precise screwdriving. The drill is powered by a quick-charge (fully charged in one hour) Super Power Pack with a thermostat that prevents over-charging. The 10mm keyless chuck ensures that changing drill and screwdriver bits is both fast and easy and its low chuck offset makes this drill ideal for working in confined spaces. The professional cordless drill is supplied with a Super Power Pack, charger and its own plastic carry case. Weighs 1.3kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YC55K 1	12V Drill/Driver	£144.650	£169.970

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## MAINS POWERED

### Multi-Purpose Power Tool

Dremel



This is a versatile, high speed, easy to use multi-purpose mains powered drill. The drill will cut, grind, sand, drill, sharpen and polish using the accompanying accessories. The kit includes a 40-piece accessory assortment, wrench, storage case and the '100+ Uses' guidebook. The high speeds of 10,000 to 37,000 rpm enable the Multi to perform many jobs that other tools cannot perform. The Multi is small and compact allowing comfortable use and control, even in tight places. The accessories are secured firmly using the quick-change collets (two sizes).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
KE84F	Power Drill	£95.480	£81.820	£72.100	£112.190

### Drill Press 212

Dremel

Designed for use with the Dremel Multi-purpose Power Tool, this drill press will enable precise drilling, routing and grooving. The stand is made from die cast metal for stability and maximum accuracy. The large base plate (155 x 155mm) has holes and slots cut in it so that a machine vice can be fixed in position. There are mounting holes for securing the stand to a bench.



Maximum working travel is 70mm. A fitted depth shaft with locking stop collar will enable a number of holes to be drilled to the same depth.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YC30H	Drill Press Dremel	£47.950	£44.050	£41.500	£56.350

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

### Flex-Shaft 225

Dremel



Increases the usefulness of the Dremel Multi-Purpose Power Tool by allowing fingertip control to cut, grind, drill, etc. in positions which would normally be inaccessible. Shaft is 36" long with a 1/2" diameter handpiece. Designed to attach to Dremel tool models 395, 285 and 275.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YC31J	Flex-Shaft D225	£40.200	£37.750	£35.850	£47.240

### Router Attachment 230

Dremel



Converts the Dremel Multi-purpose Power Tool into a versatile router. It has a removable edge guide for freehand as well as straight routing. Fixing the guide to the work through a provided hole enables circles to be routed. Depth of cut is adjustable.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YC32K	Router Atch Dremel	£32.300	£30.350	£28.850	£37.960

### Power Drill

Skil



This is the ideal quality drill for the DIY enthusiast. The drill features an excellent ergonomic design that ensures it's a joy to use and easy to handle and control - left or right handed - and Skil's patented RBR reversing system. This automatically rotates the carbon brushes, delivering an extra 10% of power in both directions and extending the life of the brushes themselves. The drill has a 450W

motor, is double insulated to European safety standards and radio/TV suppressed, has a 10mm chuck capacity and is supplied with a chuck key.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	1+
FC38R	Hammer Drill	£22.110		£25.990

### 6500 13mm Hammer Drill Reversing with Variable Speed

Skil



This fully featured DIY hammer drill has a variable speed switch with a lock button. Its disengageable hammer mechanism is capable of delivering a high rate of impacts per minute. The drill features an excellent compact and ergonomic design that ensures it's a joy to use and easy to handle and control - left handed or right - and Skil's patented RBR reversing system. This automatically rotates the carbon brushes, delivering 10% more power in both directions and extending the life of the brushes themselves. The drill has a 550W motor, is double insulated to European safety standards and radio/TV suppressed and has a 13mm chuck capacity. Supplied complete with a side handle.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT		inc. VAT each
		1+	1+	1+
YC56L	Hammer Drill	£38.270		£44.970

### Variable Speed Hammer Drill

Skil



This professional quality and fully featured DIY hammer drill has a variable speed switch with a lock button and pre-selected speed indicator to provide optimum control while working. The disengageable hammer mechanism is capable of delivering a high rate of impacts per minute and, to ensure holes are always drilled to the correct depth, there's an adjustable depth indicator - simply set it to the required depth and stop drilling when the gauge comes into contact with the surface. The drill features an excellent compact and ergonomic design that ensures it's a joy to use and easy to handle and control - left or right handed - and Skil's patented RBR reversing system. This automatically rotates the carbon brushes, delivering 10% more power in both directions and extending the life of the brushes themselves. The drill has a 710W motor, is double insulated to European safety

standards and radio/TV suppressed and has a 13mm chuck capacity. It is supplied with a variable depth adjuster, chuck key and side handle.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
FC46A	1 Hammer Drill/Vaibl	£68.070	£79.990

## Orbital Sander

Ski



Get the job done faster with this lightweight but powerful orbital sander with its high power and extra large orbit to provide speedier material removal on all surfaces. The 150W motor delivers an impressive 24,000 movements per minute (unloaded). The sander's ergonomic design and an integrated auxiliary handle ensures that it's safe, easily controllable and comfortable to use and there's a lock-on button for continuous use. Dust and debris is taken away by suction through the hole pattern in the foot and, for an even cleaner working environment, a domestic vacuum cleaner can be connected to the integral adaptor at the rear of the tool. Supplied with 3 sanding sheets.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
FC43W	1 Orbital Sander	£22.970	£26.990

## Jig Saw

Ski



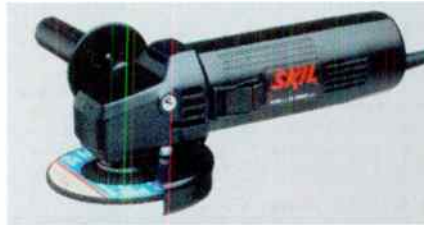
This powerful 380W jig saw delivers high power and speed for faster and smoother cutting. Its 50mm saw depth will cut through 50mm of wood or up to 3mm of steel. The jig saw's features include a lock-on button for continuous use, a 2-way adjustable foot for accurate bevel cuts and splinter-free cutting and an automatic blower that keeps the line of the cut clear and easier to follow. Dust and debris is taken away by suction and, for an even cleaner working environment, a domestic vacuum cleaner can be connected to the integral adaptor at the rear of the tool. Supplied with a blade key.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
FC44X	1 Jigsaw	£22.970	£26.990

## Angle Grinder

Ski



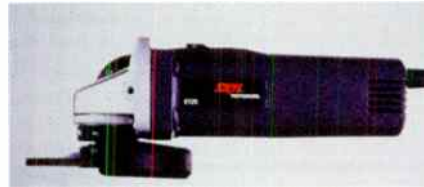
This lightweight but powerful DIY angle grinder delivers 11,000 rpm (unloaded) and features a wheel that's enclosed through 180° for additional safety – the guard cover can easily be adjusted to offer protection in any direction. The angle grinder is double insulated to European safety standards and radio/TV suppressed. It has a 550W motor and is supplied with a grinding wheel, set of flanges, safety guard, side handle, accessory key and hexagon key.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
FC45Y	1 Angle Grinder 450W	£38.280	£44.990

## Professional Angle Grinder 9125

Ski



Ideal for those heavier DIY projects, this powerful but compact professional quality angle grinder delivers 11,000 rpm (unloaded) and features a wheel that's enclosed through 180° for additional safety - the guard cover can easily be adjusted to offer protection in any direction. Quality built to the highest standards and featuring durable precision-cut helical gears, the grinder has been designed with a slim metal head to improve access in awkward spaces and a quick and easy to operate spindle lock for more rapid disc changes. The angle grinder is double insulated to European safety standards and radio/TV suppressed. It has a 1050W motor and is supplied with a 125mm grinding wheel, set of flanges, safety guard, side handle, and accessory key.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
YC54J	1 Angle Grinder 1050W	£90.840	£94.990

## Heat Gun

Black & Decker



A very useful mains powered 240V 1600W heat gun for paint stripping, thawing pipes, shrink-wrapping, welding plastics (in a very well ventilated area) etc. The heat gun has two heat settings, 300°C and 560°C and extreme care MUST be exercised when using the heat gun to avoid personal injury. The air flow of either 270 l/min. or 450 l/min. ensures faster paint stripping using the push-and-pull scrapers supplied with the heat gun. The heat gun is fitted with a two way handle for either conventional pistol grip, or in-line grip for one handed use, which provides added safety, particularly during external use.

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
BU36P	2 Heat Gun	£28.630	£33.650

## Heat Gun with Adaptors

Ungar



This 240V AC, lightweight, efficient heat-gun can perform a wide range of tasks including encapsulation, reflow soldering, epoxy curing, cooling and drying of components, softening adhesives and applying heatshrink tubing. A three-way off/cool/heat switch is conveniently located at the trigger position. The gun operates at 425°C so care must be taken when operating the gun. The heat gun is contained in a rugged, impact resistant housing and is supplied with three reflectors and a reducing baffle. Manufacturer's Code 6966G

Retail Unit Price each (inc. VAT)

Order Code	Type	Price each exc. VAT	inc. VAT each
DF80B	1 Heat Gun 6966G	£102.500	£120.440

## ACCESSORIES & BITS

### Vertical Drill Stand

**Black & Decker**

The D2037 is a rigid high quality vertical drill stand, for use with Black & Decker claw grip drills, that is perfect for precision drilling. The single solid support column is fitted with a multi-position handle that can be set to any position. The handle operates a spring loaded drill support bracket which can be rotated through 360° and provides automatic retraction. Included on the support bracket is a calibrated depth scale and drill stop for accurate drilling control. The professional quality of this drill stand will ensure a long working life.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RJ33L	7 Vertical Drill Stand	£29.200	£27.570	£25.810	£34.320

### Hobby Shop

**Black & Decker**

The D2057 Hobby Shop is designed for all hobbyist work such as mitre cutting, grinding and sanding, and comprises a horizontal stand and tilting table. The horizontal stand is suitable for all Black & Decker 43mm DIN nose drills and allows the drill to be rotated through 360°. The tilting table is adjustable for greater accuracy of finish. The stand can be held in a vice, a Black & Decker Workmate™, or secured with screws to a work surface.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RJ35Q	1 D2057 Hobby Shop	£11.270	£9.830	£8.590	£13.250

### Miniature Drill Sets

**Microbox**



Two sets of HSS Twist Drills contained in their own individually marked cases. The handy dispenser box adjusts to release individual drills. One set of 20 pieces has drills from 0.3mm to 1.6mm in range, and the other 20 piece set has drills from Wire Gauge No. 61 to 80 in range.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GUB7U	Microbox Metric Set	£7.370	£6.450	£5.990	£8.660
GUB8V	Microbox Number Set	£7.370	£6.450	£5.990	£8.660

### Drill Bits with 2.35mm Shank



A range of high speed drill bits all with 2.35mm shanks designed for use with the older type Reliant, Titan or Mini Mains drills that do not have the new 3-jaw pin chucks. The following sizes are available: 0.8mm (for IC pins), 1mm (for most components), 1.4mm (for presets etc).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
BR85G	HS Twist Drill 0.8mm	£1.020	£0.832	£0.755	£1.210
BR86T	HS Twist Drill 1mm	£1.020	£0.832	£0.755	£1.210
BR87U	HS Twist Drill 1.4mm	£1.020	£0.884	£0.755	£1.210

### Tungsten Carbide Drills



A range of very high quality solid tungsten carbide drills which offer extended life when drilling PCBs, especially fibre-glass. All drills have an a 3.18mm diameter shank approx. 24mm long. Overall drill length 38mm. Tungsten carbide drills are not recommended for hand-held use as they snap very easily under sideways pressure. For best results, use a drill stand and run the drill at a slower speed than would be normal for high-speed steel. Available in five sizes 0.6, 0.8, 0.9, 1 and 1.3mm diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
FE48C	Tung Carb Drill 0.6	£2.760	£2.350	£1.930	£3.250
FE49D	Tung Carb Drill 0.8	£2.760	£2.350	£1.930	£3.250
FE50E	Tung Carb Drill 0.9	£2.760	£2.350	£1.930	£3.250
FE51F	Tung Carb Drill 1.0	£2.760	£2.350	£1.930	£3.250
FE52G	Tung Carb Drill 1.3	£2.760	£2.350	£1.930	£3.250

### 20-Piece Bit Set



Tools vary, but a typical set comprises four drills, four abrasives, nine burs of various shapes, one polishing pad, one radial brush and one axial brush.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
LH77J	20-Piece Tool Kit	£13.010	£10.870	£10.110	£15.290

### 37-Piece Bit Set



Tools vary, but a typical set comprises of drills, abrasives, burs of various shapes, polishing pads, axial and radial brushes, mandrels on which fit abrasives, or saws of different sizes, tommy bar and allen key.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
LH78K	37-Piece Tool Set	£25.160	£21.700	£20.240	£29.570

### 6.35mm (1/4in.) Keyless Chuck

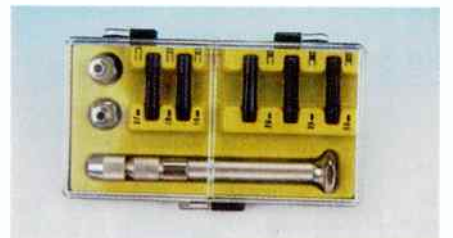
A 3-jaw keyless pin chuck for handling shank diameters up to 6.35mm (1/4in.) The shank of the chuck is hexagonal in cross-section, and 6mm across flats by 22mm long. All steel construction with black and chrome finish. Overall diameter 26mm. Overall length 62mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD80B	1/4in Chuck	£2.850	£2.500	£2.130	£3.360

### Pin Vice Set



A well made pin vice set comprising 6 pin vices, 0.7mm, 1mm, 1.5mm, 2mm, 2.5mm, 3mm; 3 chucks 11mm square, 11mm hex and 11mm round with knurl. Each vice is marked with grooves to indicate the size and these markings are repeated in the box to assist in identification. The set is supplied in a hinged plastic box with a transparent cover.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YP54J	Pin Vice Set	£11.270	£9.360	£8.690	£13.250

### Pin Vice



A quality, handy, versatile pin vice suitable for holding small files, taps, drills, scriber points, wires, etc. All steel construction, with bright chrome finish, the pin vice has a revolving head and ribbed sides for ease of use. Supplied with two double-ended jaws, giving it a wide handling capacity of 0.1 to 3.2mm diameter. The second set of jaws is retained

See Stock Code Index For More Price Breaks

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at the top of the pin vice. Removing the cap, to which the revolving head is attached, uncovers this second set. Overall length 94mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GW33L	Pin Vice	£6.930	£6.020	£5.660	£8.150

### Pin Drill

A 55mm long pin drill with a 3-jaw chuck having a capacity up to 3.18mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YW66W	Pin Drill	£7.370	£6.040	£5.520	£8.660

### High Speed Metric Drills



A range of miniature high speed steel straight shank twist drills in metric sizes. Ideal for metal and suitable for PCBs

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
QY64U	Metric Drill 0.8mm	£0.834	£0.552	£0.495	£0.980
QY65V	Metric Drill 1mm	£0.765	£0.495	£0.431	£0.900
QY90X	Metric Drill 1.2mm	£0.765	£0.495	£0.431	£0.900
QY66W	Metric Drill 1.4mm	£0.765	£0.495	£0.431	£0.900
QY91Y	Metric Drill 1.5mm	£0.646	£0.426	£0.364	£0.760
QY94C	Metric Drill 2mm	£0.646	£0.426	£0.364	£0.760
QY95D	Metric Drill 2.5mm	£0.646	£0.426	£0.364	£0.760
FV60Q	Metric Drill 3mm	£0.646	£0.426	£0.364	£0.760
FV61R	Metric Drill 3.5mm	£0.646	£0.426	£0.364	£0.760
FV62S	Metric Drill 4mm	£0.765	£0.495	£0.431	£0.900
FV63T	Metric Drill 5mm	£0.919	£0.552	£0.495	£1.080
FV64U	Metric Drill 6mm	£1.060	£0.728	£0.624	£1.250

### High Speed Twist Drills



A range of good quality high speed twist drills for metal. The following sizes are available:

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HQ02C	HS Drill 1/16in	£0.510	£0.406	£0.339	£0.600
HQ03D	HS Drill 5/64in	£0.510	£0.406	£0.339	£0.600
HQ04E	HS Drill 3/32in	£0.510	£0.406	£0.339	£0.600
HQ05F	HS Drill 7/64in	£0.510	£0.406	£0.339	£0.600
HQ06G	HS Drill 1/8in	£0.510	£0.406	£0.339	£0.600
HQ07H	HS Drill 9/64in	£0.510	£0.406	£0.339	£0.600
HQ08J	HS Drill 5/32in	£0.561	£0.458	£0.385	£0.660
HQ10L	HS Drill 3/16in	£0.629	£0.510	£0.458	£0.740
HQ14Q	HS Drill 1/4in	£0.936	£0.749	£0.666	£1.140
HQ16S	HS Drill 9/32in	£1.190	£0.978	£0.853	£1.440
HQ18U	HS Drill 5/16in	£1.420	£1.140	£0.957	£1.680
HQ22Y	HS Drill 3/8in	£1.820	£1.440	£1.260	£2.150
HQ26D	HS Drill 7/16in	£2.630	£2.120	£1.870	£3.130
HQ29G	HS Drill 1/2in	£3.530	£2.810	£2.400	£4.150

### Masonry Drills



Tungsten carbide tipped masonry drills with a special flute spiral for fast material removal. 4.76 and 6.35mm (3/16 and 1/4in.) sizes have straight shanks 85mm long for use with hand or power drills.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FV65V	Masonry Drill 3/16	£0.740	£0.634	£0.572	£0.870
FV66W	Masonry Drill 1/4	£0.942	£0.697	£0.624	£0.990

### Masonry Drill



Now you can drill through walls! Use this 10 x 400mm tungsten carbide tipped drill for all your important jobs. Will drill holes in brick, stone, concrete, ceramic tiles, etc. Manufactured to ISO 5468 and BS 5621. Can be used with hand or power drills.

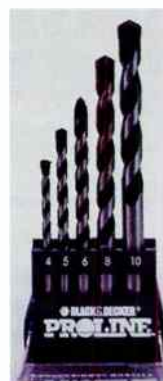
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
FC89W	10X400mm Msrny Drill	£4.110	£3.900	£3.800	£4.830

### Professional Quality Metric Masonry Drill Set

**Black & Decker**

A set of 5 superb quality metric masonry drills suitable for use in both rotary and hammer action drills. The precision ground tip is hardened for longer life and is suitable for drilling through brick, concrete and all natural stones. The 5 sizes provided are 4mm, 5mm, 6mm, 8mm and 10mm. All 5 drills are supplied in a plastic hinged storage case.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
ZC92A	Metric Masonry Drills	£9.540	£7.550	£6.860	£11.210

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### Professional Quality HSS Metric Drill Set

**Black & Decker**

A set of 6 top quality high-speed metric drill bits which offer long-life coupled with fast drilling speeds. They can be used with both hand and power drills, and will penetrate steel, iron, alloys, most other metals, laminates, plastics and wood. Sizes: 2mm, 3mm, 4mm, 5mm, 6mm and 8mm. The drills are supplied in a hinged plastic storage case.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
ZC93B	Metric HSS Drills	£9.540	£7.550	£6.860	£11.210

### 13-Piece Imperial HSS Drill Set

High-speed drill bits which are suitable for use with hand or power drills on wood, mild steel, soft non-ferrous metals, plastics, etc. They are supplied in a sturdy metal hinged storage case. The set contains 13 imperial sizes:

1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16, 13/64, 7/32, 15/64, 1/4in.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FM97F	Imperial HSS Drills	£4.590	£3.790	£3.570	£5.400

### 19-Piece Metric HSS Drill Set

A 19-piece HSS drill set, complete with a strong hinged metal box for storing drills. These drills are suitable for use on wood, mild steel, soft non-ferrous metals, plastics, etc. The set contains the following metric sizes: 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10mm.



Retail Unit Price each (inc. VAT).

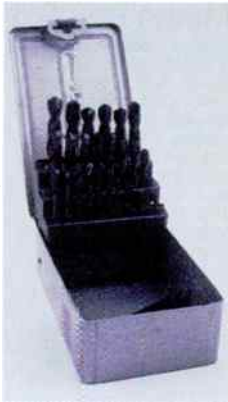
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YU68Y	19pc Met Drill Set	£7.800	£7.230	£5.510	£9.170

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## 29-Piece Imperial HSS Drill Set

A 29-piece HSS drill set, complete with a strong hinged metal box for storing drills. These drills are suitable for use on wood, mild steel, soft non-ferrous metals, plastics, etc. The set contains the following imperial sizes: 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16, 13/64, 7/32, 15/64, 1/4, 17/64, 9/32, 19/64, 5/16, 21/64, 11/32, 23/64, 3/8, 25/64, 13/32, 27/64, 7/16, 29/64, 15/32, 31/64, 1/2in.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU25C	29pc Imp Drill Set	£16.480	£19.370

## Drill Bit Sharpener



This clever and very handy device actually uses your drill to sharpen its own bits – both steel and masonry and of any size between 3mm and 10mm. The sharpener is safe (the grindstone is fully enclosed within the body of the sharpener) and very easy to use. After fitting the appropriate grindstone, fasten the chuck of your drill (minimum suitable chuck size is 8mm) to the rotating shaft and select the correct collet holder and collet for the bit to be sharpened. Seat the drill bit correctly within its collet and collet holder (a built-in clamp helps you set the correct position and angle), turn on the drill (the grindstone operates best at a speed of 3,000 rpm), insert the collet assembly into the grinding position and, using a smooth, light, downward action, rotate the bit while it is in contact with the grindstone.

Supplied with two grindstones, one for steel and one for masonry bits, two collet holders and 4 collets: 'A' for bits up to 10.5mm, 'B' for bits up to 9.7mm, 'C' for bits up to 6.7mm and 'D' for bits up to 3.7mm.

A range of replacement parts is available: White Aluminium Oxide Grindstone for steel bits (BN95D), Green Silicon Carbide Grindstone for masonry bits (BN96E) and replacement set of 4 Collets (BN97F). Remember, eye goggles should always be worn when sharpening drill bits.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
CB14Q	Drill Sharpener	£13.600	£15.990
BN95D	Sharp Stone White	£2.200	£2.590
BN96E	Sharp Stone Green	£2.200	£2.590
BN97F	Collet Set	£2.200	£2.590

## 75mm Wire Cup

A stiff wire bristled cup-shaped brush. The brush has a central protruding shaft that enables the brush to be inserted into a drill chuck. Care should be taken when using the wire cup as the wire bristles are VERY sharp. Eye protection should be worn as a safety precaution. The shaft diameter is 6mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GX21X	75mm Wire Cup	£1.760	£2.070

## 75mm Wire Wheel

A stiff wire bristled wheel, with a central protruding 6mm shaft for insertion into a drill chuck. Care should be taken when using the wire wheel as the wire bristles are VERY sharp. Eye protection should be worn as a safety precaution.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GX20W	75mm Wire Wheel	£1.310	£1.550

## Power Tool Nibbler

A high quality nibbler that fits any power drill for cutting sheet metals and plastics. The nibbler cuts cleanly without distortion in straight or curved lines and will also cut corrugated sections. For most work a drill speed of 2500 to 3000 rpm is used, but for heavy continuous cuts a slower speed is recommended. It is important that plenty of oil is used on the cutting edges and along the job. This is very important when cutting aluminium. The width of cut is 3mm and the maximum gauge is 1.5mm (16swg) for mild steel and 2mm (14swg) for aluminium etc. Replacement punches and dies are available.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BA25C	Nibbler Attachment	£23.420	£27.530
BA26D	Spare Die	£4.760	£5.600
BA27E	Spare Punch	£2.420	£2.850

## Jigsaw Blades

Blades suitable for use with Black & Decker jigsaws. Two types are available; medium finish in metal and medium finish in wood, supplied in packs of three.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JU87U	Jig Bls Med Metal	£3.720	£4.380
JU88V	Jig Bls Med Wood	£3.110	£3.660

## Jigsaw Blade Set



A quality 5-piece set of universal shank jigsaw blades suitable for most makes of jigsaw. The set contains a saw-blade for each of the following requirements: cross-cutting timber; cutting plywood; rip-cutting timber; scroll-cutting timber; cutting metal.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ03D	Jigsaw Blade Set	£2.590	£3.050

## Socket Set

**Black & Decker**

A seven piece socket set for use with Black & Decker cordless screwdrivers and variable speed reversing drills. The set consists of six sockets 6, 7, 8, 10, 11, 13mm and an adaptor.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ31J	7pc Socket Set	£7.370	£8.660

## Screwdriver Bits for Cordless Screwdrivers and Variable Speed Drills

**Black & Decker**

A set of 10 screwdriver bits, housed in a dial-a-bit storage drum. These bits are suitable for use with Black & Decker cordless screwdrivers and variable speed drills. The set consists of 4 slotted bits, 3 pozidrive, 2 Phillips bits and 1 magnetic bit holder.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JUB6T	10pc Screw Bit Set	£8.500	£9.990

## LOW VOLTAGE TOOLS

### Reliant Electric Drill



A sub-miniature 12V electric drill suitable for drilling printed circuit boards etc, and similarly light duties. Features the latest automatic 3-jaw pin chuck with up to 2.9mm capacity. Suitable power supply

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Maplin has more stores Nationwide than ever before. See the maps at the front of the catalogue for the nearest one to you.

**XM20W.**  
 Rated voltage: 12V DC  
 No load current: 175mA  
 Full load current: 1.5A  
 Torque: 100g/cm  
 Speed: 9000 rpm  $\pm 71/2\%$   
 Body dimensions: 76mm long x 33mm diameter  
 Weight: 160g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BW03D	Reliant Drill	1+ 10+ 25+ £13.010 £11.190 £10.510	1+ £15.290

## Reliant Drill Kit



A kit comprising the Reliant electric drill, fitted with latest automatic 3 jaw pin chuck, adjustable to take any size drill bit up to 2.9mm dia. Kit includes 16 twist drills, one axial brush, one radial brush, polishing pad, tommy bar. A mains adaptor is included in the kit.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LH79L	Reliant Kit	1+ 10+ 25+ £32.330 £26.850 £25.050	1+ £37.990

## Zircon Electric Drill

Miniature 12V DC electric drill suitable for drilling printed circuit boards, thin aluminium and other light duty work. The T section magnets and 5-pole motor produce more torque than drills of twice this size. The drill utilises a ground shaft, ball race drive and 3-jaw pin chuck which has a capacity of 0.5mm to 3.0mm. The drill is well balanced, comfortable to hold and easy to use.



**Specification**  
 Rated voltage: 12V  
 No load current: 390mA  
 Full load current: 2.25A  
 Running torque: 150g/cm  
 Stall torque: 1150g/cm  
 Speed on load: 9700 rpm  
 No load speed: 11,200 rpm  
 Dimensions: 170 x 35mm dia.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YU92A	Zircon Drill	1+ 5+ 10+ £20.820 £18.830 £18.000	1+ £24.470

## Drill Stands

A range of drill stands for use with the Reliant and Zircon miniature electric drills. A lever on the stand lowers/raises the drill; thus accurate alignment can be easily achieved.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XM82D	Reliant Stand	1+ 5+ 10+ £26.030 £22.740 £21.380	1+ £30.590
XP05F	Zircon Stand	£26.030	£30.590

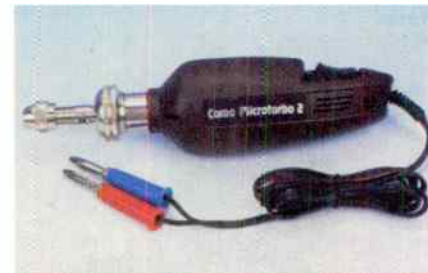
## Microturbo Drill

Como



These miniature combination drills are ideal for engraving, polishing, grinding, drilling and cutting and versatile enough for a wide range of applications including modelling, glass cutting and engraving, working on PCBs, car body work, toolmaking and a variety of hobbies.

Both precision drills are reliable and versatile and the combination of their power, small size, shape and handling characteristics make them ideal for fine detail work where larger DIY tools are too cumbersome. For variable speed with no loss of torque at lower speeds the Variable Speed Transformer is required (order code BP80B) – variable speed is recommended when plastics or similar materials are being cut or drilled.



Both drills are supplied with 4 collets to take tools up to 3mm in diameter and with 950mm cable terminating in sprung 4mm connectors.

The Microturbo 2 shares the same features as the Microturbo 1 but has the additional advantage of a drill shaft running in a precision ball race for even greater accuracy and durability.

### Specification for Microturbo 1 and 2

Power supply: 6–18V DC  
 Maximum speed: 14,500 rpm  
 Typical current draw: 0.75 amp  
 Tool sizes: 0–3mm  
 Torque: 530 gr/cm  
 Power: 20W

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BP77J	Microturbo 1	1+ 10+ 25+ £11.480 £9.150 £8.400	1+ £13.490
BP78K	Microturbo 2	£22.970	£26.990

## Variable Speed Transformer

Como



This 6-3A fused heavy duty transformer steps 240V AC mains power down to the 15V DC necessary to power the Microturbo drills on this page.

The transformer features +/- terminals for the connectors supplied with the drills, a neon indicator to show power is connected and a single knob to control drill speed – from 'stop' to the drill's maximum 14,500 rpm. Supplied fitted with a 13A fused plug.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BP80B	Var. Speed Transf.	1+ 10+ 25+ £36.580 £27.000 £24.150	1+ £42.990

## Cast Alloy Drill Stand

Como



This quality made cast alloy drill stand is ideal for use with the Microturbo drills on this page.

The drill retention harness holds the drill firmly in place while you set the rig up to the perfect angle for the job in hand. Every aspect of the stand can be fine tuned for precision work – including carriage movement, drill depth, vertical height and axial adjustment (the drill can be turned through 360° with a gauge marked from 0 to 180 to the left and right).

The base features a raised bed and a large countersunk hole at each corner for fixing to your workbench. When you're ready to drill, cut, grind or polish a sprung lever (it springs back to rest when released) gives you full control over the speed at which you present the bit to your work and the amount of pressure you exert on it.

### Specification

Bed height: 25mm  
 Bed size: 119 x 119mm  
 Max throat depth: 119mm  
 Max drilling depth: 28mm  
 Overall dimensions: 265 x 139 x 198mm  
 Net weight: 1.46kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BP76H	Alloy Drill Stand	1+ 10+ 25+ £39.140 £31.490 £29.050	1+ £45.990

## MINICRAFT®

### Hobby Drill

Minicraft



The MB150 is a high-quality, low cost, miniature lightweight drill ideal for use in electronics for PCB preparation, in jewellery fabrication and in model making. This drill has been ergonomically styled for comfortable handling to allow for long periods of continuous use without excess fatigue. A high-torque, high-speed, fan-cooled motor ensures that it will give a long and trouble-free life. A lightweight keyless chuck allows for simple accessory changeover and versatility in use. Alternatively, the drill can be fitted with a collet chuck (BA95D) for a greater degree of accuracy in drilling and detailing.

Specification	
Operating voltage:	9 to 18V DC
Maximum power:	25W
Off load speed:	16,000 rpm
Chuck type:	Keyless
Chuck capacity:	0.4 to 3.2mm
Cable type:	Extendable
Cable length:	1.8m
Dimensions:	165 x 32mm approximately
Weight:	190g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RD75S	MB150 Hobby Drill	£22.970	£19.850	£18.800	£26.990

### High-Speed Precision Drill for the Hobbyist

Minicraft



- ★ **Lightweight ergonomically designed housing**
- ★ **Keyless chuck for easy accessory changeover**
- ★ **Twin bearing drive shaft for smoother running**
- ★ **Powerful 40W fan cooled motor**
- ★ **Very high speed for increased versatility**

For the hobbyist who requires a drill that offers a perfect balance between speed and handling, then this drill is the ideal choice. This lightweight ergonomically designed drill has a powerful high speed motor with a twin bearing drive shaft for smoother running. A lightweight keyless chuck ensures easy accessory changeover and for extra flexibility, a collet set (BA95D) can be fitted.

Specification	
Operating voltage:	9 to 18V DC
Power:	40W
Off-load speed (12V):	20,000 rpm
Chuck type:	Keyless
Chuck capacity:	0.4 to 3.2mm
Cable type:	Extendable
Cable length:	1.8m
Weight:	210g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BA80B 1	MB170 Hobby Drill	£28.070	£24.050	£22.730	£32.990

### High Power High Precision Miniature 'Buffalo II' Drill

Minicraft



- ★ **Very powerful 100W fan cooled motor**
- ★ **Twin bearing drive shaft**
- ★ **Precision key operated chuck**
- ★ **Integral on/off/push-on**
- ★ **Coiled cable**
- ★ **Ergonomically styled**

A highly recommended miniature drill which offers both power and precision. The drill has an extremely powerful motor and a special on/off/push-on switch which allows continuous use or intermittent use. Twin drive shaft bearings ensure long life, accuracy and smooth operation. The key operated chuck accepts drill bits or accessories between 0.4 and 6mm dia. The drill is neatly styled, comfortable to hold, well balanced and easy to use. Supplied with chuck key. Spare chuck keys available (BA97F). This versatile drill, when used with the MB540 twin pillar vertical drill stand (XP21X) is ideal for printed circuit board fabrication and other precision drilling applications.

Specification	
Operating voltage:	9 to 18V DC
Power:	100W
Off-load speed (12V):	12,500 rpm
Chuck type:	Key operated
Chuck capacity:	0.4 to 6.0mm dia.
Cable type:	Extendable, coiled
Cable length:	1.8m
Weight:	420g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YZ94C 1	MB1012 Buffalo Drill	£36.580	£31.050	£29.220	£42.990

### 10VA Transformer Unit

Minicraft



A well made, compact transformer unit for use with all 40W drills and engraving pen. The unit is self contained, with integral 13A plug pins and output cable with free socket. The unit is double insulated and thermally protected against overload, the thermal trip is self resetting. This unit is suitable for indoor use only.

Specification	
Input voltage:	240V AC 50Hz
Output voltage:	12V DC
Output power:	10VA
Output cable connector:	Minicraft 2-pin socket
Cable length:	2m
Weight:	520g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YZ97F 1	MB714 10VA Xformer	£23.820	£20.550	£19.450	£27.990

### 24VA Variable Speed Transformer Unit

Minicraft



A variable speed transformer unit for use with all Minicraft tools. The unit is well made and compact and features a manually resettable trip to guard against overload. Mains input is via a two core mains cable fitted with a 13A plug and 3A fuse (plug and fuse supplied ready fitted). A rotary front panel control allows adjustment of output voltage, thus controlling speed. The unit is double insulated and is suitable for indoor use only.

Specification	
Input voltage:	240V AC 50Hz
Output voltage:	9V to 16V DC
Output power:	24VA
Speed control range:	7,000 to 30,000 rpm
Output connector:	Minicraft 2-pin socket
Mains cable length:	2m
Weight:	1.05kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XP19V 2	MB730 24VA Xformer	£35.730	£30.350	£28.570	£41.990

### Universal Variable Speed Transformer

Minicraft



This top of the range power centre is suitable for all Minicraft precision tools, and has a massive 100VA peak output. This unit is equipped with a unique microchip controlled electronic variable speed for smoother running, with full torque control for effective work at lower speeds. Additionally, a resettable overload cut-off facility is incorporated for extra safety and longer life, and for added convenience, three outputs are included for easy tool changeover. Storage space for 60 accessories is included along with a tool rest for quick and easy access.

Specification	
Input voltage:	240V AC 50Hz
Output voltage:	8.8V to 16.2V DC
Output power:	50VA constant 100VA peak
Speed control range:	500 to 18,000 rpm
Cable type:	Standard
Cable length:	2.0m
Weight:	2.0kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BA83E 3	MB750 100VA Xformer	£55.310	£46.050	£43.050	£64.990

## MB1000 Hobby Drill Kit

Mincraft



A high torque low voltage drill for hobby, electronics and D.I.Y. use. The drill and included accessories will enable a variety of jobs to be done, including drilling, grinding, sanding, cutting, etc.

The kit contains:

MB150 Hobby drill upgraded to 30W max. power  
MB714 Transformer giving 10VA at 12V DC.

20 Accessories

Supplied complete with a handy carry/storage case.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DO730	MB1000 Hobby Kit	1+ £38.280 10+ £36.380 25+ £35.420	1+ £44.990

## MB1037 Cordless Drill Kit

Mincraft



A top quality kit which comes complete with cordless drill, charger and 15 accessories for drilling, grinding, cutting, routing, shaping, polishing and sanding. All items are packed in a handy carry and storage case. The drill itself is extremely practical, it can be used anywhere at any time when its internal batteries have been charged. It features a lightweight, keyless chuck to make changing of accessories quick and easy. The body of the drill has been ergonomically designed to make using it a pleasure. For longer life and high reliability, a fan-cooled motor is fitted, and the drive shaft has twin bearings for smoother running.

### Specification

Power source: 3 x Ni-Cd cells (3-6V DC)

Charger included

Off-load speed: 13,500 rpm

Drilling capacity: 230 x 3mm holes in 10mm softwood

400 x 2mm holes in 10mm

softwood

Chuck type: Keyless

Chuck capacity: 0-4mm to 6mm

Recharge time: 12 hours

Weight: 440g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZC94C 2	MB1037 Drill Kit	1+ £46.800 10+ £39.300 25+ £36.850	1+ £54.990

**Business Account Holders**  
No Delivery Charges for any order

## High Precision Drill Kit

Mincraft



**PROMOTIONAL OFFER**  
FREE - 25 Additional Accessories

This top of the range kit is suitable for use by all hobby enthusiasts and professional users. Ideal for various model building and repairing work. It combines the MB1012 'Buffalo II' 100W high power high precision drill with the MB730 variable speed transformer unit (13A plug not supplied) and 15 selected accessories for drilling, grinding, cutting, routing, shaping, polishing and sanding. Supplied complete with a chuck key and tough carrying and storage case.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XP20W 4	MB8571 Drill Kit	1+ £72.330 10+ £59.350 25+ £55.400	1+ £84.990

## Vertical Mini Drill Stand

Mincraft



A single pillar drill stand for use with RD74R, RD75S and BA80B drills. The spring loaded pressure mechanism is easily and smoothly operated by a lever to lower the drill. The 'at-rest' position of the drill can be raised or lowered. The die cast construction ensures stability. The 79 x 88mm base plate can be attached to a bench for increased stability. Supplied with an Allen key for adjusting the drill holder.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
ZA01B	MB820 Min Vert Stand	1+ £25.520 10+ £21.950 25+ £20.750	1+ £29.990

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

## Twin Pillar Precision Vertical Drill Stand

Mincraft



A twin pillar precision vertical drill stand for use with either the MB160 'Topi' or MB1012 'Buffalo II' drills. The stand is made from die cast metal for stability and maximum accuracy. The large base plate (117 x 176mm) has holes and slots cut in it so that the MB715 Machine Vice can be fixed in position. Mounting holes are also provided so that the stand can be secured to a bench. Supplied with a reducing collar for YZ94C drill.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
XP21X 5	MB540 Vert Stand	1+ £38.280 10+ £32.450 25+ £30.500	1+ £44.990



RS12750

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Stockholding and Supply

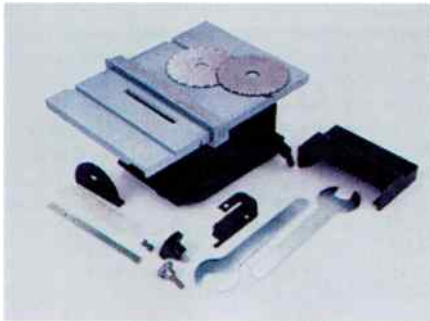
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## Precision Circular Saw Table

Minicraft



- ★ Powerful 100W fan cooled motor
- ★ Diecast table
- ★ Rip fence
- ★ Mitre guide
- ★ Transparent blade guard
- ★ Supplied with two blades

A precision circular saw table for modellers, a fan cooled 100W motor provides power to the saw blade which rotates at 12,500 rpm off-load. The saw table is made from die cast metal for accuracy and reliability. A transparent saw blade guard protects the operator whilst allowing the progress of the blade through the workpiece to be observed. A rip fence ensures precise straight cuts in wood, metal and plastic. An adjustable mitre guide is also provided to allow mitres to be cut accurately, the guide is adjustable from 0° to 90°. Supplied with two blades; an 84-tooth blade for wood and plastic and a 106-tooth blade for metal and plastic.

### Specification

Voltage:	9 to 18V DC
Power:	100W
Off-load speed:	12,500 rpm
Table area:	169 x 119mm
Cutting capacity	

Non-ferrous metal:	1mm
Plastic:	2mm
Wood:	6mm

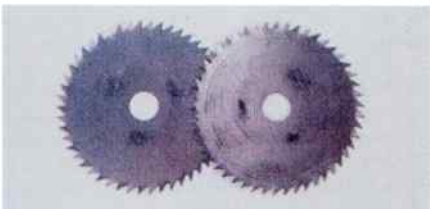
Mitre guide angle:	0° to 90°
Blade diameter:	50mm or 60mm
Cable connector:	Minicraft 2-pin plug
Cable length:	1.8m
Weight:	900g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XP18U 2	MB410 Circular Saw	£45.940	£38.600	£36.200	£53.990

## Blades to Fit Circular Saw

Minicraft



A range of blades designed for use with the Minicraft MB410 circular saw table. Three different types of blade are available, each designed for cutting different materials. The blades are supplied in packs of two as follows:

- MB1647 has 50mm diameter saw blade for plastic and non-ferrous metals (pack of 2).
- MB1648 has 60mm diameter 50 tooth saw blade for wood (pack of 2).
- MB1649 has 60mm diameter 84 tooth saw blade for wood and plastics (pack of 2).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JU93B	MB1647 Saw Blds50PM	£11.050	£8.790	£8.100	£12.990
JU94C	MB1648 Saw Blds60W	£6.800	£5.500	£5.100	£7.990
DQ75S	MB1649 CircSaw Blade	£8.500	£8.080	£7.860	£9.990

## MB495 Variable Speed Fretsaw Kit

Minicraft



- ★ Short 5mm safety cutting stroke.
- ★ Diecast construction.
- ★ Adjustable mitre guide available separately
- ★ Complete with power supply MB730 and three blades

Especially designed for the hobbyist or light DIY use, this saw contains a number of user benefits which, combined, make it a class leading fretsaw. The short 5mm stroke reduces the risk of accidental injury considerably, as skin tends to vibrate with the stroke rather than being cut. The blade is 4-way positioning thus increasing flexibility by allowing longer workpieces to be accommodated.

### Specification.

Voltage:	9 to 18V DC
Cutting speed:	500-1250 Strokes/Min
Table size:	195mm x 195mm
Max. cutting height:	75mm
Cutting stroke:	5mm
Throat distance:	270mm
Weight inc. Transformer:	6KG

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DQ87U	MB495 Fretsaw Kit	£127.650	£121.280	£118.090	£150.000

## 12 Fretsaw Blades

Minicraft

A range of replacement fretsaw blades for use with the Minicraft low voltage fretsaw. They are available in four different grades for various applications and supplied in packs of 12.



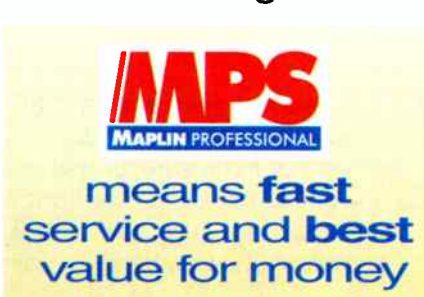
### Specification:

Minicraft Code	Maplin Code	Grade	Suggested Application
MB1754	DQ77J	V.Fine	Metal & Wood
MB1755	DQ78K	Fine	Wood & Plastic
MB1756	DQ79L	Medium	Wood & Plastic
MB1757	DQ80B	Coarse	Wood

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DQ77J	MB1754 Fret Bid No3	£3.400	£3.230	£3.150	£4.000
DQ78K	MB1755 Fret Bid No6	£2.530	£2.410	£2.350	£2.980
DQ79L	MB1756 Fret Bid No9	£2.530	£2.410	£2.350	£2.980
DQ80B	MB1757 Fret Bid No12	£2.530	£2.410	£2.350	£2.980

## Mitre Guide for Jigsaw



Minicraft



An optional mitre guide for use with the Minicraft jigsaw to give accurate angled cutting.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DQ81C	MB1758 Mitre Guide	£8.500	£8.080	£7.860	£9.990

## Precision Jigsaw

Minicraft



Perfect for cutting intricate shapes, small radii and scroll work with adjustable shoe for angled cutting (45° - 90°). It features a powerful 100W motor for greater cutting capacity and efficiency, positive blade lock for extra precision, extendable cable for better storage and comes complete with 2 blades.

### Specification.

Voltage:	9 to 18V DC
Power:	100W
Off-load speed:	2,800 rpm
Cutting stroke:	9mm
Cutting capacity	

Wood	10mm
Softwood	20mm
Plastic	5mm
Ferrous Metal	1.25mm
Non-Ferrous Metal	3mm

Adjustable shoe	45° - 90°
Cable type	Extendable
Cable length	1.8m
Weight	520grams

Spare blades are available as:

MiniCraft Code	Maplin Code	Material Cut	Pack Size
MB1750	KE97F	Wood/Plastic	Pk of 4
MB1751	KE98G	Metal	Pk of 3

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DQ88V	MB552 Precs.Jigsaw	£38.280	£36.380	£35.420	£44.990
KE97F	MB1750 Jigsaw Blades	£4.240	£4.040	£3.930	£4.990
KE98G	MB1751 Jigsaw Blades	£3.390	£3.230	£3.150	£3.990



## MB6001 Lathe & Drill Kit

Minicraft

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- ★ **Powerful 100W ball bearing drill MB1012 for DIY, hobby and craft use**
- ★ **Keyed chuck for better grip**
- ★ **Variable speed transformer MB730 - matches speed to application**
- ★ **Can be used as a lathe or drill stand for added flexibility**
- ★ **190 x 25mm Lathe turning capacity for small and detailed work pieces**
- ★ **Includes 2 bench clamps and assorted accessories**

This extremely versatile lathe system is designed for turning small, intricate pieces of wood. The system is easily assembled and is powered by the flexibility of variable speed control combined with the power of a Minicraft 100W precision drill. The system can also be used as a separate drill and transformer unit for drilling, cutting and D.I.Y. work. Supplied in a sturdy reusable kit box for storage

Retail Unit Price each (inc. VAT).

Order Code	Type 13810	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DQ90X	MB6001 Lathe & Drill	£119.140	£113.180	£110.200	£139.990

## Orbital Sander

Minicraft

- ★ **Powerful 100W fan cooled motor**
- ★ **Quick release sandpaper grip for simple changeover**
- ★ **Extendable cable for better storage - 1.8m**
- ★ **Includes 3 sanding sheets and a handy carry/storage case.**



This low voltage orbital sander is designed for all precision sanding work on wood and metal, and is excellent for treating surfaces before painting. It is suitable for use with Minicraft power supply MB714, MB730, MB750 or a similar source of direct current.

**Specification:**

Voltage	12V DC
Max. output	100W
No load speed (12V)	12,500 rpm
Pad size	70 x 50mm
Weight	400gm.

Replacement sanding sheets available in packs of 10:

Minicraft	Maplin	Grade
-----------	--------	-------

Code	Code	Coarse
MB1787	DQ82D	Fine
MB1789	DQ83E	

Retail Unit Price each (inc. VAT).

Order Code	Type 13808	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DQ89W	MB560 Orbital Sander	£34.030	£32.330	£31.480	£39.990
DQ82D	MB1787 Sand Sheet	£2.360	£2.250	£2.190	£2.780
DQ83E	MB1789 Sand Sheet	£2.380	£2.250	£2.190	£2.780

## Low Voltage Bench Sander

Minicraft



- ★ **100W motor**
- ★ **Ventilated housing for longer life**
- ★ **Bench fixing holes for maximum stability**
- ★ **Complete with mitre guide, table and 3 sanding disks**

A useful addition to any armoury of low voltage hobby power tools. Use for rapid removal and smoothing of material. Designed for use with Minicraft MB730 or MB750 variable speed power supplies.

**Specification:**

Voltage	19-18V DC
Max. output	100W
No load speed (12V)	12,500 rpm
Work surface area	100 x 65mm
Pad size	75mm dia
Standard cable	1.8m
Weight	510 gm

Replacement velcro backed sanding discs available in packs of 5.

Minicraft Code	Maplin Code	Grade
MB1797	DQ84F	Coarse
MB1799	DQ85G	Fine

Retail Unit Price each (inc. VAT).

Order Code	Type 13808	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DQ86T	MB450 Bench Sander	£38.280	£36.380	£35.420	£44.990
DQ84F	MB1797 Sand Disc	£2.530	£2.410	£2.350	£2.980
DQ85G	MB1799 Sand Disc	£2.530	£2.410	£2.350	£2.980

## Engraving Pen

Minicraft



An extremely simple to use engraving pen for craft and security engraving on glass or metal. The lightweight pen-style unit is comfortable to hold. The on/off switch requires very little pressure to operate, thus reducing operator fatigue. Accessory bits simply push-in/pull-out for fast interchangeability. Tip speed is 20,000 rpm (off-load) for fast efficient engraving. Supplied with one diamond tipped engraving bit.

**Specification**

Voltage:	9 to 16V DC
Power:	6W
Off-load speed:	20,000 rpm
Shaft holder capacity:	2-3mm
Cable connector:	Minicraft 2-pin plug
Cable length:	1-8m
Weight:	75g

Retail Unit Price each (inc. VAT).

Order Code	Type 3858	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YZ96E	MB185 Engraving Pen	£14.880	£13.000	£12.400	£17.490

## Engraving and Security Kit

Minicraft

A superb kit ideal for the craft enthusiast and householder. This comprehensive, simple to use engraving kit comes with a lightweight pen-style engraver, plug-in transformer, one diamond bit and two grinding stones. The kit also includes a paper stencil for craft engraving on glass and a plastic stencil for security marking on valuables, i.e., videos, cameras, car radio. Supplied with a handy carry and storage case.



Retail Unit Price each (inc. VAT).

Order Code	Type 3858	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BA86T	MB186 Engraving Kit	£25.520	£21.950	£20.750	£29.990

## Diamond Engraving Bit Set

Minicraft

A set of diamond engraving bits designed for use with the Minicraft MB185 engraving pen. The bits are suitable for fine engraving work on a wide range of plastics, metals and glass. The set contains three different types as follows: 1mm diameter round bit, 1.4mm diameter round bit, 1.6mm diameter oval bit.



Retail Unit Price each (inc. VAT).

Order Code	Type 3860	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JW06G	MB1766 Engravers	£8.500	£6.970	£6.450	£9.990

## LOW VOLTAGE ACCESSORIES

### Cast Alloy Vice

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Keep your models and other small items firmly in place while you work on them with this small, quality made cast alloy vice. The vice jaws are 35mm wide, 10mm deep and open to 30mm at full extension. The vice has slots in the two longest sides, enabling it to be fitted to a drill stand or easily secured to your workbench.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BP79L	Cast Alloy Vice	£11.050	£9.550	£9.050	£12.990



## Machine Vice

### Minicraft

A precision machine vice for clamping and holding workpieces. Shafts and tubes may be held securely by means of horizontal and vertical 'V' grooves. The vice incorporates slots and screws enabling it to be attached to the MB540 vertical drill stand or alternatively secured to a bench. Capacity: jaw width: 35mm, jaw extension: 30mm, jaw depth: 10mm.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JW16S	MB715 Machine Vice	£9.350	£8.300	£7.900	£10.990

## MB720 Flexible Drive Shaft

### Minicraft

Increases the usefulness of the Minicraft range of drills by allowing fingertip control for cutting, grinding, etc., in positions which would normally be inaccessible. It has an 800 x 3mm steel flexible drive shaft with 2.3mm collet and engraving sleeve. Described as a light duty DIY and hobby shaft, it is suitable for use with all Minicraft drills.



Retail Unit Price each (inc. VAT).



Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DQ91Y	MB720 Flex Drive	£14.450	£13.740	£13.380	£16.990

## Super Fine Drill Bits

We endeavour to hold stocks at all Maplin and Maplin Mondo stores, but to be sure, please phone before travelling. See front of catalogue for addresses and telephone numbers

### Minicraft

A pack of 5 different Minicraft, superfine, High Speed Steel drill bits in the following diameters: 0.8mm, 1.0mm, 1.2mm, 1.5mm, 2.0mm. The bits are designed for use with the Minicraft range of drills and are suitable for drilling wood, non-ferrous metals and plastics.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JW04E	MB1728 5pc Drill Set	£8.500	£7.400	£6.950	£9.990

## HSS Twist Drill Bits

### Minicraft



A range of quality, High Speed Steel twist drill bits suitable for precision drilling applications in wood, non-ferrous metals and plastics. The bits are designed for use with the Minicraft range of drills and are available in packs, each containing 4 different drill sizes.

Type	Diameters
MB1720	0.4mm, 0.6mm, 0.8mm, 1.0mm
MB1721	1.2mm, 1.4mm, 1.6mm, 1.8mm
MB1722	2.2mm, 2.4mm, 2.6mm, 2.8mm
MB1723	1.5mm, 2.0mm, 2.5mm, 3.0mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JU96E	MB1720 Drill Pk	£3.390	£2.800	£2.600	£3.990
JU97F	MB1721 Drill Pk	£3.390	£2.800	£2.600	£3.990
JU98G	MB1722 Drill Pk	£3.390	£2.800	£2.600	£3.990
JU99H	MB1723 Drill Pk	£3.390	£2.800	£2.600	£3.990

## 11-Piece HSS Drill Bit Set

### Minicraft

A set of 11 High Speed Steel bits designed for use with the Minicraft range of drills. The set comprises:



2 x 0.4mm, 2 x 0.8mm, 2 x 1.0mm, 1 x 1.2mm, 1 x 1.5mm, 1 x 1.6mm, 1 x 2.0mm and 1 x 2.5mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
JW20W	MB1905 11pc DrillSet	£8.500	£7.400	£6.950	£9.990

## 25-Piece Accessory Set

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### Minicraft



A general purpose accessory set comprising six High-Speed Steel drill bits (1.0, 1.2, 1.5, 2.0, 2.5 and 3.0mm), six fine milling cutters, three grinding stones, one grinding wheel, seven carborundum cutting discs and two mandrels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BAB8V	MB1900 Accessory Set	£13.600	£10.750	£9.800	£15.990

## Diamond Saw Blade

### Minicraft

An 22mm diameter diamond cutting disc designed for use with the Minicraft range of drills. The blade is supplied complete with a mandrel and is suitable for cutting glass.

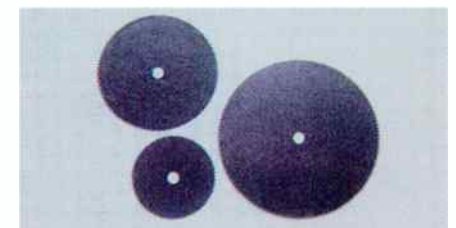


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JW05F	MB1763 Diamond Saw	£8.500	£7.400	£6.950	£9.990

## Circular Saw Blades for Drills

### Minicraft



Circular saw blades designed for use with the Minicraft range of drills. The blades are suitable for cutting and trimming small sections of wood and plastic. MB1640 has 12mm, 19mm and 25mm diameter saw blades (3 items).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JU91Y	MB1640 Saw Blades	£6.800	£5.500	£5.100	£7.990

## Carborundum Cutting Wheels

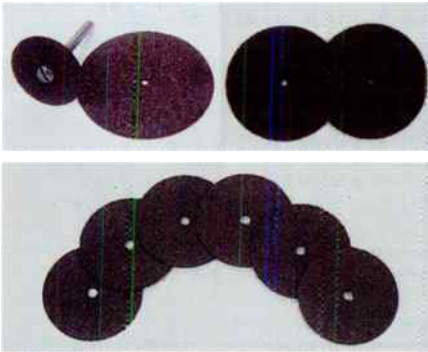
### Minicraft

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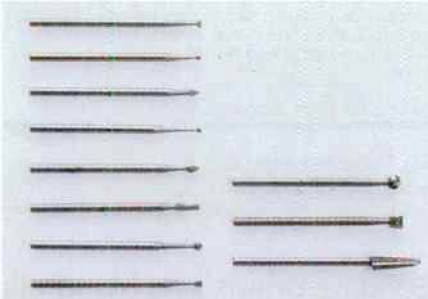
Carborundum cutting wheels suitable for use with the Minicraft range of drills. The wheels are available in 22mm and 40mm diameter and are suitable for cutting through small metal tubes and shafts. Three different packs are available: MB1630 has 1 x 40mm cutting wheel, 1 x 22mm cutting wheel, 1 x mandrel. MB1631 has 2 x 40mm cutting wheel. MB1632 has 6 x 22mm cutting wheel. Please note: packs MB1631 and MB1632 do not contain mandrels.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JUB9W	MB1630 Whis&Mandrl	£2.710	£2.250	£2.100	£3.190
JU90X	MB1632 Carb Whis22	£2.710	£2.250	£2.100	£3.190
JW22Y	MB1631 Carb Whis40	£2.280	£1.900	£1.800	£2.690

## 12-Piece Fine and Medium Cutter Set

Minicraft



A 12-piece cutter set comprising nine fine and three medium milling cutters. The set is suitable for a variety of hollowing, carving, shaping and engraving of wood, metals and plastics. The cutters cover a wide range of shapes and include reverse taper, taper, round, cylindrical, conical, oval and dome. The fine sizes are 1.5mm and 2.3mm diameter, and the medium sizes are 4mm and 6mm diameter.

Retail Unit Price each (inc. VAT).

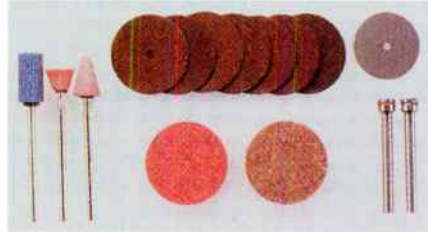
Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BA90X	MB1603 Cutter Set	£13.600	£10.750	£9.800	£15.990

## 15-Piece Cutting and Grinding Set

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Minicraft



A general purpose cutting and grinding set comprising three assorted grinding stones (cylindrical, taper and reverse taper), seven carborundum cutting wheels, one mini saw blade, two grinding wheels and two mandrels. Suitable for use on a wide range of materials.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BA91Y	MB1904 Grinding Set	£8.500	£6.970	£6.470	£9.990



## Self Adhesive Sanding Discs

Minicraft



A range of self adhesive sanding discs to fit the Minicraft MB1780 rubber holder. The discs are available in two different grades and are supplied in packs containing 6 discs. The following types are available: MB1781 pack of 6 discs (coarse). MB1783 pack of 6 discs (fine).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JW25C	MB1781 Sand Discs C	£1.600	£1.350	£1.270	£1.890
JW26D	MB1783 Sand Discs F	£1.600	£1.350	£1.270	£1.890

## Rubber Holder with Self Adhesive Sanding Discs

Minicraft

A rubber holder for self adhesive sanding discs suitable for use with the Minicraft range of drills. The holder is supplied with four self adhesive sanding discs (2 coarse and 2 fine) and is suitable for a wide range of sanding applications in wood and metal.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JW11M	MB1780 Hldr & Discs	£2.880	£2.400	£2.250	£3.390

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## Flap Sander

Minicraft

Flap sander designed for use with the Minicraft range of low voltage drills. It is ideal for sanding small areas especially on wood or car bodies



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DC76H	MB1656 Flap Sander	£3.400	£3.230	£3.150	£4.000

## Felt Polishers

Minicraft



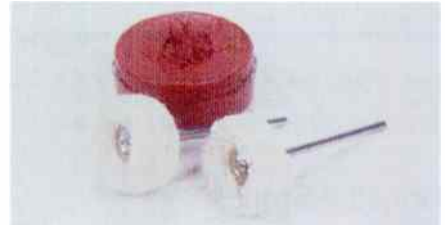
Three felt polishers primarily intended for metals, particularly silver and pewter. The pack has one tapered, one reverse-tapered and one wheel polisher, each of which has its own 2mm mandrel. They are intended to work at speeds of up to 12,000 rpm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KW17T	Felt Polisher Pack	£3.390	£2.800	£2.600	£3.990

## Polishing Set

Minicraft



A set of polishing accessories for the Minicraft range of drills. The set includes a 22mm diameter soft felt polisher, a wool 'mop' and a pot of polishing paste. Both the polisher and the mop are supplied with fixed mandrels. The polishing paste is applied using the felt polisher and the wool mop is then used to do the polishing. Suitable for metals, glass and ceramics. Maximum recommended speed 10,000 rpm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JW07H	MB1652 Polish Set	£4.240	£3.490	£3.250	£4.990

## Mounted Silicone Polishers

Minicraft

A pack of mounted silicone polishing tips for use with the Minicraft range of drills. The pack contains one circular and one elliptical silicone polishing wheel suited to a wide range of specialist polishing applications. Both are 12mm in diameter and are supplied with fixed mandrels.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JW08J	MB1661 Sil Polishers	£3.390	£2.800	£2.600	£3.990

## Steel and Brass Wire Brushes

**Minicraft**



A selection of steel and brass wire brushes suitable for use with the Minicraft range of drills. The brushes can be used for a wide variety of metal cleaning tasks including derusting and paint removal. Each type is supplied in a pack containing 3 different brushes: one pencil shape, one cup shape and one wheel shape. Note: the maximum recommended speed is 10,000 rpm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5742	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JW09K	MB1670 Steel Brushes	£3.390	£2.800	£2.600	£3.990
JW10L	MB1671 Brass Brushes	£3.390	£2.800	£2.600	£3.990

## 15-Piece Cleaning and Polishing Set

**Minicraft**



A set of 15 cleaning and polishing accessories for use with the Minicraft range of drills. The set contains accessories suitable for sanding, cleaning, grinding, deburring and polishing on wood, plastics and soft metals.

Retail Unit Price each (inc. VAT).

Order Code	Type 5743	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JW19V	MB1902 Clean&Polish	£8.500	£6.850	£6.300	£9.990

## Grinding Stones

**Minicraft**

A pack of three grinding stones of various types. They are used for grinding, deburring and engraving metal, glass, stone, ceramics, plastic and wood. They can also be used for sharpening knives, etc. The three stones supplied are: 7mm cylindrical, small taper and reverse taper.

All types have an integral 2mm mandrel. Maximum drill speed: 35,000 rpm.



Retail Unit Price each (inc. VAT).

Order Code	Type 5745	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
KW15R	Grinding Stones 3Pk	£3.390	£2.800	£2.600	£3.990

## Grinding Wheels

**Minicraft**



A pack of 22mm grinding wheels. There are three in the pack; graded as coarse grit (purple), medium grit (brown) and fine grit (white). The chosen wheel is screw-fitted to a separate 3mm dia. mandrel, the

free end of which is inserted into the drill's chuck. These grinding wheels are suitable for use on ceramics, metals, stones and glass, with a maximum speed of 40,000 rpm.

Retail Unit Price each (inc. VAT).

Order Code	Type 5747	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
KW16S	Grinding Wheels 3Pk	£3.390	£2.800	£2.600	£3.990

## Mandrels

**Minicraft**

A pack of three mandrels for use with Minicraft drill fitting sawblades and cutting discs. Suitable for all Minicraft drills.



Retail Unit Price each (inc. VAT).

Order Code	Type 5750	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
JW18U	MB1625 Mandrels	£2.110	£1.780	£1.660	£2.490

# MINICRAFT®

## Collet Set

**Minicraft**

A four piece collet set suitable for use with Minicraft® drills MB1010, MB170 (BA80B) and MB160.

Diameter sizes: 0.5, 1.0, 2.3, 3.2mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 5752	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BA95D	MB1925 Collet Set	£4.240	£3.490	£3.250	£4.990

## Keyless Chuck

**Minicraft**

A keyless chuck for use with Minicraft® collet drill MB120. Size: 0.4 to 3.2mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 5755	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BA96E	MB1932 Keyless Chuck	£4.240	£3.490	£3.250	£4.990

## Chuck Key

**Minicraft**

A replacement chuck key for use with the Minicraft® high power, high precision drill MB1012 (YZ94C).



Retail Unit Price each (inc. VAT).

Order Code	Type 5757	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BA97F	MB1936 Chuck Key	£2.540	£2.120	£1.980	£2.990

## Extension Cables

**Minicraft**

Two extension cables for use with the majority of Minicraft® power tools. The cables are 5m long and one has a Minicraft® socket at one end and a compatible plug at the other end. The other version has battery clips at one end and a Minicraft® compatible socket at the other end (BA94C).



Retail Unit Price each (inc. VAT).

Order Code	Type 5759	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
BA94C	MB1805 Cable + Clips	£5.520	£4.500	£4.170	£6.490
BA93B	MB1802 Ext Cable	£4.240	£3.490	£3.250	£4.990

## 15-Piece Modelling Set

**Minicraft**



A 15-piece modelling set comprising five carbondrum cutting discs, one mini saw blade, two mandrels, three fine milling cutters, one hard felt polisher, two steel wire brushes and one brass wire brush.

Retail Unit Price each (inc. VAT).

Order Code	Type 5761	Price each exc. VAT			inc. VAT each 1+
		1+	5+	10+	
BA89W	MB1901 Modelling Set	£9.920	£7.650	£7.150	£10.490

## Sanding Drums and Mandrels

**Minicraft**



A selection of sanding drums for use with Minicraft drum mandrels (above). Three types of sanding drum are available: fine grade, coarse grade, silicon carbide. The drums are sold in packs of five and the mandrels in packs of three.

Retail Unit Price each (inc. VAT).

Order Code	Type 5896	Price each exc. VAT			inc. VAT each 1+
		1+	10+	25+	
RZ62S	MB1784 Fine	£3.390	£2.800	£2.620	£3.990
RZ63T	MB1785 Coarse	£3.310	£2.770	£2.590	£3.890
RZ64U	MB1786 SiCarbide	£3.390	£2.800	£2.620	£3.990
RD77J	Drum Mandrels	£2.970			£3.490

### 8 Tungsten/Vulcanite Burrs

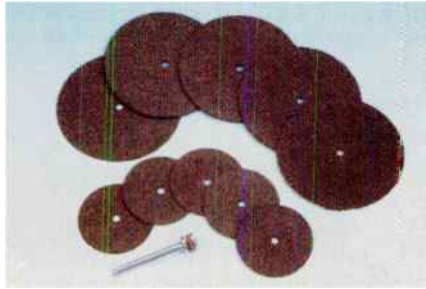


A set of 8 tungsten/vulcanite burrs of various sizes and types suitable for use in precision drills. Ideal for fine precision work and a wide range of hobby and modelling projects, the burrs in this set are suitable for hollowing, carving, shaping and engraving wood, metals and plastics.

Retail Unit Price each (inc. VAT).

Order Code	Type 10321	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
BP68Y	8 Tungstr/Vulcanite Burr	£38.280	£27.500	£24.900	£44.990

### Carborundum Discs

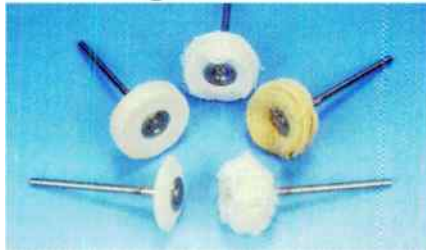


This useful set includes 5 large carborundum disc/cutting wheels (37mm dia), 5 small disc/cutting wheels (22mm dia) and a mandrel. Ideal for cutting through small tubes and shafts.

Retail Unit Price each (inc. VAT).

Order Code	Type 10329	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP69A	Carborundum Discs	£4.070	£3.400	£3.150	£4.750

### 5 Polishing Brushes



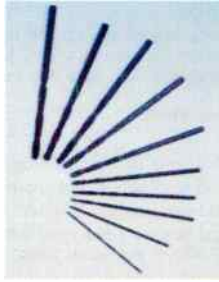
A set of 5 polishing brushes suitable for use with a range of materials, including metals, glasses and ceramics. The set comprises a wheel and an elliptical shaped polisher in felt, two wheel polishers (one in soft suede and one in cotton) and a 'mop' polisher in wool. Maximum recommended speed 10,000 rpm.

Retail Unit Price each (inc. VAT).

Order Code	Type 10332	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP70M	5 Polishing Brushes	£4.240	£3.550	£3.350	£4.990

### 10 HS Twist Drills

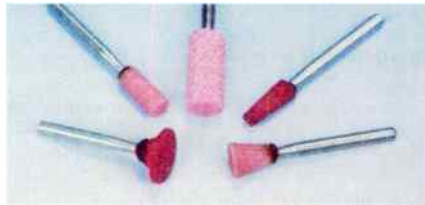
A pack of 10 high speed twist drill bits for precision drills, ranging in size from 0.8mm to 2.4mm. The set includes: 1 x 0.8mm, 1 x 1.0mm, 1 x 1.2mm, 1 x 1.3mm, 1 x 1.5mm, 1 x 1.8mm, 1 x 2.0mm, 1 x 2.2mm, 1 x 2.3mm, 1 x 2.4mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 10322	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP71N	10 HS Twist Drills	£4.920	£4.200	£3.980	£5.790

### 5 Mounted Abrasives



This pack of pink abrasives contains 5 mounted abrasives/grinding stones for use in precision drills. Supplied in a variety of sizes and types including cylindrical, disc, taper and reverse taper, they're ideal for a wide range of applications - metal, glass, stone, ceramics, plastic and wood.

Retail Unit Price each (inc. VAT).

Order Code	Type 10323	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP72P	5 Mounted Abrasive	£2.540	£2.250	£2.150	£2.990

### 5 Plain Steel Burrs



This set contains 5 miniature plain steel burrs in a variety of types and suitable for very fine work in wood, metals and plastics.

Retail Unit Price each (inc. VAT).

Order Code	Type 10325	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP73Q	5 Plain Steel Burrs	£3.990	£3.300	£3.100	£4.690

### 6 Diamond Tipped Burrs



This set of fine, quality diamond tipped burrs for precision drills provide the 'edge' you need for close detail work in wood, metal, glass and ceramics. The set includes a variety of types and sizes.

Retail Unit Price each (inc. VAT).

Order Code	Type 10326	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP74R	6 Diamond Tip Burrs	£29.770	£23.100	£21.050	£34.990

### Steel and Brass Brushes



This polishing and finishing set for precision drills comprises two brass wire brushes (wheel and pencil shape), three steel wire brushes (wheel, cup and pencil shape) and a 'mop' brush in wool for buffing to a bright, shining finish. The recommended maximum speed is 10,000 rpm.

Retail Unit Price each (inc. VAT).

Order Code	Type 10327	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BP75S	6 Steel/Brass Brush	£4.240	£3.550	£3.350	£4.990

## WELDING EQUIPMENT

### Mig Welder

Clarke



The NO GAS MIG 85EN is a high quality rugged 'metal inert gas' (MIG) welder for professionals and DIYers alike offering the advantages of standard mig welding but without the need for a CO2 gas bottle. The welder is used with a special flux-cored mild steel wire that produces its own gas shroud as it burns allowing these machines to weld steel without the need for additional gas, thus simplifying their use. The wire is retained inside the machine and automatically fed out by a feeder unit through the torch nozzle: the rate of feed being controlled by a 'min/max' switch. A second 'min/max' switch provides two power settings at the torch, to give increased welding power control. The torch incorporates an 'on/off' control 'switch'. Designed solely for use without gas and simple to use, yet capable of producing professional results, this machine is ideal for welding thin sheet metal-work and car body repairs. Supplied with welding torch, flux-cored mild steel wire, earth clamp, face mask and full operating instructions.

#### Specification

Input voltage:	240V AC 50Hz
Open-circuit output voltage:	21 to 28V
Output current	
Max:	85A
60%:	35A
Min:	30A
Maximum metal thickness:	3 to 4mm mild steel
Wire size:	0.9mm
Wire spool capacity:	Mini or 5kg
Max wire feed speed:	15m/min
Dimensions:	430 x 370 x 250mm
Weight:	21.5kg

Retail Unit Price each (inc. VAT).

Order Code	Type 4014	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
RJ46A	42 MIG Welder 85EN	£121.520	£109.240	£106.120	£142.790

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See the maps at the front of the catalogue for the nearest one to you.

## MIG Welder

Clarke



A high quality rugged 'metal inert gas' (MIG) arc welder designed for the hobbyist, professional and light industrial user who needs the advantages of standard mig welding that are offered by this welder. The welder is used with a mild steel wire and a CO2 gas bottle, strapped to the rear, to produce its own gas shroud as it burns, to weld steel. It can be used for other metals with only a change of wire and gas, if necessary. Stowage for a spare bottle is provided. The wire is retained inside the machine and automatically fed out by a feeder unit through the torch nozzle: the rate of feed being controlled by a 'min/max' switch and wire tension controlled by a 0 to 10 position variable rotary control. Two switches provide four power settings for optimum welding power control at the torch. The torch incorporates a control 'switch' for full 'on/off' control. Designed to be simple to use, yet capable of producing professional results, this machine is ideal for welding thin sheet metal-work and car body repairs. Supplied with CO2 gas bottle, welding torch, gas regulator, mild steel welding wire, earth clamp, face mask and full operating instructions.

### Specification

Input voltage: 240V AC 50Hz  
 Open-circuit output voltage: 21 to 28V  
 Output amperage  
 Max: 90A  
 60%: 30A  
 Min: 25A  
 Maximum metal thickness: 3 to 4mm mild steel  
 Wire size: 0.6/0.8mm  
 Wire spool capacity: Mini or 5kg  
 Max wire feed speed: 14m/min  
 Dimensions: 430 x 370 x 250mm  
 Weight: 23.0kg

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ47B	49 90A MIG Welder	£164.920 £144.620 £133.170	£193.790

## Welding Gases

Clare

A selection of gases, for use with MIG welder RJ47B, are available. Supplied in standard bottles, the gases are CO2 for mild steel, Argon for aluminium/stainless steel, and a CO2/Argon Mix for thin sheet metal/mild steel.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ48C	3 CO2 Welding Gas	£8.670 £8.070 £7.550	£10.190
RJ49D	Argon Welding Gas	£8.670 £8.070 £7.550	£10.190
RJ50E	3 CO2/Argon Weld Gas	£8.670 £8.070 £7.550	£10.190

## Welding Wire

Clarke

Supplied on mini-spools, welding wire is available for the MIG welders RJ46A (which uses flux-cored wire) and RJ47B, in a selection of types and sizes.

### Description

Mild steel wire spool, 0.6mm dia. RJ51F  
 Mild steel wire spool, 0.8mm dia. RJ52G  
 Mild steel wire spool, 0.9mm dia. flux-cored RJ53H  
 Stainless steel wire spool, 0.8mm dia. RJ54J  
 Aluminium wire spool, 0.8mm dia. RJ55K

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ51F	2 M/S Weld Wire 0.6mm	£5.200 £4.580 £4.310	£6.110
RJ52G	2 M/S Weld Wire 0.8mm	£5.200 £4.580 £4.310	£6.110
RJ53H	1 M/S W/W 0.9mm Fluxed	£8.670 £7.550 £7.130	£10.190
RJ54J	1 S/S Weld Wire 0.8mm	£13.880 £12.330 £11.710	£16.310
RJ55K	Alum Weld Wire 0.8mm	£13.880 £12.330 £11.710	£16.310

## Welding Tips

Clarke

Supplied in packs of five, a selection of welding tips is available for the MIG welders RJ46A and RJ47B. Three sizes are available: 0.6mm, 0.8mm, and 1.0mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ57M	0.6mm Welding Tip	£3.460 £3.040 £2.870	£4.070
RJ26D	0.8mm Welding Tip	£3.460 £3.040 £2.870	£4.070
RJ58N	1.0mm Welding Tip	£3.460 £3.040 £2.870	£4.070

## Welding Torch Shroud

Clarke

A spare shroud for use with the torches supplied with MIG welders RJ46A and RJ47B. Supplied in packs of two.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ56L	Welding Torch Shroud	£4.330 £3.850 £3.590	£5.090

## Glass for Welding Mask

Clarke

A spare darkened safety glass for the welding mask supplied with MIG welders RJ46A and RJ47B.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RJ59P	Weld Mask Dark Glass	£3.720 £3.270 £3.070	£4.380

## Welding Clamps



Each tool has two clamps which securely lock when the handles are squeezed together. The self-locking device can be quickly released by pulling a lever into the second half of the handle (the handle is made up of two levers). Screw adjustment on the base of the handle increases or decreases the space between the jaws of the clamp.

Three types of clamp are available:  
 C Welding Clamps with a 100mm gap when the jaws are fully open.  
 250mm Welding Clamps with a 53mm gap when the jaws are fully open.  
 Flat Nose Clamps with a 68mm gap when the jaws are fully open.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JR64U	1 C Welding Clamp	£4.330 £3.740 £3.220	£5.090
JR65V	2 250mm Weld Clamp	£4.240 £3.390 £2.830	£4.990
JR66W	1 Flat Nose Clamp	£4.160 £3.390 £3.070	£4.890

## Heavy Duty Gauntlets



Heavy duty gauntlets made from a suede type material. Features long length for maximum protection and have internal lining. The gloves are suitable for general-purpose use and offer excellent protection from hard and dirty tasks.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GK92A	Green Gauntlets	£3.650 £2.970 £2.700	£4.290

ORDER BEFORE 5PM FOR SAME DAY DESPATCH

Tel: 01702 554000

Fax: 01702 554001

e-mail: Sales@maplin.co.uk

**PRODUCTION**

**COMPONENT PREFORMING**

**Component Preforming Machine**

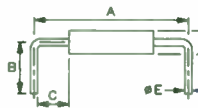
Cliff



This manually operated machine is designed to cut to length, and preform, axial lead components ready for fitting into PCBs, where the component is parallel to the board. The component may be fed in bandolier form (assuming a 5mm pitch between components or multiple of), or loose by means of the built-in chute slots. Components are cut and formed without scoring or damaging the leads. The bandolier drum supports have lugs which locate into keyhole slots on the side of the machine. This allows the drum to sit over the machine, when in use, so that components are gravity fed into the machine.

All adjustments are carried out on top of the machine using the built-in scales and setting instructions, which are conveniently printed on the machine.

The machine has an anodised body with heavy steel sides and is supplied with an incorporated base plinth. The 35mm diameter free running blades are made from 'M2' high-speed steel. The cutting and bending wheels are in high carbon steel, and are all hardened and tempered as appropriate. The machine will cut and form 40,000 components per hour, and is fitted with safety guards where necessary. A mains powered component counter is available, separately, for use with the machine. The counter is adjustable to accept all bandolier sizes and has a reset button and reverse count switch.



**Specification**

Bending between centres A:	5mm to 50mm
Length of cut B:	4mm to 13mm
Minimum bending C:	1-2mm
Diameter of component D:	0.4mm to 15mm
Diameter of wire E:	0.4mm to 1mm

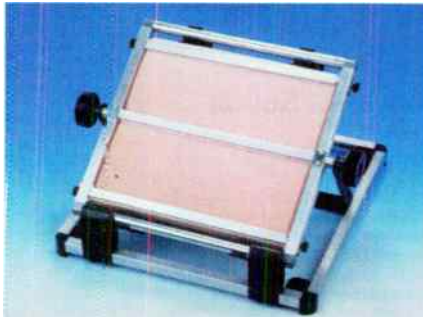
Dimensions: 200 (W) x 165 (H) x 175 (D)mm  
Weight: 2.8kg

Retail Unit Price each (inc. VAT).

Order Code	Type #405	Price each exc. VAT		inc. VAT each
		1+	3+	
DH18U	Preforming Machine	£346.360	£322.520	£406.980
DH19V	Component Counter	£216.150	£192.470	£253.980

**PCB JIGS**

**PCB Workframe**

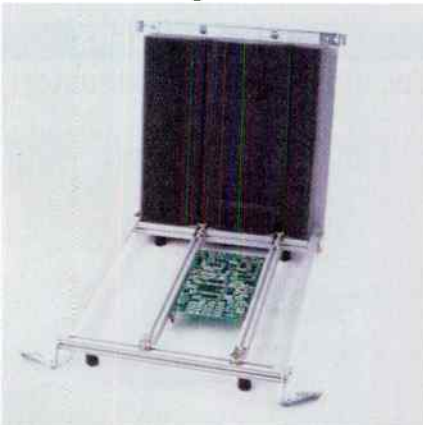


A range of three high quality PCB frames – ideal for PCB assembly with leaded components. Simply insert all the leaded components into the PCB, fit the foam lined back plate, invert the frame and solder the leaded joints. This ensures all the components never fall out while soldering, giving flush components every time. Available in different sizes, with the ability to hold a PCB up to 230 x 280mm (WF/0), 230 x 510mm (WF/1) and 360 x 510mm (WF/2).

Retail Unit Price each (inc. VAT).

Order Code	Type 10403	Price each exc. VAT		inc. VAT each
		1+	1+	
BN92A 1	Work Frame WF/0	£68.070		£79.990
BN93B 1	Work Frame WF/1	£74.030		£86.990
BN94C 1	Work Frame WF/2	£93.600		£109.990

**PCB Component Mounting and Soldering Frame**



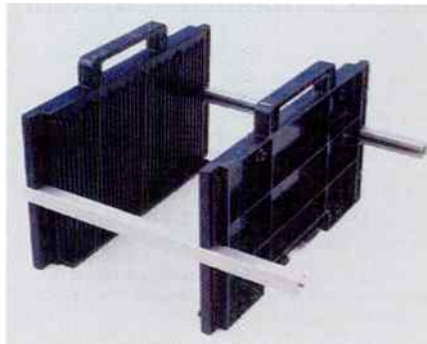
An ingenious and flexible solution to component insertion and soldering problems. The extruded aluminium frame will hold a PCB with dimensions up to 185 x 235mm. The first stage of PCB assembly is to clamp the board in position using the adjustable clamp bars. The PCB is held firmly by 8 spring clips and the components can now be inserted. Once insertion is complete, the foam padded lid is fitted, which holds the components in position. The frame is then turned over and the underside of the board can be soldered and leads cropped without components falling out. Overall size 260 x 240 x 50mm. Supplied unassembled.

Retail Unit Price each (inc. VAT).

Order Code	Type 2016	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XM72P 2	PCB Assembly Frame	£44.460	£39.000	£29.040	£52.250

**Conductive Rack for PCBs**

Cliff



A modular rack system that has been designed for safely holding PCBs during all stages of assembly, cleaning or testing. The width of each module is easily adjusted from 0 to 290mm, by sliding one side panel along the aluminium extrusion and tightening 2 screws. The module is stackable in all directions so that racks of unlimited height and depth may be constructed. The two front handles are used for holding the assembly, and two back strips are provided which, when fitted, prevent the PCBs from sliding out of the back of the rack. Two moulded hooks are supplied for wall mounting the modules. The plastic sides are antistatic so sensitive devices may be safely stacked in PCBs without special precautions, other than earthing the rack.

**Supplied Parts:**

- Side assemblies: 2
- 320mm long aluminium extrusions: 2
- Back strip: 2
- Wall hooks: 2
- Nut holders: 4
- Nuts/bolts: 10 sets

**Manufacturer's Code**

Code	Type	MPS Code
PC-01C	conductive	DH21X

Retail Unit Price each (inc. VAT)

Order Code	Type #027	Price each exc. VAT			inc. VAT each
		1+	3+	5+	
DH21X	PCB Conductive Rack	£20.410	£19.000	£14.280	£23.990

**Printed Circuit Board Clamps**

A plastic moulded clamp for holding printed circuit boards of up to 3mm max. thickness. The clamp can also be screwed onto a board as part of a jig assembly for testing purposes. The clamp has been designed to be used with the various contact probes, so the PCB is sitting on the probes with the clamps holding the board in place. A lever with a thumb platform allows the PCBs to be removed with ease, whilst a wide base enables the user to screw the clamp into the desired position. Base measures: 34 x 25mm  
Height to PCB level: 12mm  
Total height: 30mm



Retail Unit Price each (inc. VAT).

Order Code	Type #426	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KU16S	PCB Clamps	£1.320	£1.240	£0.886	£1.560

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

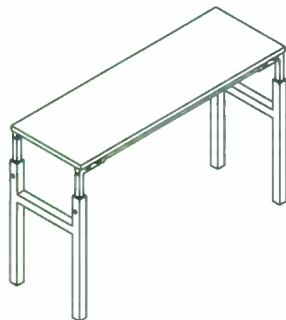
## WORKBENCHES

### Modular Workbench System

**Treston**

A range of self-assembly workbenches that are sturdy in construction, and offer considerable flexibility in the way they can be used. Because of the modular design, layout changes and alterations in worktop and shelf heights can be made rapidly without loss of stability. The worktop is light grey, laminated on both sides and all edges, and has an overall thickness of 25mm. The framework is in blue-grey epoxy enamelled steel. The workbenches are particularly suited to electronic and related industries.

Each bench is supplied in a strong carton with full instructions and a small spanner and hex key for easy assembly.



**Profile dimensions**

frame: 40 x 40 x 2.0mm  
 sidebars: 35 x 35 x 1.5mm  
 height adjustment profile: 34 x 34 x 2.0mm

### Workbench TP

This range has a continuous height adjustment of 650 to 900mm. There is an integral scale between 10 and 50mm in the height adjustment profile.

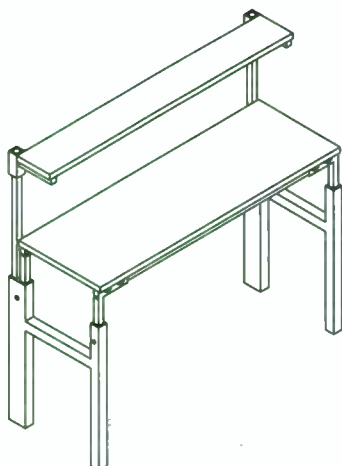
Manufacturer's Code	Measurements (mm)	MPS Code
TP-510	500 x 1000	DE97F
TP-515	500 x 1500	DE98G
TP-715	700 x 1500	DE99H
TP-718	700 x 1800	DF00A

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DE97F	Workbench TP-510	£144.670	£169.990
DE98G	Workbench TP-515	£161.690	£189.990
DE99H	Workbench TP-715	£170.200	£199.990
DF00A	Workbench TP-718	£187.220	£219.990
DF01B	Workbench TP-918	£212.750	£249.990

### Workbench TPH

**Treston**



This range includes a matching light grey laminate shelf. The depth of this shelf is 320mm and its height may be continuously adjusted between 1080 and 1580mm. Under the shelf there is a longitudinal

support bar 35 x 35 x 1.5mm. Height adjustment of the main worktop is continuous between 650 to 900mm.

Manufacturer's Code	Measurements (mm)	MPS Code
TPH-712	700 x 1200	DF02C
TPH-715	700 x 1500	DF03D
TPH-918	900 x 1800	DF05F

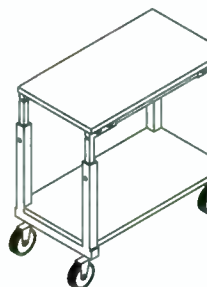
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DF02C	Workbench TPH-712	£255.310	£299.990
DF03D	Workbench TPH-715	£263.820	£309.990
DF05F	Workbench TPH-918	£306.370	£359.990

### Movable Bench

**Treston**

This movable bench has four 100mm diameter castors, two being fitted with brakes. Height adjustment is continuous between 650 to 900mm. This useful and versatile auxiliary bench, or trolley, is available in two sizes. Can be equipped with a matching lower shelf (available separately).



Manufacturer's Code	Measurements (mm)	MPS Code
SAP-507	500 x 700	DF06G
SAP-710	700 x 1000	DF07H
AT-507 (shelf)	500 x 700	DF08J
AT-710 (shelf)	700 x 1000	DF09K

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DF06G	Movable Bench SAP507	£161.690	£189.990
DF07H	Movable Bench SAP710	£187.220	£219.990
DF08J	Shelf AT-507	£34.030	£39.990
DF09K	Shelf AT-710	£55.310	£64.990

## SERVICE PRODUCTS

### VACUUM CLEANERS

#### Vacuum Cleaner Dustbuster

**Black & Decker**



A compact and lightweight cordless rechargeable vacuum cleaner. Ideal for cleaning in 'nooks and crannies' and cleaning up everyday spills. Supplied with wall-mounting housing and recharger.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
RL21X	DustBuster	£19.950	£23.450

### Rechargeable Vacuum Cleaner



A high suction power lightweight vacuum cleaner for use in the home, car, etc. The cleaner has a high capacity 6V sealed lead acid battery rated at 4Ah, and an easy and fast to clean filter. An LED built-in to the body of the cleaner indicates when on charge. Supplied with a plug-in AC battery charger and extension tube nozzle.

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
BP39N	Rechargebl Vac Clnr	£17.010 10+ 14.100 25+ 13.150	£19.990 1+

## METAL & ELECTRICAL TESTERS

### Mains Testers



These mains tester screwdrivers contain a neon indicator in the clear plastic handle which lights up when the point of the screwdriver is touched on voltages between 220-250V and your thumb is forming an earth contact with the metal stud set into the top of the handle.

The mains tester has a plastic insulating sleeve on the screwdriver blade and is available in two sizes - 140mm overall length (55mm blade length) or 190mm overall length (100mm blade length). The 140mm tester is fitted with a metal pocket clip.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
BP82D	Mains Tester 140	£1.060 10+ 0.710 25+ 0.660	£1.250 1+
BP81C	Mains Tester 190	£1.440 10+ 1.100 25+ 1.020	£1.700 1+

### Continuity Tester



An ingenious screwdriver tester that can be used to detect continuity and therefore used for checking fuses or lamps. Continuity tests can be made by holding the tip of the screwdriver on a fuse then touching the cap of the screwdriver and the cap of the fuse with your hand. If the fuse is OK, the screwdriver will light. The same principle can be used with lamps, leads and anything else that is conductive.

Other uses include short circuit tests, tracking broken cables, microwave oven radiation testing and television emission tests. The device uses two

silver or alkaline batteries (supplied), with a battery life of approximately 5 hours continuous use. Dimensions 136 x 20mm (L x W) including clip. **NB Not suitable for direct connection with live circuitry.**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
AS26D	Continuity Tester	£6.380	£5.750	£5.250	£7.500

## Metal and Voltage Detector



A very useful instrument for tracing pipes, detecting nails and screws etc. in walls. In addition to detecting metals it can also detect electric cables that are connected to the mains even if no current is flowing. To distinguish between metal objects and mains cables an LED indicator and buzzer will give a continuous tone and light for metal objects and an intermittent tone and flashing light for mains cable. The detector is housed in a tough plastic case and is powered by one 9V PP3 battery (JY49D, not supplied).

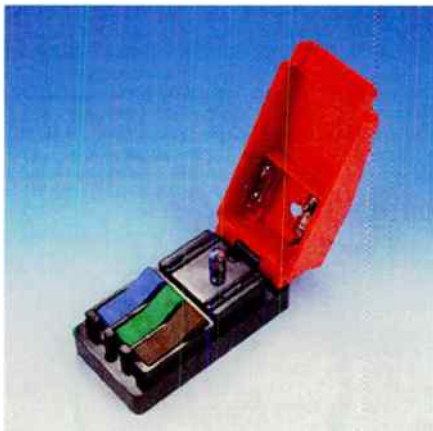
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YP30H	Metal/Volt Detector	£5.930	£5.000	£4.210	£8.150

## MAINS CONNECTOR

### Quick Mains Connector

cliff



A completely safe way of connecting mains cables to the power supply without having to fit plugs. The wire ends of the cable simply fit under three clips which are exposed when the lid is lifted. With lid lifted it is not possible to touch any live part. When lid is closed all live parts are fully enclosed and mains is connected to the clips and thus to the cable.

#### Specification

Max rating: 13A, 240V AC  
Size: 127 x 67 x 51mm high  
Weight: 340g (12oz.)

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YB21X	Quick Mains Connectr	£10.400	£9.680	£9.110	£12.230

## BRUSHES

### Small Brass Brush



A straight wooden handle with brass bristles at one end. Ideal for cleaning files and sparkplugs.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
GX14Q	Brass Brush	£0.689	£0.624	£0.520	£0.810

### Brass Plated Brush



A wide wire brush with brass plated steel bristles and a hardwood handle. Bristle length: 25mm  
Brush width: 35mm  
Brush length (including handle): 280mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
ZC34M	Wire Brush	£0.978	£0.791	£0.749	£1.150

## CLAMPS & VICES

### Hobby Vice

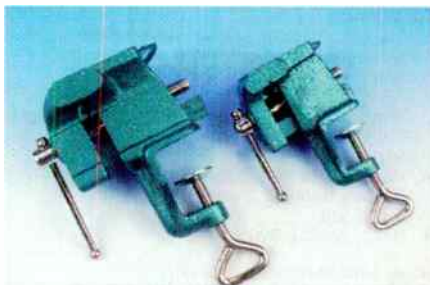


A small modellers' vice in tough plastic construction with metal faced jaws. The vice has a very strong suction clamp for mounting to flat non-porous surfaces. Jaw width: 37mm. Max opening: 27mm. Overall dimensions fully closed: 90mm long x 70mm wide x 68mm high.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YP38R	Hobby Vice	£2.420	£1.940	£1.610	£2.850

### Bench Vices



Two good quality steel bench mounting vices with smooth jaws. 50mm type fixes to benches from 2mm to 32mm thick. Jaw width 50mm, max.

opening 40mm. 75mm type fixes to benches from 13mm to 46mm thick. Jaw width 75mm, max. opening 60mm. Finished in hammertone.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YJ83E	1 50mm Bench Vice	£14.740	£13.270	£12.640	£17.330
YJ84F	4 75mm Bench Vice	£24.790	£22.000	£20.910	£29.120

### Table Vice

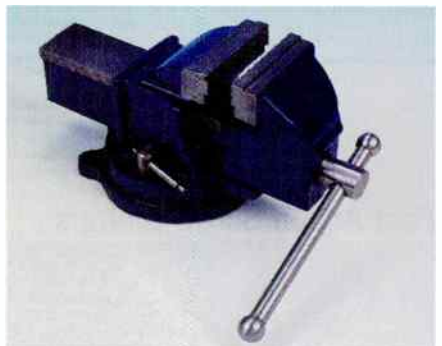


This top quality table vice is ideal for smaller bench top tasks such as model engineering, jewellery making or general DIY and handicrafts. The vice is well designed, solidly constructed and extremely versatile – the highly efficient fixing clamp holds the vice firmly to any table or bench top (avoiding the need for more permanent fixing), precision machined slide rods assure equally applied jaw pressure and the jaws can be covered by slide off rubber jaw pads (supplied) to protect delicate or easily marked surfaces. A special feature is the multi-positional swivel base, allowing the vice working position to be varied through a full 360° on its horizontal axis and 180° on its vertical axis. Jaw width is 50mm and, when fully open, the jaws extend to 68mm in length (62mm with the rubber pads in place).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
BNS9H	Swivel Table Vice	£18.390	£17.470	£17.010	£21.610

### Bench Vice with Swivel Base



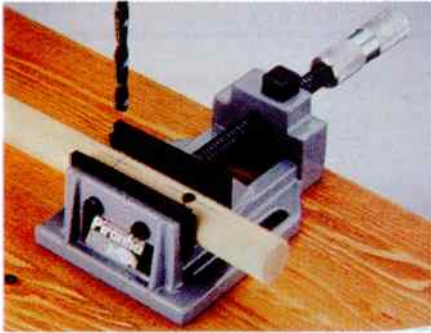
A quality 75mm vice with integral swivel base that is manufactured from cast steel and finished in blue. The swivel base can rotate 360° and can be locked in any position with two locking handles. Maximum jaw opening is 105mm. The vice has three fixing holes 85mm diameter for securing to a bench. Overall dimensions: 268 x 155 x 136mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RJ13P	12 75mm Bench Vice	£13.880	£11.960	£11.190	£16.310

## Machine Vice

Black & Decker



A machine vice that features a quick-release adjustment mechanism and jaw width of 100mm with a jaw opening of 100mm. Suitable for use with the Black & Decker vertical drill stand.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
RJ37S 3	Machine Vice	£17.700	£17.010	£16.600	£20.800

## G Clamp Set



A three-piece, diecast G clamp set comprising 20mm, 30mm and 40mm capacity clamps. A shoe on the end of the threaded screw protects the workpiece. The screw is operated by a knurled knob. A round, magnetic base is included, which incorporates a slot to accept any of the three clamp frames, such that two may be combined to form a small table edge vice, or to make the clamp free-standing for holding small items. Ideal as a third hand for holding PCBs etc., holding together small objects being bonded, and many other uses.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
FT76H	Mini G Clamp Set	£3.810	£2.750	£2.440	£4.480

## Fast Action Screw Clamps



Two fast action screw clamps that are ideal for clamping work to benches, or to hold work securely while glue sets. As the adjustable part of the clamp is tightened and starts to secure the work, it 'locks' into a ratchet on the stem. When the clamp is unscrewed, the clamp 'unlocks' and can slide down

the stem, instantly releasing the work. The centre of the clamp to the stem is 50mm and the clamp can open to either 100mm or 300mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
KR45Y	Screw Clamp 100	£3.980	£3.490	£3.240	£4.680
KR46A	Screw Clamp 300	£4.850	£4.310	£4.110	£5.700

## INSPECTION & ASSEMBLY

### Mono Inspection Microscope

Zenith

A high quality instrument of metal construction and excellent optical performance. Ideal for use as a routine inspection microscope in industrial applications and highly recommended for Primary Science Education and Field Study Centres.



Specification:

- ★ Fixed magnification x20, x10 widefield eyepiece (locked on), x2 achromatic objective.
- ★ Field of view 9.5mm, working distance 81mm
- ★ Monocular head inclined 45° & rotatable 360° for convenient viewing, upright/ erect image
- ★ Smooth-action Rack and Pinion focussing
- ★ Black & White reversible Stage Plate
- ★ Complete with Dust Cover
- ★ Overall dimensions 145 x 110 x 260mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
YC44X 1	Mono Insp Microscope	£64.000	£59.250	£56.250	£75.210

### Stereo Inspection Microscope

Zenith



A routine inspection microscope combining high optical quality with robust, reliable construction and simplicity of operation, making it an extremely useful tool for use in Industry, Field Study Centres and throughout education from Primary level upwards.

Specification:

- ★ Magnification x20, paired x10 Widefield Eyepieces (locked on) with rubber eyecups, achromatic objective pair x2
- ★ Field of view 10mm, working distance 70mm, dioptic adjustment provided, stereo head height adjustable to accommodate specimens of varying sizes.
- ★ Rack and Pinion focussing, adjustable Inter-Pupillary distance, black & white reversible stage plate
- ★ Height approx. 300mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	3+	5+	1+
YC45Y 1	Stereo Insp Microscope	£104.000	£99.100	£92.750	£122.210

## Helping Hands



A very useful piece of apparatus which allows a PCB or any delicate work to be held in position by means of two large crocodile clips. Enables user to keep both hands free for positioning, soldering, and assembling. Six ball joints allow adjustments to the exact angles needed, and the heavy iron base prevents tipping. Includes a glass magnifier.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YK53H 1	Helping Hands + Mag	£6.370	£5.500	£4.500	£7.490

## Pocket Magnifier



A 50mm glass magnifying lens, which slides away into a protective synthetic leather pouch when not in use. It offers a 5x magnification factor with low distortion.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZF02C	Pocket Magnifier	£1.860	£1.700	£1.550	£2.190

## Large Magnifier



A good quality, general purpose 75mm dia. glass magnifier with a 93mm long handle. It offers a 3.5 x magnification factor with low distortion.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ZF01B	Large Magnifier	£2.340	£2.100	£1.800	£2.750



### Illuminated Glass Magnifier



An illuminated x 2.5 glass magnifier that is ideal as an aid for fine inspection of electronic components and circuit boards, but equally suited for reading fine print, maps etc. The handle incorporates an on/off slide switch for the lamp, which is powered by 4 x AA size batteries (not supplied JY48C). Magnifier 90mm dia., handle length 135mm. A replacement bulb is available (RZ39N).

Retail Unit Price each (inc. VAT).

Order Code	Type 4002	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
BZ53H	Illuminated Glass	£3.460	£2.350	£1.980	£4.070
RZ39N	Replacement Bulb	£0.417	£0.295	£0.265	£0.490

### Eye Glass

Ideal for close observation and inspection of small objects. This eye glass has a 3x magnification and is housed in a plastic shroud. Suitable for close-up work. Focusing distance is 90mm (3.5in.).



Retail Unit Price each (inc. VAT).

Order Code	Type 7896	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
GU96E	Eye Glass	£1.720	£1.360	£1.240	£2.030

### Miniature Inspection Mirror

Optum



An inspection mirror on a long plastic handle. Overall length 125mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 3121	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
FS19W	Inspection Mirror	£0.774	£0.500	£0.396	£0.910

### Guiding Lite

A must for all cablers and electrical installers – a pair of guiding lights comprising either a plastic or metal bodied torch with a 1.5m plastic guide incorporating a miniature high brightness incandescent bulb at its tip. Ideal for illuminating trunking, cable conduits and darkened recesses. Replacement light pipes are also available, order FC33L. For the Deluxe, metal bodied, version order FC32K or for the economy, plastic bodied, version order FC31J. Requires 2 'AA' cells (JY50E).



Retail Unit Price each (inc. VAT).

Order Code	Type 10432	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
JY50E	Duracell AAA	£0.757	£0.700	£0.650	£0.890

Retail Unit Price each (inc. VAT).

Order Code	Type 10432	Price each exc. VAT				inc. VAT each
		1+	25+	100+	1+	
FC31J	Guiding Lite	£21.260	£19.150	£18.350	£24.990	
FC32K	Guiding Lite DeLux	£28.920	£26.100	£25.050	£33.990	
FC33L	Spare Lite Tube	£5.940	£5.640	£5.530	£6.990	

### Halogen Headtorch

Lago



A robust general-purpose head-torch, with all of the features of BN79X above. Instead of the prefocused bulb, though, a superbright halogen bulb is used to provide up to 100m of illumination. A fresh LR12 battery (not included ZB63T), will power the torch for between 6 and 7 hours. For longer battery life, an alkaline battery is available, JC94C. In this case, the battery pack is mounted on the back of the headband. Weight (without batteries): 135g. A pouch is available (BN78K). Helmet clips (BN80B) and a replacement bulb (BP87U) are also available.

Retail Unit Price each (inc. VAT).

Order Code	Type 10304	Price each exc. VAT		inc. VAT each
		1+	1+	
BN77J	Halogen Head Torch	£21.260	£24.990	
BN78K	Pouch	£4.890	£5.750	
BP87U	Spare Bulb	£3.190	£3.750	
BN80B	Helmet Clips	£1.650	£1.950	

### Powerlite 6V

Lago



A novel, extremely robust and dependable headtorch, as supplied to the Ministry of Defence, BR and UK electricity companies. It consists of a

bright 6V lamp with an adjustable 56mm parabolic lens to cover the field of view. This is fitted to a comfortable, adjustable and elasticated 30mm wide headband, which can be used with a safety helmet if the optional clips are used. A pair of battery packs, which between them take four 'AA' cells (alkaline recommended, not included JY48C) are strapped to the sides of the headband. A fresh set of batteries will yield between 6 and 7 hours of continuous operation. The bulb is a lens-ended brilliant type, and provides a 30m beam of illumination. For convenience, the lens also acts as the on/off switch, and has three operating modes: off, wide and spot beam. A compartment just under the lamp provides storage for spare bulbs. Weight (without batteries): 105g. Please note: this product is not waterproof, but will continue to work if immersed in water. It can be quickly opened up and dried, when convenient. The electrical contacts are rustproof and the lens varnished, for long service life under moisture-rich environmental conditions. A spare 3.5V 200mA lens-ended MES bulb (BP86T) is available for the above, as is a pouch (BN78K) and helmet clips (BN80B).

Retail Unit Price each (inc. VAT).

Order Code	Type 10306	Price each exc. VAT		inc. VAT each
		1+	1+	
BP86T	Spare Bulb	£0.638	£0.750	
BN79L	Powerlite	£17.860	£20.990	
BN78K	Pouch	£4.890	£5.750	
BN80B	Helmet Clips	£1.650	£1.950	

## SAFETY & PROTECTION

### BS Lens



Safety goggles for use when working with power tools, machinery or in situations where flying debris is a hazard. These safety goggles are manufactured from impact resistant polycarbonate to BS2092/1. The goggles have a comfortable, ventilated soft plastic surround and adjustable elastic head-band. Suitable for protection when drilling, filing, sanding, planing, chipping, spraying, grinding and other hazardous jobs.

Retail Unit Price each (inc. VAT).

Order Code	Type 4133	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YZ68Y	BS Safety Goggles	£4.900	£4.650	£4.530	£5.760

### Safety Coverspecs

Coll

The Coverspecs are manufactured from polycarbonate material and are designed for use with or without standard spectacles. They conform to BS2092 Impact Grade 2 and CE standard.



Retail Unit Price each (inc. VAT).

Order Code	Type 11802	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KE83E	Safety Coverspecs	£2.450	£1.970	£1.810	£2.890



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5PM**

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e-mail: Sales@maplin.co.uk



## Riggers Gloves



These heavy duty 'riggers' gloves offer protection from sharp edges or rough surfaces when lifting or handling materials and are used on building sites, in warehouses, or gardens.

Retail Unit Price each (inc. VAT).

Order Code	Type 4137	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
RJ04E	Gloves	£1.890	£1.460	£1.240	£2.230

## PVC Gloves



White cotton wrist length gloves with cuffs coated with red PVC which has been given a rough texture to give added grip on smooth surfaces.

Retail Unit Price each (inc. VAT).

Order Code	Type 4138	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
GK91Y	PVC Gloves	£1.370	£1.100	£0.999	£1.620

## Heavy Duty Gauntlets



Heavy duty gauntlets made from a suede type material. Features long length for maximum protection and have internal lining. The gloves are suitable for general-purpose use and offer excellent protection from hard and dirty tasks.

Retail Unit Price each (inc. VAT).

Order Code	Type 4030	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
GK92A	Green Gauntlets	£3.650	£2.970	£2.700	£4.290

## Plastic Gloves



A pair of light, throw-away plastic gloves for those especially messy jobs, or when handling chemicals. Ideal for protecting the hands whilst handling ferric chloride and PCBs in the process of being etched. Supplied in pairs.

Retail Unit Price each (inc. VAT).

Order Code	Type 4052	Price each exc. VAT			inc. VAT each
		1+	50+	250+	1+
YJ48C	Plastic Gloves	£0.425	£0.312	£0.270	£0.500

## FIRST AID KITS

### First Aid Kit Refills

A range of first-aid kit refills suitable for offices, shops etc. All dressings are packed in sterile wrappings. Kit ACOP is intended for one to five employees in low-hazard environments. Kit ACOP 1 is intended for up to 20 employees in a low-hazard environment, or up to 10 employees in an environment with a greater degree of hazard. Kit ACOP 2 is intended for up to 50 employees.

Contents	ACOP	ACOP 1	ACOP 2
General guidance leaflet:	1	1	1
Medium sterile lint dressing No. 8:	2	6	8
Large sterile lint dressing No. 9:	1	2	4
Extra large lint dressing No. 3:	1	3	4
Sterile eye pads No. 16:	1	2	4
Triangular bandage:	2	6	6
Individually wrapped adhesive plasters:	20	20	40
Alcohol-free wipes:	6	6	10
Safety pins:	6	6	12

	Weight	Dimensions	Refills
ACOP :	390g	230 x 195 x 50mm	DH78K
ACOP1:	900g	360 x 265 x 195mm	DH80B
ACOP2:	1-4kg	360 x 265 x 195mm	DH82D

Retail Unit Price each (inc. VAT).

Order Code	Type 4130	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DH78K	Refill for ACOP	£10.400	£9.050	£8.480	£12.230
DH80B †	Refill for ACOP1	£22.950	£20.290	£19.150	£26.970
DH82D †	Refill for ACOP2	£31.620	£27.570	£26.010	£37.160

## Motorist's First-Aid Kit



A first-aid kit especially for the motorist, that is housed in a green polypropylene carry case. All dressings are packed in a sterile wrapping.

### Contents

Sterile wound dressing:	1
Triangular bandage:	1
Tube antiseptic cream:	1
Alcohol-free wipes:	4
2.5cm cotton bandage:	1
5cm cotton bandage:	1
15g cotton wool:	1
Assorted sterile plasters:	20
Assorted safety pins:	6
Pair of 10cm (4in.) scissors:	1
Vehicle label:	1
Guidance card:	1

Dimensions: 230 x 195 x 50mm  
Weight: 406g

Retail Unit Price each (inc. VAT).

Order Code	Type 4131	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DH83E	Car First-Aid Kit	£13.010	£10.910	£9.940	£15.260



## Section Contents

Audio Transformers	1318	Inductors/Chokes	1312	Servos & Accessories	1327
Delay Lines	1315	Isolating Transformers	1321	Stepper Motors	1324
Ferrite Cores	1310	Lighting Transformers	1321	Toroidal Transformers	1320
Gear & Pulley Sets	1325	Mains Transformers	1315	Transformer Kits	1322
General Purpose Motors	1324	Model R/C Motors	1328	Valve Transformers	1319
HF Transformers	1314	Pulse Transformers	1314	Variacs	1323

## FERRITES

### FERRITE KIT

#### EMC/RF Ferrite Kit



**RECENTLY INTRODUCED**

A kit comprising a selection of the cable EMI suppressors, toroidal cores, bead cores, anti-parasitic beads and wide band choke cores described in this section. Housed in a transparent component box, and offering a considerable saving compared to individual prices.

#### Order

Order Code	Quantity	Type
AN83E	1	Component Box
AF92A	2	Flat Cable Suppressor 25.4mm
AG94C	2	Flat Cable Suppressor 33.5mm
AG95D	10	Toroidal Core 12.7mm
AN75S	5	Toroidal Core 22mm
AN76H	2	Bead Core 25.9mm
AN77J	10	Bead Core 14.22mm
AN78K	15	Bead Core 12mm
AN80B	5	Bead Core 4mm
AN79L	25	Bead Core Taped Type
AN81C	25	Wide Band Choke 7MHz
AN82D	25	Wide Band Choke 500kHz
LB62S	5	Anti-parasitic Beads

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GT10L	EMC/RF Ferrite Kit	£25.520	£29.990

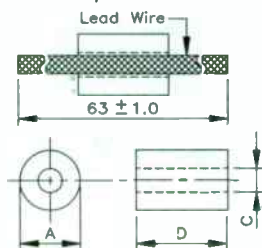
## FERRITES

### Wired Bead Cores



**RECENTLY INTRODUCED**

A wired bead core designed for manual or automatic insertion into PCBs to prevent undesirable signal feedback and parasitic oscillation.



Practical frequency range is 100kHz to 2MHz. Dimensions: A = 2.5mm, D = 3mm, C = 1mm.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN79L	Bead Core Taped	£0.110	£0.130

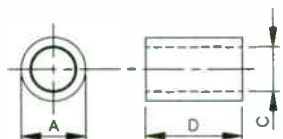
## Bead Cores



**RECENTLY INTRODUCED**

A range of ferrite cores for EMI suppression on round cables. AN80B supplied in packs of 10.

Order Code	Suitable Frequency	Max Cable dia. mm
AN76H	100kHz to 2MHz	12mm
AN77J	100kHz to 2MHz	6mm
AN78K	300kHz to 7MHz	5mm
AN80B	100kHz to 2MHz	1.2mm



#### Dimensions mm

Order Code	A	D	C
AN76H	25.9	29	12.7
AN77J	14.22	28	6.35
AN78K	12	20	5.6
AN80B	4	6	2

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN80B	Bead Core 2mmID	£0.536	£0.630

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AN76H	Rnd Cbl Slv 12.7mmID	£1.140	£1.340
AN77J	Rnd Cbl Slv 7mmID	£0.944	£1.110
AN78K	Rnd Cbl Slv 5.6mmID	£0.638	£0.750

## Anti-Parasitic Beads

Small ferrite beads which may be threaded on to wires to add impedance for the suppression of unwanted parasitic oscillations or to provide screening. Max. dia. 4.2mm. Max. length 5.5mm. Min. hole dia. 1.8mm. Packed in tens.



**RECENTLY INTRODUCED**

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
LB62S	A/P Beads	£0.595	£0.700

## Wide Band Choke Core



A choice of two wide band choke cores intended for PCB mounting to filter externally induced EMI.

Order Code Practical Frequency Range

AN81C 300kHz to 7MHz  
AN82D 10kHz to 500kHz

#### Dimensions

Diameter: 6mm  
Length: 10mm  
Hole diameter: 0.85mm  
Pitch (opposite holes): 3.5mm

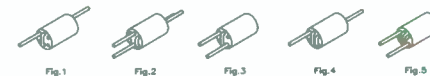


Fig 1. 1.5 turns  
Fig 2. 2 x 1.5 turns  
Fig 3. 2 turns  
Fig 4. 2.5 turns  
Fig 5. 3 turns

The following table shows the approximate impedance (Ω) for various types of windings and at selected frequencies

Figure (AN81C)	10MHz Ω	50MHz Ω	100MHz Ω
Fig. 1	150	300	350
Fig. 2	150	300	350
Fig. 3	210	450	475
Fig. 4	300	640	560
Fig. 5	350	750	580

Figure (AN82D)	10MHz Ω	50MHz Ω	100MHz Ω
Fig. 1	140	400	480
Fig. 2	140	400	480
Fig. 3	200	600	600
Fig. 4	300	870	650
Fig. 5	370	980	670

Retail Unit Price each (inc. VAT).

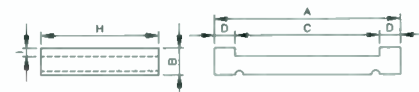
Order Code	Type	Price each exc. VAT	inc. VAT each
AN81C	Choke Core 0.3-7MHz	£0.587	£0.690
AN82D	Choke Core 10-500kHz	£0.587	£0.690

## EMI Suppressor For Flat Cables



**RECENTLY INTRODUCED**

A choice of two EMI ferrite suppressors for flat cables, designed to have a practical frequency range of 100kHz to 2MHz. The suppressor comes in two halves which are clamp round the cable by two supplied spring clips



AF92A is for 25.4mm flat cables  
AG94C is for 33.5mm flat cables

#### Dimensions

	AF92A	AG94C
Cores	38 x 25.4 x 6.35mm	45 x 28.5 x 6.35mm
A	38mm	45mm
B	6.35mm	6.35mm
C	26.6mm	34.4mm
D	5.75mm	5.25mm
H	25.4mm	28.5mm
I	0.8mm	0.8mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AF92A	Flt Cbl Core 25.4mm	£2.380	£2.800
AG94C	Flt Cbl Core 33.5mm	£2.980	£3.510

Account Enquiries: 01702 554187

**+** This symbol beside an order code in the price block indicates **WHILE STOCKS LAST**

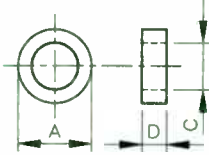
## Toroidal Coils



**RECENTLY INTRODUCED**

A range of toroidal cores suitable applications include: coupling transformer, balancing coil, fixed coil EMI filter coil etc.

AG95D suitable for 100kHz to 2MHz  
AN74R suitable for 10kHz to 500kHz  
AN75S suitable for 100kHz to 2MHz



Dimensions mm	A	D	C
AG95D	12.7	6.35	7.9
AN74R	12.7	6.35	7.9
AN75S	22	6.4	13.7

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AG95D	TCORE12.7mm 0.1-2MHz	£0.468	£0.550
AN74R	Tc12.7mm10-500K	£0.391	£0.463
AN75S	TCORE22mm 0.1-2MHz	£0.672	£0.790

## FX4054 Ferrite Toroid

A general purpose nylon coated toroid made from 3E2 grade high permeability manganese-zinc ferrite material; suitable for use in a wide range of applications, including interference suppression, inductors, transformers, etc.



### Mechanical Specification

Inside diameter: 13.4mm  
Outside diameter: 23.6mm  
Thickness: 7.6mm

### Magnetic Specification

Initial inductance factor: 3472nH  
Residual plus eddy loss factor: <math>< 15 \times 10^{-6}</math>  
Curie point: >130°C  
Effective length of magnetic path: 57.0mm  
Core factor: 1.81mm<sup>-1</sup>  
Effective volume of core: 1790mm<sup>3</sup>  
Effective area of core: 31.5mm<sup>2</sup>  
 $\mu_{tor}$  at +25 to +70°C: >5000

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JR84F	FX-4054	£2.050	£2.420

## Ferrite EMC Filters

### Cure Radio Interference

One of the easiest ways of curing interference is with these special ferrite rings selected for the purpose. Simply wind a few turns of any hi-fi lead, TV down lead, or mains lead, around the ring. Interfering radio signals are then prevented from travelling into the equipment. As supplied by us to BBC, DTI and TV rental companies etc.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
AM35Q	Ferrite Filter	£2.540	£2.990

## NOTES ON WINDING INDUCTORS

The following range of pot cores allow inductances from about 10mH to 10H to be wound with a high degree of accuracy. In general it is best to use as thick enamelled copper wire as possible bearing in mind that the thicker the wire the fewer the number of turns that can be contained on the former within the core. Using thicker wire will have negligible effect on the value of inductance, but it will lower the DC resistance which makes the Q higher.

To calculate the number of turns required to make a particular inductance use the formula:

$$n = \sqrt{L/A_L} \text{ or } L = n^2 A_L$$

where n is the number of turns, L is the inductance in Henrys and  $A_L$  is the specific inductance.

The specific inductance of our cores is given in nanoHenrys and it is necessary to convert this to Henrys (i.e.  $\times 10^{-9}$ ) to obtain the inductance in Henrys.

Example:

Using Core Type 2 find the number of turns required to give 0.1 Henrys (100mH).

For core LA4345,  $A_L = 400nH$ .  $n = \sqrt{L/A_L} = \sqrt{0.1/400 \times 10^{-9}}$  turns  
 $= \sqrt{0.00025 \times 10^9}$  turns  
 $= \sqrt{250,000}$  turns  
 $= 500$  turns.

## Pot Core (Type 2)

### Phillips

#### Core (Type 2) (LA4345)

Pot core dia. 23mm, height 17mm. Printed circuit board mounting former (with pins on 2.54mm grid) and clips supplied separately. Specific inductance: 400nH.

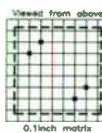


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HX06G	Core Type 2	£2.370	£2.790

## Bobbin (Type 2) (DT 2470)

Single section bobbins for use with Core Type 2.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HX07H	Bobbin Type 2	£0.927	£1.090

## Clips (Type 2) (DT 2396)

Tinned sprung steel clip for use with Core Type 2. two clips are required, note clips are sold singly.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HX08J	Clip Type 2	£0.161	£0.190

## Pot Core (Type 3)

#### Core (Type 3) (LA4543)

Pot core dia. 28mm, height 19mm, printed circuit board mounting former (with pins on 2.54mm grid) and clips supplied separately. Specific inductance: 1000nH.



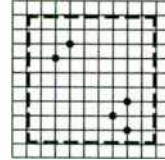
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HX09K	Type 3 Core	£3.820	£4.490

## Bobbin (Type 3) (DT 2534)

Single section with 5 pins for use with Type 3 Core.

Viewed from above



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HX10L	Type 3 Bobbin	£1.090	£1.290

## Clips (Type 3) (DT2406)

Tinned sprung steel clips for use with Type 3 Core (2 clips required).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HX11M	Type 3 Clips	£0.187	£0.220

## Ferrite Rods



Round ferrite rods with a slightly flattened cross-section for medium/long wave radios. Available in the following sizes which may be cut into shorter lengths with a hacksaw if required.

Type	Length (l)	Dia. (d)	d1	Apparent permeability
810	100mm ±1.5mm	8mm ±0.8mm	7mm ±0.3mm	9.2 to 9.5
101	140mm ±2mm	10mm ±0.4mm	9mm ±0.4mm	9.9 to 10.2

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
YG20W	Ferrite Rod 810	£0.842	£0.990
YG22Y	Ferrite Rod 101	£1.180	£1.390

**All Orders Account or Not-**

PHONE BEFORE 5PM FOR SAME DAY DESPATCH

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**Fax: 01702 554001**  
e-mail: Sales@maplin.co.uk

## Ferrite Rod Aerial



A 127mm (5in.) long x 9.525mm (0.375in.) diameter ferrite rod onto which a medium wave and long wave coil are wound. Coils may be moved on rod for best performance (then fixed with a suitable adhesive). Inductance of medium wave coil: 370µH; long wave coil: 4.1mH.  
 Typical coverage:  
 Medium wave - 550 to 1550kHz (193m to 545m).  
 Long wave - 150 to 280kHz (1070 to 2000m).

Retail Unit Price each (inc. VAT).

Order Code	Type 3019	Price each exc. VAT	inc. VAT each
LB12N	MW/LW Aerial	1+ £3.710 10+ £0.533 25+ £0.426	1+ £4.360

## INDUCTORS / CHOKES / COILS

## Moulded RF Coils



A range of small moulded coils with ferrite cores for designers. A special nylon trim tool is also available to suit these cores - a metal tool must not be used. The coils are available in 1 1/2 to 8 1/2 turn types and are particularly suited to use at frequencies between 40 and 170MHz.

Inductance in µH	Turns	Q at 100MHz	Colour code
0-04	1 1/2	150	White
0-066	2 1/2	150	Red
0-114	3 1/2	150	Orange
0-180	4 1/2	170	Yellow
0-230	5 1/2	140	Green
0-297	6 1/2	130	Blue
0-389	7 1/2	140	Violet
0-450	8 1/2	170	White

Retail Unit Price each (inc. VAT).

Order Code	Type 3013	Price each exc. VAT	inc. VAT each
UF70M	RF Coil Trim Tool	1+ £0.808 10+ £0.497 25+ £0.397	1+ £0.950

Retail Unit Price each (inc. VAT).

Order Code	Type 3013	Price each exc. VAT	inc. VAT each
UF62S	RF Coil 0.040µH	£0.561 £0.267 £0.213	£0.660
UF63T	RF Coil 0.066µH	£0.561 £0.267 £0.213	£0.660
UF64U	RF Coil 0.114µH	£0.561 £0.267 £0.213	£0.660
UF65V	RF Coil 0.180µH	£0.561 £0.267 £0.213	£0.660
UF66W	RF Coil 0.230µH	£0.561 £0.267 £0.213	£0.660
UF67X	RF Coil 0.297µH	£0.561 £0.267 £0.213	£0.660
UF68Y	RF Coil 0.389µH	£0.561 £0.267 £0.213	£0.660
UF69A	RF Coil 0.450µH	£0.561 £0.267 £0.213	£0.660

## Miniature Radial Lead Inductors

Newport Components

A range of general purpose inductors with radial leads. Their small size makes them particularly suitable for power-line decoupling and low-power switching regulator applications.



This series offers lower DC resistance and a higher current rating than its counterparts. All parts are protected by a flame retardant sleeve. Size is

6.5mm diameter by 11mm high, with leads spaced at 4mm. (680µH is 2.73mm.)

Order Code	Type No.	Inductance µH (±10%) at 1kHz	DC Resistance Ω (max.)	DC Current Continuous A
AH26D	22R 103	10	0-20	1.50
AH27E	22R 153	15	0-22	1.10
AH28F	22R 223	22	0-28	1.00
AH29G	22R 333	33	0-30	0.92
AH30H	22R 473	47	0-39	0.90
AH31J	22R 683	68	0-47	0.88
AH32K	22R 104	100	0-60	0.68
AH33L	22R 154	150	0-80	0.58
AH34M	22R 224	220	0-95	0.50
AH35Q	22R 334	330	1.25	0.43
AH36P	22R 474	470	1.50	0.33
AH37S	22R 684	680	1.75	0.30
AH38R	22R 105	1000	4.00	0.21

Retail Unit Price each (inc. VAT).

Order Code	Type 3022	Price each exc. VAT	inc. VAT each
AH26D	22R 103	£0.331 £0.290 £0.270	£0.390
AH27E	22R 153	£0.331 £0.290 £0.270	£0.390
AH28F	22R 223	£0.331 £0.290 £0.270	£0.390
AH29G	22R 333	£0.331 £0.290 £0.270	£0.390
AH30H	22R 473	£0.331 £0.290 £0.270	£0.390
AH31J	22R 683	£0.331 £0.290 £0.270	£0.390
AH32K	22R 104	£0.331 £0.290 £0.270	£0.390
AH33L	22R 154	£0.331 £0.290 £0.270	£0.390
AH34M	22R 224	£0.331 £0.290 £0.270	£0.390
AH35Q	22R 334	£0.331 £0.290 £0.270	£0.390
AH36P	22R 474	£0.331 £0.290 £0.270	£0.390
AH37S	22R 684	£0.331 £0.290 £0.270	£0.390
AH38R	22R 105	£0.331 £0.290 £0.270	£0.390

## Bobbin Type Inductors

Newport Components



These inductors use a novel bobbin core manufactured from a material with a high saturation flux density. The high current capability makes these devices suitable for power-line applications, and they are ideal for use in switching regulators and filters. They have low temperature dependence and can be used at high currents. Each component is finished with a flame retardant heat shrink sleeve. For additional mechanical stability, these inductors may be mounted using an M4 non-magnetic bolt (e.g. nylon).

Type	A (mm)	B (mm)
14-104-54	24	14.5
14-224-35	24	14.5
14-334-28	24	14.5

Type	Inductance µH ±10% @ 1kHz	DC Resistance mΩ	DC Current (Continuous) A
14-104-54	100	24	5.4
14-224-35	220	106	3.5
14-334-28	330	165	2.8

Retail Unit Price each (inc. VAT).

Order Code	Type 3021	Price each exc. VAT	inc. VAT each
AH21X	14-104-54	£2.800 £1.920 £1.600	£3.300
AH22Y	14-224-35	£2.800 £1.920 £1.600	£3.300
AH23A	14-334-28	£2.800 £1.920 £1.600	£3.300

## R.F. Chokes



A range of r.f. chokes having a triple barrier against moisture, and high termination strength and reliability. Colour code (as resistors) gives value in µH.

Rating: 1/3W at 70°C  
 Insulation resistance: >10<sup>9</sup>Ω

Value (µH)	Test freq. (MHz)	Self-resonant frequency	Q (min) at 20°C	D.C. resistance (max) at 70°C	D.C. current (max)
0.22	25.2	300	50	0.12Ω	1.4A
0.47	25.2	220	50	0.17Ω	1.15A
1.0	25.2	157	45	0.21Ω	920mA
2.2	7.96	110	55	0.28Ω	750mA
4.7	7.96	56	70	0.39Ω	620mA
6.8	7.96	40	75	0.42Ω	550mA
10.0	7.96	30	65	0.63Ω	500mA
22.0	2.52	9.0	50	0.95Ω	410mA
47.0	2.52	6.0	40	1.31Ω	340mA
100	2.52	4.5	30	2.1Ω	275mA
470	0.796	1.9	60	7.7Ω	126mA
1mH	0.796	1.0	45	14Ω	100mA

Retail Unit Price each (inc. VAT).

Order Code	Type 3020	Price each exc. VAT	inc. VAT each
WH25C	Choke 0.22µH	£0.553 £0.450 £0.330	£0.650
WH27E	Choke 0.47µH	£0.553 £0.450 £0.330	£0.650
WH29G	Choke 1.0µH	£0.587 £0.163 £0.130	£0.690
WH31J	Choke 2.2µH	£0.587 £0.129 £0.103	£0.690
WH33L	Choke 4.7µH	£0.587 £0.125 £0.100	£0.690
WH34M	Choke 6.8µH	£0.587 £0.125 £0.100	£0.690
WH35Q	Choke 10.0µH	£0.587 £0.300 £0.240	£0.690
WH37S	Choke 22.0µH	£0.587 £0.125 £0.100	£0.690
WH39N	Choke 47.0µH	£0.757 £0.128 £0.103	£0.890
WH41U	Choke 100µH	£0.842 £0.160 £0.128	£0.990
WH45Y	Choke 470µH	£0.842 £0.160 £0.128	£0.990
WH47B	Choke 1mH	£0.842 £0.175 £0.140	£0.990

## R.F. Choke



An axial lead, lacquer-coated radio frequency choke, featuring high inductance and small size.  
 Inductance: 4.7mH  
 Q<sub>min</sub>: 35 (Test frequency: 252kHz)  
 Rated current: 55mA  
 Dimensions: 9.2 x 4mm dia.

Retail Unit Price each (inc. VAT).

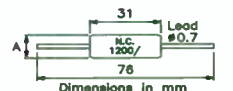
Order Code	Type 3016	Price each exc. VAT	inc. VAT each
UK80B	4.7mH Choke	1+ £0.587 25+ £0.450 100+ £0.336	1+ £0.690

## General Purpose Axial Lead Inductor

Newport Components



A general purpose inductor (type 1200/15) with axial lead terminations. The high permeability wound ferrite rod is finished with a flame-retardant heat-shrink sleeve.



**Specification:**  
 Inductance (@ 1kHz): 1000µH (±10%)  
 DC resistance: 0.77Ω  
 DC current: 1A continuous  
 Q (at 10kHz): 55  
 Self-resonant frequency: 800kHz  
 Diameter: 12mm

Retail Unit Price each (inc. VAT).

Order Code	Type 3020	Price each exc. VAT	inc. VAT each
UM13P	Inductor 1200/15	1+ £1.940 10+ £1.440 25+ £1.300	1+ £2.290

## Search Coil



A 100µH inductor designed for use as a search coil in our Mini Metal Detector Kit. Overall size 29mm long x 10mm diameter.

Retail Unit Price each (inc. VAT).

Order Code	Type 3615	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JC25C	100µH Search Coil	£0.842	£0.670	£0.590	£0.990

## 293mH RF Coil



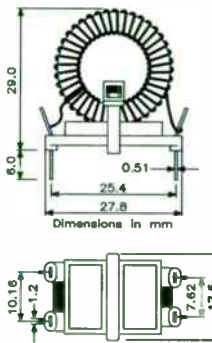
An adjustable 293mH RF Coil, as specified for the Rugby Clock Superhet Receiver project (LP63T) published in issue 99 of Electronics The Maplin Magazine.

Retail Unit Price each (inc. VAT).

Order Code	Type 11950	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
DT18U	293mH RF Coil	£13.180			£15.490

## High Current Toroidal Inductors

Newport Components



A range of high current vertically mounted toroidal inductors, designed for use in switching power supply and power line filtering circuits. Suitable for any application requiring high current handling with minimal EMI emissions.

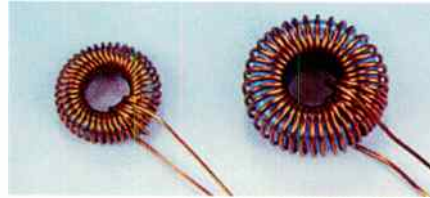
The inductors are mounted on a plastic base having UL94-VO rating and secured by a cable tie.

Type	Inductance (@ 1kHz) (µH ±10%)	DC Resistance (mΩ max.)	DC Current (Continuous) (A max.)
19104B	100	65	2.2
19334B	330	120	1.0
19474B	470	145	0.8
Type	Q	at frequency (kHz)	Nominal self-resonant frequency (MHz)
19104B	100	50	12-3
19334B	90	10	1-7
19474B	90	10	1-3

Retail Unit Price each (inc. VAT).

Order Code	Type 3635	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
BU55K	Toroid 19104	£3.310	£2.560	£2.130	£3.900
BU57M	Toroid 19334	£3.310	£2.560	£2.130	£3.900
BU58N	Toroid 19474	£3.310	£2.560	£2.130	£3.900

## High Current Toroids



High current chokes wound on toroids designed primarily for use in switched mode power supplies. Two types are available:  
Inductance: 150µH. Max current: 5A intermittent, 3A continuous.  
Inductance: 300µH. Max current: 8A intermittent, 5A continuous.

Retail Unit Price each (inc. VAT).

Order Code	Type 3631	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JL72P	5A 150µH Choke	£3.550	£2.780	£2.310	£4.180
JL73Q	8A 300µH Choke	£5.940	£4.420	£3.680	£6.980

## Ferrite coils



A new range of ferrite coils, ideal for use in cross-over circuits.

VM18U	1.0mH
VM19V	2.0mH
VM20W	3.5mH
VM21X	4.5mH
VM22Y	5.5mH
VM23A	6.5mH
VM24B	7.5mH
VM25C	9.0mH
VM26D	12.0mH

Retail Unit Price each (inc. VAT).

Order Code	Type 13430	Price each exc. VAT			inc. VAT each
		1+	25+	50+	1+
VM18U	Ferrite Coil 1.0mH	£1.260	£0.000	£0.000	£1.490
VM19V	Ferrite Coil 2.0mH	£1.690	£0.000	£0.000	£1.990
VM20W	Ferrite Coil 3.5mH	£2.970	£0.000	£0.000	£3.490
VM21X	Ferrite Coils 4.5mH	£3.390	£0.000	£0.000	£3.990
VM22Y	Ferrite Coil 5.5mH	£4.670	£0.000	£0.000	£5.490
VM23A	Ferrite Coil 6.5mH	£5.520	£0.000	£0.000	£6.490
VM24B	Ferrite Coil 7.5mH	£6.800	£0.000	£0.000	£7.990
VM25C	Ferrite Coil 9.0mH	£7.220	£0.000	£0.000	£8.490
VM26D	Ferrite coils 12.0mH	£8.070	£0.000	£0.000	£9.490

## Very High Inductance Choke

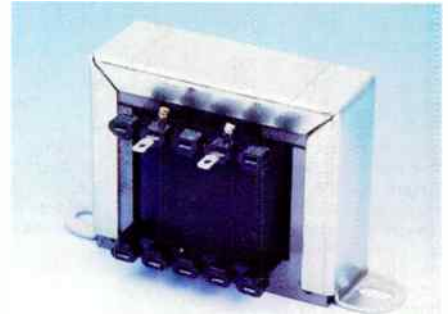
A small audio choke inductance 10H (with no DC current present or 3H with 12mA DC). DC resistance: 750Ω.  
Size: 20 x 16 x 16mm.



Retail Unit Price each (inc. VAT).

Order Code	Type 3616	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
HW27E	Choke 10H	£3.540	£3.360	£3.090	£4.170

## Low Frequency Choke



A high value LF choke with a laminated steel core of separate 'E' and 'I' stacks separated by a paper insulator to minimise saturation. Designed for main line supply smoothing in HT valve power supplies. Inductance value is nominally in the range 7 to 10 Henries, while the DC resistance is 150Ω. The choke was originally designed for the 'Newton' Valve Pre-amplifier project.

### Specification

Choke core material:	Electrical steel
Lamination distribution:	Insulated 'E' and 'I' groups
Specific inductance:	7 to 10H nominal @ 50mA DC
Maximum DC (wire rating):	100mA
DC resistance:	150Ω approx.
DC voltage drop:	7.5V @ 50mA
Mechanical fitting:	2-hole 'clamp' type
Fixing centres:	67 to 75mm (M4 or 4BA)
Overall dimensions excluding lugs:	60 x 52 x 49mm high

Retail Unit Price each (inc. VAT).

Order Code	Type 6935	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
ST28F	10H 100mA Choke	£6.060	£5.460	£4.990	£7.130

**ORDER BEFORE 5PM FOR SAME DAY DESPATCH**

**Tel: 01702 554000**

**Fax: 01702 554001**

**e-mail: Sales@maplin.co.uk**

## HF TRANSFORMERS

### Sub-Miniature I.F. Transformers



Low-cost sub-miniature i.f. transformers. Overall size of screening can: 10mm square x 12mm high.

#### Specification

Type	YRCS11098	RRCS45327	YHCS11100	CSK3464
Q:	90	90	110	100
Internal capacitor:	180pF	180pF	180pF	27pF
Turns between pins				
1 & 2:	137	127	104	
1 & 3:	162	165	140	8
2 & 3:	25	38	36	
4 & 6:	4	6	20	2
Application:	1st i.f.	2nd i.f.	3rd i.f.	R/C
Nom freq.:	455kHz	475kHz	475kHz	27MHz
Range:	455-470kHz	460-490kHz	460-490kHz	26-29MHz

Type	YMCS17104	ACS34342	CAN1A350EK
Q	110	70	100
Internal capacitor:	180pF	51pF	
Turns between pins			
1 & 2:	98	-	27
1 & 3:	165	15	261
2 & 3:	67	-	234
4 & 6:	-	1	27
Application:	i.f. osc.	FM i.f.	LW antenna
Nom freq.:	455kHz	10.7MHz	252kHz
Range	455-470kHz	9-11.4kHz	
Inductance:			3-55mH
Colour			Red
Type	RWR 331208	KANK 3333R	KANK 3334R
Q	70	60	85
Turns between pins			
1 & 2:	2	14	7
1 & 3:	94	55	18
2 & 3:	92	41	11
4 & 6:	8	4	3
Application:	MW osc.	SW1 aer.	SW2 aer.
Nom. freq.:	1.4MHz	2.52MHz	3.8-22.0MHz
Inductance	330µH	45µH	5-5µH
Colour	Red	Violet	Yellow

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
HX42V	Toko YRCS 11098	£0.544	£0.354
YG30H	Toko RRCS45327	£0.638	£0.400
HX43W	Toko YHCS 11100	£0.544	£0.352
YG31J	Toko CSK3464	£0.468	£0.275
YG32K	Toko YMCS17104	£0.468	£0.275
HX97F	Toko ACS 34342	£0.544	£0.358
FD00A	Toko CAN1A350EK	£0.731	£0.540
FD01B	Toko RWR331208	£0.544	£0.344
FD02C	Toko KANK3333R	£0.544	£0.340
FD03D	Toko KANK3334R	£0.544	£0.302
FD04E	Toko KANK3335R	£0.544	£0.340

### TV Video IF Coil

A TV I.F. coil which will tune to 38-9MHz using a 100pF capacitor in parallel. Adjustable ferrite core.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
UL55K	Toko TV IF	£0.476	£0.560

### TV Sound IF Coil

Bonex

A TV sound I.F. coil with one single winding of 8 turns, which should be tuned externally with 560pF for a resonant frequency of 6MHz, tunable with adjustable ferrite core. Q = 75. Colour: black.



Retail Unit Price each (inc. VAT).

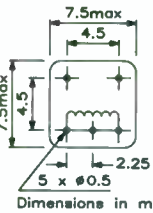
Order Code	Type	Price each exc. VAT	inc. VAT each
UL56L	Toko TV Sound	£0.502	£0.590

### 15µ H Adjustable Coil

Type 119ANA5873HM.

#### Specification

Q:	80
Suggested Frequency:	2-52MHz
Turns between Pins 1 & 3:	25
Inductance:	15µH
Identification	
Colour:	Pink



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
UH86T	15µH Adjustable Coil	£0.544	£0.640

### 15kHz Lowpass Filter

Bonex

A multiple inductor low-pass filter with a cut-off frequency at 15kHz which will find uses for the output stage filtering of F.M. audio receivers and stereo decoders.



#### Specification

Input and output impedances:	3-3kΩ
Attenuation:	-2.5 to 3dB @ 15kHz -43dB @ 36-4kHz max. 12µs @ 30kHz
Group delay time:	
Dimensions of can: length 18mm, width 6-1mm, height 9-5mm. Pin length 3mm.	

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
JMS4C	15kHz L.P.F.	£1.690	£1.990

### Coil for Mains Tx/Rx Project

Centre frequency:	125kHz
Q (pins 3, 4) unloaded:	25 min at 125kHz
Adjustment range (pins 3, 4) at 125kHz:	33,000pF ±6%
External tuning cap:	33,000pF
Winding pin 4 to 3:	49 1/2 turns
pin 5 to 6:	7 turns
pin 5 to 2:	3 1/2 turns
pin 5 to 1:	4 1/2 turns

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
FT55K	Tank Coil AO42YUK	£1.090	£1.290



## PULSE TRANSFORMERS

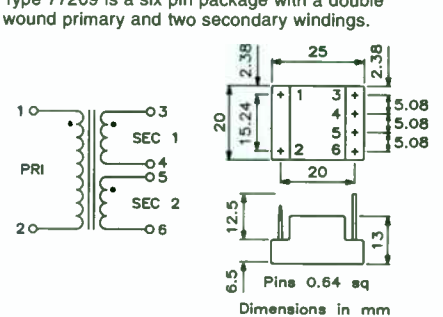
### 772 Series Pulse Transformers

Newport Components

Designed for thyristor/triac triggering applications these pulse transformers are fully encapsulated in a moulded case.

The windings have been tested to withstand 2500V rms at 50Hz. The windings may be linked together to obtain alternative turns ratios.

Type 77207 is a six pin package with a single primary (pins 1 and 2) and secondary winding (pins 3 and 4 (pins 5 and 6 may be removed if required)). Type 77208 is a six pin package with a single primary winding and two secondary windings. Type 77209 is a six pin package with a double wound primary and two secondary windings.



#### Specification

Type:	77207	77208	77209
Turns ratio ±2%:	1:1	1:1:1	2:1:1
Primary inductance mH (min.):	20-7	20-7	20-7
Primary Et constant Vµs:	494	494	494
Leakage inductance µH (max.):	18	40	40
Capacity pF (max.):	65	40	40
DC resistance of winding Ω (max.):			
Primary:	3-5	3-6	3-5
Secondary 1:	3-4	3-1	1-6
Secondary 2:		4-2	2

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
UM32K	Pulse Tx 77207	£4.240	£4.990
UM33L	Pulse Tx 77208	£4.240	£4.990
UM34M	Pulse Tx 77209	£4.240	£4.990

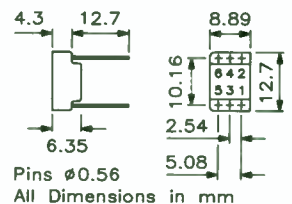
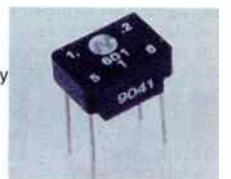
### 766 Series Pulse Transformers

Newport Components

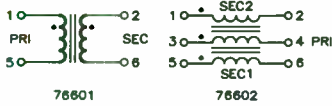
These ferrite cored transformers are fully encapsulated in a high grade moulded case. They are widely used in digital and data processing applications, and for line coupling, matching and isolating. Linking the secondaries together can produce an alternative ratio.

Types 76601/1, 76601/2 and 76601/3 are four pin packages and comprise a single primary and secondary winding.

Types 76602/2 and 76602/3 are six pin packages and comprise a single primary and two secondary windings.







**Specification**

Type	76601/1	76601/2	76601/3
Turns ratio $\pm 2\%$ :	1:1	1:1	1:1
Primary inductance $\mu\text{H}$ (min):	2060	492	219
Primary Et constant $V\mu\text{s}$ :	17.5	8.5	5.5
Capacity pF (max):	45	20	12
Leakage inductance $\mu\text{H}$ (max):	0.6	0.3	0.25
DC resistance of windings $\Omega$ (max):	1.5	0.8	0.5

Type	76602/2	76602/3
Turns ratio $\pm 2\%$ :	1:1:1	1:1:1
Primary inductance $\mu\text{H}$ (min):	492	219
Primary Et constant $V\mu\text{s}$ :	8.5	5.5
Capacity pF (max):	20	12
Leakage inductance $\mu\text{H}$ (max):	0.3	0.25
DC resistance of windings $\Omega$ (max):	0.8	0.5

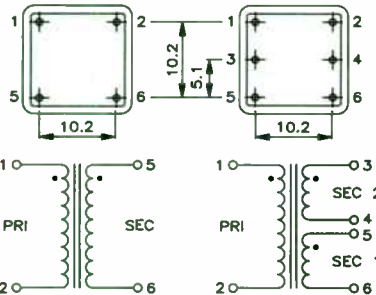
Retail Unit Price each (inc. VAT).

Order Code	Type 3675	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
UM28F	Pulse Tx 76601/1	£2.340	£1.900	£1.600	£2.750
UM29G	Pulse Tx 76601/2	£2.340	£1.900	£1.600	£2.750
BU41U	Pulse Tx 76601/3	£2.340	£1.900	£1.600	£2.750
UM31J	Pulse Tx 76602/2	£2.340	£1.900	£1.600	£2.750
BU42V	Pulse Tx 76602/3	£2.340	£2.190	£1.900	£2.750

## 1000 Series Pulse Transformers

**Newport Components**

The fully encapsulated 1000 series pulse transformers with moulded cases, are intended to be used in wide band and pulse applications including thyristor/triac triggering circuits. Each winding has been voltage tested to withstand 2000V rms, 50Hz. Type 1001 is a four pin package comprising primary and secondary windings. Types 1002 and 1003 are six pin packages comprising one primary and two secondary windings.



**Specification**

	1001	1002	1003
Turns ratio $\pm 2\%$ :	1:1	1:1:1	2:1:1
Primary inductance mH (min.):	3	3	12
Primary Et constant $V\mu\text{s}$ :	200	200	400
Leakage inductance $\mu\text{H}$ :	22	9	35
Capacity pF (max.):	23	28	30
DC resistance of windings $\Omega$ (max)			
Primary:	1.2	1.4	4.0
Secondary 1:	1.0	1.3	1.8
Secondary 2:		1.7	2.4

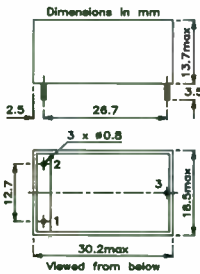
Retail Unit Price each (inc. VAT).

Order Code	Type 3672	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
UM06G	Pulse Tx 1001	£3.750	£2.570	£2.380	£4.410
UM07H	Pulse Tx 1002	£3.990	£3.090	£2.640	£4.690
BU40T	Pulse Tx 1003	£3.660	£3.350	£2.780	£4.310

## DELAY LINES

### Delay Line

The delay consists of two parallel coils which are astatically wound to decrease the influence of magnetic fields from other parts of the receiver. The delay line is in a plastic housing. Three pins enable the unit to be soldered directly to a printed circuit board.



**Electrical Data**  
(measured at 25°C)

Delay:	270ns $\pm 10\%$
Characteristic impedance:	0.9k $\Omega$ $\pm 10\%$
Group Delay (with respect to 0.5 MHz) at 3.5MHz max:	30ns
at 5.0MHz max:	60ns
Bandwidth at -3dB:	5MHz
Ripple with 2r-pulse on pin 2 max:	2.5%
Breakdown voltage between pins 2 and 3 min:	50V DC

Price each is shown. Order quantities less than 25 will be sold at the one off inc. VAT price.

Order Code	Type 5442	Price each exc. VAT			inc. VAT each
		25+	100+	500+	1+
UH84F	DL270 Delay Line	£0.950	£0.840	£0.720	£1.590

## MAINS TRANSFORMERS

Our range of laminated core transformers is organised as follows:

**Standard Transformers:** All types are suitable for use between 230 and 240 VAC and comply with BS3535 / EN60742.

**PCB Mounting Transformers:** These units are now manufactured by JJ Transformers.

**Auto-Transformers:** All of our Autotransformers comply with BS7452 and CE/LV Directives.

**US Mains Auto-Transformers:** Our new range of portable US Mains Autotransformers are ideal for use in the home. CE Marked, BS7452 / IEC989.

**Public Address Transformers:** a range of 100V line matching transformers offering power matching from 1/4W through to 30W in many useful steps.

**Isolation Transformers:** 240V to 240V isolation transformers available in 20, 50 and 100VA versions, also 2KVA and 3KVA portable site types.

### Sub-Miniature

A range of very small transformers that are wire ended. All types have 100mA output. Overall size: 37 x 31 x 30mm. Fixing centres: 45mm. All primaries tapped 0 to 240V.



Type	Secondary
3V	3-0-3V
6V	6-0-6V
9V	9-0-9V
12V	12-0-12V
15V	15-0-15V

Retail Unit Price each (inc. VAT).

Order Code	Type 3686	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YN12N	Sub-Min Tr 3V	£3.140	£2.400	£2.180	£3.690
WB00A	Sub-Min Tr 6V	£3.390	£2.400	£2.180	£3.990
WB01B	Sub-Min Tr 9V	£3.390	£2.400	£2.180	£3.990
WB02C	Sub-Min Tr 12V	£3.390	£2.400	£2.180	£3.990
YN13P	Sub-Min Tr 15V	£3.390	£2.580	£2.330	£3.990

## Miniature 250mA

A range of small transformers that are wire ended. All types have a 250mA output, centre-tapped. All primaries are 0 to 240V. Available in 6V, 9V, 12V and 15V types.



Type	Secondary	Size(w x h x d)*	Fixing Centres
6V	6-0-6V	36 x 31 x 34mm	46mm
9V	9-0-9V	43 x 35 x 34mm	51mm
12V	12-0-12V	43 x 35 x 36mm	51mm
15V	15-0-15V	43 x 35 x 38mm	51mm

\*Size excludes fixing feet which protrude 10mm on each side.

Retail Unit Price each (inc. VAT).

Order Code	Type 3688	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
YN14Q	250mA Tr 6V	£4.240	£2.710	£2.450	£4.990
YN15R	250mA Tr 9V	£4.240	£2.710	£2.450	£4.990
YN16S	250mA Tr 12V	£4.240	£2.710	£2.450	£4.990
YN17T	250mA Tr 15V	£4.240	£2.960	£2.670	£4.990

## Standard Range

All Mains transformers in this section are suitable for 230-240V, 50-60Hz supply. Secondary voltages are specified at 240V input and should be reduced in proportion when the input is below 240V. A range of high quality mains transformers, all with single mains primary windings and twin secondaries, wound on double-section safety bobbins. All comply with BS3535 / EN60742. Note 6VA Chassis types would require extra insulation between tags and fixing clamp if used in a double insulated application. If core is connected to accessible metal parts, they should be earthed. Secondaries can be connected in parallel to double the current capacity, or in series to double the voltage or form a centre-tapped secondary. Connections are by solder tags.

## 6VA Chassis Mounting



With 2-hole fixing clamp and solder tags.

### Dimensions:

Size (W x D x H): 45 x 40 x 37mm  
Fixing centres: 54mm

### Outputs:

Code	Secondaries	Maximum Current
WB06G	2 x 6V	500mA
DH24B	2 x 9V	333mA
WB10L	2 x 12V	250mA
WB15R	2 x 15V	200mA
WB16S	2 x 20V	150mA
WB20W	2 x 24V	125mA

## 12VA Chassis Mounting



With 2-hole fixing clamp and solder tags.

### Dimensions:

Size (W x D x H): 59 x 50 x 49mm  
Fixing centres: 70mm

### Outputs:

Code	Secondaries	Maximum Current
YJ50E	2 x 6V	1A
WB11M	2 x 9V	666mA
DM27E	2 x 12V	500mA
DM28F	2 x 15V	400mA
DH25C	2 x 20V	300mA

## 20/25VA Chassis Mounting

With 2-hole fixing clamp and solder tags.

### Dimensions:

Size (W x D x H): 69 x 57 x 57mm  
Fixing centres: 80mm

### Outputs:

Code	Secondaries	Maximum Current
YJ51F	2 x 6V	2A
DH26D	2 x 9V	1.38A
WB25C	2 x 12V	1A
DH27E	2 x 15V	830mA
DH28F	2 x 20V	625mA

## 50VA Chassis Mounting

With 2-hole fixing clamp and solder tags.

### Dimensions:

Size (W x D x H): 78 x 63 x 65mm  
Fixing centres: 92mm

### Outputs:

Code	Secondaries	Maximum Current
DH29G	2 x 6V	4A
DH30H	2 x 9V	2.78A
WB26D	2 x 12V	2A
DH31J	2 x 15V	1.66A
DH32K	2 x 20V	1.25A

## 100VA Chassis Mounting

With multi-hole fixing frames and solder tags.

### Dimensions:

Size (W x D x H): 91 x 70 x 77mm  
Fixing centres: 4 holes @ 57 x 45mm

### Outputs:

Code	Secondaries	Maximum Current
DH33L	2 x 6V	8.33A
DH35Q	2 x 12V	4.17A
DH36P	2 x 15V	3.33A
DH37S	2 x 20V	2.5A
DH38R	2 x 55V	910mA

Retail Unit Price each (inc. VAT).

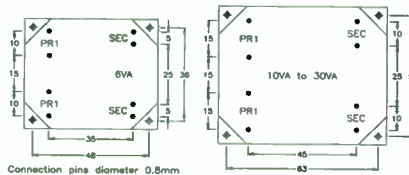
Order Code	Type 3581	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DH24B	Std 6VA 9V	£5.090	£4.030	£3.660	£5.990
WB10L	Std 6VA 12V	£5.090	£4.030	£3.660	£5.990
WB15R	Std 6VA 15V	£5.090	£4.030	£3.660	£5.990
WB16S	Std 6VA 20V	£5.090	£4.030	£3.660	£5.990
WB20W	Std 6VA 24V	£5.090	£4.030	£3.660	£5.990
YJ50E	Std 12VA 6V	£5.940	£4.950	£4.630	£6.990
WB11M	Std 12VA 9V	£7.420	£6.300	£4.180	£8.730
DM27E	Std 12VA 12V	£6.340	£4.630	£4.180	£7.460
DM28F	Std 12VA 15V	£6.340	£4.630	£4.180	£7.460
DH25C	Std 12VA 20V	£5.940	£4.630	£4.200	£6.990
YJ51F	Std 25VA 6V	£8.070	£6.420	£5.740	£9.490
DH26D	Std 25VA 9V	£8.070	£6.420	£5.740	£9.490
WB25C	Std 25VA 12V	£8.070	£7.780	£5.740	£9.490
DH27E	Std 25VA 15V	£8.070	£6.420	£5.740	£9.490
DH28F	Std 25VA 20V	£8.070	£6.420	£5.740	£9.490
DH29G	Std 50VA 6V	£9.770	£7.620	£6.780	£11.490
DH30H	Std 50VA 9V	£9.770	£7.620	£6.780	£11.490
WB26D	Std 50VA 12V	£10.200	£7.620	£6.780	£11.990
DH31J	Std 50VA 15V	£10.200	£7.620	£6.780	£11.990
DH32K	Std 50VA 20V	£10.200	£7.620	£6.780	£11.990
DH33L	Std 100VA 6V	£17.750	£13.500	£11.550	£20.860
DH35Q	Std 100VA 12V	£17.750	£13.500	£11.550	£20.860
DH36P	Std 100VA 15V	£17.750	£13.500	£11.550	£20.860
DH37S	Std 100VA 20V	£17.750	£13.500	£11.550	£20.860
DH38R	Std 100VA 55V	£17.750	£13.500	£11.550	£20.860

## Low Profile Encapsulated PCB Mounting Transformers

JJ Transformers



These are compact devices in a range from 2VA to 30VA, suitable for use where space is at a premium. The wound bobbins are mounted in resin filled thermoplastic cases designed for through hole soldering to PCBs. They are designed and manufactured to BS415 Class 2, IEC65, class 2. Integrally moulded mounting holes provide additional fixing points by four self tapping screws (No.6 x 9.5mm).



### Dimensions in mm

The inputs are 120/240V AC, with independent primary windings enabling connection in series for 240V and parallel for 120V input. The range available is shown below.

Code	Rating	Regulation, Approx	Secondaries	Output current	Size (mm) LxWxH
KU94C	2VA	26%	0-6V 0-6V	2 x 0-17A	53x44x17
KU95D	2VA	26%	0-9V 0-9V	2 x 0-11A	53x44x17
KU97F	2VA	26%	0-15V 0-15V	2 x 0-06A	53x44x17
KU98G	4VA	24%	0-6V 0-6V	2 x 0-33A	53x44x19

KW00A	4VA	24%	0-9V 0-9V	2 x 0-22A	53x44x19
KW01B	4VA	24%	0-12V 0-12V	2 x 0-165A	53x44x19
KW03D	4VA	24%	0-18V 0-18V	2 x 0-11A	53x44x19
KW04E	6VA	22%	0-6V 0-6V	2 x 0-5A	53x44x22
KW05F	6VA	22%	0-9V 0-9V	2 x 0-33A	53x44x22
KW63T	6VA	22%	0-15V 0-15V	2 x 0-2A	53x44x22
KZ08J	10VA	26%	0-6V 0-6V	2 x 0-83A	68x57x22
AA10L	10VA	26%	0-9V 0-9V	2 x 0-55A	68x57x22
AJ78K	10VA	26%	0-18V 0-18V	2 x 0-28A	68x57x22
AJ86T	18VA	17%	0-9V 0-9V	2 x 1-5A	68x57x27
AJ87U	18VA	17%	0-12V 0-12V	2 x 0-75A	68x57x27
AJ88V	18VA	17%	0-18V 0-18V	2 x 0-5A	68x57x27
AJ91Y	24VA	16%	0-12V 0-12V	2 x 1-0A	68x57x31
AJ92A	24VA	16%	0-15V 0-15V	2 x 0-8A	68x57x31
AJ94C	30VA	16%	0-9V 0-9V	2 x 1-66A	68x57x35
AJ95D	30VA	16%	0-12V 0-12V	2 x 1-25A	68x57x35
AK00A	30VA	16%	0-18V 0-18V	2 x 0-83A	68x57x35
AK06G	30VA	16%	0-24V 0-24V	2 x 0-625A	68x57x35

Retail Unit Price each (inc. VAT).

Order Code	Type 3684	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
KU94C	0-6V 2VA PCB	£6.800	£5.600	£5.000	£7.990
KU95D	0-9V 2VA PCB	£6.800	£5.600	£5.000	£7.990
KU97F	0-15V 2VA PCB	£6.800	£5.600	£5.000	£7.990
KU98G	0-6V 4VA PCB	£7.220	£5.950	£5.250	£8.490
KW00A	0-9V 4VA PCB	£7.220	£5.950	£5.250	£8.490
KW01B	0-12V 4VA PCB	£7.220	£5.950	£5.250	£8.490
KW03D	0-18V 4VA PCB	£7.220	£5.950	£5.250	£8.490
KW04E	0-6V 6VA PCB	£7.650	£6.350	£5.650	£8.990
KW05F	0-9V 6VA PCB	£7.650	£6.350	£5.650	£8.990
KW63T	0-15V 6VA PCB	£7.650	£6.350	£5.650	£8.990
KZ08J	0-6V 10VA PCB	£9.350	£7.400	£6.630	£10.990
AA10L	0-9V 10VA PCB	£8.920	£7.250	£6.500	£10.490
AJ78K	0-18V 10VA PCB	£8.920	£7.250	£6.500	£10.490
AJ86T	0-9V 18VA PCB	£10.200	£8.400	£7.500	£11.990
AJ87U	0-12V 18VA PCB	£10.200	£8.400	£7.500	£11.990
AJ88V	0-18V 18VA PCB	£10.200	£8.400	£7.500	£11.990
AJ91Y	0-12V 24VA PCB	£11.050	£9.100	£8.150	£12.990
AJ92A	0-15V 24VA PCB	£11.050	£9.100	£8.150	£12.990
AJ94C	0-9V 30VA PCB	£11.900	£9.900	£8.850	£13.990
AJ95D	0-12V 30VA PCB	£11.900	£9.900	£8.850	£13.990
AK00A	0-18V 30VA PCB	£11.900	£9.900	£8.850	£13.990
AK06G	0-24V 30VA PCB	£11.900	£9.900	£8.850	£13.990

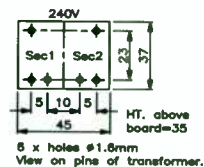
## PCB Mounting Transformers

Two ranges of 6 and 12VA PCB mounting transformers, identical to the chassis-mount range but having PCB pins instead of solder tags, and no hardware fixing clamps. The pins require PCB holes of 1.6mm diameter. Due to the extra weight of the 12VA types, these have three additional 'dummy' PCB pins for extra security. The actual PCB may also need extra hardware support fixings in the area close to the transformer. All types comply with BS3535 / EN60742. All suitable for 230-240V supply, data given for 240V.



## 6VA PCB Mounting

With six PCB pins.



### Dimensions:

Size (W x D): 45 x 37mm  
Height above PCB: 35mm

### Outputs:

Code	Secondaries	Maximum Current
YJ52G	2 x 6V	500mA
YJ53H	2 x 9V	333mA
YJ54J	2 x 12V	250mA
YJ55K	2 x 15V	200mA
DH39N	2 x 20V	150mA
DH40T	2 x 24V	125mA

## 12VA PCB Mounting

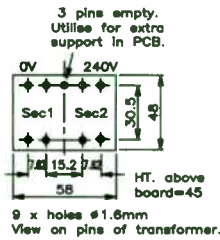
With six terminated PCB pins and three non-connected support pins.

### Outputs:

Code	Secondaries	Maximum Current
DM11M	2 x 6V	1A
DM26D	2 x 9V	660mA
DM13P	2 x 12V	500mA
DH41U	2 x 15V	400mA
DH42V	2 x 20V	300mA

### Dimensions:

Size (W x D): 58 x 48mm  
Height above PCB: 45mm

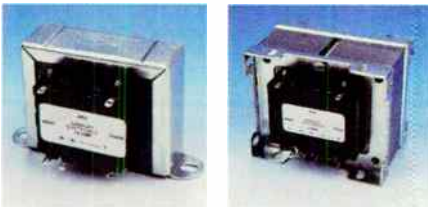


Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YJ52G	PCB 6VA 6V	£5.230	£3.810	£3.390	£6.150
YJ53H	PCB 6VA 9V	£5.230	£3.810	£3.390	£6.150
YJ54J	PCB 6VA 12V	£5.230	£3.810	£3.390	£6.150
YJ55K	PCB 6VA 15V	£5.230	£3.810	£3.390	£6.150
DH39N	PCB 6VA 20V	£4.240	£3.810	£3.390	£4.990
DH40T	PCB 6VA 24V	£4.240	£3.810	£3.390	£4.990
DM11M	PCB 12VA 6V	£4.240	£4.080	£3.730	£4.990
DM26D	PCB 12VA 9V	£4.240	£4.080	£3.730	£4.990
DM13P	PCB 12VA 12V	£4.240	£4.080	£3.730	£4.990
DH41U	PCB 12VA 15V	£4.240	£4.080	£3.730	£4.990
DH42V	PCB 12VA 20V	£4.240	£4.080	£3.730	£4.990

## Twin Secondary and Multi-Tapped Mains Transformers

A useful range of 230-240V mains transformers mostly with twin, tapped secondary windings, providing a varied choice of secondary combinations. Mechanical fixing is either by clamps or multi-hole frames. In the following table, 2-hole fixing centres are indicated by a single number in the 'fixing centres' column, or else multi-hole frames are fitted, and the dimensions of the centres of four holes are given. Dimensions in mm. All types comply with BS3535 / EN60742. All output data given for 240V input.



Code	VA Rating	Secondary Windings	Maximum Current	Dimensions W x D x H (mm)	Fixing Centres
WB03D	24	(1) 0-8-9V (2) 0-8-9V	1.5A 1.5A	69 x 63 x 57	80
YK28F	9	(1) 0-12V (2) 0-12V	330mA 330mA	55 x 45 x 45	70
LY03D	10	(1) 0-15V (2) 0-15V	330mA 330mA	55 x 45 x 45	70
WB07H	34	(1) 0-10-12-15-17V (2) 0-10-12-15-17V	1A 1A	78 x 70 x 65	92
WB22Y	68	(1) 0-10-12-15-17V (2) 0-10-12-15-17V	2A 2A	91 x 76 x 77	57 x 45
WB12N	40	(1) 0-15-20V (2) 0-15-20V	1A 1A	78 x 70 x 65	92
WB17T	84	(1) 0-28V (2) 0-28V	1.5A 1.5A	91 x 70 x 77	57 x 45

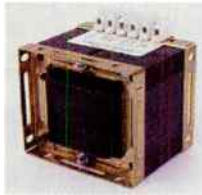
YK02C	128	(1) 32-0-32V	2A	98 x 84 x 65	64 x 54
XB38R	450	(1) 32-0-32V (2) 12-0-12V	6.5A 1.5A	118 x 99 x 127	90 x 65

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
WB03D	Multi 24VA 9V	£8.500	£6.420	£5.740	£9.990
YK28F	Multi 12VA 12V	£8.280	£4.720	£4.220	£7.390
LY03D	Multi 10VA 15V	£8.800	£4.860	£4.350	£7.990
WB07H	Multi 34VA 17V	£12.750	£9.490	£8.450	£14.990
WB22Y	Multi 68VA 17V	£17.860	£13.350	£13.280	£20.990
WB12N	Multi 40VA 20V	£10.200	£7.620	£6.750	£11.990
WB17T	Multi 84VA 28V	£17.860	£13.350	£13.280	£20.990
YK02C	Multi 128VA 32V	£17.010	£12.180	£10.650	£19.990
XB38R	Multi 450VA 32V	£36.580	£25.750	£23.250	£42.990

## Inverter Transformer

A high quality inverter transformer as used in our 12V/240V, 60W Inverter Kit LW95D, and suitable for similar inverter circuits. Winding details, primary: centre-tapped to suit 12V DC, 50Hz inverter driver at 3A. Secondary: single winding for 240/260V AC output at a nominal 500mA maximum (120W). Turns ratio: 1+1:32. Fitted with multi-hole mounting frames.



### Dimensions:

Size (W x D x H): 100 x 88 x 100mm  
Fixing centres: 63.5 x 67mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
XG29G	Inverter Transformer	£28.460	£22.350	£20.520	£33.450

## Stereo Amplifier Transformer



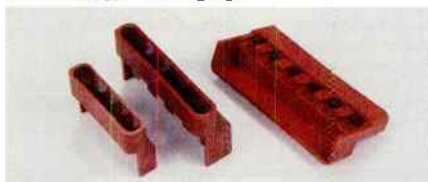
A very high quality transformer designed primarily for use with our 50W Amplifier.

Primary: 120-0-120V  
Secondary 1: 22-0-22V at 1 1/2A  
Secondary 2: 22-0-22V at 1 1/2A  
Secondary 3: 15-0-15V at 1A  
Rating: 162VA  
Size: 85 x 100 x 80mm  
Fixing centres: 63 x 55mm  
Style: Similar to TR 20V 1A etc.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
LW34M	15/22V Power Tran	£17.010	£12.820	£11.490	£19.990

## Terminal Covers



Terminal covers for standard transformer styles with solder tags. These covers fit over the terminals and hold on to the plastic bobbin cover beneath. Wires exit through the top of the cover. Three sizes are

available: 5-way for 6VA transformers with up to 5 solder tags, 5-way for 20/25VA size and 6-way for 50 to 100VA sizes. These covers are particularly suitable for use with isolation transformers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
DM29G	5-Way 6VA Cover	£0.170	£0.095	£0.085	£0.220
DM30H	5-Way 25VA Cover	£0.187	£0.125	£0.110	£0.220
DM31J	6-Way 100VA Cover	£0.204	£0.135	£0.120	£0.240

## AUTO TRANSFORMERS

### Portable Stepdown Auto-Transformers



A range of portable auto-transformers intended to operate American type 110/120V equipment in the U.K. The output sockets are designed to accept 2- or 3-pin American style plugs. An output fuse is fitted as standard on all models that is appropriate to the auto-transformer rating. The 220/240V input is fitted with 1m of 3-core flex with moulded plug.

The auto-transformers use highly efficient toroidal windings and each unit is encapsulated with potting compound (to UL94V0) in a robust housing. All types are manufactured to BS7452:1991 and IEC.989:1991, and generate virtually no external magnetic field.

All types are suitable for 220/240V input and 110/120V output.

Order Code	Max Load	No. of Outlets	Dimensions H x D
VR02C	100VA	1	95 x 88mm
VR03D	200VA	1	109 x 103mm
VR04E	200VA	2	109 x 103mm
VR05F	300VA	2	109 x 103mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
VR02C	Autotrans 100VA	£34.030	£24.250	£20.750	£39.990
VR03D	Autotrans 200VA	£42.540	£32.990	£29.990	£49.990
VR04E	Autotrans 200VA/2Sk	£46.800	£37.250	£34.750	£54.990
VR05F	Autotrans 300VA/2Sk	£55.310	£42.490	£39.490	£64.990

## US Mains Type Auto-Transformers



Step-down transformers of 100, 250 and 450VA ratings to adapt UK 230/240V 50/60Hz mains supply to American standard 110/120V appliances. All types comply with BS7452, have enclosing steel shrouds and come complete with UK mains lead and standard American 3-pin outlet socket in the cover. Mounting is by four single hole brackets at the base.

**WARNING:** auto-transformers DO NOT provide safety isolation from the 230/240V mains supply and, despite the lower voltage, involved the 110V should be treated with the same respect as the 240V mains supply.

These units are NOT intended for outdoor use, neither should they be used with portable tools. Mounting is by four single hole brackets at the base, and the auto-transformer should be secured to a suitable surface/enclosure for safety. The auto-transformers are NOT intended to be portable.

Order Code	VA Rating	Nominal Max. Current (110/120V out)	Dimensions (mm)	Fixing Centres (mm)
YM50E	100	830mA	80 x 120 x 97	63.5 x 67
DH45Y	250	2.08A	80 x 133 x 97	63.5 x 80
DH46A	450	3.75A	80 x 146 x 97	63.5 x 93

Detailed operating instructions are supplied with the auto transformers.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YM50E 4	US Mains 100VA	£38.270	£22.950	£21.600	£44.970
DH45Y 6	US Mains 250VA	£46.780	£38.000	£25.100	£54.970
DH46A 10	US Mains 450VA	£66.470	£38.000	£25.300	£78.110

## Auto-Transformers



A range of auto-transformers which provide step-up or step-down to adapt 110/120V equipment to 230/240V AC mains and vice versa, suitable for 50/60Hz operation. Five different power ratings are available from 50VA to 450VA, all complying with BS7452, with steel shrouds and screw terminal connections. All types tapped at 0-120-240V.

**WARNING:** auto-transformers DO NOT provide safety isolation from the 110/240V mains supply (can be used for step-up/down) and, despite the lower voltage, involved the 110V should be treated with the same respect as the 240V mains supply. These units are NOT intended for outdoor use, neither should they be used with portable tools. Mounting is by four single hole brackets at the base. Note this type is intended for permanent wiring and

must be mounted in an enclosure so that the terminal block and wiring are not readily accessible.

Order Code	VA Rating	Nominal Max. Current (110/120V out)	Dimensions (mm)	Fixing Centres (mm)
YJ56L	50	400mA	64 x 84 x 78	48 x 45
YJ57M	100	830mA	64 x 84 x 78	48 x 45
YJ58N	150	1.25A	72 x 94 x 88	57 x 51
YJ59P	250	2A	80 x 110 x 97	63.5 x 54
DH44X	450	3.75A	80 x 123 x 97	63.5 x 67

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
YJ59P 4	Auto 250VA	£26.370	£18.600	£16.990	£30.990

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
YJ56L 2	Auto 50VA	£13.600	£9.900	£9.010	£15.980
YJ57M 2	Auto 100VA	£16.160	£11.470	£11.100	£18.990
YJ58N 3	Auto 150VA	£22.110	£16.490	£15.780	£25.980
DH44X 4	Auto 450VA	£36.840	£32.390	£31.990	£43.290

## AUDIO TRANSFORMERS

### Miniature Audio Transformers



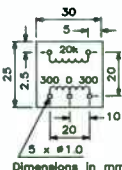
Two miniature transformers for audio matching. Dimensions 20 x 16 x 15mm. (CT = Centre tapped). Output type 200mW.

Type No.	Application	Primary impedance	Secondary impedance
LT44	Driver	20kΩ	1kΩCT
LT700	Output	1.2kΩCT	3.2Ω

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	25+	100+	
HX82D	Min Tr LT44	£1.150	£0.659	£0.492	£1.360
LB14Q	Min Tr LT700	£1.150	£0.560	£0.418	£1.360

### Microphone Transformer



A transformer specially designed to match low impedance balanced or unbalanced microphones into unbalanced high impedance inputs.

Turns ratio: 7:1  
 Input impedance: 300-0-300Ω (600Ω)  
 Output impedance: 20kΩ  
 Frequency response: 50Hz to 18kHz (-1dB)  
 The transformer is suitable for direct PCB mounting. Overall dimensions: 30 x 30 x 30mm high including 5mm long PCB mounting pins.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
FD23A	Mic Xlfr 600/20	£7.960	£4.720	£4.180	£9.360

## 600-600Ω Line Isolating Transformer

A 1:1 ratio isolating transformer for use on 600Ω systems. Low insertion loss and good linearity over a wide signal level range coupled with a high proof voltage make this transformer ideally suited for such applications as telephony, general data transfer, audio and holding coil circuits. Please Note, this product is not approved for connection to the public switched telephone network. Audio Frequency range is 300 to 3kHz at 2dB. Dimensions: 37 x 40mm. Fixing centres: 53.5mm x 48A. Weight: 170g.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
BK57M	600 Ohm Isoltran	£6.800	£5.160	£4.630	£7.990

## 100V Line-Matching Transformers

A range of line-matching transformers for multiple loudspeaker and Public Address systems. The range offers a choice of power outputs from 1/4W to 30W. Universal types can drive 4, 8 or 16Ω loads, all others are matched to 8Ω only.



The function of these transformers is to match the 100V line output of PA (Public Address) amplifiers to all loudspeakers in the system. They MUST NOT be connected to amplifiers or systems other than those designed for 100V line operation. Operating in the medium frequency range, the transformers are designed for typical commercial PA speech and music applications. The outputs quoted do not include input losses.

### Universal Types 15/30W

Input: standard 100V line.  
 Output power: 1, 2, 5 or 15/30W, selected by connecting the 100V line to the appropriate primary taps. Impedance matching: 4, 8 or 16Ω, selected by connecting the loudspeaker to the appropriate secondary taps.

**WARNING:** DO NOT adjust the primary taps of these transformers without first disconnecting the 100V line input or switching off the equipment. High voltages can be found on the adjacent primary taps of this type where only 100V would be expected. Mounting is by 2-hole clamps.

Code	Maximum Power	Dimensions W x D x H	Fixing Centres
DH47B	15W	69 x 57 x 57mm	80mm
YJ60Q	30W	78 x 63 x 65mm	92mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	
DH47B	15W 100V Line Tx	£8.500	£6.500	£5.850	£9.990
YJ60Q 2	30W 100V Line Tx	£10.620	£7.750	£6.800	£12.490

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## Tapped Output Types

Line transformers with fixed 100V line inputs and outputs for 8Ω loudspeakers only. Adjustable output taps provide a range of 4 power levels from each type; two different power ranges are available. Mounting is by 2-hole clips.



Code	Output Taps, Watts	Dimensions W x D x H	Fixing Centres
DH49D	1/4, 1/2, 1, 2W		45 x 40 x 37mm
DH48C	1, 2, 4, 10W	59 x 50 x 49mm	70mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
DH49D	2W 100V Line Tx	£5.940	£4.520	£4.050	£6.990
DH48C	10W 100V Line Tx	£7.650	£5.780	£5.200	£8.990

## Low Power Step-up Transformer

This transformer may find applications where a low power step-up transformer is required. Transformer is wound on a LA4343 pot core.



**Specification**

Primary: 10 turns, 24 swg  
 Secondary: 600 turns, 40 swg  
 Turns ratio: 1:60  
 Dimensions: 29.3 x 27.5 x 18.5mm

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
JL94C	Isoliser Transformer	£11.710	£8.650	£7.850	£13.760

## Valve Transformer

A transformer with HT and heater secondaries for powering valve circuits. The HT secondary is 0-240V @ 100mA, and the AC heater secondary is the standard 6.3V up to 1.5A max. Dimensions 78 x 65 x 65mm. 34VA.



Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	10+	25+	1+
XP27E 2	Tp 2400.1 & 6.3/1.5	£11.710	£7.980	£7.000	£13.760

## High Quality Valve Transformer



A transformer with HT and heater secondaries for valve circuits. It has a steel top cover over one side of the former, and is designed to be mounted into a

rectangular cutout in a suitable chassis on the other side. The core is grain oriented to keep the hum field to a minimum and the primary windings are dual standard 115/230V.

**Specification**  
 Transformer core material: Low-field grain-oriented steel  
 Primary windings: 2 x 115V (dual UK/US standard)  
 Secondary windings: 3  
 HT voltage: 350V max.\*  
 HT current: 100mA max.\*  
 Heater #1 voltage: 6.3V  
 Heater #1 current: 1.5A max.  
 Heater #2 voltage: 15V  
 Heater #2 current: 1.5A max.  
 Mechanical fittings: 4-bolt top cover and frame  
 Fixing centres: 64.5 x 52mm (4 off)  
 Overall dimensions: 80 x 66 x 70mm high  
 \*Not available simultaneously.  
 The transformer is designed for use in the 'Newton' Valve Preamplifier project. The 15V secondary is intended to source a 12.6V DC smoothed and regulated heater supply.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
ST29G 2	350V 3-Sec Valve TX	£18.020	£14.250	£12.950	£21.180

## High Power Valve Mains Transformer



A mains transformer for high power valve circuits such as audio power amplifiers with twin 0-115V primary windings, and separate single-ended HT and centre-tapped heater secondaries. It was developed for use in our 'Millennium 4-20' valve amplifier project.

The transformer is intended for mounting on top of a chassis where one side of the former, carrying all primary and secondary connections, passes through a rectangular cutout, and the top side of the former is shielded by a steel top cover. The core therefore seats flat on the chassis and 4 x M5 mounting hardware is included. Due to the heavy gauge of wire used, the heater secondaries are not terminated at solder tags.

**Specification**  
 Input voltage: 230V AC @ 50Hz (twin 0-115V)  
 HT secondary output voltage: 350V AC max.\*  
 HT secondary output current: 250mA max.\*  
 HT secondary winding impedance: 300Ω approx.  
 Heater secondary voltage: 6.3V AC centre-tapped (3.15-0-3.15V) 7A max.  
 Heater secondary current: 7A max.  
 Power consumption, I<sub>HT</sub> = 125mA, I<sub>h</sub> = 3.5A: 70W (VHT = 313V AC (350-300Ω x 125mA))  
 I<sub>HT</sub> = 250mA, I<sub>h</sub> = 7A: 120W (VHT = 275V AC (350-300Ω x 250mA))

Switch-on input surge current, HT into 68μF and fully loaded heater: >800mA  
 Nominal continuous primary input current at full load: >600mA  
 Overall dimensions: 96 x 80 x 85mm  
 Fixing centres: 79.3 x 63.5mm  
 Former cutout: 68 x 62mm min.  
 \* Due to the internal winding impedance, max. voltage and current are not available simultaneously.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DM54J 5	Valve Amp Mains Trans	£28.850	£21.700	£19.600	£33.900

## Valve Output Transformer



A push-pull output transformer suitable for class A/B and B valve output stages at powers up to 20W rms. Screen grid taps are provided for distributed-load ('ultra-linear') designs, but need not be used. It was developed for use in our 'Millennium 4-20' valve amplifier project.

The transformer is intended for mounting on top of a chassis where one side of the former, carrying all primary and secondary connections, pass through a rectangular cutout, and the top side of the former is shielded by a steel top cover. The core therefore seats flat on the chassis and 4 x M5 mounting hardware is included.

**Specification**  
 Primary anode-to-anode impedance (Ra/a): 6-6kΩ  
 Screen grid taps: 43% from CT  
 Winding distribution: Five sections of primary and secondary windings interleaved  
 Usable frequency range: 25Hz to 75kHz ±3dB @ 20W rms, <10Hz to >90kHz ±1dB @ 1W rms  
 Low frequency cut-off: 25Hz @ 20W throughput  
 Natural resonance frequency of primary winding: 80kHz approx.  
 Max. Power throughput: 20W rms (30W rms absolute max.)  
 Speaker load matching: 8Ω only  
 Output impedance: 0-2Ω approx.  
 Damping factor: 50 approx.  
 Overall dimensions: 85 x 71 x 84mm  
 Fixing centres: 71.5 x 57mm  
 Former cutout: 60 x 56mm min.

Note that this transformer must only be used in push-pull modes with HT supply connected to CT, and never in single-ended mode.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DM53H 3	20W OP Transformer	£26.140	£19.250	£17.300	£30.720

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## TOROIDAL MAINS TRANSFORMERS

### Toroidal Mains Transformers



A range of high quality, toroidal mains transformers whose main features include a low magnetic field, small size and weight, low noise and excellent regulation. A mounting kit is supplied with each, allowing easy mounting to a chassis by placing one neoprene washer below, and the other above the transformer, and bolting the dished washer down on top. DO NOT over-tighten, also ensure that both ends of the bolt do not make contact with the chassis (e.g., top of bolt touches lid of case). Because the bolt is aligned in the same direction as the primary and secondary turns, this will effectively create a short-circuit winding. Either shorten the bolt if too long, or provide some insulation, such as plastic, so the bolt does not make contact. Note that an antisurge fuse should always be used as the mains fuse for toroidal transformers, as they exhibit a very high initial surge current at switch on. All types have a single 240V primary and two separate identical secondaries, except YZ23A, YK33L and XJ65V. All connections are approximately 20cm long sleeved leads, and primaries are always colour coded as orange. The types available are shown in the following list. Dimensions include mounting kit. The start/finish colour codes of the secondary windings are also shown. All types are approved to EN60742/BS3535, VDE0551 and ISO9003.

Code	Rating	Regulation, Approx.	Secondaries, Start/Finish	Output Current	Size (mm) Dia. x Ht
<b>15VA</b>					
DH55K	15VA	19%	(1) 0-9V Red/Yellow	830mA	62 x 37
			(2) 0-9V Blue/Grey	830mA	
DH56L	15VA	19%	(1) 0-12V Red/Yellow	630mA	62 x 37
			(2) 0-12V Blue/Grey	630mA	
DH57M	15VA	19%	(1) 0-15V Red/Yellow	500mA	62 x 37
			(2) 0-15V Blue/Grey	500mA	
DH58N	15VA	19%	(1) 0-18V Red/Yellow	420mA	62 x 37
			(2) 0-18V Blue/Grey	420mA	
<b>30VA</b>					
YK08J	30VA	15%	(1) 0-6V Red/Yellow	2.5A	70 x 37
			(2) 0-6V Blue/Grey	2.5A	
YK09K	30VA	15%	(1) 0-9V Red/Yellow	1.66A	70 x 37
			(2) 0-9V Blue/Grey	1.66A	
YK10L	30VA	15%	(1) 0-12V Red/Yellow	1.25A	70 x 37
			(2) 0-12V Blue/Grey	1.25A	
YK11M	30VA	15%	(1) 0-15V Red/Yellow	1A	70 x 37
			(2) 0-15V Blue/Grey	1A	
YK12N	30VA	15%	(1) 0-18V Red/Yellow	830mA	70 x 37
			(2) 0-18V Blue/Grey	830mA	

50VA

YK14Q	50VA	13%	(1) 0-9V Red/Yellow	2-78A	80 x 43	(2) 0-9V Blue/Grey	8-89A		
			(2) 0-9V Blue/Grey	2-78A					
YK15R	50VA	13%	(1) 0-12V Red/Yellow	2-08A	80 x 43	(2) 0-12V Blue/Grey	6-66A	110 x 50	
			(2) 0-12V Blue/Grey	2-08A			6-66A		
YK16S	50VA	13%	(1) 0-15V Red/Yellow	1-67A	80 x 43	(2) 0-15V Blue/Grey	2-28A	110 x 50	
			(2) 0-15V Blue/Grey	1-67A			2-28A		
DH59P	50VA	13%	(1) 0-18V Red/Yellow	1-38A	80 x 43	(2) 0-18V Blue/Grey	9-38A	110 x 55	
			(2) 0-18V Blue/Grey	1-38A			9-38A		
DH60Q	50VA	12%	(1) 0-25V Red/Yellow	1A	80 x 43	(2) 0-25V Blue/Grey	7-5A	110 x 55	
			(2) 0-25V Blue/Grey	1A			7-5A		
<b>80VA</b>									
DH61R	80VA	10%	(1) 0-12V Red/Yellow	3-33A	95 x 43	(2) 0-12V Blue/Grey	5-11A	110 x 55	
			(2) 0-12V Blue/Grey	3-33A			5-11A		
YK17T	80VA	10%	(1) 0-18V Red/Yellow	2-22A	95 x 43	(2) 0-18V Blue/Grey	3-75A	110 x 55	
			(2) 0-18V Blue/Grey	2-22A			3-75A		
YK18U	80VA	10%	(1) 0-22V Red/Yellow	1-82A	95 x 43	(2) 0-22V Blue/Grey	10A	120 x 65	
			(2) 0-22V Blue/Grey	1-82A			10A		
YK19V	80VA	10%	(1) 0-30V Red/Yellow	1-33A	95 x 43	(2) 0-30V Blue/Grey	6-82A	120 x 65	
			(2) 0-30V Blue/Grey	1-33A			6-82A		
<b>120VA</b>									
DH62S	120VA	10%	(1) 0-12V Red/Yellow	5A	90 x 56	(2) 0-12V Blue/Grey	5A	120 x 65	
			(2) 0-12V Blue/Grey	5A			5A		
DH63T	120VA	10%	(1) 0-15V Red/Yellow	4A	90 x 56	(2) 0-15V Blue/Grey	4-28A	120 x 65	
			(2) 0-15V Blue/Grey	4A			4-28A		
DH64U	120VA	10%	(1) 0-18V Red/Yellow	3-33A	90 x 56	(2) 0-18V Blue/Grey	3-33A	120 x 65	
			(2) 0-18V Blue/Grey	3-33A			3-33A		
DH65V	120VA	10%	(1) 0-22V Red/Yellow	2-72A	90 x 56	(2) 0-22V Blue/Grey	5-68A	140 x 75	
			(2) 0-22V Blue/Grey	2-72A			5-68A		
YK86T	120VA	10%	(1) 0-24V Red/Yellow	2-5A	90 x 56	(2) 0-24V Blue/Grey	10A	135 x 65	
			(2) 0-24V Blue/Grey	2-5A			10A		
DH66W	120VA	10%	(1) 0-25V Red/Yellow	2-4A	90 x 56	(2) 0-25V Blue/Grey	7-14A	135 x 65	
			(2) 0-25V Blue/Grey	2-4A			7-14A		
YK20W	120VA	10%	(1) 0-30V Red/Yellow	2A	90 x 56	(2) 0-30V Blue/Grey	5-55A	135 x 65	
			(2) 0-30V Blue/Grey	2A			5-55A		
YK33L	120VA	10%	(1) 0-24V Red/Yellow	2-5A	90 x 56	(2) 0-24V Blue/Grey	4-44A	135 x 65	
			(2) 0-24V Blue/Grey	2-5A			4-44A		
			(3) 0-100V Black/White	100mA			4-44A		
<b>156VA</b>									
YZ23A	156VA	8%	(1) 12-0-12V Blue/Grey/Blue	166mA	110 x 50	(2) 39-0-39V Red/Yellow/Red	5-68A	140 x 70	
			(2) 39-0-39V Red/Yellow/Red	2A			5-68A		
<b>160VA</b>									
DH67X	160VA	7%	(1) 0-9V Red/Yellow	8-89A	110 x 50				

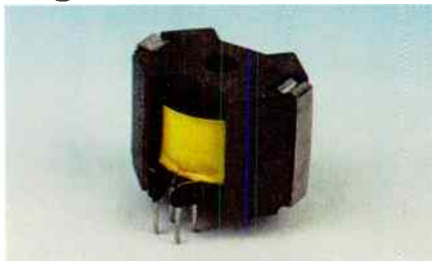
**1016VA**  
XJ65V 1016VA 3% (1) 0-70V Red/Yellow 7-2A 160 x 82  
(2) 0-70V Blue/Grey 7-2A  
(3) 0-12V Black/White 640mA

Retail Unit Price each (inc. VAT).

Order Code	Type 3722	Price each exc. VAT			inc. VAT each
		1+	5+	10+	
DH55K	15VA 9V Toroidal	£10.580	£7.490	£6.910	£12.440
DH56L	15VA 12V Toroidal	£10.580	£7.490	£6.910	£12.440
DH57M	15VA 15V Toroidal	£10.580	£7.490	£6.910	£12.440
DH58N	15VA 18V Toroidal	£10.580	£7.490	£6.910	£12.440
YK06J	30VA 6V Toroidal	£12.930	£9.090	£7.650	£15.200
YK09K	30VA 9V Toroidal	£12.930	£9.090	£7.650	£15.200
YK10L	30VA 12V Toroidal	£12.930	£9.090	£7.650	£15.200
YK11M	30VA 15V Toroidal	£12.930	£9.090	£7.650	£15.200
YK12N	30VA 18V Toroidal	£12.930	£9.090	£7.650	£15.200
YK14Q	50VA 9V Toroidal	£14.290	£9.950	£8.100	£16.800
YK15R	50VA 12V Toroidal	£14.290	£9.950	£8.100	£16.800
YK16S	50VA 15V Toroidal	£14.290	£9.950	£8.100	£16.800
DH59P	50VA 18V Toroidal	£14.290	£9.950	£8.100	£16.800
DH60Q	50VA 25V Toroidal	£14.290	£9.950	£8.100	£16.800
DH61R	80VA 12V Toroidal	£14.400	£9.950	£8.750	£16.930
YK17T	80VA 18V Toroidal	£14.400	£9.950	£8.750	£16.930
YK18U	80VA 22V Toroidal	£14.400	£9.950	£8.750	£16.930
YK19V	80VA 30V Toroidal	£14.400	£9.950	£8.750	£16.930
DH62S	120VA 12V Toroidal	£17.120	£11.750	£10.440	£20.120
DH63T	120VA 15V Toroidal	£17.120	£11.750	£10.440	£20.120
DH64U	120VA 18V Toroidal	£17.120	£11.750	£10.440	£20.120
DH65V	120VA 22V Toroidal	£17.120	£11.750	£10.440	£20.120
YK86T	120VA 24V Toroidal	£17.120	£11.750	£10.440	£20.120
DH66W	120VA 25V Toroidal	£17.120	£11.750	£10.440	£20.120
YK20W	120VA 30V Toroidal	£17.120	£11.750	£10.440	£20.120
YK33L	120VA 100V Toroidal	£17.120	£11.750	£10.440	£20.120
Y223A	156VA 39V Toroidal	£23.420	£16.950	£15.280	£27.530
DH67X	160VA 9V Toroidal	£20.930	£13.690	£11.690	£24.600
DH68Y	160VA 12V Toroidal	£20.930	£13.690	£11.690	£24.600
YK21X	160VA 35V Toroidal	£20.930	£13.690	£11.690	£24.600
DH68A	225VA 12V Toroidal	£22.080	£15.850	£13.350	£25.950
DH70M	225VA 15V Toroidal	£22.080	£15.850	£13.350	£25.950
DH71N	225VA 22V Toroidal	£22.080	£15.850	£13.350	£25.950
DH72P	225VA 30V Toroidal	£22.080	£15.850	£13.350	£25.950
DH73Q	300VA 15V Toroidal	£25.240	£17.490	£15.100	£29.660
DH74R	300VA 22V Toroidal	£25.240	£17.490	£15.100	£29.660
DH75S	300VA 30V Toroidal	£25.240	£17.490	£15.100	£29.660
YK22Y	300VA 35V Toroidal	£25.240	£17.490	£15.100	£29.660
YM45Y	300VA 45V Toroidal	£25.240	£17.490	£15.100	£29.660
DH76H	500VA 25V Toroidal	£34.260	£22.490	£18.950	£40.260
YK23A	500VA 35V Toroidal	£34.260	£22.490	£18.950	£40.260
YM46A	500VA 45V Toroidal	£34.260	£22.490	£18.950	£40.260
YM47B	500VA 55V Toroidal	£34.260	£22.490	£18.950	£40.260
YM48C	625VA 45V Toroidal	£37.900	£25.850	£22.490	£44.540
YM49D	625VA 55V Toroidal	£37.900	£25.850	£22.490	£44.540
XJ65V	1016VA 240V Toroidal	£69.450	£45.950	£41.000	£81.610

## SPECIALISED TRANSFORMERS

### Geiger Transformer



A specially wound transformer for use with Geiger tubes, as used in the Radiation Monitoring kit LM25C. The transformer is designed to operate from a 9V, 40kHz oscillator circuit and has a feedback winding as well as the primary. The secondary will produce 250V peak-to-peak.

Retail Unit Price each (inc. VAT).

Order Code	Type 1193	Price each exc. VAT	inc. VAT each
FP78K	Geiger Transformer	£4.240	£4.990

## LIGHTING TRANSFORMER

### Electronic Lighting Transformer

This electronic transformer is designed specifically for use with low voltage lighting. It is rated at 20 - 105 va, is double insulated and provided with internal overload and short circuit protection. This transformer is dimmable using standard tungsten dimmers (to BS 800/5518). An excellent transformer for variable wattage use.



#### Specifications

Length 140mm  
Diameter 32mm  
Weight 230g  
Rating 20-105va

Retail Unit Price each (inc. VAT).

Order Code	Type 12804	Price each exc. VAT			inc. VAT each
VJ13P	20-105 VA Trans.	£25.520	£23.290	£21.840	£29.990

### Toroidal Lighting Transformer

This toroidal transformer is specifically designed to work with individual lamps. It is double insulated and has self resetting thermal overload protection. Its small size makes it ideally suited for use with recessed downlighter and eyeball fittings.



#### Specifications

Length 78mm  
Diameter 62mm  
Weight 750g  
Input 240V 50Hz  
Output 12vAC  
Rating 50va

Retail Unit Price each (inc. VAT).

Order Code	Type 12805	Price each exc. VAT			inc. VAT each
VJ12N	12V Toroidal Trans.	£11.900	£10.970	£10.330	£13.990

### Electronic Safety Converter



This very compact and safe electronic converter is the ideal way to convert mains power for low voltage (12V) dichroic lamps of up to 50W (order codes AB73Q, AB74R, AB75S, AB76H, AB77J and AB78K). The converter stays cool in use, is quick and easy to fit and produces a controlled power

flow that will help to prolong bulb life. Can be used with dimmer switches. Dimensions: 75 x 33 x 25mm.

Retail Unit Price each (inc. VAT).

Order Code	Type 11663	Price each exc. VAT			inc. VAT each
KE85G	Lighting Transformer	£9.350	£7.500	£6.950	£10.990

## ISOLATION TRANSFORMERS

### Isolation Transformers

A range of 240V to 240V AC mains isolation transformers, wound on double-section safety bobbins. Four sizes are available; 12, 25, 50 and 100VA. The three smaller sizes have two-hole fixing clamps. The 100VA type has multi-hole frames for chassis mounting and solder tag connections.



Code	VA Rating	Maximum Current	Dimensions (W x D x H)	Fixing Centres
LW33L	12	50mA	59 x 50 x 49mm	70mm
DH50E	25	100mA	69 x 57 x 57mm	80mm
DH51F	50	200mA	78 x 63 x 65mm	92mm
DH52G	100	400mA	91 x 70 x 77mm	4 holes @ 57 x 45mm

Retail Unit Price each (inc. VAT).

Order Code	Type 3703	Price each exc. VAT			inc. VAT each
LW33L	12VA Isotran	£8.290	£4.650	£4.150	£7.400
DH50E	25VA Isotran	£9.000	£6.400	£5.750	£10.580
DH51F	50VA Isotran	£10.800	£7.600	£6.750	£12.700
DH52G	100VA Isotran	£18.920	£13.000	£11.650	£22.240

### Toroidal Isolation Transformers



A 230V mains isolation transformer designed to mount in enclosures or equipment. Both types are approved to EN60742/BS3535, VDE0551 and ISO9003. An anti-surge type fuse should be used as the mains fuse.

Primary windings are colour coded orange with secondary windings coded red. All connections are approximately 20mm long. Dimensions include mounting kit.

Code	Rating	Regulation, Approx.	Output Current	Size (mm) Dia. x Ht
DH53H	120VA	10%	500mA	95 x 50
DH54J	240VA	7%	1A	110 x 60

Retail Unit Price each (inc. VAT).

Order Code	Type 13205	Price each exc. VAT			inc. VAT each
DH53H	120VA 240V Toroidal	£18.000	£11.950	£10.250	£21.150
DH54J	240VA 240V Toroidal	£23.880	£15.950	£13.500	£28.060

Maplin is opening new stores all the time. Call for latest details

## Industrial Isolation Transformers



Industrial specification isolation step-down transformers, especially designed for use with 110V power tools, for outdoor use. Two types are available, rated at 2000VA or 3000VA output respectively. Both types are enclosed in a tough, yellow plastic case with carrying handle and are fitted with a pair of CEE, industrial pattern, 3-pin outlet sockets with 16A contacts and spring-loaded protective caps. These conform to BS4343 and are interchangeable with various types of 110V plugs. A suitable plug is KC76H (see Electrical Accessories). The secondary is of CTE arrangement (Centre-Tapped Earth), ensuring that the absolute maximum voltage available from either side of the output is not more than 55V with reference to earth.

Specification	DH22Y	DH23A
Colour code:	Yellow (110 to 130V)	
Input:	240V AC @ 50Hz	
Phases:	Single	
Output:	110V CTE	
Tool rating, intermittent:	2000VA	3000VA
Dimensions, H x W x D:	220 x 200 x 240mm	
Weight:	13kg	13.6kg
Overall depth includes depth of outlet sockets, these being 50mm approx.		

Retail Unit Price each (inc. VAT).

Order Code	Type 3721	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
DH22Y 27	2000VA Indust Tx	£84.250	£81.000	£89.000	£99.000
DH23A	3000VA Indust Tx	£109.780	£99.000	£89.000	£129.000

## TRANSFORMER KITS

### Transformer Kits



At last you can wind your own mains transformers to your specification. Some power supply requirements might include an unusual secondary winding, which can be easily catered for by building a transformer kit, thereby obviating the tedious process of searching through the catalogues and adverts for a transformer to meet your needs, and having to settle for one having a higher specification or additional secondary taps which are expensive and which you don't really want. As an example, a digital frequency counter using a fluorescent multi-digit display will require +5V for its logic circuits, and then a 3V AC heater feed for the display. Or you may want a +5V, +12V and -5V supply for your home made microprocessor system, plus an additional 25V tap for programming EPROMS. The only other recourse would be to use two separate transformers, which use up space and money. **NOTE:** Under no circumstances should you attempt to modify or rewire the mains primary winding if the transformer is to remain safe to use. The primary windings have been properly assembled and tested during manufacture and should not be interfered with.

#### Output Current Calculation Table

Wire Gauge	Wire Dia. s.w.g	Max Current	Max number of turns for -		
	mm.	Out	20VA	50VA	100VA
36	0.2	100mA	1664	2394	3300
34	0.224	150mA	1363	1938	2652
32	0.25	200mA	1092	1581	2135
30	0.315	300mA	714	1025	1421
26	0.4	500mA	459	660	897
24	0.56	1A	228	336	476
22	0.71	1.5A	150	209	286
21	0.8	2A	104	160	240
20	1.0	3A	77	104	144
18	1.25	5A	40	60	96
16	1.5	7.5A	28	40	60

Note that the total number of turns that can be accommodated on the former are reduced in proportion to increasing wire sizes and therefore to increasing wire current. Thus, you will not be able to achieve a high current high voltage output from a transformer kit that is too small. **NEVER** attempt to use tinned copper wire in place of enamelled copper wire, regardless of how small the winding.

240V isolation transformers can easily be made (provided the factory wound primary windings are not used as the secondary), as follows:-  
 For 20VA 1,450 turns of 34 s.w.g. enamelled copper wire (80mA out).  
 For 50VA 1,150 turns of 31 s.w.g. enamelled copper wire (200mA out).  
 For 100VA 1,000 turns of 28 s.w.g. enamelled copper wire (400mA out).

### 20VA Transformer Kit

This 20VA transformer kit comprises a double section bobbin ready wound with a 120-240V mains primary winding, electrical steel core 'E' and 'I' laminations, end mounting 'frames' and clamping bolts. The number of secondary turns required can be found by multiplying the required secondary output in volts by 6.04 turns per volt, +1% for each multiple of 10VA loading. The maximum current output depends on the wire cross section of the secondary winding (see table left). The total power output of all secondaries must not exceed 20VA. Enamelled copper wire for winding the secondaries

is not supplied with the kit. Dimensions: Width 69mm x Depth 55mm x Height 58mm. Weight: 660g.

Retail Unit Price each (inc. VAT).

Order Code	Type 3725	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YJ61R 1	Transformer Kit 20VA	£8.540	£5.990	£4.990	£10.040

### 50VA Transformer Kit

A transformer kit having a ready wound 120-240V mains primary winding, 'E' and 'I' laminations and end frames. Secondary windings can be wound for a total output not exceeding 50VA. The number of secondary turns required can be found by multiplying the voltage output required by 4.8, +1% for each multiple of 10VA loading. To find wire gauge for current output required see table above. Wire for winding the secondaries is not supplied in the kit.

Dimensions: Width 79mm x Depth 62mm x Height 65mm. Weight: 950g.

Retail Unit Price each (inc. VAT).

Order Code	Type 3726	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YJ62S 2	Transformer Kit 50VA	£11.230	£7.490	£5.990	£13.200

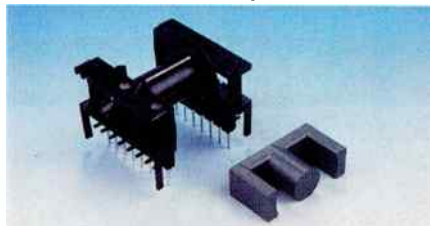
### 100VA Transformer Kit

A transformer kit having a ready wound 120-240V mains primary winding, 'E' and 'I' laminations, end frames and clamping bolts. Secondary windings can be wound using enamelled copper wire for a total power output not exceeding 100VA. To find the number of secondary turns required multiply output voltage required by 4-16 turns per volt, +1% for each multiple of 10VA loading. To find wire gauge for the output current required see table left. Wire for winding the secondaries is not supplied in the kit. Dimensions: Width 89mm x Depth 68mm x Height 75mm. Weight: 1400g.

Retail Unit Price each (inc. VAT).

Order Code	Type 3728	Price each exc. VAT			inc. VAT each
		1+	5+	10+	1+
YJ63T 3	Transformer Kit 100VA	£14.170	£9.790	£8.330	£16.660

### ETD39 Ferroxcube Transformer Core



A high performance ferroxcube core with performance optimised for switched mode power supply use. The 3C8 ferroxcube core is suitable for use at frequencies ranging from 20kHz to 150kHz. Maximum power throughput depends on operational frequency and construction of windings. Figure 1 shows power throughput versus operating frequency. Figure 2 shows the maximum working flux versus frequency. Figure 3 shows PCB mounting information. Former is manufactured from polyterephthalate and designed for PCB mounting. Assembly of the core and former is very easy due to the use of sprung stainless steel clips. Dimensions of assembled transformer (overall including pins): 44.5 x 47.5 x 41.25mm. Core halves, former and assembly clips are available separately. Note: to make one transformer two core halves, one former and two clips are required.

#### Core Specification (pair)

Absolute maximum power throughput at 150kHz:	500W
Absolute maximum power throughput at 25kHz:	150W

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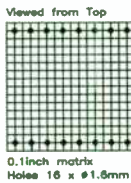
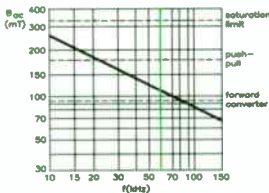
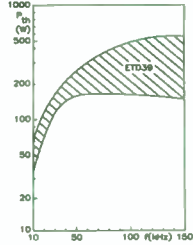
**Tel: 01702 554000**

**Fax: 01702 554001**

**e-mail: Sales@maplin.co.uk**



Effective total loss at 25kHz: <2.2W  
 Ambient operating temperature: 60°C  
 Maximum operating temperature: 100°C  
 Length of the mean turn: 69mm  
 Effective magnetic path length: 92.2mm  
 Effective area of magnetic path: 125mm<sup>2</sup>  
 Effective magnetic volume: 11500mm<sup>3</sup>  
 Minimum centre pole area: 117mm<sup>2</sup>  
 Nominal specific inductance: 2700nH  
 Saturation limit at 100°C: 320mT  
 Maximum working flux: see Figure 2



### Former Specification

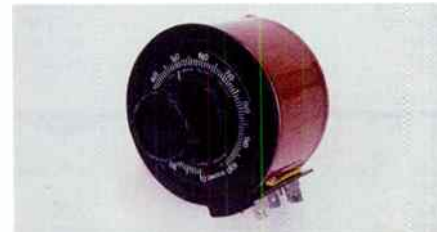
Material: Glass fibre filled polyepthalate  
 Terminations: 16 copper nickel alloy pins  
 Minimum window area: 177mm<sup>2</sup>  
 Length of mean turn: 69mm  
 Flammability: UL94-V0  
 Solderability: 400°C for 4 seconds

Retail Unit Price each (inc. VAT).

Order Code	Type 0733	Price each exc. VAT			inc. VAT each
		1+	25+	100+	1+
JR81C	HFXTmr 3C8 Core	£1.450	£0.865	£0.770	£1.710
JR82D	HFXTmr Former	£1.650	£0.970	£0.865	£1.940
JR83E	HFXTmr Clip	£0.306	£0.195	£0.175	£0.360

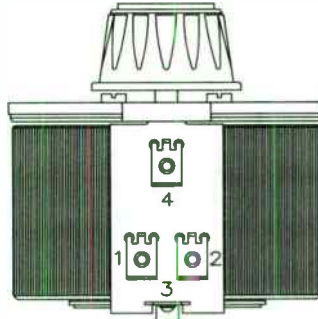
## VARIACS

### Variable Transformers



A range of three robust, open style, variable auto-transformers which enable a 250V AC 50Hz voltage supply to be varied between 0 and 270V AC. These

units are ideal for testing over- and under-voltage operation of mains equipment, as the range 240V ±10% can be covered. Three units are available, each with a different rating, to provide a cost-effective and versatile range. They can be used for reducing AC voltages for testing continental equipment, and as lighting controllers, for stage use. All feature smooth operation with single layer non-saturating windings and a toroidal iron core. The 0.75A version features 0 to 100% and 0 to 110% ranges that can be hard-wired depending on which is required. All units are specifically designed for panel mounting. Please note that these units have exposed live parts and must therefore be used in a suitable enclosure, and are only suitable for connection to a 250V AC 50Hz supply.



### 0.75A Version

**Terminal Connection**  
 0 to 240V AC operation  
 1: Input & output negative  
 2: Input positive 240V AC  
 3: Output positive 0 to 240V AC  
 0 to 270V AC operation  
 1: Input & output negative  
 4: Input positive 240V AC  
 3: Output positive 0 to 270V AC  
**Dimensions:** 90 x 84 x 97mm (H x Dia x L)  
 Two 4mm holes on 28mm PCD,  
 8mm hole for shaft

### 2A and 8A Versions

Rated input voltage: 240/270V AC 50Hz  
 Rated output voltage: 0 to 270V AC  
 Ratings: 2A and 8A continuous  
**Dimensions**  
 2A unit: 120 x 107 x 128mm  
 92 x 92mm / 4-hole fixing centres  
 8A unit: 185 x 145 x 155mm  
 146 x 146mm / 4-hole fixing centres

**Connections**  
 input: A & D for 240V AC  
 A & C for 270V AC  
 output: A & E for 0 - 270V AC

Retail Unit Price each (inc. VAT).

Order Code	Type 0476	Price each exc. VAT			inc. VAT each
		1+	2+	5+	1+
GL4/V 2	0.75A Variac	£32.450	£22.950	£19.900	£38.130
DM95E 6	2A Variac	£39.660	£22.950	£18.380	£46.610
DM97F 15	8A Variac	£72.150	£49.000	£46.000	£84.780

## ELECTRIC MOTORS

### MOTORS & GEARBOXES

### Multi Ratio Gearbox and Motors

MFA



A range of pre-assembled motor and gearboxes providing various reductions, to output shafts between 2 and 6mm in diameter. Operation is from

a supply range of between 4.5V and 15V, drawing between 0.2A and 0.8A typically. Mounting holes are provided for four screws, allowing easy fixing to almost any surface.

Motor Size	Gear Ratio	Output Shaft Diameter (mm)	Order Code
Very Small		3	WC65V
Medium		3	WC66W
Medium	100:1	2	WC68Y
Large	11:1	6	WC70M
Large	148:1	6	WC71N

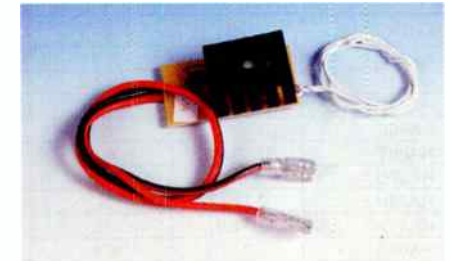
Supplied with operating specifications and accessories list, including gears, voltage regulators and rechargeable batteries.

Retail Unit Price each (inc. VAT).

Order Code	Type 0034	Price each exc. VAT	inc. VAT each
		1+	1+
WC65V	Multi GBox/VSmlMot	£6.800	£7.990
WC66W	Multi GBox/Med Motor	£7.650	£8.990
WC68Y	100:1 GBox/Med Motor	£7.650	£8.990
WC70M	11:1 GBox/Large Mot	£16.160	£18.990
WC71N	148:1 GBox/Large Mot	£16.160	£18.990

## MOTOR VOLTAGE REGULATOR MODULES

### Voltage Regulation Units



A range of voltage regulator units for use with electric motors and accessories. Available in a number of voltages, compatible with most modern model equipment. Each of the input power leads is terminated in a spade connector, allowing easy connection with rechargeable batteries.

Output Voltage (V): 1.50 3.00 4.50 4.12  
 Input Voltage (V): 6-15 6-15 6-15 6-15  
 Output Current (A): 1.50 1.50 1.50 3.00  
 Order Code: WC73Q WC74R WC75S WC76H

Retail Unit Price each (inc. VAT).

Order Code	Type 0010	Price each exc. VAT	inc. VAT each
		1+	1+
WC73Q	1.5V 1.5A Reg Module	£5.200	£6.110
WC74R	3V 1.5A Reg Module	£5.200	£6.110
WC75S	4.5V 1.5A Reg Module	£5.520	£6.490
WC76H	4-12V Var Reg Module	£9.770	£11.490

## GENERAL PURPOSE

### General Purpose Motors

MFA/Como Drills

A range of good quality general purpose motors with removable brackets (except HA92A and HA93B which are supplied without brackets). Full data available.

HA92A HA93B



HA82D HA83F HA84G HA85H HA86T HA87U HA88V HA89W

Order Code	Model	Nom V	Speed (rpm)*	Current (A)*	Output (W)*
HA82D	RE140	1.5	6,250	0.62	0.4
HA83E	RE280	1.5	3,750	0.53	0.44
HA84F	RE360	12	8,321	0.46	4.04
HA85G	RE380	7.2	19,000	6.00	42.0
HA86T	RE380/1	6.0	9,600	2.1	7.6
HA87U	RE385	12	11,500	1.40	16.80
HA88V	RE540	6	10,800	7.10	28.1
HA89W	RE540/1	12	13,360	2.85	21.2
HA92A	RE700	7.2	15,600	10.3	190.0
HA93B	RE1067	9.6	16,500	20.0	150.0

\* at maximum efficiency

Retail Unit Price each (inc. VAT).

Order Code	Type 11996	Price each exc. VAT	inc. VAT each
HA82D	RE140 Motor + Brkt	£2.540	£2.990
HA83E	RE280 Motor + Brkt	£2.970	£3.490
HA84F	RE360 Motor + Brkt	£3.990	£4.690
HA85G	RE380 Motor + Brkt	£4.670	£5.490
HA86T	RE380/1 Motor + Brkt	£4.670	£5.490
HA87U	RE385 Motor + Brkt	£4.670	£5.490
HA88V	RE540 Motor + Brkt	£5.520	£6.490
HA89W	RE540/1 Motor + Brkt	£6.800	£7.990
HA92A	RE700 Motor W/O Brkt	£34.880	£40.990
HA93B	RE1067 Mot W/O Brkt	£42.540	£49.990

### Small Motor

A small 20mm diameter motor with a 2mm dia. shaft. Overall length: 30mm excluding shaft. Shaft length: 7.5mm. The motor casing is flattened for easy mounting. Distance across flats 15mm.



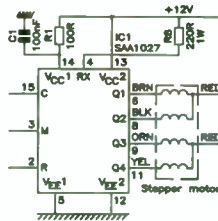
Operating voltage: 1.5 to 3V  
 No load speed: 8700rpm  
 No load current: 320mA  
 Speed at max efficiency: 5800 rpm  
 Current at max efficiency: 760mA  
 Torque at max efficiency: 5.3g/cm  
 Output at max efficiency: 310mW  
 Efficiency: 32%  
 Stall torque: 16g/cm

Retail Unit Price each (inc. VAT).

Order Code	Type 3738	Price each exc. VAT	inc. VAT each
YG13P	Small Motor	£1.520	£1.790

## STEPPER MOTORS

### Stepper Motor



A 12V 4-phase, unipolar stepping motor suitable for small robots and all kinds of applications requiring medium torque at low current drains. A suitable driver is the SAA1027 and a kit is available which contains the motor, the IC and the passive components required, together with a PCB.

#### Specification

Step angle: 7.5°  
 Current per phase: 130mA  
 Resistance per phase: 94Ω  
 Inductance per phase: 43mH  
 Dynamic torque, @ 10pps: 80g/cm (8mNm)  
 Response frequency: 300pps  
 Rotor inertia: 4g/cm<sup>2</sup>  
 Weight: 57g  
 Dimensions: 35mm dia. x 25mm deep  
 Drive Shaft: 3mm dia. x 11mm long

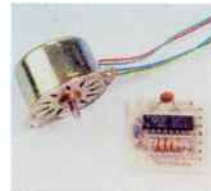
Max width across mounting tabs: 50mm  
 Fixing centres: 42mm x 6BA/M3  
 The motor is provided with six colour coded wires 230mm long.

Retail Unit Price each (inc. VAT).

Order Code	Type 3738	Price each exc. VAT	inc. VAT each
FT73Q	Stepper Motor Size 1	£17.430	£20.490

### Stepper Motor Kit

A kit comprising the Stepper Motor FT73Q, SAA1027 stepper motor driver IC (QY76H, see Semiconductors) and all passive components required to make a working module, together with a PCB. The PCB is also available separately. Full construction details may be found in Best of Maplin Projects Book 5 XC05F, and instruction leaflet XK04E.



Retail Unit Price each (inc. VAT).

Order Code	Type 3737	Price each exc. VAT	inc. VAT each
LK76H	Stpr Mtr + Drvr Kit	£22.970	£26.990
GD14Q	Stepper Motor PCB	£1.260	£1.490
XK04E	Stepper Motor Ins	£0.400	£0.400 NV

## MOTOR COUPLINGS & SHAFTS

### Inline Couplings and Rods

MFA



A range of inline couplings and connection rods for use with models, etc. The couplings are ideal for connecting rods of different diameter, like motor shafts and coupling rods. Simply place the dissimilar shafts in the coupling and tighten the two grub screws with the Allen key provided. Also each item is supplied with a parts list of other available parts.

Connection Type	Coupling Sizes/Rod Sizes (mm)	Order Code
Coupling	3 - 3	WC67X
Coupling	2 - 3	WC69A
Coupling	6 - 6	WC72P
Shaft	3 x 60	WC84F
Shaft	3 x 110	WC85G

Retail Unit Price each (inc. VAT).

Order Code	Type 3335	Price each exc. VAT	inc. VAT each
WC67X	Inline Coupling 3-3	£2.970	£3.490
WC69A	Inline Coupling 2-3	£3.140	£3.690
WC72P	Inline Coupling 6-6	£2.970	£3.490
WC84F	Short 3mm Shaft(10PK)	£3.650	£4.290
WC85G	Long 3mm Shaft(10PK)	£4.070	£4.790

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## Perforated Metal Sheet

MFA



A perforated metal sheet ideal for making motor and electrical accessory cages, shielding against moving parts or dangerous voltages. Measures 200 x 150mm, and width 0.5mm with 3mm square cutouts to provide ventilation and reduce overall weight. Constructed from galvanised steel, providing protection against rusting and discolouration.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC86T	Perf Metal Sheet	£1.690	£1.990

## Perforated Metal Strips

MFA



A pack of metal strips measuring approximately 300 x 10mm and 0.5mm thick, ideal for producing ties and struts for models, and for providing rigid straps for mounting motors, etc. Each pack contains five strips constructed from galvanised steel to prevent rusting and discolouration.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC87U	Perf Met Strip(SPk)	£2.970	£3.490



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## Motor and Gearbox Spare Parts

A range of very useful packs of gear, chain & sprocket and rack & pinion sets and parts for use in mechanical models. Ideal for the keen home constructor and for use as replacements for lost or damaged parts in existing kits and models.

### GEAR & PULLEY SETS

## Rack and Pinion Sets



A choice of two packs containing rack & pinion components. One pack (WC77J) contains all of the components needed for a full rack and pinion assembly (one 70mm long rack, one pinion and two fixing screws) while the other (HA70M) contains ten racks, 70mm in length. For pinions, see Gear Sets.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC77J	Rack & Pinion Set	£1.430	£1.690
HA70M	Rack 10Pk	£5.520	£6.490

## Gear Sets

MFA



A range of packs containing gears in the sizes and quantities indicated in the table below:

Order Code	Size	No in Pack
WC78K	Ratio gear 2.9mm bore x 48/12 teeth	2
	Ratio gear 3.1mm bore x 48/12 teeth	4
	Pinion gear 2.9mm bore x 10 teeth	1
	Spur gear 2.9mm bore x 40 teeth	1
WC81C	Pinion gear 2.9mm bore x 20 teeth	1
	Pinion gear 2.9mm bore x 10 teeth	1
HA64U	Pinion gear 2.9mm bore x 10 teeth	10
HA65U	Pinion gear 2.9mm bore x 20 teeth	10
HA66W	Spur gear 2.9mm bore x 40 teeth	10
HA75S	Ratio gear 2.9mm bore x 48/12 teeth	10
HA76H	Ratio gear 3.1mm bore x 48/12 teeth	10

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC78K	Gear Set	£2.280	£2.690
WC81C	Spur Gear Set	£1.690	£1.990
HA64U	Gear 10T 2.9mm 10Pk	£2.970	£3.490
HA65U	Gear 20T 2.9mm 10Pk	£3.650	£4.290
HA66W	Gear 40T 2.9mm 10Pk	£5.520	£6.490
HA75S	Gear 48/12T 2.9mmx10	£2.970	£3.490
HA76H	Gear 48/12T 3.1mmx10	£2.970	£3.490

## Chain & Sprocket Sets

MFA



A selection of four packs containing chain & sprocket components. The first pack (WC79L) contains a full set of components for a chain & sprocket assembly (one 1m chain, two 8 tooth sprockets and two 16 tooth sprockets), while the second (HA74R) contains a 1m chain and the remaining two packs contain, respectively, ten 8 tooth sprockets (HA72P) and ten 16 tooth sprockets (HA73Q).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC79L	Chain & Sprocket Set	£6.540	£7.690
HA72P	Chain 8T Sprkt 10Pk	£2.970	£3.490
HA73Q	Chain 16T Sprkt 10Pk	£3.650	£4.290
HA74R	Chain 1m	£5.520	£6.490

## Worm Drive Sets

MFA



A choice of two packs containing worm drive components. One (WC80B) contains a worm gear (total length: 35mm) and a 2.9mm bore x 40 teeth gear spur gear and the other contains ten 35mm worm gears (HA68Y). For spur gears, see Gear Sets.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WC80B	Worm Drive Set	£1.430	£1.690
HA68Y	Worm Drive 10Pk	£3.650	£4.290



**BEFORE  
5PM**

**FOR SAME DAY  
DESPATCH**

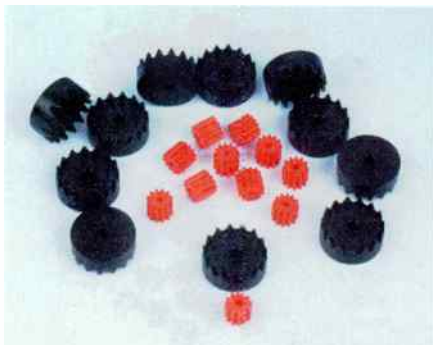
Tel: 01702 554000

Fax: 01702 554001

e-mail: Sales@maplin.co.uk

## Crown Wheel and Pinion Sets

MFA



A selection of three packs containing crown wheel/pinion components. The first pack (WC96E) contains one 2.9mm bore x 10 tooth crown gear and one 1.9mm bore x 12 tooth pinion gear, the second pack (HA71N) contains ten 2.9mm bore x 15 tooth crown gears and the third pack (HA77J) contains ten 1.9mm bore x 12 tooth pinions.

Retail Unit Price each (inc. VAT).

Order Code	Type 11941	Price each exc. VAT	inc. VAT each
WC96E	Crown Wheel & Pinion	£1.260	£1.490
HA71N	Crown Gear 10Pk	£4.240	£4.990
HA77J	Pinion 12T 1.9mmx10	£2.370	£2.790

## Pulley Sets

MFA



Order Code	Description	No in Pack
WC82D	30mm spur shells	4
	14mm pinion shells	2
	8mm pinion shells	4
	Fixing pegs	2
	Brass sleeve	1
	70 x 5mm rubber drive belt	1
HA78K	2.9mm bore 14/10 pulley wheel	10
HA79L	2.9mm bore 30/25 pulley wheel	10
HA80B	3.9mm bore 30/25 pulley wheel	10
	Brass sleeve	10
HA81C	2.9mm bore 8/5 pulley wheel	10
WC83E	70 x 5mm rubber drive belt	1
HA67X	Fixing pegs	10

Retail Unit Price each (inc. VAT).

Order Code	Type 11939	Price each exc. VAT	inc. VAT each
WC82D	Pulley Set	£5.520	£6.490
HA78K	Ply 14/10 2.9mmx10	£9.350	£10.990
HA79L	Ply 30/25 2.9mmx10	£12.750	£14.990
HA80B	Ply 30/25 3.9mmx10	£13.600	£15.990
HA81C	Ply 8/5.5 2.9mmx10	£6.370	£7.490
WC83E	70x5mm Drive Belt	£1.550	£1.830
HA67X	MicroSwitch Pins 10Pk	£0.842	£0.990

## WHEELS FOR ROBOTS

### Rubber Wheels

MFA

An assorted range of rubber wheels for use on model cars, bikes, lorries, and army vehicles. Authentic tyre patterns and treads, ready to fit 2mm drive shafts.



Wheel Dimensions (Dia x W) (mm)	Pack Quantity	Order Code
25 x 10	4	WC88V
35 x 7	4	WC89W
37 x 16	4	WC90X
44 x 16	4	WC91Y
51 x 16	4	WC92A
54 x 30	1	WC93B
56 x 16	4	WC94C
68 x 20	1	WC95D

Retail Unit Price each (inc. VAT).

Order Code	Type 8311	Price each exc. VAT	inc. VAT each
WC88V	Wheels 25x10mm(4Pk)	£0.842	£0.990
WC89W	Wheels 35x7mm(4Pk)	£0.842	£0.990
WC90X	Wheels 37x16mm(4Pk)	£1.290	£1.520
WC91Y	Wheels 44x16mm(4Pk)	£1.430	£1.690
WC92A	Wheels 51x16mm(4Pk)	£2.160	£2.540
WC93B	Wheel 54x30mm	£1.290	£1.520
WC94C	Wheels 56x16mm(4Pk)	£2.330	£2.740
WC95D	Wheel 68x20mm	£1.260	£1.490

## SERVO

### Economy Servo



An economy servo complete with motor and electronics. The servo is supplied with actuator horns. The three wire system requires 5V DC on the red wire, 0V on the black wire and a 3V to 5V pulse on the white wire between 0.75 and 2.25ms long every 18ms approx.

**Specification**  
 Supply voltage: 5V DC  
 Current drain: Standby 8mA  
 Max 550mA  
 Speed: 0.26sec/60°  
 Torque: 2.3kg/cm  
 Input pulse: 0.75ms to 2.25ms  
 Rotation: 170° ±10°  
 Operating temp: -35° to +65°  
 Life (approx.): 1 million operations  
 Size: 39 x 38 x 19mm  
 Fixing centres: 47 x 10mm  
 Spline: 6mm diameter

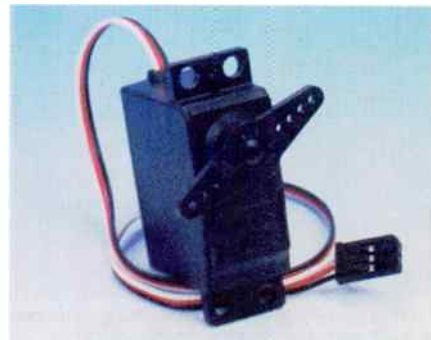
Retail Unit Price each (inc. VAT).

Order Code	Type 3739	Price each exc. VAT	inc. VAT each
FS35Q	Economy Servo	£10.400	£12.230

Account Enquiries: 01702 554187

## Standard and Ball Race Servos

Futaba



A standard replacement servo as supplied with Futaba radio control systems. A superior ball raced version is also available (DX99H).

Retail Unit Price each (inc. VAT).

Order Code	Type 9944	Price each exc. VAT	inc. VAT each
DX09K	S148 Servo	£11.270	£13.250
DX99H	S3001 Servo	£13.880	£16.310

## Futaba S3302 High Torque Servo



A large, high-torque power servo, designed for activating systems requiring a lot of force, such as aircraft landing gear. Sealed for moisture and dust resistance, and built using metal gears, this heavy-duty servo is built to last. Supplied with horns and mounting kit.

**Specification**  
 Speed: 60° in 0.19 seconds  
 Torque: 8kg/cm (111oz./in.)  
 Dimensions: 59 x 29 x 50mm  
 Weight: 103g

Price each shown, but sold only in multiples of 1.

Order Code	Type 9774	Price each exc. VAT	inc. VAT each
DX08J 1	S3302 Servo	£47.730	£56.090

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## Futaba FP-S143 Micro-Servo



A high-quality micro-servo for small models, suitable for use with the Futaba J, M, SG, PG, 4N and 6N series digital proportional radio control systems. Features include a high level of shock and vibration resistance and neutral position, easy installation, a high torque/size ratio, and a mechanically strong case that is invulnerable to glow fuel. Supplied with horns – a splined shaft here aids neutral adjustment.

### Specification

Control system: +pulse width control (1520µs neutral)  
 Operating angle: Rotary type, one side 40° or greater (including trim)  
 Power supply: 4-8V or 6V (shared with receiver)  
 Power consumption: 6V, 8mA (idle)  
 Output torque: 1.9kg/cm  
 Operating speed: 0-18 sec/60°  
 Dimensions: 28mm x 13mm x 29mm  
 Weight: 19g

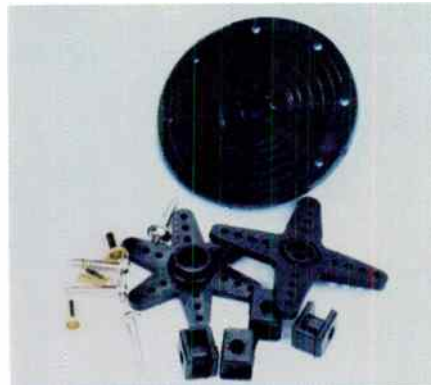
Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX10L †	S3101 Micro Servo	£39.050	£45.890

## SERVO ACCESSORIES

### Servo Accessory Pack

Futaba



The pack contains 3 servo horns. Each horn has an internal splined socket for neutral adjustment. The circular disc which is usually used on petrol cars, is pierced for use. The other two starfish shaped horns (four and six arms) can be cut to suit your requirements.

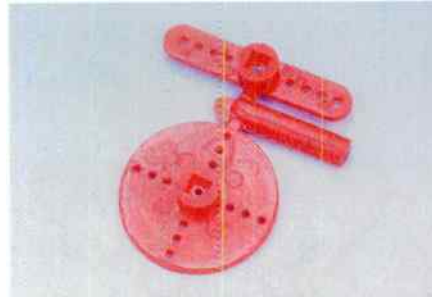
The Servo Accessory Pack comes complete with the following mounting kit:

- 4 x Screws
- 4 x Rubber mounts
- 4 x Brass screw guide

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ81C	Servo Acc Pack	£1.020	£1.210

## Servo Output Arms

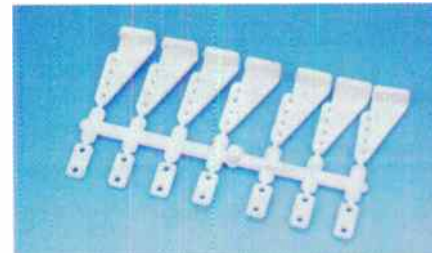


A pack of two servo output arms, one wheel-type (approx 30mm diameter) and one bar-type (approx 40mm long).

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX79L †	Servo Output Arms	£0.340	£0.400

## Control Horns



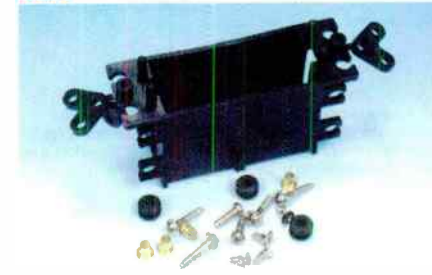
A pack of seven control horns with spacers, ready to be fixed to any point (the control surfaces on radio control aircraft, for example) to be connected via pushrods to their controlling servos.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX89W †	Control Horns	£0.510	£0.600

## Single Servo Tray

Futaba



This complete black plastic assembly makes up into a side mounted tray designed to accept a single servo. Supplied complete with servo tray and all necessary screws and fixings.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ82D	Single Servo Tray	£2.070	£2.440

## Double Servo Mount



A complete plastic assembly, ready to be made up into a secure, shock-absorbing mount designed to accept a twin servo arrangement. Supplied complete with rubber grommets and screws.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX91Y †	Double Servo Mount	£0.944	£1.110

## Triple Servo Mount



A complete plastic assembly, ready to be made up into a secure, shock-absorbing mount designed to accept a triple servo arrangement. Supplied complete with rubber grommets and screws.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX94C †	Triple Servo Mount	£1.460	£1.720

## Single Servo Mount



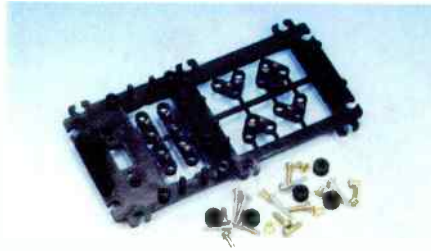
A complete plastic assembly, ready to be made up into a secure, shock-absorbing mount designed to accept a single servo. Supplied complete with rubber grommets and screws.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX83E †	Single Servo Mount	£0.510	£0.600

## Triple Servo Tray

Futaba



This complete assembly is the ideal way to simply and neatly mount a triple servo arrangement within a large model (e.g. remote control aircraft). The kit contains a black plastic servo tray with integral mounting position for an on/off switch and all the necessary screws and fixings.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ83E	Triple Servo Tray	£3.020	£3.560

## MODEL ENGINEERING MOTOR PACKS

### 'Marlin' Marine Power Pack

MFA



Electric power pack for the Avenger, Seahawk, and Fantome model boats. Note that two are required for the Fantome model. Includes motor and mounting, reversible speed controller, wiring and connectors and universal coupling. Features high torque and is ready to go after simple installation. The motor has twin output shafts (one at each end) and has interference suppression. Powered by MFA Titan 12V battery (WE91Y), not included.

#### Specification of motor

Typical maximum speed:	5,100rpm
Torque:	253mNm
Power consumption:	68W
No load current:	0.97A
Typical load current:	5A
Length of body:	75mm
Diameter:	50mm
Shaft diameter:	6.35mm
Shaft length, each end:	17mm
Weight:	543g

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
WE90X1	Marlin Power Pack	£38.280	£44.990

## Electric-Flight Power Pack 15

MFA



Offers extra power for model aeroplanes utilising 1-2Ah 9-6V NiCd pack. For use with 6 x 6, 7 x 4 or 7 x 6 propellers. Suitable for lightweight models of approximately 127cm wing-span. Includes double 4-8V NiCd battery packs with interconnecting leads, microswitch, fuseholder and motor with propeller fitting kit.

#### Specification

Total weight:	600g
Motor weight:	170g
Motor dimensions:	57 x 35-5mm (excluding shaft)
NiCd capacity:	8 cells, 1.4Ah
Average current consumption:	14A
Full power duration:	5 minutes, approximate

Motor includes RF suppression. To recharge NiCds, use the Multi-Charger and Charging Monitor DX19V. Recommended charging time is 30 minutes from 12V lead-acid battery.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX45Y1	Power Pack 15	£42.540	£49.990

## Electric Motor Mount

MFA



A quality plastic engine mount, designed for an RS-540 size electric motor. The motor sits inside the mount, held in place by its fixing bolts at one end. Holes can then be drilled in the desired position into the large plastic lugs to secure the mounted motor in place.

Retail Unit Price each (inc. VAT).

Order Code	Type	Price each exc. VAT	inc. VAT each
DX78K1	Electric Motor Mount	£0.595	£0.700

## HIGH PERFORMANCE RACING MOTORS

### MRI Motors



This range of high performance motors are produced by MRI. Available in a range of permutations, these motors are make an ideal more highly powered replacement for any standard RS540-type motor.

Order Code	Description	No of Turns	Winding
GZ18U	MRI 13/65 Motor	13	Double
GZ19V	MRI 15/65 Motor	15	Double
GZ20W	MRI 15/65 Motor	15	Triple
DX14Q	MRI 17/65 Motor	17	Double
GZ21X	MRI 17/65 Motor	17	Triple
DX13P	MRI 19/65 Motor	19	Double
GZ22Y	MRI 19/65 Motor	19	Triple
GZ23A	MRI 21/65 Motor	21	Single
GZ24B	MRI 27/65 Motor	27	Single

Price each shown, but sold only in multiples of 1.

Order Code	Type	Price each exc. VAT	inc. VAT each
GZ18U	MRI 13 Tm Dble Wnd	£21.690	£25.490
GZ19V	MRI 15 Tm Dble Wnd	£21.690	£25.490
GZ20W	MRI 15 Tm Triple Wnd	£21.690	£25.490
GZ21X	MRI 17 Tm Triple Wnd	£21.690	£25.490
GZ22Y	MRI 19 Tm Triple Wnd	£21.690	£25.490
GZ23A	MRI 21 Tm Single Wnd	£21.690	£25.490
GZ24B	MRI 27 Tm Single Wnd	£21.690	£25.490
DX13P	MRI 19 Tm Dble Wnd	£21.690	£25.490
DX14Q	MRI 17 Tm Dble Wnd	£21.690	£25.490

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## UK INLAND ORDERS

### HOW TO ORDER IN THE UK

Use our order form whenever possible. The blank form returned with your previous order will have your customer number and your name and address already printed. Please keep a note of your customer number and always use it on any order or correspondence. Send all mail to Maplin MPS, FREEPOST SMU 94, P.O. Box 777, Rayleigh, Essex SS6 8LU. Keep an accurate copy of your order so that you can check that we have sent you exactly what you have ordered. We will send an itemised invoice with your order which shows exact costs.

Please do not write queries or anything other than your order on the order form unless the query is about something you are ordering this time. If you have any other enquiry, write it on a separate piece of paper with your name and address and customer number if known.

### Telephone Your Order - 01702 554000

Please quote your customer number.

If you intend to pay for your order by credit card or an account, you can telephone your order to us. We shall require your credit card number, the expiry date and the cardholder's full name and address. For account customers we need your customer or account number. We aim to despatch on the same day all orders received by telephone before 5 p.m. subject to approval by the credit card company or account status.

When you telephone be as brief as possible. Please state the five digit order code only and then the quantity you require.

Please ensure you know the order codes for the goods you wish to order before phoning. If you are having difficulty finding an order code please call Customer Services (01702 554002)

Please note that the moment you ring off, your order is accepted by the system and it is no longer possible to modify it. So please do not ring back to add to or delete items from that order.

The Maplin Sales Desk is available Monday to Friday from 8:30 a.m. to 5:30 p.m. and Saturday from 9:30 a.m. to 5:00 p.m. Out of office hours there is an answering system on this line which can take your order. Please do not call our stores; they will not be able to help you with a mail order enquiry or order.

### Cashtel Modem Ordering Facility: 01702 552941

#### How To Use Cashtel

Once you have the appropriate hardware and software, simply dial 01702 552941 and listen for the tone. When you hear it, switch the modem to "online" and replace the telephone handset. Our modem sorts out at which speed you are sending automatically.

1. Your TV screen will now display the welcome message.
2. Enter your customer number and the FIRST line as displayed on your last address label. This must match exactly the details on file. A command menu is then displayed.
3. **Option 1** enables you to place orders. You will be asked for the stock number and quantity of the item you require, then the description, unit price and total price will be displayed. You are then asked for the next stock code and so on until you type 'END', as shown in Screen C. Your whole order is then displayed line by line and you choose to order or not by typing 'Y' or 'N' (Yes or No). You are also told at this time if any item is unavailable and if you still leave the order for the item outstanding, then it will be sent on to you by the computer as soon as it becomes available.

When all items have been entered, the screen displays the total value of all the items ordered. Only if you key 'Y' (Yes) to the whole order will the order actually be sent. You now enter your Access. Visa or American Express card number (or account number for business customers credit) and the order is printed out by our computer ready to be collected and despatched.

4. **Option 2** allows you to check the price and availability of any item.

5. **Option 3** allows you to search for any consecutive group of letters through a list of stock descriptions.
6. **Option 4** allows you to check your previous orders (whether placed by mail, phone or Cashtel).
7. The other options are for regular users, who will find them clearly explained as they use them.
8. If you enter **option 9**, the call is terminated - you may leave a message with any suggestions or explaining any problem you have had.

The system then disconnects and awaits the next call.

The full system is available, 24 hours a day except for essential maintenance. During shutdowns you will receive a message explaining why the system is closed and our estimate of when it will be open again.

### Key Call -

#### See back of order form for details

Out of office hours you can order via a standard tone dial telephone.

### PRICES

Maplin reserves the right to change prices at any time without prior notice. In general, prices are reviewed every six months, at which time some prices may change. The price charged for all goods will be that ruling at the date of acceptance of the order by Maplin MPS. No changes to prices will be made following acceptance of an order by Maplin MPS. Whilst every effort has been made to ensure accuracy of prices quoted, Maplin MPS does not accept responsibility for any error or omissions. Written quotations shall be valid for a period of thirty days.

Prices shown in this catalogue are shown as VAT exc. and VAT inc. at 17.5%, where applicable and are for the quantity shown, i.e. each, per pack, per metre etc. Items marked NV are rated at 0% (at the time of going to press - see note below) and the price shown applies both to inland and export orders. Overseas customers please see Overseas Ordering on page 1333.

All prices are the same in our stores and by mail order (excluding promotions). If there is an additional number next to the order code, they are for overseas customers only.

### Small Order Charge

For all credit business account customers, DELIVERY IS FREE OF CHARGE. For all other orders, i.e. credit card/cheque/PO/Transcash, a small order charge of £2.95 inc VAT is levied for orders below the value of £30.00 inc VAT. All orders over £30.00 inc. VAT, are delivered FREE OF CHARGE.

### DESPATCH

All orders received by 5pm are dispatched the same day whenever possible. Orders having a total weight of less than 1kg are despatched by first class letter post. Orders having a total weight over 1kg are despatched by 24-hour fast carrier (for most areas in the UK). For faster or guaranteed delivery, please see page 2.

### PAYMENT

Payment may be made by Cheque, Credit Card, Postal Order, Giro transfer or Transcash. Cheques and postal orders should be made payable to "Maplin MPS". In your own interest cross all cheques or postal orders sent in the post with two straight lines across the centre. For details of the Credit Cards we accept and details of Transcash and Giro transfers, see Credit Cards below.

Do not send cash unless the envelope is registered at the Post Office. If you send cash in an ordinary envelope the Post Office may compulsorily register it and we regret that we cannot accept such letters.

**Remember to enclose with your order the numbered credit note if you are claiming credit.**

Please remember to add the £2.95 charge on small orders below £30.00 inc VAT if you do not have an account.

**Note: VAT will be applied at whatever rate is legislated by the UK or other applicable EC government at the time we receive your order.**

### Credit Accounts

For bona fide business Educational or Government Establishments a credit account may be opened subject to status. Apply using the form in this catalogue.

### Credit/Direct Debit Cards

We are pleased to accept orders with payment by any of the following credit/direct debit cards: Access, American Express, Barclaycard, Connect, Eurocard, Mastercard, Visa and Switch. We also accept most company procurement cards - please enquire. NEVER send your card to us. Simply write the number and expiry date of your credit card on your order, sign it and send it to us. Do not include any cash.

### Place your Order in your Post Office



Simply ask for a form in your Post Office and write your order on it along with our TRANCASH number. You then pay the amount due to us to the cashier at the Post Office (plus a small fee to the Post Office) and that's it. No stamps to buy, no letters to post, no fiddly Postal Orders. We receive your order within four to five days and can despatch it immediately. Please do not include enquiries; orders only.

Take a note of Maplin's TRANCASH number now - TRANCASH 308 8065. Use it at your local Post Office now!

### Paying by Giro Transfer



You can transfer money from your Giro account directly into our Giro account by completing and sending to the National Giro Centre, in one of your National Giro postage paid envelopes, one of your own National Giro transfer/deposit forms. Write your order and your customer number (if you know it) on the back of the form. We receive your order in three to four days and can despatch it immediately.

Make a note of Maplin's National Girobank account number now. 3076652 Please do not send Giro transfers to us as this will cause considerable delay. Use a crossed Girocheque if you wish to send money directly to us.

### SPECIAL NOTE FOR CUSTOMERS IN THE CHANNEL ISLES

Customers in the Channel Isles do not have to pay British VAT, and should mark their orders "Export". Use VAT exclusive prices only.

### How To Order From BFPO Addresses

If your BFPO address is in Northern Ireland you must use the ordinary inland prices, but if your BFPO address is elsewhere in the world you do not have to pay VAT and small order charges will be applied.

However if any item is too large or heavy for despatch by BFPO you must supply a civilian address and pay extra for carriage at cost.

Should the rules pertaining to VAT change due to government legislation, VAT will be charged at whatever rate is in force at the date we receive your order.

### CREDIT FOR OUT OF STOCK ITEMS

When we are out of stock of an item that you have ordered we may issue a numbered credit note. If you do not want to buy anything further from us, simply put the credit note with your name and address and your request for a refund in an envelope and send it to us using the Freepost address. We will send a cheque refund by return of post. We regret that we cannot refund by Postal Order and we can only refund cash if you provide a Post Office registered envelope prepaid with the correct stamp.

If any item on your invoice is marked 'to follow' then we will automatically send it to you as soon as it comes into stock. If you wish to cancel then you can do so at any time until we despatch the goods and we will refund your money as described above.

## SATISFACTION GUARANTEED 7-DAY MONEY-BACK GUARANTEE FOR MAIL ORDER CUSTOMERS

If you change your mind and are not fully satisfied with your purchase, simply return the item(s) within seven days and you will receive a full refund or exchange at your option. We only ask that goods must be unused and in their original packaging complete with your proof of purchase. This guarantee does not apply to computer software, speakers, cut lengths of cable, books, loose batteries or semiconductors.

### Damaged Goods

Damaged goods or goods sent in error will be replaced as soon as we receive them, provided that they have been carefully packed and provided that we have stock. We will refund postage. Authorisation must be given by our Returns Manger before goods can be returned by any method other than by Royal Mail.

### Guarantee for Kits

All the components in our kits carry the guarantee that they meet the manufacturer's specifications. We guarantee that correctly built kits, using components supplied by us, will work to the specifications published in our advertising and construction details. The guarantee does not cover damage caused during construction or errors in construction. If after studying the construction details you feel that the project is more complicated than you expected, please contact our sales department who will arrange for you to return the kit for a refund subject to our 20% handling charge. This offer only applies to kits where construction has not started. Simply return to us or alternatively return it to any MAPLIN or Mondo store with proof of purchase.

This statement does not affect your statutory rights.

### Repairs and Get-You-Working Service

We will undertake to repair or get working any of the complete projects published in our constructional articles, including Velleman Kits, providing that they are built on our ready-etched printed circuit boards, and use a majority of components that we have supplied. Items marked "Datafile Project", Circuit Maker ideas and Mini Circuits in this catalogue and in our magazine are excluded because they are essentially technical information articles for 'building block' type circuit and IC applications, and their correct functioning depends on the surrounding circuitry over which we have no control. Therefore we cannot offer the service on such projects. Also we cannot offer the repairs and get-you-working service for magazine projects, *other than those in our own publications*, even if we are mentioned as suppliers of the parts or supply a pcb for the project. Please return the whole completed project, not just the faulty board (if it is a large project), as faults on one board are often caused by problems on another board in the project. Enclose a cheque or P.O. based on the retail price of the kit as shown in the table (subject to minimum cost of £24.00). If the boards arrive damaged by the Post Office, they will be returned to you with a refund after deducting the return postage. Under no circumstances will we be liable for damage to goods sent to us. In addition we will not attempt a repair if the quality of construction is so poor that the only answer is a complete rebuild. Again the package will be returned to you with your money after deducting the return postage. If the fault is due to faulty components, or incorrect instructions or any error on our part which could have led to the fault, we will repair the project free of charge and return it to you carriage paid with a refund of your postage to us. If the fault is due to an error or errors you have made we will charge you for our time at a reasonable rate (see table below) and for the cost of any parts replaced. If this is less than the amount you sent, we will refund the difference after deducting the cost of postage to you. If the cost including return postage is more than the amount you sent, we will ask you to pay the difference before the goods are returned. Remember that it can take our engineer up to an hour (or much more on large projects) to set up the necessary test jig that will enable him to start testing your particular project and then take him some time to find the fault. So if you are not actually prepared to pay our very reasonable charges then please do not return your projects for repair!

Kit Retail Price	Standard Servicing Cost
Up to £39.99	£24.00
£40 to £59.99	£30.00
£60 to £79.99	£40.00

£80 to £99.99	£50.00
£100 to £149.99	£60.00
Over £150	£60 min.

If no fault can be found with the project, a charge of £24.00 will be raised to cover the cost of setting up any equipment needed and the subsequent testing. All repairs are carried out by skilled technicians at our Head Office. Please note that staff at our shops are unable to undertake repairs, but will forward projects to our Head Office Service Centre. We will carry out the repair as fast as we possibly can, but please allow up to four weeks. We will acknowledge receipt of your returned kit by return of post.

### KIT BUILDING SERVICE

If for any reason you wish to purchase one of our projects but feel you are unable to construct it we will be happy to build and fully test it for you. Please contact our customer service department for pricing details.

### TECHNICAL ENQUIRIES AND FAULT FINDING

If you have a technical problem with any product please telephone 01702 556001. Between 9 a.m. and 5.30 p.m. each day (Mon to Fri) an engineer will be available to try to help. It will save time if you have all relevant details to hand, e.g. catalogue page number for components, project book number for kits, and if replacement or additional parts are required, your customer number and post code. There are times when fault finding cannot be carried out over the phone, in which case the engineer will ask you to write in with the problem.

If you write, please keep technical enquiries separate from any other enquiry or order. Address your letter to the Technical Department, Maplin MPS, P.O. Box 777, Rayleigh, Essex SS6 8LU.

We will do our utmost to answer your enquiry within 2 working days of our receiving it. We cannot answer queries which do not relate to items in our catalogue or 'Electronics & Beyond' (The Maplin Magazine). Also we are unable to offer the service on projects where the kit has been discontinued for over one year. Priority will be given to those enquiries accompanied by an sae. Enquiries about projects appearing in magazines must refer to the magazine concerned. Before you write try to narrow down the fault; it's hard to help you if you just say it doesn't work, since in most cases the fault could be almost anything. Most designs follow a logical sequence, so if possible check to see if any parts of the circuit are operating correctly, and make a note of every test you make. You will undoubtedly require a multimeter and in audio circuits a crystal earpiece can be useful as only the tip need be connected to enable you to hear what is happening throughout the circuit and the extremely high impedance of this monitor will not cause the existing conditions to change. Always check the power supply voltages and voltage rails in the circuit, and check that all points that should be at earth potential are correct, especially when you have several seemingly unconnected faults. Hums and buzzes are almost always caused by incorrect earthing, poor layout or interconnecting wires that are too long. Poor soldering is one of the most common causes of faults. Keep the soldering iron tip clean and free from build-ups of flux by wiping it on a damp rag or sponge, but ensure that it is always tinned (covered with a layer of molten solder - with a new iron, tin the new bit by wiping the molten solder over it with a piece of card or rag). It is most important that both sides of a joint are heated together by the iron. If one side is cold the flux from the solder will flow around it and insulate it from the other side, exactly the opposite to what is wanted.

### Specifications & Illustrations

Specifications and illustrations in this catalogue are given in good faith, but they should be used for guidance only as goods are subject to alteration without notice in order to maintain delivery or price levels.

### Patents and Copyright

Products offered for sale by Maplin MPS may be covered by patent or copyright in relation to a manufacturer or publisher. Maplin MPS maintains full copyright protection in respect of its catalogues, price details and other literature, which may not be reproduced wholly or partially without Maplin MPS prior consent in writing.

## OVERSEAS ORDERING

### HOW TO ORDER IF YOU LIVE OUTSIDE THE UK

Whenever possible, please use our order form and send your order to Maplin MPS, P.O. Box 777, Rayleigh, Essex, SS6 8LU, United Kingdom. To order an item, write the quantity you require and the five character code shown for that item, printed under the heading Order Code. If a number is shown beside the five character code (ignore any letters), multiply this number by the quantity you are buying and then write the result in the Carriage Charge column. For resistors, write the code letter for the type you require and the resistance value - for more information see Resistors Section.

All prices in this catalogue (except items marked NV beside their price) include British VAT. Since January 1st 1993, all customers within the E.C. have to be charged VAT, unless the purchaser has a VAT number. This will normally be at the British rate, which is currently 17½%, although in some cases VAT will be applied at the rate ruling in the country of import. When the goods arrive in your country, no duty on those goods should have to be paid. VAT will be applied at whatever rate is legislated by the government of the appropriate E.C. state at the time we receive your order. If you have a VAT number, please make sure it is clearly visible on your purchase order form. VAT will not be applied in these cases.

Carriage will be charged at a standard rate in accordance with the table on page 1334. All goods are despatched by airmail. Full details are shown in the table below.

The carriage you have to pay is calculated as follows:

- If you have not had to write any numbers in the Carriage Charge column, the carriage charge you have to pay is the minimum charge shown in the table for your country.  
For example, if you are ordering from the Republic of Ireland, you will use rate A, and the charge is £4.00.

Rate	Minimum charge	Multiplication factor in addition to minimum charge	Handling charge
A	£4.00	£0.80	-
B	£4.25	£2.00	-
C	£4.25	£3.00	-
D	£4.50	£4.00	-
E	£5.00	£5.00	-
F	£5.00	£4.00	-
G	£2.95	£0.50	-
H	-	-	£2.95

- If you had to write numbers in the Carriage Charge column, add up the numbers and multiply the total by the multiplication factor shown in the table for your country.  
For example, if you live in the Republic of Ireland and the Carriage Charge column adds up to say, 5; then the amount you have to pay for carriage is 5 x £0.80 = £4.00 plus the minimum charge, so total is £8.00.
- If the value of goods in your order is over £100.00, please add a minimum 20% only to the cost of your goods. Postage will be charged at cost. If the amount you send exceeds the cost, we will refund the difference, or contact you if it is insufficient. If you are just ordering one item which costs over £100, use the table to calculate the correct postage.

You do not have to pay the £2.95 handling charge applicable in the UK. All goods are sent by AIR MAIL unless shown in the notes at the foot of the table. Please note that hazardous goods such as aerosols and lead-acid batteries, cannot be sent by air parcel post. Extra charges will be made if air freight is requested. Carriage for catalogues and magazines are charged as follows:

Europe (including Republic of Ireland) and Surface Mail		
Outside Europe		
Catalogue	Single Magazine	Magazine Subscription
£8.45 or 21 IRC's	£3.40 or 8 IRC's	£17.00 or 40 IRC's
Catalogue (only) outside Europe		by surface mail
		£6.50 or 16 IRC's.
Air Mail Outside Europe		
Catalogue	Single Magazine	Magazine Subscription
£16.00 or 37 IRC's	£4.30 or 10 IRC's	£22.00 or 50 IRC's
IRC - International Reply Coupon		

## METHODS OF PAYMENT

There are seven ways in which you can send the money for your order to us. In all cases, cheques etc., should be made payable to Maplin MPS.

### 1. Uniform Eurocheques

If you have a Eurocheque book, then simply write the amount in pounds sterling and sign the cheque. You must write your Eurocheque guarantee card number on the back of the cheque.

### 2. Bank Draft

Go to any local bank and buy a bank draft drawn on a British bank for the exact amount in pounds sterling. We shall be able to despatch your goods on the day we receive your order because our money is guaranteed by the British bank printed on the draft.

### 3. Credit Card

If you have a Eurocard/Mastercard/Access, Visa/ Carte Bleue or American Express Card, then simply write your card number on your order also stating which type of card it is and its expiry date and sign the order. Do not send your card with the order. We will be able to despatch your order immediately, subject to credit card authorisation.

### 4. Postal Orders and International Reply Coupons

We can accept postal orders provided they are in pounds sterling and issued in one of the following countries only:

Anguilla, Antigua, Ascension, Bahamas, Barbados, Belize, British Antarctic Territory, British Virgin Isles, Brunei, Chatham Isles, Cook Isles, Dominica, Falkland Isles and Dependencies, Fiji, Gambia, Gibraltar, Grenada, Hong Kong, Malaysia, Malta, Montserrat, New Zealand, Niue Isle, Penrhyn Isle, Pitcairn Isle, St. Helena, St. Kitts & Nevis, St. Lucia, St. Vincent, Seychelles, Singapore, Tonga, Trinidad and Tobago, Tristan da Cunha, Turks and Caicos Isles, Western Samoa, Yemen (except Kamaran Isles). Do not affix extra stamps to Postal Orders as the stamps have no value in the UK, unless they are actually current British Post Office issues. For very small orders, catalogues and magazines we can accept International Reply Coupons (IRC). Each IRC is worth 41p.

### 5. Currency

We can accept currency (but no coins) only if sent by registered post at your risk.

### 6. C.O.D.

We can send goods (but not catalogues or magazines, unless included with goods) Cash on Delivery to the following countries only: Antigua & Barbuda, Austria, Azores, Balearic Isles, Bahamas, Barbados, Belgium, Belize, British Virgin Is, Canary Is, Cayman Is, Corsica, Cyprus, Czechoslovakia, Dominica, Denmark, Egypt, Falkland Is, Farøe Isles, Finland, Fiji, France, Gibraltar, Germany, Grenada, Guernsey, Hurgary, Iceland, Italy, Jamaica, Jersey, Liechtenstein, Luxembourg, Madeira, Malaysia, Malta, Monaco, Montserrat, Netherlands, Norway, Portugal, San Marino, St Christopher & Nevis, St Lucia, St Vincent & Grenadines, Sardinia, Seyocelles, Sicily, Sierra Leone, Singapore, Slovakia, Somalia, Spain, Sri Lanka, Sudan, Suriname, Sweden, Switzerland, Trinidad & Tobago, and Tunisia. You will be charged for the goods despatched, the standard carriage charge and the C.O.D. charge at cost. At present the C.O.D. charge is £5.00 per £200, but if the order is under £100, the charge is £9.00. Thus for example in addition to any other charges due, the additional amount you have to pay for C.O.D. is as follows:

Order Value	C.O.D. Charge
Up to £200	£5.45
£200 to £400	£10.25

You must write C.O.D. in large letters across your order.

### 7. Letter of Credit

If you cannot use any of the above methods, then usually the only other method we can accept is the "irrevocable Letter of Credit". Again, this can be arranged through any bank, part-shipment and transshipment must be allowed and you must pay all charges. Using this system, we do not receive payment until the goods are despatched. But it is a very slow system and because of the large amount of documentation, we cannot accept it with orders worth less than £750. Please do not use any other form of payment without

our prior consent. In particular, we cannot accept Money Orders or personal cheques except Uniform Eurocheques. In any event, please write on your order which method of payment you are using.

## OFFERS AND ACCEPTANCE

No obligation on Maplin MPS shall arise as a result of a catalogue quotation or any other offer until Maplin MPS accepts a purchaser's order. Maplin MPS reserves the right to cancel or amend orders without penalty depending on stock availability.

In the event of any inconsistency between Maplin MPS and the purchaser's terms and conditions, the Maplin MPS terms and conditions of sale shall prevail, unless and until variation by express agreement is accepted in writing by both parties.

## PRICES

Maplin reserves the right to change prices at any time without prior notice. In general, prices are reviewed every six months, at which time some prices may change. The price charged for all goods will be that ruling at the date of acceptance of the order by Maplin MPS. No changes to prices will be made following acceptance of an order by Maplin MPS. Whilst every effort has been made to ensure accuracy of prices quoted, Maplin MPS does not accept responsibility for any error or omissions. Written quotations shall be valid for a period of thirty days.

## PAYMENT TERMS

Export orders must be paid for in advance by one of the following methods:

1. Internationally recognised credit card, stating type of card, card number and expiry date.
2. Bank draft or cheque in Pounds Sterling, with order, drawn on a UK bank.
3. Where approved and established with Maplin MPS, net monthly account terms.
4. Letter of Credit (for order value exceeding £2,000), provided that it conforms to the following conditions:
  - (i) Irrevocable and confirmed on a major UK bank.
  - (ii) Negotiable for payment, at sight in Sterling.
  - (iii) Must conform exactly in detail for price, description of contents, despatch method etc., as given in Maplin MPS quotation or pro-forma invoice.
  - (iv) All bank charges, commissions, etc. are to be to the account of the customer.
  - (v) Transshipment and part-shipment must be allowed.
  - (vi) Must be open for a period of six months.
  - (vii) Must allow reasonable time for despatch of goods and subsequent preparation and presentation of documents.
  - (viii) Must specify if Country(ies) of Origin are to be shown.
  - (ix) Must be subject to the uniform Customs and Practice for Documentary Credits (1993 Revision ICC Publication UCP500) or as the same may be amended from time to time.

## DELIVERY, INSURANCE, IMPORTATION

In general, Maplin MPS delivery terms are CIF. Freight/Insurance charges are at cost and estimated as separate items on quotations and pro-forma invoices. All duties, importation and other costs related to import legislation in the destination country are the responsibility of the customer. The customer shall indemnify Maplin MPS against any expenses or losses incurred by Maplin in connection with the importation of goods into the destination country. The customer is responsible for obtaining any necessary import licences.

## DELIVERY DISCREPANCIES AND RETURNS

Any queries regarding non-delivery or incorrect delivery should be made in writing to Maplin MPS within twenty-one days of the date of despatch, quoting all relevant details, otherwise Maplin MPS cannot accept liability. No goods may be returned to Maplin MPS, for whatever reason, without prior written consent, unless they were sent by Maplin MPS in error or received by the purchaser in damaged or faulty condition. If goods are under guarantee, refer to section entitled "Warranty" for correct procedure.

## DESPATCH

Maplin MPS reserves the right to handle or transport goods by any means or method available to us, and that gives best service to our customer. However, Maplin MPS will

endeavour to meet the customer's specific requests regarding transportation of goods, but does not guarantee to do so. Special courier services are available at cost, as and when requested.

## Certificates of Origin

Maplin MPS undertakes, as necessary, to obtain, complete and submit Certificates of Origin to Chambers of Commerce and overseas consulates for certification and legalisation. Maplin MPS cannot arrange for certification or obtain other documentation from outside the UK.

## Documentation

Maplin MPS standard documentation comprises an invoice and a despatch note. Other documentation which, from time to time, may be required to accompany or support entry of orders into certain countries, e.g., Chamber of Commerce or Consular Certification of Legislation, will be charged at cost unless previously specified on Maplin quotation or pro-forma invoice. Maplin MPS will quote such charges, if requested to do so, at the time of any quotation. All such charges will be detailed separately.

## Additional Documentation - Charges

The following handling and administration charges for additional documentation will apply:

### \* Confirmed Irrevocable Letter of Credit:

(Minimum order value £2,000) Bank charges to the account of the customer.

Order value £2,000 to £4,999: Charged at £125

Order value £5,000 and over: Charged at £100

### \* Certificate of Origin:

Charged at £50 (in addition to Consular Legalisation charge)

### \* Hazardous Goods Document:

Charged at £30

## VAT

UK Value Added Tax at the standard rate of 17.5% is normally added to catalogue prices, quotations or pro-forma invoices for all customers resident in EC member states. Goods to EC customers may be zero rated provided that the customer's VAT registration number is indicated on the sales invoice. In some countries, such as Eire, VAT may be charged at the rate ruling in that EC State. In order to zero rate goods supplied to UK addresses for onward shipment overseas, e.g., to freight forwarders, a "Proof of Shipment" certificate and other necessary evidence of shipment may be required. Goods for export to areas outside the EC and including the Channel Islands are VAT zero rated.

## WARRANTY

Maplin MPS will, at its discretion, repair or replace a product in which, under proper use within 12 months of despatch, defects appear due to faulty materials or workmanship. All products should be returned at the purchaser's risk, suitably packaged, carriage paid within 12 months of despatch, accompanied by an advice note stating the original invoice number against which the goods were supplied, the nature of the fault and any other supporting information Maplin MPS may require. If any of these requirements are not complied with, Maplin MPS shall be discharged from all liabilities arising from the supply of faulty goods, and our warranty shall not apply.

## LIABILITY

Maplin MPS shall have no liability in respect of damage, expense or consequential loss resulting from the failure or delay in delivery or in performance of any obligations under any contract, due to any cause within or beyond Maplin control. This shall be considered Force Majeure and shall include, but not be limited to, Act of God, fire, floods, war, civil disturbances and industrial disputes.

## LAW

Any business transacted by Maplin MPS, subject to the foregoing terms and conditions, shall be governed solely by English law and be within the exclusive jurisdiction of English courts.

# 1334 - Overseas Distributors/Overseas Carriage Charge Table



## OVERSEAS DISTRIBUTORS

### CANADA

Quality Kits, 292 Queen Street, Kingston, Ontario, K7K 1B8, CANADA  
Tel: 613 544 6333 Fax: 613 544 4944  
E-mail: james@qkits.com  
World Wide Web: <http://www.qkits.com>

### GIBRALTAR

Mail Order International, c/o Medsun, PO Box 225, 93-99 Irish Town, GIBRALTAR  
Tel: 79797 Fax: 74664

### ITALY

L'Agorà s.r.l./Elettronica 2000  
Cso Vittorio Emanuele, 15  
20122 - Milano, ITALY  
Tel: 02 781000 Fax: 02 780472  
E-mail: e2k@like.it  
World Wide Web: <http://www.like.it/e2k>

### LEBANON

N and Y Controls, PO Box 175414, Beirut, LEBANON  
Tel: (01) 443091-397467  
UK Office Tel: (44) 1702 347614  
Fax: (44) 1702 77161

### MALTA

Cam Services, Cam Centre, Off Cannon Road  
Qormi, QRM 09, MALTA  
Tel: 484650 Fax: 447174

### NORWAY

Amgren Electronics  
P.O. Box 2, Holmen, 0322 Oslo, NORWAY  
Tel: 22 490009 Fax: 22 490210  
E-mail: faet@sn.no  
World Wide Web: <http://www.sn.no/amgren>

### PAKISTAN

Link Pakistan, Suite No 2, 2nd Floor, I-R Plaza  
Markaz F-10, Islamabad, PAKISTAN  
Tel: 51 291406 Fax: 51 282319

### SAUDI ARABIA (Alkhobar Region)

Fadan Establishment, P.O. Box 848,  
Alkhobar 31952,  
KINGDOM OF SAUDI ARABIA  
Tel: 3 898 2737 Fax: 3 898 2737

### SOUTHERN AFRICA

Maplin South Africa (Pty) Ltd, PO Box 1846  
Somerset West 7129,  
REPUBLIC OF SOUTH AFRICA  
Sales: (021) 8515124  
Enquiries/Helpine (021) 8515123  
Fax: (021) 8515127  
E-mail: [maplin@iafrica.com](mailto:maplin@iafrica.com)

### UNITED ARAB EMIRATES (U.A.E.)

(Bahrain, Kuwait, Oman, Qatar)  
Maplin Middle East Company, PO Box 47019  
Hamdan Street, ABU DHABI, U.A.E.  
Tel: (971) (02) 760332 Fax: (971) (02) 760317

### GHANA

Electronic Supplies & Engineering Services Ltd  
J. Oteng-Nyame,  
P.O. Box 15724, Accra North, Ghana,  
Tel: 233 2122 8634 Fax: 233 21232316

### MALAYSIA

N.I.E. Electronics (M) SDN BHD,  
1004 and 1005 Resource Centre,  
33 Jaleen Segam =lut Atas  
51200 Kuala Lumpur  
Malaysia,  
Tel: 60 3 746 4310  
Fax: 60 3 746 1507

RATE	COUNTRY	RATE	COUNTRY	RATE	COUNTRY
F	Alghanistan	C	Iceland	F	Philippines
C	Albania	F	India	F	Pitcairn Island
F	Algeria	F	Indonesia	B	Poland
F	Andorra	F	Iran	B	Portugal
F	Angola	F	Iraq	F	Puerto Rico
F	Anguilla	A	Ireland (Republic of)	F	Qatar
F	Antigua & Barbuda	F	Israel	F	Reunion
B	Armenia	F	Italy	C	Romania
F	Argentina	F	Ivory Coast	C	Russia
F	Aruba	F	Jamaica	C	Rwanda
F	Ascension	F	Japan	C	St. Helena
F	Australia	G	Jersey	C	St. Kitts & Nevis
F	Austria	F	Jordan	C	St. Lucia
F	Azerbaijan	F	Kazakhstan	F	St. Pierre & Miquelon
F	Azores	F	Kenya	F	St. Vincent & the Grenadines
F	Bahamas	F	Kirghizstan	F	Samoa (USA Territory)
F	Bahrain	F	Kiribati	F	San Marino
F	Balearc Islands	F	Korea (Democratic Peoples Republic)	F	Sao Tomé & Principe
F	Bangladesh	F	Korea (Republic of)	F	Sardinia
F	Barbados	F	Kuwait	F	Saudi Arabia
F	Belarus	F	Latvia	F	Senegal
F	Belua	F	Laos	F	Serbia
F	Belgium	F	Lebanon	F	Seychelles
F	Belize	F	Lesotho	F	Sicily
F	Benin	F	Liberia	F	Sierra Leone
F	Bermuda	F	Libya	F	Singapore
F	BFPO	F	Liechtenstein	C	Slovakia
F	Bhutan	F	Lithuania	F	Slovenia
F	Bolivia	F	Luxembourg	F	Solomon Islands
F	Bosnia	B	Macao	F	Somali Dem Republic
F	Botswana	F	Macedonia	F	South Africa
F	Brazil	F	Madagascar	F	South Sandwich Islands
F	British Indian Ocean Territory	F	Madeira	F	Spain
F	British Virgin Islands	F	Malawi	F	Spanish Territories of N. Africa
F	Brunei	F	Malaysia	F	Spitzbergen
F	Bulgaria	F	Maldives	F	Sri Lanka
F	Burkina Faso	F	Malta	F	Sudan
F	Burundi	F	Marianas Islands	F	Suriname
F	Cambodia	F	Marshall Islands	F	Swaziland
F	Cameroon	F	Martinique	F	Sweden
F	Canada	F	Mauritania	F	Switzerland
F	Canary Islands	F	Mauritius	F	Syria
F	Cape Verde Islands	F	Mexico	F	Tajikistan
F	Cayman Islands	F	Micronesia	F	Taiwan
F	Central African Republic	F	Moldova	F	Tanzania
F	Chad	F	Monaco	F	Thailand
F	Chile	F	Montenegro	F	Tibet
F	China (People's Republic of)	F	Montserrat	F	Togo
F	Christmas Is (Indian Ocean)	F	Morocco	F	Tonga
F	Cocos (Keeling) Island	F	Mozambique	F	Trinidad & Tobago
F	Colombia	F	Myanmar (Burma)	F	Tristan da Cuniha
F	Comoros	F	Namibia (SW Africa)	F	Tunisia
F	Congo (People's Republic of)	F	Nauru Island	F	Turkey
F	Corsica	F	Nepal	F	Turkmenistan
F	Costa Rica	F	Netherlands	F	Turks & Caicos Islands
F	Croatia	F	Netherlands Antilles	F	Tuvalu
F	Cuba	F	New Caledonia	F	Ukraine
F	Curacao	F	New Zealand	F	United Arab Emirates
F	Cyprus	F	New Zealand Island Territories	F	Uruguay
F	Czech Republic	F	Nicaragua	F	USA
F	Denmark	F	Nigeria	F	Uzbekistan
F	Djibouti	F	Niger Republic	F	Vanuatu
F	Dominica	F	Norfolk Island	F	Vatican City State
F	Dominican Republic	F	Norway	F	Venezuela
F	East Timor	F	Oman	F	Vietnam
F	Ecuador	F	Pakistan	F	Virgin Islands (USA)
F	Egypt	F	Panama	F	Wake Island
F	El Salvador	F	Papua New Guinea	F	Wallis & Futuna Islands
F	Equatorial Guinea	F	Paraguay	F	Western Samoa
F	Eritrea	F	Peru	F	Yemen
F	Estonia	F		F	Zaire
F	Ethiopia	F		F	Zambia
F	Falkland Islands and Dependencies	F		F	Zimbabwe
F	Faroe Isles	F		F	
F	Fiji	F		F	
F	Finland	F		F	
F	France	F		F	
F	French Guiana	F		F	
F	French Polynesia	F		F	
F	French Southern and Antarctic Territories	F		F	
F	Gabon	F		F	
F	Gambia, The	F		F	
F	Gaza & Khan Yunis	F		F	
F	Georgia	F		F	
F	Germany	F		F	
F	Ghana	F		F	
F	Gibraltar	F		F	
F	Greece	F		F	
F	Greenland	F		F	
F	Grenada	F		F	
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F	Hong Kong	F		F	
F	Hungary	F		F	

1. Parcels over 2kg to Ascension, Cuba, Falkland Islands, Spitzbergen and St. Helena are despatched by Surface Mail.
2. Maximum weight of packets to Cambodia and Tibet is 2kg. Customers must send an import licence with order.
3. Maximum weight of packets is 5kg.
4. Outside Northern Ireland, goods over 1/2kg are despatched by Surface Mail. If you require Air Mail, use the standard rate for the country you are in.
5. Maximum weight of packets to the French Southern and Antarctic Territories is 2kg and goods are despatched by Surface Mail.
6. An import/export licence may be required. We will advise on receipt of order before despatch.



International Telephone No. + 44 1702 554000  
for enquiries and orders



Maplin MPS, P.O. Box 777, Rayleigh, Essex, SS6 8LU  
 Telephone: Sales 01702 554000 Accounts: 554187 Fax: 554001

**CREDIT ACCOUNT APPLICATION**

Please complete using BLOCK CAPITALS

DETAILS OF APPLICANT	
Trading name & address of account	
Postcode	
Tel. No. (inc. STD code)	Fax No.

Company Registration No. \_\_\_\_\_

Name & address of ultimate holding company
Postcode

Name & address where accounts are paid from	
Postcode	
Name of contact: Mr, Mrs, Miss, Ms.	Job title
Telephone No. Extn.	Fax No.

PURCHASING PROCEDURES		
Person(s) authorised to place orders: Mr, Mrs, Miss, Ms.		
First Name	Initial	Surname

Partnership/Sole Proprietor – Mr, Miss, Mrs, Ms – Please delete		
First Name	Initial	Surname
Private address	Postcode	
First Name	Initial	Surname
Private address	Postcode	

If your company has been trading for less than 2 years, please enclose 2 trade references with this form.

I/We hereby apply for a monthly credit account. I/We understand that the settlement terms are 30 days from date of invoice and failure to comply with these terms may result in closure of the account without prior notice. Ownership of the goods remaining with Maplin Electronics plc until paid in full. A list of our terms and conditions are given overleaf.

Signature(s)	Please print full name	Position
_____	_____	_____
_____	_____	_____

EXTENT OF CREDIT REQUESTED
Please state the amount of credit required
£ _____ per month
Estimated value of total annual purchases
£ _____
Preferred method of settling account, e.g. cheque, credit transfer, etc.

FOR OFFICE USE ONLY
Customer Number _____
Account Number _____
Credit Limit Approved £ _____
TM Rep No. _____
Date / / Signature _____

## A. UNITED KINGDOM

All orders and contracts for the sale of goods are accepted by Maplin Electronics PLC ('the Company') on these Terms and Conditions which supersede any previously published terms in this, or any previous catalogue, or elsewhere.

### 1. Offers and Acceptance

No obligation shall arise as a result of a catalogue entry, quotation or any other offer until the Company accepts an order from the person, company, or other organisation with whom the sale or supply of products is conducted ('the Purchaser').

In the event of any inconsistency between the Company's and Purchaser's terms and conditions, the Company's terms and conditions of sale shall prevail unless, and until, variation by express agreement is accepted in writing by both parties.

### 2. Orders

Where possible, orders should be made using the Company's order codes and order form. Please make a note of your customer number and/or account number and quote them on all orders. Products are supplied as shown in the Company's latest catalogue, unless the product has been superseded. Telephone orders will only be accepted on account when a purchase order number is given. Confirmation orders are not required, but if they are sent they must be marked "Confirmation Only". Failure to mark written confirmation orders could result in duplicate deliveries and in such case the Purchaser will be liable for the full purchase price, or alternatively, be subject to the Company's returns procedure.

Purchasers wishing to purchase goods on account at a Maplin Store will be required to provide a suitable purchase order. This procedure is also required when a previous telephone order has been made.

Prices and delivery for items covered by scheduled orders need to be made in writing and are strictly in accordance with the terms quoted by the Company and accepted by the Purchaser. Any variation in delivery requirements may be subject to price alteration. The Purchaser will be liable for any stocks held against an order at the end of the contract period.

Schedules will only be accepted when each shipment exceeds £25. Pro-forma invoices and quotations are available from the Company upon request.

### 3. Prices

The Company reserves the right to alter prices at any time, without prior notice. In general, prices are reviewed every six months, at which time some prices may change. The price charged for all goods will normally be that ruling at the date of acceptance of the order. All prices are subject to Value Added Tax (VAT) at the relevant rate ruling on the date of despatch.

### 4. Carriage:

Carriage is free for Maplin MPS Business Account customers. All non-account orders over £25.53 plus VAT or £30.00 inc VAT are sent free of carriage charges. Orders from non-account customers less than £25.53 plus VAT or £30.00 including VAT will attract a small order charge of £2.51 plus VAT or £2.95 including VAT. Orders received by 5pm will normally be despatched the same day. Guaranteed next day deliveries (before noon) are available for all of the UK mainland (excluding Scottish Highlands). Full details of all guaranteed delivery services are shown in the introduction to the Company's catalogue.

### 5. Payment

(a) Terms of payment are strictly cash with order unless a credit account has been established with the Company.

(b) Where a credit account has been established with the Company, payment must be made within 30 days of each delivery, whether the goods delivered are the whole order or only part shipment.

(c) The Company reserves the right to suspend deliveries where payment is not received in accordance with paragraph (b) of this clause, or in accordance with any alternative arrangement which has been agreed in writing between the Company and the Purchaser. In such case, the Company reserves the right to charge interest on the unpaid amount from 30 days after the invoice date at a rate of 4% above the current London Inter-Bank Borrowing Rate (LIBOR) per annum.

### 6. Back Orders

Any subsequent deliveries to complete an order will be despatched as soon as the item becomes available. Charges are only made when goods are despatched. The Company reserves the right to cancel any outstanding items in the event of unforeseen circumstances.

### 7. Order Cancellation

Cancellation of Purchaser's orders can only be accepted after prior negotiation and agreement – but in any case within 30 days of despatch. On no account can cancellation be accepted for items ordered specially on the Purchaser's behalf. In the case of any default, the Purchaser shall be liable to compensate the Company for any partly finished products, stock or materials and tools held for the manufacture or supply of such goods.

If the Company agrees to accept cancellation, part-cancellation or return of an order for catalogued items, a charge of 20% of order value will be made subject to a minimum charge of £2.

The Company reserves the right to impose a back billing charge for part-cancellation if the reduction in quantity affects the unit price.

### 8. Non-Delivery and Returns

No goods may be returned to the Company without prior written consent, unless they were sent in error by the Company or received by the Purchaser in a damaged or faulty condition. The Purchaser shall give the Company reasonable opportunity to examine the goods in respect of which any claim for damages is made. If the company agrees to accept the return, a charge of 20% of order value will be made subject to minimum charge of £2.

It is the Purchaser's responsibility to ensure that returned goods are received in as-new condition. This includes all associated packaging and literature. Appropriate precautions must be taken by the Purchaser regarding the handling of any static-sensitive devices.

It is the Purchaser's responsibility to refuse any damaged parcels or check that all goods conform to requirements as soon as it is practicable after delivery. Any error of despatch, including omissions or damage in transit, must be notified within 10 days of receipt of the package.

Any queries regarding the non-delivery of goods should be made within 10 days of the expected despatch date. The Company cannot accept liability for non-delivery if the Purchaser has failed to clearly identify the correct delivery address.

If the Company is not advised in accordance with specified notice periods relating to returns and non-delivery, as shown in the above paragraphs of this clause, it will be assumed that the Purchaser has examined the goods and accepted liability, in accordance with the contract. Notification of faulty goods must be made to the Company within 10 days of receipt.

All returned goods must be accompanied by the associated despatch note.

The Company will not accept returned software products.

### 9. Warranty

The Company will, at its discretion, repair or replace a product in which, under proper use and within 12 months of despatch, defects appear due to faulty materials or workmanship. Alternatively a refund of the purchase price may be given, or where the Company is owed sums by the Purchaser, a credit note may be issued. Acceptance of liability is at the discretion of the Company.

All products should be returned at the Purchaser's risk, suitably packaged and carriage paid, within 12 months of despatch, with an advice note stating the original invoice number relating to the product in question and detailing the claimed defect.

Should any modification or attempted repair be made to the product, for whatever reason, this will invalidate the warranty. Any item added to the product by the Purchaser should be removed before return to the Company. If such products are returned, the Company will accept no liability for any item attached to or associated with any product returned under warranty. The Company will assume it is authorised to remove any attachments but will not be obliged to reconnect such items before returning the product to the Purchaser.

This warranty excludes, and no liability can be accepted for, consequential damage, loss or injury arising from defective products.

Software products are excluded from this warranty.

### 10. Risk and Ownership

Whilst the responsibility for safe keeping passes to the Purchaser upon receipt of any goods, ownership does not pass until full payment is received by the Company.

### 11. Liability

The Company shall have no liability in respect of damage, expense or consequential loss arising from the failure or delay in delivery or in performance of any obligations under any contract, due to any cause either within or outside the Company's control. Causes shall include, but not be limited

to, act of God, fire, floods, war, civil disturbances, riots, act of Government, industrial disputes or failure by any subcontractor.

The Company ensures that every care and attention is given to the provision of correct information whether technical or otherwise. However, no liability can be accepted by the Company for any expense or consequential loss arising from either the failure to provide information, or any statement made by the Company's agents or representatives as to the specification of any product or suitability for a defined purpose, unless that information is confirmed in writing.

### 12. Lien

The Company shall have a general lien in respect of all sums due from the Purchaser upon all goods to be supplied, or upon which work has been done on the Purchaser's behalf, and twenty-eight days from written notice to the Purchaser, may sell such goods and apply the proceeds towards the satisfaction of the sums due to the Company.

### 13. Patents and Copyright

Products offered for sale by the Company may be the subject of patents or other such protectable devices.

The Company maintains full copyright in respect of the catalogue, and its whole or partial reproduction without the Company's consent is prohibited.

### 14. Illustrations, Specifications and Product Information

Whilst every effort is made to maintain accuracy, no liability can be accepted by the Company for any errors or omissions in supplying any technical information.

No illustration or specification should be taken to represent the manufacturer or source of origin.

The Company reserves the right, without prior notice, to discontinue or supersede any product as part of its continuous programme of product improvement. It is the Purchaser's responsibility to ensure that all products are suitable and fit for the purpose of their intended application.

### 15. Termination of Contract

If the Purchaser commits any breach of these terms and conditions of business, or becomes insolvent or commits an act of bankruptcy, or enters into any arrangement with his creditors or goes, or is put, into liquidation (other than solely for the purposes of reconstruction whilst solvent), or if a receiver is appointed over any part of the Purchaser's business, the Company may, without prejudice to any rights which may accrue, terminate the contract summarily by notice in writing.

### 16. Law

Any question relating to any contract subject to these terms and conditions of business, or agreed amendment to same, shall be determined in all respects by English law.

## B. EXPORT

The above UK Terms and Conditions also apply to export orders. In addition, the following clauses are applicable to orders received by the Company from Purchasers outside the United Kingdom, or from Purchasers requesting export to a country outside the United Kingdom.

### 1. Payment Terms

**Export orders must be paid for in advance by one of the following methods:**

- Internationally recognised credit card, stating type of card, card number and expiry date.
- Bank draft or cheque in Pounds Sterling, with order, drawn on a UK bank.
- Where approved and established with the Company, net monthly account terms.
- Letter of Credit (for order value exceeding £2,000), provided that it conforms to the following conditions:
  - Irrevocable and confirmed on a major UK bank.
  - Negotiable for payment, at sight in Sterling.
  - Must conform exactly in detail for price, description of contents, despatch, method, etc., as given in the Company's quotation or pro-forma invoice.
  - All bank charges, commissions, etc., are to be to the account of the Purchaser.
  - Trans-shipment and part-shipment must be allowed.
  - Must be open for a period of six months.
  - Must allow reasonable time for despatch of goods and subsequent preparation and presentation of documents.
  - Must specify if Country(ies) of Origin are to be shown.
  - Must be subject to the uniform Customs and Practice for Documentary Credits (1993 Revision ICC Publication UCP500) or as the same may be amended from time to time.
  - Country of Final Destination must be stated.

### 2. Delivery, Insurance, Importation

In general, the Company's delivery terms are Ex-works. Freight/Insurance charges are at cost and estimated as separate items on quotations and pro-forma invoices.

All duties, importation, and other costs related to import legislation in the destination country are the responsibility of the Purchaser. The Purchaser shall indemnify the Company against any expenses or losses incurred by the Company in connection with the importation of goods into the destination country. The Purchaser is responsible for obtaining any necessary import licences.

### 3. Delivery Discrepancies and Returns

Any queries regarding non-delivery or incorrect delivery should be made in writing to the Company within twenty-one days of the date of despatch, quoting all relevant details, otherwise the Company cannot accept liability. No goods may be returned to the Company, for whatever reason, without prior written consent, unless they were sent in error or received by the Purchaser in damaged or faulty condition. If goods are under guarantee, refer to the above section entitled "Warranty" for correct procedure.

### 4. Despatch

The Company reserves the right to handle or transport goods by any means or method available, and that gives best service. The Company will endeavour to meet the Purchaser's specific requests regarding transportation of goods, but does not guarantee to do so. Special courier services are available at cost, as and when requested.

### 5. Certificates of Origin

The Company undertakes, as necessary, to obtain, complete and submit Certificates of Origin to Chambers of Commerce and overseas consulates for certification and legislation. The Company cannot arrange for certification or obtain other documentation from outside the UK.

### 6. Documentation

The Company's standard documentation comprises an invoice and a despatch note. Other documentation which, from time to time, may be required to accompany or support entry of orders into certain countries, will be charged at cost unless previously specified. The Company will quote such charges, if requested to do so, at the time of any quotation. All such charges will be detailed separately.

### 7. Additional Documentation – Charges

The following handling and administration charges for additional documentation will apply:

- \* Confirmed Irrevocable Letter of Credit:  
(Minimum order value £2,000) Bank charges to the account of the Purchaser.  
Order value £2,000 to £4,999: Charged at £125  
Order value £5,000 and over: Charged at £100
- \* Certificate of Origin: Charged at £50 (in addition to Consular Legislation charge)
- \* Hazardous Goods Document: Charged at £30

### 8. VAT

UK Value Added Tax at the applicable rate (currently 17.5%) is normally included in the catalogue, quotations or pro-forma invoices for all Purchasers resident in EC member states. Goods to EC Purchasers may be zero-rated provided that the Purchaser's VAT registration number is indicated on the sales invoice and held in the Purchaser's records (the Destination System). If the Purchaser is unregistered, VAT must be charged at the standard rate applicable (the Origin system).

In order to zero-rate goods supplied to UK addresses for onward shipment overseas, e.g., to freight forwarders, a "Proof of Shipment" certificate and other necessary evidence of shipment may be required. Goods for export to areas outside the EC and including the Channel Islands are VAT zero-rated, provided the conditions of VAT Notice 703 apply.

### 9. Law

Any business transacted by the Company, subject to the foregoing terms and conditions, shall be governed solely by English law and be within the exclusive jurisdiction of English courts.

# The Maplin Guide to...

## GOOD SOLDERING

By Mark Brighton

Solder is the most important component that you will fit to your circuit board. It is the glue which will hold your circuit together and will allow all of the other components to connect to each other. A poorly soldered circuit will be unreliable or will not work at all. Consider the fact that a high proportion of the kits returned to the Maplin Service Centre need only re-soldering to make them work properly. This brief guide will attempt to describe the main soldering tools available and the techniques necessary to use them.

### The soldering iron

There are a few choices here and each type has its advantages in certain conditions. For truly portable soldering work, a gas powered soldering iron such as the Antex "GasCat" (RD51F) is an excellent choice. It works well outdoors, even in strong wind, as you may turn the gas control up to compensate for the cooling effect of the wind. Gas irons such as this or the professional "Pyropen" range from Weller are very good for jobs where access is restricted as they have no lead, which gives good freedom of movement in the tightest spots. They will run for about 20 minutes to an hour on a single charge of ordinary lighter gas, dependent on the control setting, and use a special catalytic soldering head for intense heat with no flame. Various special heads are available which convert the unit to a gas torch, cutting tool or a hot air blower for surface mount components or fine heat shrink sleeving. There are also cordless "go anywhere" electric soldering irons that use Ni-Cad rechargeable batteries to heat a wire tip.

In situations where the iron is going to be left on all day, or for hours at a time, gas and battery powered irons are not the best choice. The standard ranges of mains powered irons are the most economical and straightforward everyday tools for soldering jobs.

Very low Wattage irons (such as the Antex 12W (YU90X), 15W (FJ44X) and 18W (FY62S)) are ideally suited to soldering logic circuits or other designs based around IC's that may be a little sensitive to heat. Choose one of these irons if you intend to solder small components in low current circuits with fine PCB tracks.

The 25W mains soldering iron is the general purpose workhorse of electronic project construction. With just two or three extra bits in various sizes, it will be suitable for almost any job, if deftly used. The Antex XS 25W iron (FR12N) is the first choice of many constructors whose budget is limited to the choice of just one iron. The iron is supplied with a 3mm chisel tip (you may find a 2.3mm tip (FR16S) a better choice as a replacement for use with smaller components). This iron is powerful enough to solder cables to small

connectors or to larger solder tags, but you will need to order a larger tip (4.7mm chisel tip (FR18U) if you wish to solder to large connectors or chassis tags, otherwise the bit will not maintain sufficient temperature and may even freeze the iron to the job!

If you need to solder heavy wires or cables regularly, or solder to large connector tags or chassis plates, you will need a larger soldering iron. The Antex 50W temperature controlled iron (XJ45Y) is an excellent choice for this sort of heavy work, allowing accurate temperature control between 200 and 450 degrees Celsius. Note that this iron is NOT suitable for general purpose PCB work. For occasional heavy use, a gas iron turned right up will also do the job.

The serious user may wish to consider a soldering iron station which uses a special, low voltage version of the soldering iron for minimum leakage and very good safety. These units are temperature con-



trolled via easy to operate controls, some having digital readouts of iron temperature. A range of these are featured in the "Soldering Equipment & Accessories" section of your new Maplin / MPS catalogue.

### Solder and other accessories

Having made the right choice of soldering iron, it is equally important that you use the right type and gauge of solder wire. DO NOT attempt to use acid cored solder, solder bars or pellets of plumbers solder on your electronic circuits as the result will never be good or reliable.

The most common, general purpose solder used for circuit construction is 60% Tin, 40% Lead with one or more cores of non corrosive rosin based flux. Choose a reel of 22SWG solder such as our



FY70M or the Multicore DF11M for all fine and general purpose work. This solder is finer than the 18SWG solder (YJ92A) used for

heavier electrical wiring and allows quicker neater joints to be made on modern PCBs.

It may seem obvious, but soldering irons get very hot! You can hang some of them up on a hook, but a dedicated soldering iron stand with a spring or heat resistant plastic holder makes a much more sensible place to keep your iron.

One last word about accessories before we go on to discuss soldering technique. The first requirement for effective, neat soldering is that every surface is clean and that the iron tip is well tinned (whetted with molten solder). Soldering iron tips soon tarnish and oxidise and become more and more difficult to tin. You must avoid the temptation to use a file or emery cloth on a modern soldering iron tip as they are plated to prevent corrosion and pitting of the tip. Filing does clean a tip, but the unprotected copper beneath soon pits badly and the tip then rapidly disappears with use.

Multicore make a wonderful little tin of compressed solder powder, chemical cleaners and fluxes with a sticky pad underneath (JG06G). Throw away that wet sponge supplied with your soldering iron stand and fit one of these instead. Your bits will last two or three times as long. Simply grind the hot tip of the iron across this mixture for a clean tinned tip.

### Soldering technique

There are just a few simple ingredients for a clean shiny soldered joint. Firstly, make sure that the PCB or stripboard is clean before you start to insert components.

Copper is prone to tarnishing and should be polished with wire wool or similar just before you start to solder. HX04E is an abrasive elastic block which is perfect for PCB preparation and will not drop fine pieces of conductive wire all over your work-surface. Avoid fingering and handling the copper tracks before soldering.

Component leads should also be clean. Many component collections are relegated to a damp shed or garage and component leads will tarnish in the damp and become very difficult to solder. Keep them dry.

Once the components to be soldered are in place and have had their leads bent to hold them in position with the PCB upside down (push the components fully home onto the PCB, do not leave

them sticking up into the air), it is time to apply the soldering iron, which should have been left to warm up for several minutes and then freshly tinned by applying just a touch of solder wire to the tip face. If you are using a reel of solder, you may find it easier to pull off a couple of metres at a time and wind it around the fingers of one hand to form a handy little roll that is easy to hold and apply to the joint when soldering.

Apply the tip at an angle to the site of the joint in such a way that the tinned tip face heats both the PCB pad and the component lead where they touch and use the other hand to apply the end of the solder wire to that exact spot where iron tip, component lead and track are all touching. Push the solder wire into the joint just a little as it instantly melts and pull both the iron tip and solder cleanly away from the joint. The whole process should take no more than a couple of seconds.

All being well, the solder should have flowed evenly around the lead and over the pad and should have formed a smooth fillet of solder all around the lead which remains shiny when it cools.

If part of the pad or lead is still bare and clean, the iron should have been applied a little longer and a little more solder applied. You may go back in and re-apply the iron until the solder melts and apply a touch more solder. If you apply too much solder you will end up with a bulbous bead of solder on the joint instead of a fillet, with the possibility of short circuits to adjacent pads or tracks. If you do use too much solder, it is best to use desolder braid (GU83E) or a solder sucker (BA15R) to remove the excess and start again.

If the finished joint looks jagged, cracked and dull you have produced what is known as a dry joint. This is usually caused by applying heat to the joint for too long and cooking all of the flux out of the solder. Try reapplying the iron until the solder melts, add a touch more solder and instantly remove heat and solder wire. The flux in the new solder should allow the joint to flow and smooth out before setting. Again, if you end up with too much solder, or the joint still looks rough, remove the solder and redo the joint. Don't be tempted to leave dry joints. They may look joined now, but the leads will easily break free of the crystallised joint and form a high resistance joint which may overheat, arc and carbonise in use, especially if any significant current path runs via the joint.

If the finished joint looks clean, but the solder has beaded and is sitting above the pad, often with a brown shiny ring just under it, or the solder does not form a little "volcano" shape into the lead but dips into the lead and does not look joined, the pad or the lead were not clean enough and the solder has not taken to them. This sort of "joint" often insulates the component completely from the pad, and can be quite hard to troubleshoot once the circuit is finished. If reheating the joint does not work (and it usually doesn't) you will have to melt and remove the solder, wait for the joint to cool and scrape the flux and tarnish from the joint with a craft knife or similar before starting again. An abrasive fibreglass pencil (KR61R) is a handy tool for cleaning PCB tracks and pads.

## Soldering with Verowire.

The excellent Verowire wiring pen (HY16S) is the only sensible choice for the construction of prototype or one off digital circuits. It allows fast and direct wiring of multi wire data and address busses in one hit, where wires may cross as many times as necessary without shorting due to the tough, flexible layer of insulating varnish on the wire. Where a joint is required, the pen is used to wrap two or three turns of the fine wire around the IC



(socket) leg in question and the wire is run to the next IC, and so on.

It is not necessary to strip the insulation off of Verowire, as you may simply solder through it, but you will need a hot iron. A 25W iron with a medium tip will do this job adequately, but use of a hotter temperature controlled 40W or 60W iron will give faster and easier soldered joints. Pull enough excess wire out of the pen before soldering (10 cm will be fine) to ensure heat travelling up the wire from the joint does not melt it into the pen tip, ruining the pen. Use a craft knife or scalpel (FY05F is the handle, FY06G is a pack of blades) to cut off the wire at the end of the run (with pen attached) after soldering is complete. When soldering Verowired joints, the solder may bead on the iron tip for a second before you see the varnish burn off the wire. The solder should then run around the joint and the iron should be removed. If a whole buss has been wired by running (for example) D0 from one chip to the next, until the end, then back on D1 from chip to chip, across to D2 and so on until done, don't forget to cut of the links (alternately) at each end from one data line to another after soldering. Overheating should rarely be a problem with modern components and materials. In the 1960's, it was deemed necessary to fit a clip on device called a "heat shunt" (still available as FR10L for those working with obsolete Germanium devices) on each lead of a transistor or diode before soldering it in order to isolate the delicate crystal junction from the heat. Modern components are much more robust, but there are still some rules of thumb to follow.



Use as little heat as possible. This does not necessarily mean you should always use a low wattage iron or turn the temperature control down on a variable iron. On the contrary, a hotter iron often conducts less actual heat to a delicate component than a cooler iron does, because the more intense local heating produced by a hotter tip enables you to solder the leads quickly, before the heat is conducted to the device itself.

If in doubt, especially with a large IC to be directly soldered into a PCB (why not use a socket?) where many legs must be heated, you may use a freezer spray (DM88V) to freeze the IC solid before you start, and avoid soldering all the legs in one go. Try soldering half of them, then going on to other components before returning to finish the IC when it has had a chance to cool. Stripboard and Veroboard does not like being

heated excessively. Be very careful when soldering on stripboard. It is quite easy to overdo the solder and bridge (short) between strips. If you do this, bear in mind that these boards are made from resin bonded paper and the material does start to distort, blister and blacken if you overheat it. The track material is also prone to coming unstuck if you are forced to resolder or

remove components more than once.

Some connectors (especially basic phono and jacks) have plastic centre insulators that melt VERY easily. The tip here is to plug the connector into a mating socket before soldering. This not only acts as a helpful third hand, but supports the centre pin as the plastic holding it softens. It also helps to drain the heat away before the plastic melts completely. Don't unplug it before it has cooled!

## Health and Safety.

Just a brief note about health considerations. Solder is not very user friendly. It is 40% Lead, which gradually builds up in the body if ingested until toxic effects result. Handling solder is fairly safe, but don't nibble at it thoughtfully whilst contemplating your project! Wash your hands after soldering, especially if stopping for a bite to eat. Lead also vaporises into the fumes generated when you are soldering, so avoid inhaling the flux smoke. Just to add insult to injury, the flux fumes in the smoke are also none too healthy and have been shown to have carcinogenic properties with long term exposure. Work in a well ventilated room and avoid breathing the fumes. Use a fan or, better still, a filtered fume extractor such as our BN90X, which will remove most particulates if the filter is changed regularly (BN91Y). Careful with that hot soldering iron! Quite apart from burnt and blistered fingers, many plastics produce choking and harmful gases when melted and burned and it is all too easy to concentrate on the area where the tip is, only to burn something with the rest of the iron.

This brief guide has only scratched the surface of the art of soldering and the products available. There are specialised soldering irons such as the Antex Pipemaster (YP01B), designed to solder central heating / plumbing pipes, soldering iron kits, 12 Volt soldering irons for car use, solder pots for melting pellets, special shaped tips, solder creams and flux dispensers for reworking conventional components and surface mount devices. 60/40 solder is available by the reel, as well as in short lengths or in dispensers. Solder with higher or lower melting points is also available, as are solder pellets and bars.

"Practice makes perfect" as the old saying goes and it's never been truer than with soldering technique. It is very much a skill that comes with practice, once you have the right equipment for the job. It goes without saying that your new Maplin/MPS catalogue has all of the soldering equipment you will ever need and that our Technical Sales staff are only a phone call away should you wish to discuss your soldering requirements and need some help in making the right choice.



# The Maplin Guide to...

## HOME SECURITY

By Mark Brighton

Home security is a subject close to many peoples minds. As the years go by we all build up collections of valued possessions.

Insurance is all very well, but it won't replace those items with sentimental value taken without thought or broken without purpose, or make you feel any better about the intruders who have violated your home. If you can stop them getting in, you have protected more than a house full of possessions. You have protected your family's way of life.

It need not cost much to protect your home (look at YS01B)

You do not have to be an expert to fit a security system.

If you can wire a three pin plug, you can learn how to fit a burglar alarm.

You have one initial choice to make, that of a hardwired system, or a wireless system that uses low power radio circuits to connect the sensors to the main alarm unit. Each system has its own features and benefits, but may also have installation requirements that could affect your choice of system

Features and benefits compared;

### Hardwired alarm systems

Hardwired alarm systems such as our YS03D rely on simple switching circuits to operate, so they are easy to understand.

They do not need complex electronics, so they can be inexpensive to buy.

They run from one main power supply, so they do not need several batteries changing periodically.

Wired alarm systems do not use radio signals, so their arm and disarm codes cannot be "cloned" by enterprising technological criminals.

### On the other hand;

Hardwired alarm systems need to have cables run from the main control panel to each window, door or motion sensor and there are a number of ways to connect them together for correct operation.

Care must be taken to keep the wiring well away from any place where burglars could tamper with it, disconnecting sensors from the system.

### Wireless Alarm systems

Wireless alarm systems like the versatile Fox Security CN10L have no cables connecting sensors to the main control panel, so they are easy to fit and do not create redecoration work.

Nearby sheds or garages may be covered with no cables needed.

They are controlled by convenient remote control units, with no complex disarm codes to remember.

### On the other hand;

Each sensor has its own battery and these must be monitored and changed periodically, but many

wireless control systems will let you know when a battery is getting low.

Wireless systems are not actually wireless. They need mains power supply wiring and usually have a wired external bellbox connection (except for the solar cordless kit YD44X).

With very specialised receiver/decoder equipment it is possible (though very unlikely) that transmitted arm and disarm codes may be grabbed and "cloned", or transmissions may sometimes be jammed so that the panel cannot receive sensor alarm signals.

However, most of this is of limited importance. No burglar alarm will be absolutely infallible, but any alarm that you fit will be a deterrent to potential intruders. If the bellbox is visible, it indicates that your premises are not going to be a pushover. If

So, in essence, all that you need to do is to fit sensors to each window or door that you wish to protect and wire a loop from the

panel, via each sensor in turn, back to the panel again. Wire in the mains supply and bell box and presto! Your home is secure. In practice, there is a bit more to it than this, but it is not too complicated.

### Sensors and Zones

The sensors connected to an alarm panel could all be wired up as described previously to a single pair of inputs on the control panel, but there are advantages to having several separate sets of input pairs (zones) covering different parts of the house. Firstly and most obviously, you can tell what part of the house the offending sensor is in if the alarm is triggered. This narrows down the search for signs of an intruder or an open window. Having several separate zones rationalises the wiring too, as you end up with several spurs of wire

running out from the (ideally centrally located) control panel to each part of the house instead of one huge loop that must pass through every room, upstairs and downstairs.

The use of separate zones allows you to "part arm" the system. At night, the lower floor could be armed, with upstairs bedrooms disarmed so that windows could be left open in summer and movement detectors do not trigger if you turn over in bed and so on.

In addition to the zones you use to run sensors from separate parts of the house, there are often extra zones dedicated to special functions. The anti tamper or 24 hour zone will be triggered if anyone attempts to dismantle the control panel, the bell box, or any of the sensors connected to the system, whether the alarm is armed or not. Likewise you may fit a panic button to this zone near to the

front door which will trigger the alarm instantly when pressed.

One zone, usually connected to the front or back door, is called the "Entry / Exit Zone". This zone is fitted with (often programmable) time delays which allow you to leave the house having set the alarm, as well as allowing (say) 30 seconds for you to disarm the alarm upon entry detection before firing the sirens.

Some panels (such as our XP02C) have a dedicated fire zone for heat sensors or smash panels, which is a 24 hour zone with outputs for a separate fire siren.

Apart from the magnetic sensors already mentioned, the other main choice for coverage of a room is the Passive Infra-red Detector, or PIR (such as DM12N). This is a motion detector that works by sensing moving body heat in its field of view. Of course, by this time the intruder is inside your home, so you may wish to use window sen-



intruders do trigger your alarm, the resultant ear splitting din should see them off before they ever set foot inside your home, as well as alerting your neighbours that something is amiss.

Let us take a look in more detail at each of the systems, the sensors and the work involved in fitting them.

### Hardwired systems

As the name suggests, hardwired systems rely on wired inputs to inform the main control panel what is going on in your home. The most fundamental part of a wired alarm system is the closed loop. This simply means that, all being well, the control panel expects to see a short circuit between two sense terminals. It passes a signal to one end of the loop and expects to see it come back at the other. If any door or window fitted with a sensor is opened, a magnetic switch in the sensor opens and the loop is broken.

sors as well. A PIR is not triggered by moving curtains or lights being switched on, nor by slowly changing heat sources like a radiator or storage heater, but pets may trigger the sensor. Special lenses that look up away from the floor are available (use AG82D pet lens with PIR AG81C), but cats with a tendency to run up the curtains may well cause problems!

One very useful variation on the standard PIR is our code (CP98G) which combines a smoke detector with a passive infra-red detector (separate outputs) to convert your burglar alarm system into a very effective fire alarm too.

The various sensors fitted to a burglar alarm system are wired to each other and to the control panel using either four wire (PA77J) or six wire cable (PA7N). You may use a single reel of the six way cable for the whole installation if required, leaving the spare wires unconnected.

Door and window switch sensors generally require a four wire connection. One pair of wires are connected to the incoming and outgoing closed loop wires. This pair will be shorted by a magnetic switch when the window or door is closed (a magnet mounted on the door / window will be in close proximity to the switch), and opening the door will result in the switch opening the loop. In addition to the zone loop pair, another pair of anti tamper wires are fitted to each sensor. This pair is also shorted under normal conditions by a switch that is held in place by the screws securing the sensor casing. If the screws are removed, the anti tamper loop will be broken and the panel will fire the sirens.

Six wire connections are required for any sensor that needs a power supply. Passive Infra-Red sensors use the third pair of wires to obtain their 12 Volt DC supply from the panel. Most bell boxes also require a six wire connection.

Apart from the magnetic switched sensors and PIR's already described, there are a few special sensors which may be fitted to a security system. Glass break detectors and motion or shock sensors based upon trembler switches protect against entry via broken windows and photoelectric beam break sensors will trigger the alarm if an intruder crosses a certain point.

## Wireless systems

The zone arrangement on a wireless system is much the same as with a wired one, with several separate zones to cover different area and a 24 hour "Panic" and anti tamper zone. The obvious difference is that the sensors within a zone do not need wiring together and usually identify their zone number to the panel by transmitting a digital code to the receiver which includes the zone number.

The same magnetic switch sensor system is used for windows and doors, which may need some wiring to the sensor / transmitter unit. You would in any case probably wish to wire several magnetic switches to one sensor (for a large window with several casements), plus perhaps a door switch, all in one room.



PIR's are the easiest sensors to fit as they need no wired connections whatsoever. Simply set the internal switches to indicate which zone the sensor belongs to, connect the battery and fit the unit about two metres up on the desired wall.

## Remote monitoring of your system

It is also possible to add a remote monitoring station to your burglar alarm that will phone pre-programmed telephone numbers to warn that the alarm has been activated. The new Arms 3 subscriber unit (MT99H) will phone a professional monitoring service that will in turn dial out to one of four chosen contact numbers and warn you of the alarm activation. The system also allows you to listen to an audio recording from your property of the 20 seconds prior to the alarm being activated, as well as 10 seconds after activation. Should the system be triggered by accident, it is possible to disarm it from your home using a standard tone dial phone, after monitoring the recording locally. Extension microphones (MU43W) and loudspeakers (MU44X) are also available.

The annual subscription to this service is at one of three levels. The 3 Star service is as described above, notifying subscribers of Intruder, Fire or Personal Attack (provided the unit is connected to a burglar alarm system with separate outputs for those conditions) with monthly test calls being made to check the system (premium rate line, 75 seconds). The 4 Star service adds notification of rising freezer temperature, frozen pipes and water leaks (if the optional sensor pack (MU41U) is fitted

and wired to the subscriber unit). The top of the range 5 Star service adds electrical ring main failure, and monitoring for gas and carbon monoxide leaks to the other monitoring services (once the extra sensors / detectors (MU42V) have been fitted).

## General considerations

All of the sensor power supply and sensor loop wiring on modern burglar alarm systems is low voltage and poses no shock hazard provided the control panel has been properly fitted. The control panel of mains operated systems will need wiring into a separate fused unswitched spur from your mains supply. Follow the instructions provided with each panel for details of mains wiring and earth connections. The 12 Volt auxiliary supply wired to powered sensors and the bell box is fused or current limited within the panel. Note that working on a system with power applied risks shorting the auxiliary supply and blowing the fuse. If all PIR's stop working, this is the most likely cause.

The power supplies in mains operated systems are backed up by rechargeable batteries, so that your home will still be protected in the case of a power cut or if the supply cable is tampered with.

Likewise, most bell boxes have a rechargeable battery within them, making it very difficult for a burglar to disable the system. Cutting the lead to the bell box (which should in any case not be accessible from the outside of the premises) will result in the bell box sounding until its internal battery is discharged. Note that bell boxes such as our YS09K normally sound only for a predetermined period (usually up to 30 minutes) as required by legislation. Many alarm control panels have a separate output which remains switched on indefinitely after the alarm is triggered and this is usually connected to a strobe beacon on the bell box so that you may see upon return to your home that the system has triggered.

The battery back up and anti tamper system does mean that alterations or additions to the system cannot be accomplished by simply switching off the power and opening the case, as the bell box will sound continuously until power is restored. It will be necessary to climb up to the bell box and temporarily disable it whilst working. Nearby lightning strikes during thunderstorms sometimes set off alarm systems, which will occasionally need to be completely reset to stop their sirens. The mains power supply in some country areas is none too reliable and momentary drops or spikes in the supply may also trigger the alarm. It is possible to fit a mains filter to the supply to reduce the effect of a noisy supply.

Take a good look at the system kits and burglar alarm accessories featured in the "Security, Safety and Warning Devices" section of your new Maplin MPS catalogue. If you have any questions, or would like to discuss installation of a security system in your home with our trained technicians, please feel free to call our Technical Helpline on 01702 556001 for a prompt and courteous service.



# The Maplin Guide to...

## UPGRADING PC's

By Mark Brighton

They say that time and tide wait for no man and the world of PC's certainly never stands still.

Chances are that "State of the Art" machine you bought two or three years ago won't even run half the latest games now, and some of the new office programs run so slowly you might as well have written that report in longhand! But all is not lost. It is nowhere near as difficult to upgrade your PC as you may have imagined. Note that this guide is not written with the beginner in mind, but is intended to help those who have used a PC for some time and are considering upgrading their machines for better speed and capacity.

How much of an upgrade you wish to consider is very much up to you. For very little outlay, you may add extra RAM in the form of an extra 8 Meg (NT04E for 72 pin EDO, AR20W for 72 pin standard), 16 Meg (NT05F for 72 pin EDO) or even 32 Meg SIMM (NT06G for 72 pin EDO) to an existing system and gain a considerable speed increase. If your system uses 30 pin SIMM's, we can still supply the 4 Meg x 9 (ZG55) at time of writing. Older systems based on slower 486 processors may be modestly upgraded at next to nothing prices to use the fastest of the 486 chips such as a DX4 or an "Overdrive" Pentium adapter, or you may decide to bring your computer right up to date by fitting a new motherboard and Pentium processor. Before getting carried away with PC specifications and their complexities, take a moment to examine your system to assess what you have now. Then you are in a position to decide what sort of upgrade is worthwhile.

### Looking back at the AT's

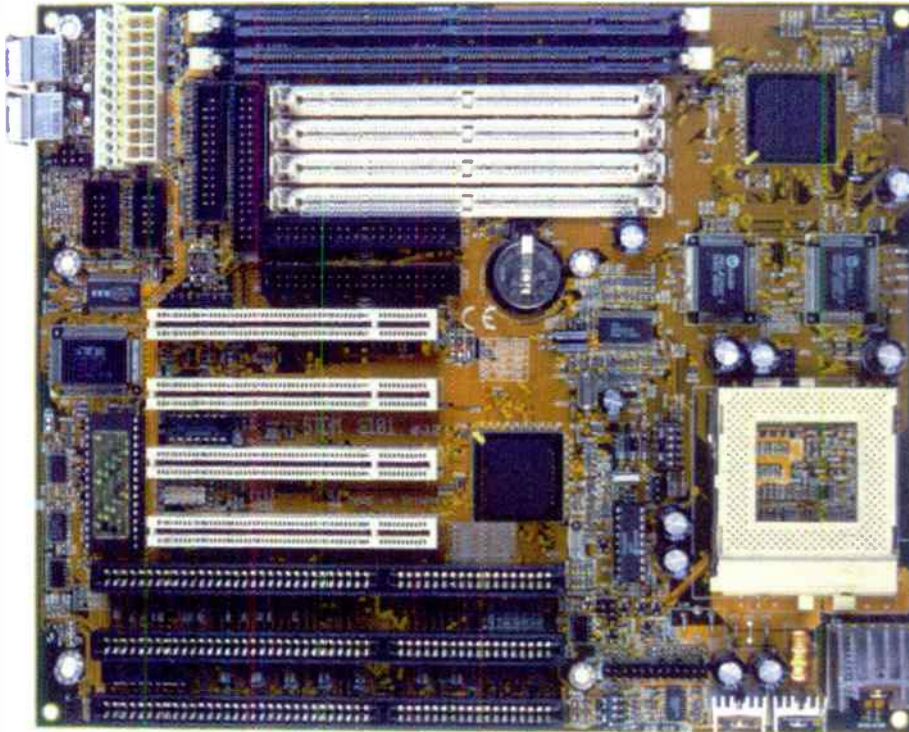
Some of you may just have a 386 or even a 286 processor. If your motherboard is of a standard size and format in a full size desktop or tower case fitted with a 200 Watt power supply, you may be able to upgrade your PC to a modern standard, but it will not be easy. Older machines will need new motherboards with a Pentium processor fitted, but you will also find that your peripheral cards (VGA, IDE and so on have only an ISA interface (the black sockets with one long and one shorter part on the motherboard), whereas modern motherboards expect a PCI interface (shorter, denser single socket, usually white) in order to make full use of the speed of data transfer which is one of the main reasons for upgrading your machine in the first place.

Even if you change these cards the older VGA

monitors will not work at the faster SVGA refresh rates and you will not be able to use your original SIMM's (or, in the case of very old machines, SIP's) so will need new memory modules. Owners of pre 286 machines (IBM XT compatible) and non standard format PC's, such as older Amstrad or Compaq PC's, are best advised to sell or donate those machines to a worthy cause and start again.

### Back to the future

Some of the above will also apply to 486 based PC's, but to a lesser extent. The monitor of any PC bought over the past few years should be SVGA compatible (check for non interlaced (NI) refresh at 1024 x 768 mode). Users of motherboards



purchased within the past three years or so will probably have already fitted the more modern 72 pin SIMM's, which will be usable in new Pentium motherboards (until they are only supplied fitted with the latest DIMM standard sockets). If you still use 30 pin SIMM's, you will have to buy new memory modules, but you should be pleasantly surprised at the fall in prices. A 16 Meg 72 pin SIMM is now half the price an 8 Meg SIMM was just a year ago. Twice the memory for half the price!

If you should need a new monitor, the JT31J 15 inch colour monitor from CTX provides a useful increase in clarity over the 14 inch screens supplied with many older PC's at relatively little extra cost. The other item you will need to upgrade (unless you already have a fast PCI bus based graphics card) is your old ISA VGA or SVGA graphics card. If your present motherboard is fitted with

any VESA local bus cards (they plug into a long black ISA connector in line with a brown high density connector), they will

unfortunately not be suitable for use in a Pentium motherboard upgraded system.

### Bits and PC's

Where does this leave you? With a longer or shorter shopping list depending how modern your existing system peripherals are, but the first main item you will want is a new motherboard.

There are three new motherboards featured in the latest Maplin MPS catalogue. Each of the boards is supplied in a standard size format, one of which should fit in most desktop cases with no problem (most cases have a variety of fittings to accept mounting stand offs in a number of positions).

Each of the motherboards has two built in EIDE interface ports for connection of hard drives and CDROM's, so that is one less plug in card you will need to replace. The motherboards also include all of the usual "Super I/O" functions (floppy drive (up to 2.88 MB connector, two 16550 compliant (fast) serial ports and parallel ports).

The new baby AT motherboard (LR84F) offers the best backward compatibility, having the same back panel / socket arrangement as any standard AT compatible machine, as well as having both the old standard power supply sockets and the newer ATX software power control sockets. It will support a whole range of modern processors up to the 233MHz Pentium MMX, but will also accept slightly more affordable but still

high performance processors such as the Crix P150+ (VL68Y) or P166+ (VL69A). Provided with 512K cache, supports up to 256MB DRAM (SIMM memory)

The ATX motherboard (LR85G) provides the same functions as the board described above, but brings the various serial and parallel connectors out at the back of the PC in the newer ATX format, with the keyboard and mouse connectors being in the mini-DIN PS/2 style. Provided with 512K cache, supports up to 256K cache, supports up to 256MB DRAM

The top of the range Pentium II based ATX motherboard (LR86T) also uses the updated ATX format but features an additional expansion slot for the Pentium II processor (up to 266MHz). Supports up to 512MB DRAM.

Three of the older ISA sockets are provided on each motherboard for older peripheral cards that

you do not wish to replace, as well as four PCI sockets. All of the new motherboards feature Flash BIOS, software power control, jumperless CPU installation via BIOS, PnP and IrDA IR function.

Just a few general notes on changing a motherboard. Make sure that the stand-offs from your old motherboard are fitted to the new one lining up with as many of the holes in the case as possible and remove any that don't. If any of the brass threaded pillars at the rear of the case do not align with corresponding holes (clear of PCB tracks) in the new motherboard, then remove them.

Note that SIMM's are a lot easier to fit before the motherboard is installed in the case, and will only fit one way around. There are sometimes rules about which bank should be filled first and some motherboards are fussy about fitting only the same size in adjacent banks etc. If in doubt, consult the manual that came with the motherboard. CPU's should also be fitted at this stage, lifting the lever on the CPU ZIF (Zero Insertion Force) socket before fitting the CPU (note correct orientation) and then pushing the lever down to grip the CPU. DO NOT handle the CPU or SIMM pins when fitting. Do discharge any static you may be carrying by momentarily touching a grounded object such as a radiator, before starting or, better still, wear an anti static wrist strap connected to ground.

**Safety Note:** Do not connect yourself directly to ground, especially when working with mains powered equipment, as this could easily cause a fatal shock if a fault condition occurs. An anti static wrist strap such as FE29G contains high voltage limiting resistors which will protect the user against shocks as well as protecting your PC from failure due to static damage.

## Motherboard settings

Some motherboards have complex sets of jumper links to set CPU type and supply voltage. You should get away with setting the type up incorrectly, but setting a 3 Volt processor up with a 5 Volt supply may result in a brief, but expensive, fireworks display. Do consult the motherboard manual (booklet) several times to ensure that you have set the supply voltage and other CPU links correctly. Alternatively, buy one of our new motherboards, which will allow you to set up the CPU type from within the BIOS program at power up.



Ensure that the power connectors are correctly connected to the new motherboard (the black wires on the older AT connectors should meet on the inside of the long power socket).

Although it may look a little daunting, the spaghetti of wiring to the switches and indicators is quite straightforward when taken bit by bit. Each group of pins on the motherboard is marked more or less clearly (and the booklet that comes with each motherboard usually helps here) and the consequences of connecting LED's or switches the wrong way around are not usually that bad. Just two things to look out for;

The loudspeaker connector on the motherboard has both +5V (or +3V) and 0V pins. Make sure you do not connect the PC speaker between them or you may damage the motherboard!

The Reset switch wiring is often on a three way plug which will go on to the motherboard reset pins (only two pins) either way around, leaving one wire unconnected. If you fit this the wrong way around, the PC will switch on with a blank screen, because it is reset all of the time except when the Reset switch is pressed. Simply swap the connector to the other pair if this happens.

Most of the other connections are simple common sense. If, upon power up, a LED doesn't light when you operate the associated switch, reverse the connector to the LED concerned.

Upgrading other parts of the system is usually very easy in these days of "Plug n Play", especially if you are using Windows 95, which tends to recognise new hardware upon power up and prompt

you for the necessary driver software. When you fit new boards (soundcards, modems, graphics cards and so on), ensure that you have definitely pushed the card fully home into the motherboard (never, ever try to do this with the power on). Try to keep the card square to the socket as you do this or you may lose the BIOS set up information and have to go through the set up again. Bear in mind that the power supply on a PC can deliver 20 Amps or more and shorting it out will burn PCB tracks on your motherboard to a crisp. These are sometimes between the top and bottom PCB layers and therefore not repairable. You have been warned!

## Fitting Disk Drives

Floppy drives and hard drives have to be wired up in a certain way to set A drive, B drive, Master and Slave and so on. Unfortunately, these are often provided with little or nothing in the way of installation instructions. Data cables may often be fitted either way around (but will only work one way). Look for Pin one on the controller card or motherboard, fit the stripe on the cable to this end of the connector and follow it through to pin 1 on the drives. If you cannot see which is pin one, the end of the connector nearest to the power socket is usually right.

Fitting a new hard drive such as the 3.0 GB Western Digital (KV49D) is now fairly simple. Any motherboard made since mid 1995 will have an autodetect hard drive facility within the BIOS, so those heads, cylinders and sectors no longer need to be entered manually. Jumper leads however, will need setting so that you have a master drive and a slave drive. Modern IDE CDRom drives complicate this further as they also need setting to master or slave. If you have an EIDE interface (which will also allow your motherboard to access hard drives larger than 528MB), you will have two IDE connectors, each of which may have a master and a slave drive connected.

If you do not have information on the jumper settings (especially for your older drive) and they are not printed on the drive, try the Internet for information. This also applies to other configuration information as the Internet is, among other things, a huge repository of technical information both old and new. Failing that, as always, our technical team are waiting for your call!



# The Maplin Guide to...

## GETTING ON-LINE

By Mark Brighton

It seems that everybody is talking about the Internet. You cannot open a newspaper or watch an evenings television without at least one mention of the "World Wide Web" or the ubiquitous "Super Information Highway". Even the adverts display almost subliminal flashes of web addresses for those with extraordinary memory retention skills while television programme presenters struggle with those awkward "BBC dot Co dot UK" E-mail addresses.

But what's it all about? If you have never "surfed the web" before, you have possibly been left cold by all the coverage (and hype) of the Internet. However, if you own a PC already or are considering buying one, it wouldn't cost the earth to add Internet access to your system, but it would give you access to information, pictures and sounds from all over the earth. Once you have bought and fitted a modem (which simply allows your PC to send and receive data over the phone line) you simply choose a service provider from the many that advertise Internet access (prices are still coming down and some are around £7.50 per month at the time of writing), load up some software and you are ready to go.

### Whats in it for me

The Internet is not just for computer buffs. There is plenty out there in "cyberspace" for you, no matter what your interests may be. It may be fairly said that the Internet is like a huge encyclopaedia, with no contents or index pages. Instead of looking at contents lists, you use one of the many "search engines" which allow you to type in any words relating to your interest.

Whether you are into American square dancing, tourism in Oxford, war memorials in France, finding lost or distant relatives whose ancestors may have been "transported" to the colonies, or even more obtuse or exotic subjects, it can be practically guaranteed that your search results will list tens, hundreds or (often) thousands of web documents containing your key words, sorted by relevance (or at least by how many times the search found your keywords in each document). Just click on the links displayed and off you go.

### Fun for all the family

If you have children at school, the Internet can provide pages of useful information to help them: with homework or special projects from, for example, pages about what life is like in Kenya (and charities such as Actionaid, who are working to improve the quality of life in Africa and third world countries worldwide, have very active and interesting web sites) to web sites dedicated to the latest in space exploration, such as the recent Pathfinder mission to Mars.

Children will be delighted by the number of web sites providing information about their interests,

with sites discussing virtual pets and their care and evolution where children from around the world can swap pet stories, sites about those Orcs, Goblins and Space Marines used in the latest miniature wargaming, sites about Barbie and Ken, or almost anything else you could imagine. Just a word of warning here. The Internet has always been based very much on free speech and free expression and contains a number of sites with what may be best described as "adult content". It is advised that you do not let children browse the web unattended, but get an idea what they plan to search for, or visit, in advance and check in on them from time to time. There are also third party programs which attempt to censor web access but they are not infallible and, as always, gentle supervision is the best course.

Anyway, enough about the generalities of the

those pages full of pictures to laboriously download from a remote Internet site. Some pages contain ten or more large pictures which all attempt to download at once resulting in a wait of several minutes before the page is complete.

There is just one more decision that you need to make before buying your modem and that is whether you want an internal modem card or an external boxed modem unit. Each has its pro's and con's. Internal units such as the Motorola 56K (KQ17T) neatly disappear inside your case, so there is one less box to clutter the place, and they contain their own fast UART (the chip which converts the parallel data used inside your PC to the serial data sent one bit after another down your phone line, and vice versa). They are also a little cheaper than external types as they don't need a separate power supply.

External modems on the other hand (such as the new Motorola KQ16S) are far easier to fit as you do not need to open up the case of your PC, but they do require that you have a fast serial port to connect them to (based on a 16550 UART, not an 8250).

Some diagnostic programs (such as MSD under DOS) will tell you which chip your serial ports are based upon, but most modem serial cards and motherboard ports will be fitted with the faster type anyway. External units are obviously rather more portable and are worth considering if you wish to go online from more than one machine, or if all your motherboard expansion slots are already filled. You will need an extra mains socket for the power supply though.

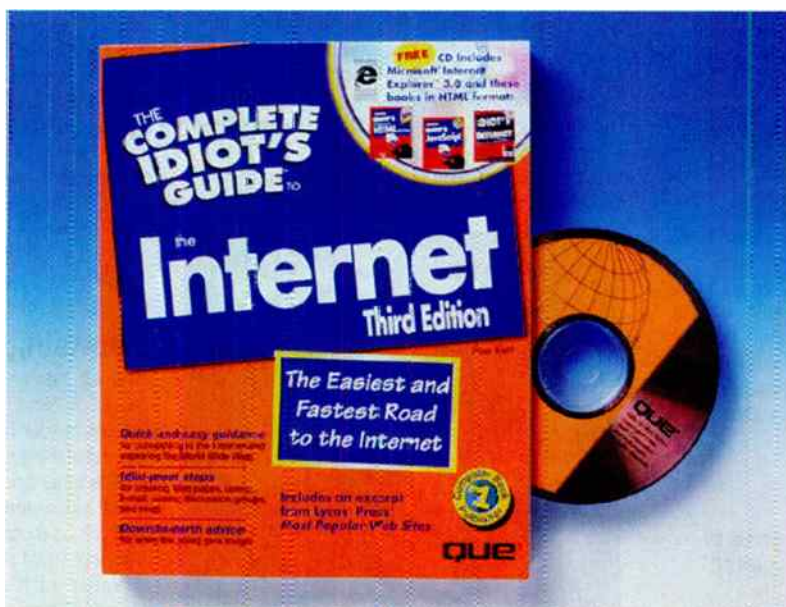
Whatever you choose, BD06G is a telephone extension line kit that will run a convenient phone / modem socket to your PC for all but the most palatial of residences. Don't forget to put your

service providers phone number on your "Friends and Family" list to save 10% on those long Internet sessions.

### What do I use?

Once you have fitted your new modem, you will need to load some software to make use of it. This subject is a little complicated and the setup of your machine to work with the new hardware may be a little difficult. Firstly, your modem may have come with software drivers for Windows / Win 95 on disk, which may be installed. Windows 95 should recognise the fact that you have fitted new hardware to your system (if the modem is external, make sure it is switched on before you boot up) and prompt you through the set up sequence. Beyond this basic driver set up, the software you will use depends on your choice of service provider.

If you have chosen to subscribe to one of the non standard service providers such as Compuserve or America On Line (AOL), who do not connect you



Internet. Let us take a closer look at what you will need to get on line.

### The nuts and bolts of it

The various service providers are now generally offering country wide local access numbers at baud rates (connect speeds) of 28.8K Baud. This is (roughly) equal to 2.8K bytes per second when downloading and is the absolute minimum speed you should consider when buying a modem. 33.6K modems are available at much the same price as 28.8K ones and allow some degree of future proofing. For really snappy results, the latest 56K modems will allow speeds far in excess of what is possible at the moment once the service providers fit the equipment necessary to transmit at these speeds. In the meantime, the faster modems will automatically shift down to the fastest speed possible with your service provider, upon connection.

It really is worth buying the fastest modem you can afford, as you will realise when you sit waiting for

directly to the Internet but let you look at it through their gateway, you will need to run the software they provide to do that. For example, Compuserve subscribers run a program which in turn runs a special dial up and connect program that dials your local Compuserve node (access number) and then provides the log on and password information in the protocol that the Compuserve host machine expects before passing you to a menu program giving you access to a number of themed areas within Compuserve. Note that whilst browsing these areas you are not connected to the Internet as such, but to the alternative Compuserve network of computers. Clicking on the Internet button within this program then passes control to a special web browser program giving you a filtered access to the Internet.

On the one hand, this sort of access may be set up very easily. The CD supplied installs all of the (Windows based) software you will need and provides a number of configuration screens to fill in your logon and preference information. It is all rather non standard however. The programs you use are different from those used by other Internet subscribers, the E-mail addresses tend to be different in format, so you may find that many of the articles in the many Internet magazines do not directly apply to your set up.

If you choose to subscribe with a straightforward Internet only service provider, you may install their own suite of programs, such as the Demon Tumpike software, or you may use the programs supplied with Windows 95, or use some third party software. The most popular web browser packages, such as Microsoft Internet Explorer (supplied with later versions of Win 95), Netscape Navigator and NCSA Mosaic all work in a fairly similar way once you are connected.

## DUN Roamin'

The actual dial up, connection and log on is taken care of by Windows Dial Up Networking (DUN) software, which you may set up from My Computer and Control Panel in Win 95. This does require some patience but, once done, also allows you to set up Microsoft Mail / Microsoft Fax so that you may use your PC as a fax machine. Once set up, Microsoft Fax then becomes a printer option for any Windows application that can print, allowing you to send faxes quickly and easily using the Fax Wizard.

The long and short of all this is that, having purchased your modem and paid for your subscription to an Internet service provider, all of the software you will need for Internet web access, E-mail and general Fax use will be found on your Windows 95 system. Some of these options may not have been installed when Win 95 was set up on your system, but you may add them using Control Panel, Add/Remove Programs, under the Windows Setup tab. This will give you a list of Windows components that contains check boxes at the start of each line. Dial up networking will be found under communications, Microsoft Exchange and Microsoft Fax will both need checking if not already installed.



## State your preferences

You may choose to use the Microsoft Internet Explorer browser provided with later versions of Windows 95, or to use a browser such as Netscape Navigator (freely available on many magazine cover CD's). Either way, you will need to run the browser for the first time and set up the general preferences and details such as the E-Mail incoming and outgoing mail server names, the news server name and so on. These details will be given to you by your service provider. In addition to this, you will need to set up your networking options to add the TCP/IP data



exchange protocol before setting up your dial up adaptor from My Computer, Make New Connection. This will allow you to set up the program that dials your service provider and logs on to them. Note that some versions of Windows 95 will be able to do this automatically, having a suitable log on script built in, but others cannot. You must



enter your Internet Protocol (IP) address and your service provider IP address(es) within the Properties screen (right click on DUN icon created), via "Server Type" and "TCP/IP Settings". Choose "Specify" options and fill in the IP address numbers, which will have been given to you by your service provider.

Once you have set up your DUN connection, you may click and drag it across to the Desktop to create a shortcut, next to the icon for your chosen browser. Click on the shortcut to begin and your modem should dial out and connect to the remote server after an initial burst of whistling and data hiss.

## Logging on to the net

If the log on process presents you with a small terminal screen prompting you for log in name, password and protocol or similar, it is because the script run has not produced the expected result and error trapping has caused the system to revert to a manual log on. Enter the information as prompted and click on "Continue". If you get an error message such as "No Protocol", then you have not got the DUN or networking details set correctly.

If all of this proves too much, you may use programs such as the Tumpike software available from Demon (for access via that provider) which greatly simplify set up, but sometimes cause problems, particularly if you are also using a cabled network to link with other PC's, as they do replace or modify some standard Win 95 network files required by other networks.

## Browsing around

You will then need to run your favourite browser program. Note that you may be able to run several copies of your browser at once, should you wish to set something downloading on one browser, switch to the other and browse elsewhere (albeit slowly) while it downloads. This does slow things down, but not as much as you might think.

No one would pretend that the Internet is fast. Some of the more popular servers are under a continual strain due to weight of numbers accessing them at any one time. Service providers are struggling to keep up with the huge exponential increase in demand. The result of this is that the transfer rate of data from a given remote site is often considerably less than the theoretical maximum that your link to your local service provider could handle. Running two browsers at once sometimes gives a more effective combined bandwidth and does give you something to do if access to a site is slow.

That is about all that can be covered in this brief guide. The books section of this catalogue contains several books which are very useful to those venturing onto the Internet for the first time. The "Netscape Internet Navigator Assistant" is a concise reference to one of the most popular browsers. "The Complete Idiots Guide to the Internet" (NQ61R) covers everything you will need to know about getting started. It does all seem a little daunting at first, but confidence will only be gained by going on-line. If you do need help, try E-mailing [technical\\_sales@maplin.co.uk](mailto:technical_sales@maplin.co.uk) or, if you can't manage that, phone us on 01702 556001.

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WZ501 126	1	8.90	8.90	8.90	XMS95 717	1	0.50	8.90	8.90	XMS95 717	1	0.50	8.90	8.90	XMS95 717	1	0.50	8.90	8.90
WZ511 126	1	8.90	8.90	8.90	XMS96 717	1	0.50	8.90	8.90	XMS96 717	1	0.50	8.90	8.90	XMS96 717	1	0.50	8.90	8.90
WZ521 126	1	8.90	8.90	8.90	XMS97 717	1	0.50	8.90	8.90	XMS97 717	1	0.50	8.90	8.90	XMS97 717	1	0.50	8.90	8.90
WZ531 126	1	8.90	8.90	8.90	XMS98 717	1	0.50	8.90	8.90	XMS98 717	1	0.50	8.90	8.90	XMS98 717	1	0.50	8.90	8.90
WZ541 126	1	8.90	8.90	8.90	XMS99 717	1	0.50	8.90	8.90	XMS99 717	1	0.50	8.90	8.90	XMS99 717	1	0.50	8.90	8.90
WZ551 126	1	8.90	8.90	8.90	XMS100 717	1	0.50	8.90	8.90	XMS100 717	1	0.50	8.90	8.90	XMS100 717	1	0.50	8.90	8.90

Sales Tel: 01702 554000 • Fax: 01702 554001 • Technical Helpline: 01702 556001

**PLEASE NOTE: ORDER QUANTITIES - PRICES EACH ARE SHOWN. PLEASE REFER TO THE RELEVANT CATALOGUE PAGE FOR DETAILS ON ORDER QUANTITIES AND PACK SIZES.**

Order Code	Qty	Price each	Price each inc VAT	Order Code	Qty	Price each	Price each inc VAT	Order Code	Qty	Price each	Price each inc VAT	Order Code	Qty	Price each	Price each inc VAT
XU121 705	1+	0.800		XU11M 778	1+	0.800		YD66A 1195	1+	31.480	6+	YD66A 1195	1+	31.480	6+
XU122 730	1+	0.800		XU12M 778	1+	0.800		YD66B 868	1+	0.800		YD66B 868	1+	0.800	
XU123 742	1+	0.800		XU13P 742	1+	0.500		YD66C 868	1+	0.500		YD66C 868	1+	0.500	
XU125 741	1+	0.800		XU17T 741	1+	0.500		YD66D 868	1+	0.500		YD66D 868	1+	0.500	
XU129G 699	1+	0.800		XU18U 741	1+	0.800		YD66E 868	1+	0.800		YD66E 868	1+	0.800	
XU131 746	1+	0.800		XU19V 735	1+	0.800		YD66F 868	1+	0.800		YD66F 868	1+	0.800	
XU132K 709	1+	0.800		XU20W 731	1+	0.800		YD66G 868	1+	0.800		YD66G 868	1+	0.800	
XU133L 709	1+	0.800		XU25C 731	1+	0.800		YD66H 868	1+	0.800		YD66H 868	1+	0.800	
XU134M 726	1+	0.800		XU26D 742	1+	0.800		YD66I 868	1+	0.800		YD66I 868	1+	0.800	
XU138R 703	1+	0.800		XU27E 767	1+	0.800		YD66J 868	1+	0.800		YD66J 868	1+	0.800	
XU139R 703	1+	0.800		XU29K 706	1+	0.500		YD66K 868	1+	0.500		YD66K 868	1+	0.500	
XU140T 747	1+	0.800		XU29R 732	1+	0.500		YD66L 868	1+	0.500		YD66L 868	1+	0.500	
XU142V 751	1+	0.800		XU29S 768	1+	0.800		YD66M 868	1+	0.800		YD66M 868	1+	0.800	
XU143W 702	1+	0.800		XU29T 762	1+	0.500		YD66N 868	1+	0.500		YD66N 868	1+	0.500	
XU144X 707	1+	0.800		XU29V 749	1+	0.500		YD66O 868	1+	0.500		YD66O 868	1+	0.500	
XU145Y 700	1+	1.000		XU29W 751	1+	0.500		YD66P 868	1+	0.500		YD66P 868	1+	0.500	
XU146A 700	1+	1.400		XU29X 566	1+	0.500		YD66Q 868	1+	0.500		YD66Q 868	1+	0.500	
XU149D 719	1+	0.800		XU29Y 566	1+	0.500		YD66R 868	1+	0.500		YD66R 868	1+	0.500	
XU150E 702	1+	0.800		XU29Z 566	1+	0.500		YD66S 868	1+	0.500		YD66S 868	1+	0.500	
XU153H 699	1+	0.500		XU29AA 566	1+	0.500		YD66T 868	1+	0.500		YD66T 868	1+	0.500	
XU154J 702	1+	0.500		XU29AB 566	1+	0.500		YD66U 868	1+	0.500		YD66U 868	1+	0.500	
XU155L 730,746	1+	0.800		XU29AC 566	1+	0.500		YD66V 868	1+	0.500		YD66V 868	1+	0.500	
XU156A 708	1+	0.500		XU29AD 566	1+	0.500		YD66W 868	1+	0.500		YD66W 868	1+	0.500	
XU163V 770	1+	0.500		XU29AE 566	1+	0.500		YD66X 868	1+	0.500		YD66X 868	1+	0.500	
XU166W 703	1+	0.250		XU29AF 566	1+	0.250		YD66Y 868	1+	0.250		YD66Y 868	1+	0.250	
XU168Y 713	1+	0.800		XU29AG 566	1+	0.250		YD66Z 868	1+	0.250		YD66Z 868	1+	0.250	
XU169A 752	1+	0.800		XU29AH 566	1+	0.800		YD66AA 868	1+	0.800		YD66AA 868	1+	0.800	
XU171N 748	1+	0.800		XU29AI 566	1+	0.800		YD66AB 868	1+	0.800		YD66AB 868	1+	0.800	
XU174R 719	1+	0.800		XU29AJ 566	1+	0.800		YD66AC 868	1+	0.800		YD66AC 868	1+	0.800	
XU177J 714	1+	0.800		XU29AK 566	1+	0.800		YD66AD 868	1+	0.800		YD66AD 868	1+	0.800	
XU180S 759	1+	0.800		XU29AL 566	1+	0.800		YD66AE 868	1+	0.800		YD66AE 868	1+	0.800	
XU181C 716	1+	0.800		XU29AM 566	1+	0.800		YD66AF 868	1+	0.800		YD66AF 868	1+	0.800	
XU182D 780	1+	0.800		XU29AN 566	1+	0.800		YD66AG 868	1+	0.800		YD66AG 868	1+	0.800	
XU187U 794	1+	1.200		XU29AO 566	1+	1.200		YD66AH 868	1+	1.200		YD66AH 868	1+	1.200	
XU188V 796	1+	0.800		XU29AP 566	1+	0.800		YD66AJ 868	1+	0.800		YD66AJ 868	1+	0.800	
XU189W 740	1+	0.800		XU29AQ 566	1+	0.800		YD66AK 868	1+	0.800		YD66AK 868	1+	0.800	
XU191Y 744	1+	0.800		XU29AR 566	1+	0.800		YD66AL 868	1+	0.800		YD66AL 868	1+	0.800	
XU193A 767	1+	0.800		XU29AS 566	1+	0.800		YD66AM 868	1+	0.800		YD66AM 868	1+	0.800	
XU194C 783	1+	0.800		XU29AT 566	1+	0.800		YD66AN 868	1+	0.800		YD66AN 868	1+	0.800	
XU196E 777	1+	0.800		XU29AU 566	1+	0.800		YD66AO 868	1+	0.800		YD66AO 868	1+	0.800	
XU198A 704	1+	0.800		XU29AV 566	1+	0.800		YD66AP 868	1+	0.800		YD66AP 868	1+	0.800	
XU197F 777	1+	0.800		XU29AW 566	1+	0.800		YD66AQ 868	1+	0.800		YD66AQ 868	1+	0.800	
XU200A 704	1+	0.800		XU29AX 566	1+	0.800		YD66AR 868	1+	0.800		YD66AR 868	1+	0.800	
XU207M 751	1+	0.500		XU29AY 566	1+	0.500		YD66AS 868	1+	0.500		YD66AS 868	1+	0.500	
XU210M 701	1+	1.200		XU29AZ 566	1+	1.200		YD66AT 868	1+	1.200		YD66AT 868	1+	1.200	
XU212N 701	1+	0.800		XU29BA 566	1+	0.800		YD66AU 868	1+	0.800		YD66AU 868	1+	0.800	
XU213P 747	1+	0.800		XU29BB 566	1+	0.800		YD66AV 868	1+	0.800		YD66AV 868	1+	0.800	
XU214Q 741	1+	0.800		XU29BC 566	1+	0.800		YD66AW 868	1+	0.800		YD66AW 868	1+	0.800	
XU215U 711	1+	0.800		XU29BD 566	1+	0.800		YD66AX 868	1+	0.800		YD66AX 868	1+	0.800	
XU216 713	1+	0.800		XU29BE 566	1+	0.800		YD66AY 868	1+	0.800		YD66AY 868	1+	0.800	
XU217 726	1+	0.800		XU29BF 566	1+	0.800		YD66AZ 868	1+	0.800		YD66AZ 868	1+	0.800	
XU248 711	1+	0.800		XU29BG 566	1+	0.800		YD66BA 868	1+	0.800		YD66BA 868	1+	0.800	
XU260 709	1+	0.800		XU29BH 566	1+	0.800		YD66BB 868	1+	0.800		YD66BB 868	1+	0.800	
XU272 727	1+	1.000		XU29BI 566	1+	1.000		YD66BC 868	1+	1.000		YD66BC 868	1+	1.000	
XU295 710	1+	0.800		XU29BJ 566	1+	0.800		YD66BD 868	1+	0.800		YD66BD 868	1+	0.800	
XU304 722	1+	1.000		XU29BK 566	1+	1.000		YD66BE 868	1+	1.000		YD66BE 868	1+	1.000	
XU344M 707	1+	0.800		XU29BL 566	1+	0.800		YD66BF 868	1+	0.800		YD66BF 868	1+	0.800	
XU350 712	1+	0.800		XU29BM 566	1+	0.800		YD66BG 868	1+	0.800		YD66BG 868	1+	0.800	
XU369 757	1+	0.800		XU29BN 566	1+	0.800		YD66BH 868	1+	0.800		YD66BH 868	1+	0.800	
XU387 751	1+	0.800		XU29BO 566	1+	0.800		YD66BI 868	1+	0.800		YD66BI 868	1+	0.800	
XU44X 735	1+	1.400		XU29BP 566	1+	1.400		YD66BJ 868	1+	1.400		YD66BJ 868	1+	1.400	
XU46C 749	1+	0.500		XU29BQ 566	1+	0.500		YD66BK 868	1+	0.500		YD66BK 868	1+	0.500	
XU51F 749	1+	0.500		XU29BR 566	1+	0.500		YD66BL 868	1+	0.500		YD66BL 868	1+	0.500	
XU67A 767	1+	0.500		XU29BS 566	1+	0.500		YD66BM 868	1+	0.500		YD66BM 868	1+	0.500	
XU68Y 743	1+	0.800		XU29BT 566	1+	0.800		YD66BN 868	1+	0.800		YD66BN 868	1+	0.800	
XU69A 724	1+	0.800		XU29BU 566	1+	0.800		YD66BO 868	1+	0.800		YD66BO 868	1+	0.800	
XU70M 744	1+	0.800		XU29BV 566	1+	0.800		YD66BP 868	1+	0.800		YD66BP 868	1+	0.800	
XU71N 733	1+	1.000		XU29BW 566	1+	1.000		YD66BQ 868	1+	1.000		YD66BQ 868	1+	1.000	
XU74R 767	1+	1.000		XU29BX 566	1+	1.000		YD66BR 868	1+	1.000		YD66BR 868	1+	1.000	
XU78A 760	1+	1.000		XU29BY 566	1+	1.000		YD66BS 868	1+	1.000		YD66BS 868	1+	1.000	
XU77J 720	1+	0.800		XU29BZ 566	1+	0.800		YD66BT 868	1+	0.800		YD66BT 868	1+	0.800	
XU79K 789	1+	0.300		XU29CA 566	1+	0.300		YD66BU 868	1+	0.300		YD66BU 868	1+	0.300	
XU79L 767	1+	0.800		XU29CB 566	1+	0.800		YD66BV 868	1+	0.800		YD66BV 868	1+	0.800	
XU80S 716	1+	0.800		XU29CC 566	1+	0.800		YD66BW 868	1+	0.800		YD66BW 868	1+	0.800	
XU82E 739	1+	0.800		XU29CD 566	1+	0.800		YD66BX 868	1+	0.800		YD66BX 868	1+	0.800	
XU83E 724	1+	0.800		XU29CE 566	1+	0.800		YD66BY 868	1+	0.800		YD66BY 868	1+	0.800	
XU86T 757	1+	0.300		XU29CF 566	1+	0.300		YD66BZ 868	1+	0.300		YD66BZ 868	1+	0.300	
XU88M 720	1+	0.800		XU29CG 566	1+	0.800		YD66CA 868	1+	0.800		YD66CA 868	1+	0.800	
XU89Y 727	1+	0.800		XU29CH 566	1+	0.800		YD66CB 868	1+	0.800		YD66CB 868	1+	0.800	
XU938 378,723	1+	1.000		XU29CI 566	1+	1.000		YD66CC 868	1+	1.000		YD66CC 868	1+	1.000	
XU95D 715	1+	0.800		XU29CJ 566	1+	0.800		YD66CD 868	1+	0.800		YD66CD 868	1+	0.800	
XU96S 195	1+	3.950		XU29CK 566	1+	3.950		YD66CE 868	1+	3.950		YD66CE 868	1+	3.950	
XU97P 157	1+	25.500		XU29CL 566	1+	25.500		YD66CF 868	1+	25.500		YD66CF 868	1+	25.500	
XU98Y 192	1+	19.950		XU29CM 566	1+	19.950		YD66CG 868	1+	19.950		YD66CG 868	1+	19.950	
XU100 955,962	1+	1.000	25-	XU29CN 566	1+	1.000	25-	YD66CH 868	1+	1.000	25-	YD66CH 868	1+	1.000	25-
XU109 119,690	1+	6.000	25-	XU29CO 566	1+										









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Amplifiers	61	screened	227	Batten Lampholders	633	long screwdriver	1262
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On purchases of  
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Valid until 28th February 1998  
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## £10 off voucher

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On purchases of £200 or over from



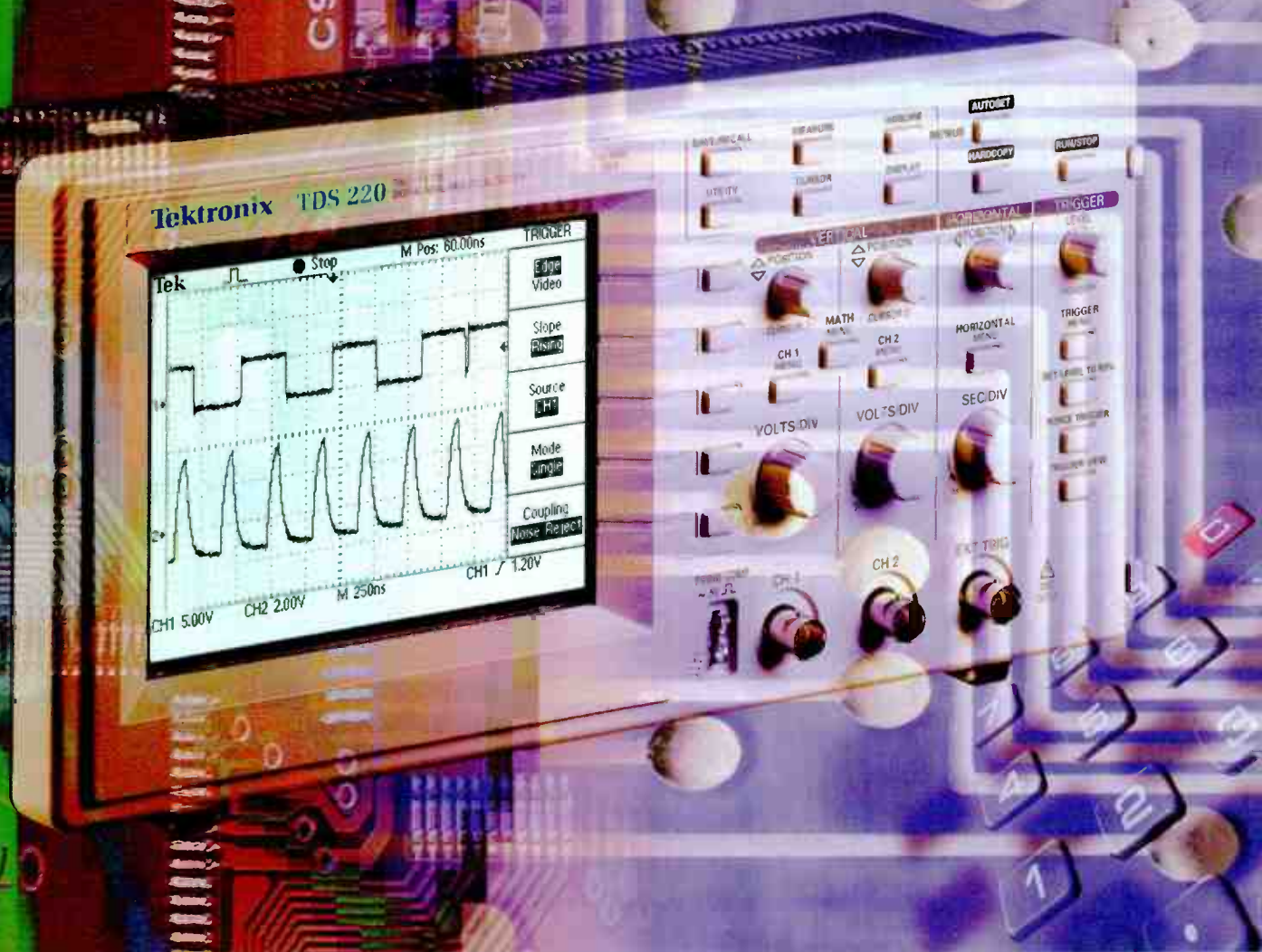


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The TDS 210 (Maplin Stock Code KV56L) & TDS220 (Maplin Stock Code KV57M) have set new standards in performance, functionality, portability and value.

- 1 Giga samples per second per channel
- Auto triggering
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- Automatic measurements
- Save and recall waveforms
- Maths functions
- Crisp LCD display

**The compact design that saves space without compromising screen size**



## A. UNITED KINGDOM

All orders and contracts for the sale of goods are accepted by Maplin Electronics PLC ('the Company') on these Terms and Conditions which supersede any previously published terms in this, or any previous catalogue, or elsewhere.

### 1. Offers and Acceptance

No obligation shall arise as a result of a catalogue entry, quotation or any other offer until the Company accepts an order from the person, company, or other organisation with whom the sale or supply of products is conducted ('the Purchaser').

In the event of any inconsistency between the Company's and Purchaser's terms and conditions, the Company's terms and conditions of sale shall prevail unless, and until, variation by express agreement is accepted in writing by both parties.

### 2. Orders

Where possible, orders should be made using the Company's order codes and order form. Please make a note of your customer number and/or account number and quote them on all orders. Products are supplied as shown in the Company's latest catalogue, unless the product has been superseded. Telephone orders will only be accepted on account when a purchase order number is given. Confirmation orders are not required, but if they are sent they must be marked "Confirmation Only". Failure to mark written confirmation orders could result in duplicate deliveries and in such case the Purchaser will be liable for the full purchase price, or alternatively, be subject to the Company's returns procedure.

Purchasers wishing to purchase goods on account at a Maplin Store will be required to provide a suitable purchase order. This procedure is also required when a previous telephone order has been made.

Prices and delivery for items covered by scheduled orders need to be made in writing and are strictly in accordance with the terms quoted by the Company and accepted by the Purchaser. Any variation in delivery requirements may be subject to price alteration. The Purchaser will be liable for any stocks held against an order at the end of the contract period.

Schedules will only be accepted when each shipment exceeds £25. Pro-forma invoices and quotations are available from the Company upon request.

### 3. Prices

The Company reserves the right to alter prices at any time, without prior notice. In general, prices are reviewed every six months, at which time some prices may change. The price charged for all goods will normally be that ruling at the date of acceptance of the order. All prices are subject to Value Added Tax (VAT) at the relevant rate ruling on the date of despatch.

### 4. Carriage:

Carriage is free for Maplin MPS Business Account customers. All non-account orders over £25.53 plus VAT or £30.00 inc VAT are sent free of carriage charges. Orders from non-account customers less than £25.53 plus VAT or £30.00 including VAT will attract a small order charge of £2.51 plus VAT or £2.95 including VAT. Orders received by 5pm will normally be despatched the same day. Guaranteed next day deliveries (before noon) are available for all of the UK mainland (excluding Scottish Highlands). Full details of all guaranteed delivery services are shown in the introduction to the Company's catalogue.

### 5. Payment

(a) Terms of payment are strictly cash with order unless a credit account has been established with the Company.

(b) Where a credit account has been established with the Company, payment must be made within 30 days of each delivery, whether the goods delivered are the whole order or only part shipment.

(c) The Company reserves the right to suspend deliveries where payment is not received in accordance with paragraph (b) of this clause, or in accordance with any alternative arrangement which has been agreed in writing between the Company and the Purchaser. In such case, the Company reserves the right to charge interest on the unpaid amount from 30 days after the invoice date at a rate of 4% above the current London Inter-Bank Borrowing Rate (LIBOR) per annum.

### 6. Back Orders

Any subsequent deliveries to complete an order will be despatched as soon as the item becomes available. Charges are only made when goods are despatched. The Company reserves the right to cancel any outstanding items in the event of unforeseen circumstances.

### 7. Order Cancellation

Cancellation of Purchaser's orders can only be accepted after prior negotiation and agreement – but, in any case within 30 days of despatch. On no account can cancellation be accepted for items ordered specially on the Purchaser's behalf. In the case of any default, the Purchaser shall be liable to compensate the Company for any partly finished products, stock or materials and tools held for the manufacture or supply of such goods.

If the Company agrees to accept cancellation, part-cancellation or return of an order for catalogued items, a charge of 20% of order value will be made subject to a minimum charge of £2.

The Company reserves the right to impose a back billing charge for part-cancellation if the reduction in quantity affects the unit price.

### 8. Non-Delivery and Returns

No goods may be returned to the Company without prior written consent, unless they were sent in error by the Company or received by the Purchaser in a damaged or faulty condition. The Purchaser shall give the Company reasonable opportunity to examine the goods in respect of which any claim for damages is made. If the company agrees to accept the return, a charge of 20% of order value will be made subject to minimum charge of £2.

It is the Purchaser's responsibility to ensure that returned goods are received in as-new condition. This includes all associated packaging and literature. Appropriate precautions must be taken by the Purchaser regarding the handling of any static-sensitive devices.

It is the Purchaser's responsibility to refuse any damaged parcels or check that all goods conform to requirements as soon as it is practicable after delivery. Any error of despatch, including omissions or damage in transit, must be notified within 10 days of receipt of the package.

Any queries regarding the non-delivery of goods should be made within 10 days of the expected despatch date. The Company cannot accept liability for non-delivery if the Purchaser has failed to clearly identify the correct delivery address.

If the Company is not advised in accordance with specified notice periods relating to returns and non-delivery, as shown in the above paragraphs of this clause, it will be assumed that the Purchaser has examined the goods and accepted liability, in accordance with the contract. Notification of faulty goods must be made to the Company within 10 days of receipt.

All returned goods must be accompanied by the associated despatch note.

The Company will not accept returned software products.

### 9. Warranty

The Company will, at its discretion, repair or replace a product in which, under proper use and within 12 months of despatch, defects appear due to faulty materials or workmanship. Alternatively a refund of the purchase price may be given, or where the Company is owed sums by the Purchaser, a credit note may be issued. Acceptance of liability is at the discretion of the Company.

All products should be returned at the Purchaser's risk, suitably packaged and carriage paid, within 12 months of despatch, with an advice note stating the original invoice number relating to the product in question and detailing the claimed defect.

Should any modification or attempted repair be made to the product, for whatever reason, this will invalidate the warranty. Any item added to the product by the Purchaser should be removed before return to the Company. If such products are returned, the Company will accept no liability for any item attached to or associated with any product returned under warranty. The Company will assume it is authorised to remove any attachments but will not be obliged to reconnect such items before returning the product to the Purchaser.

This warranty excludes, and no liability can be accepted for, consequential damage, loss or injury arising from defective products.

Software products are excluded from this warranty.

### 10. Risk and Ownership

Whilst the responsibility for safe keeping passes to the Purchaser upon receipt of any goods, ownership does not pass until full payment is received by the Company.

### 11. Liability

The Company shall have no liability in respect of damage, expense or consequential loss arising from the failure or delay in delivery or in performance of any obligations under any contract, due to any cause either within or outside the Company's control. Causes shall include, but not be limited

to, act of God, fire, floods, war, civil disturbances, riots, act of Government, industrial disputes or failure by any subcontractor.

The Company ensures that every care and attention is given to the provision of correct information whether technical or otherwise. However, no liability can be accepted by the Company for any expense or consequential loss arising from either the failure to provide information, or any statement made by the Company's agents or representatives as to the specification of any product or suitability for a defined purpose, unless that information is confirmed in writing.

### 12. Lien

The Company shall have a general lien in respect of all sums due from the Purchaser upon all goods to be supplied, or upon which work has been done on the Purchaser's behalf, and twenty-eight days from written notice to the Purchaser, may sell such goods and apply the proceeds towards the satisfaction of the sums due to the Company.

### 13. Patents and Copyright

Products offered for sale by the Company may be the subject of patents or other such protectable devices.

The Company maintains full copyright in respect of the catalogue, and its whole or partial reproduction without the Company's consent is prohibited.

### 14. Illustrations, Specifications and Product Information

Whilst every effort is made to maintain accuracy, no liability can be accepted by the Company for any errors or omissions in supplying any technical information.

No illustration or specification should be taken to represent the manufacturer or source of origin.

The Company reserves the right, without prior notice, to discontinue or supersede any product as part of its continuous programme of product improvement. It is the Purchaser's responsibility to ensure that all products are suitable and fit for the purpose of their intended application.

### 15. Termination of Contract

If the Purchaser commits any breach of these terms and conditions of business, or becomes insolvent or commits an act of bankruptcy, or enters into any arrangement with his creditors or goes, or is put, into liquidation (other than solely for the purposes of reconstruction whilst solvent), or if a receiver is appointed over any part of the Purchaser's business the Company may, without prejudice to any rights which may accrue, terminate the contract summarily by notice in writing.

### 16. Law

Any question relating to any contract subject to these terms and conditions of business, or agreed amendment to same, shall be determined in all respects by English law.

## B. EXPORT

The above UK Terms and Conditions also apply to export orders. In addition, the following clauses are applicable to orders received by the Company from Purchasers outside the United Kingdom, or from Purchasers requesting export to a country outside the United Kingdom.

### 1. Payment Terms

**Export orders must be paid for in advance by one of the following methods:**

1. Internationally recognised credit card, stating type of card, card number and expiry date.
2. Bank draft or cheque in Pounds Sterling, with order, drawn on a UK bank.
3. Where approved and established with the Company, net monthly account terms.
4. Letter of Credit (for order value exceeding £2,000), provided that it conforms to the following conditions:
  - (i) Irrevocable and confirmed on a major UK bank.
  - (ii) Negotiable for payment, at sight in Sterling.
  - (iii) Must conform exactly in detail for price, description of contents, despatch, method, etc., as given in the Company's quotation or pro-forma invoice.
  - (iv) All bank charges, commissions, etc., are to be to the account of the Purchaser.
  - (v) Trans-shipment and part-shipment must be allowed.
  - (vi) Must be open for a period of six months.
  - (vii) Must allow reasonable time for despatch of goods and subsequent preparation and presentation of documents.
  - (viii) Must specify if Country(ies) of Origin are to be shown.
  - (ix) Must be subject to the uniform Customs and Practice for Documentary Credits (1993 Revision ICC Publication UCP500) or as the same may be amended from time to time.
  - (x) Country of Final Destination must be stated.

### 2. Delivery, Insurance, Importation

In general, the Company's delivery terms are Ex-works. Freight/Insurance charges are at cost and estimated as separate items on quotations and pro-forma invoices.

All duties, importation, and other costs related to import legislation in the destination country are the responsibility of the Purchaser. The Purchaser shall indemnify the Company against any expenses or losses incurred by the Company in connection with the importation of goods into the destination country. The Purchaser is responsible for obtaining any necessary import licences.

### 3. Delivery Discrepancies and Returns

Any queries regarding non-delivery or incorrect delivery should be made in writing to the Company within twenty-one days of the date of despatch, quoting all relevant details, otherwise the Company cannot accept liability. No goods may be returned to the Company, for whatever reason, without prior written consent, unless they were sent in error or received by the Purchaser in damaged or faulty condition. If goods are under guarantee, refer to the above section entitled "Warranty" for correct procedure.

### 4. Despatch

The Company reserves the right to handle or transport goods by any means or method available, and that gives best service. The Company will endeavour to meet the Purchaser's specific requests regarding transportation of goods, but does not guarantee to do so. Special courier services are available at cost, as and when requested.

### 5. Certificates of Origin

The Company undertakes, as necessary, to obtain, complete and submit Certificates of Origin to Chambers of Commerce and overseas consulates for certification and legislation. The Company cannot arrange for certification or obtain other documentation from outside the UK.

### 6. Documentation

The Company's standard documentation comprises an invoice and a despatch note. Other documentation which, from time to time, may be required to accompany or support entry of orders into certain countries, will be charged at cost unless previously specified. The Company will quote such charges, if requested to do so, at the time of any quotation. All such charges will be detailed separately.

### 7. Additional Documentation – Charges

The following handling and administration charges for additional documentation will apply:

- \* Confirmed Irrevocable Letter of Credit:  
(Minimum order value £2,000) Bank charges to the account of the Purchaser.  
Order value £2,000 to £4,999: Charged at £125  
Order value £5,000 and over: Charged at £100
- \* Certificate of Origin: Charged at £50 (in addition to Consular Legislation charge)
- \* Hazardous Goods Document: Charged at £30

### 8. VAT

UK Value Added Tax at the applicable rate (currently 17.5%) is normally included in the catalogue, quotations or pro-forma invoices for all Purchasers resident in EC member states. Goods to EC Purchasers may be zero-rated provided that the Purchaser's VAT registration number is indicated on the sales invoice and held in the Purchaser's records (the Destination System). If the Purchaser is unregistered, VAT must be charged at the standard rate applicable (the Origin system).

In order to zero-rate goods supplied to UK addresses for onward shipment overseas, e.g., to freight forwarders, a "Proof of Shipment" certificate and other necessary evidence of shipment may be required. Goods for export to areas outside the EC and including the Channel Islands are VAT zero-rated, provided the conditions of VAT Notice 703 apply.

### 9. Law

Any business transacted by the Company, subject to the foregoing terms and conditions, shall be governed solely by English law and be within the exclusive jurisdiction of English courts.

	Catalogue Information
	Stores Information & New Products
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2	Antistatic Products
3	Audio Video
4	Batteries, Torches & Accessories
5	Books & Technical Data
6	Cable & Accessories
7	Capacitors & Crystals
8	Car Products
9	Computer Products & Calculators
10	Connectors
11	Enclosures & Accessories
12	Filters, Suppression & EMC Products
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17	Mains Electrical & Lighting
18	Microphones
19	Model Engineering
20	Navigation & Night Vision
21	Optoelectronics & Indicators
22	Panel Meters
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